File No.	170096	Committee Item No.	3
		Board Item No.	

COMMITTEE/BOARD OF SUPERVISORS

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	John Carroll John Carroll	Date: Date:	May 3	31, 2019

[Administrative Code - Telematic Vehicle Tracking Systems for City Law Enforcement Vehicles]

Ordinance amending the Administrative Code to require the installation and use of telematic vehicle tracking systems in all motor vehicles owned or leased by the City and used by law enforcement agencies, subject to waiver by the City Administrator; and affirming the Planning Department's determination under the California Environmental Quality Act.

NOTE: Unchanged Code text and uncodified text are in plain Arial font.

Additions to Codes are in single-underline italics Times New Roman font.

Deletions to Codes are in strikethrough italics Times New Roman font.

Board amendment additions are in double-underlined Arial font.

Board amendment deletions are in strikethrough Arial font.

Asterisks (* * * *) indicate the omission of unchanged Code subsections or parts of tables.

Be it ordained by the People of the City and County of San Francisco:

Section 1. The Planning Department has determined that the actions contemplated in this ordinance comply with the California Environmental Quality Act (California Public Resources Code Sections 21000 et seq.). Said determination is on file with the Clerk of the Board of Supervisors in File No. 170096 and is incorporated herein by reference. The Board affirms this determination.

Section 2. The Administrative Code is hereby amended by revising Section 4.10-2, to read as follows:

SEC. 4.10-2. TELEMATIC VEHICLE TRACKING SYSTEMS.

(a) <u>(1) Except as provided in subsection 4.10-2(a)(2), by n</u>No later than January 1, 2017, the City Administrator and each department head or other City official with jurisdiction

over motor vehicles shall cause those vehicles to be equipped with telematic vehicle tracking systems. The City Administrator, department head or other City official having jurisdiction shall prepare a notice that telematic vehicle tracking systems have been installed in the vehicles and shall disseminate that notice to affected employees at the same time the systems are installed.

- (2) For vehicles used by the Police Department, the Sheriff's Department, the Adult Probation Department, or the Juvenile Probation Department for law enforcement purposes, or used by the District Attorney's Office or the City Attorney's Office for investigations, the deadlines set forth in subsection (a)(1) for equipping vehicles and providing notice shall be January 1, 2018.
- (b) The City Administrator and each department head or other City official shall monitor the use of the motor vehicles over which he or she has jurisdiction using the systems, and shall use that information to monitor and analyze subjects such as vehicle cost efficiency, use optimization, and post-incident investigation, and to promote other potential benefits such as increased efficiency, productivity, and improved route management planning.
- (c) For purposes of this Section 4.10-2, "motor vehicle" shall mean a motor vehicle as defined in Division 1 of the California Vehicle Code, as amended. "Telematic vehicle tracking system" shall mean a system that combines the use of automatic vehicle location equipment in individual vehicles with software that monitors in real time the location, movements, and status of a vehicle or fleet of vehicles to provide a comprehensive picture of vehicle locations and usage.
- (d) Each department head or other City official with jurisdiction over motor vehicles shall submit a report with aggregate telematic data for those vehicles, including but not limited to usage and mileage data, to the City Administrator, or his or her designee, at the end of each fiscal year. By October 1 of each year, the City Administrator shall submit to the Mayor

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and the Board of Supervisors a report on aggregate motor vehicle use to promote efficient and safe operation of the City's motor vehicle fleet.

- (e) The City Administrator may, after a noticed public hearing, adopt regulations and guidelines to implement and administer this Section 4.10-2. Subject to the provisions of subsection (f), the City Administrator may waive the requirements of this Section 4.10-2, in whole or in part, upon written application by the department head or other City official with jurisdiction over motor vehicles where the City Administrator concludes that compliance with the requirements would not be feasible or would unduly interfere with the department's ability to discharge its official functions.
- (f) If the City Administrator approves an application for a waiver, he or she shall provide written notice of the approval to the Clerk of the Board within five business days of the approval, and the Clerk of the Board shall forward such notice to all members of the Board of Supervisors. Within 10 business days of receipt of such notice, any member of the Board may submit to the Clerk of the Board for introduction a written motion to approve or reject the waiver. The City Administrator, department head or other City official having jurisdiction shall not install the telematic vehicle tracking system that is the subject of the waiver while such motion is pending at the Board. The approval of an application for a waiver under subsection (e) shall be final when either: the 10 days have passed for a member of the Board to submit a written motion without any member having done so; or, if a Board member has submitted a motion for introduction, the Board adopts a motion affirming the City Administrator's approval of the application for a waiver, or 45 days have passed without the Board adopting a motion reversing the City Administrator's approval. Rejection of an application for a waiver shall be final when either: the City Administrator rejects the application; or, if the City Administrator has approved the application and a Board member has submitted a motion for introduction, the

Board adopts a motion reversing the City Administrator's approval of the application for a waiver.

(g) This Section 4.10-2 shall not apply to vehicles used by the Police Department, the Sheriff's Department, the Adult Probation Department, or the Juvenile Probation Department for law enforcement purposes, or used by the District Attorney's Office or the City Attorney's Office for investigations. The department shall file with the City Administrator a statement, in a form approved by the City Administrator, identifying the categories of vehicles for which the exemption is claimed, and the need for or the purpose of the exemption.

No later than November 1, 2016, the City Administrator shall file a report with the Board of Supervisors on the feasibility of extending the requirements of this Section to vehicles otherwise excluded by this subsection (g). The report shall specifically address the City's ability to protect confidential or sensitive information connected with the use of vehicles for law enforcement or investigations. The City Administrator shall consult with the affected departments when preparing the report.

(hg) Consistent with the Charter and other applicable State and Federal law, this Section 4.10-2 shall not apply to the Public Utilities Commission, Airport, Port, or Municipal Transportation Authority to the extent its requirements would conflict with those laws or otherwise interfere with the discharge of those functions placed under the direct jurisdiction of the department.

Section 3. Effective Date. This ordinance shall become effective 30 days after enactment. Enactment occurs when the Mayor signs the ordinance, the Mayor returns the ordinance unsigned or does not sign the ordinance within ten days of receiving it, or the Board of Supervisors overrides the Mayor's veto of the ordinance.

Section 4. Scope of Ordinance. In enacting this ordinance, the Board of Supervisors intends to amend only those words, phrases, paragraphs, subsections, sections, articles, numbers, punctuation marks, charts, diagrams, or any other constituent parts of the Municipal Code that are explicitly shown in this ordinance as additions, deletions, Board amendment

additions, and Board amendment deletions in accordance with the "Note" that appears under the official title of the ordinance. APPROVED AS TO FORM: DENNIS J. HERRERA, City Attorney Ву: Deputy City Attorney n:\legana\as2017\1700367\01165323.docx

LEGISLATIVE DIGEST

[Administrative Code - Telematic Vehicle Tracking Systems for City Law Enforcement Vehicles]

Ordinance amending the Administrative Code to require the installation and use of telematic vehicle tracking systems in all motor vehicles owned or leased by the City and used by law enforcement agencies, subject to waiver by the City Administrator; and affirming the Planning Department's determination under the California Environmental Quality Act.

Existing Law

Under existing law the City Administrator and each department head or other City official with jurisdiction over motor vehicles must install telematic vehicle tracking systems in those vehicles. A "telematic vehicle tracking system" is a system that combines the use of automatic vehicle location equipment (such as GPS locators) in individual vehicles with software that monitors in real time the location, movements, and status of a vehicle or fleet of vehicles to provide a comprehensive picture of vehicle locations and usage.

The City Administrator and department heads must monitor the systems and use the information to analyze subjects such as vehicle cost efficiency, use optimization, and post-incident investigation, and to promote other potential benefits such as increased efficiency, productivity, and improved route management planning. Each department head must submit an annual report to the City Administrator with the telematic data, including vehicle usage and mileage data.

The City Administrator may waive these requirements, in whole or in part, if the department seeking the waiver demonstrates that compliance would not be feasible or would unduly interfere with the department's ability to discharge its official functions. The Board of Supervisors may, by motion, override a waiver granted by the City Administrator.

Currently, the telematics requirements do not apply to vehicles used by the Police Department, the Sheriff's Department, the Adult Probation Department, or the Juvenile Probation Department for law enforcement purposes, or used by the District Attorney's Office or the City Attorney's Office for investigations.

Amendments to Current Law

The ordinance would eliminate the exemption for vehicles used by the Police Department, the Sheriff's Department, the Adult Probation Department, or the Juvenile Probation Department for law enforcement purposes, or used by the District Attorney's Office or the City Attorney's Office for investigations, beginning January 1, 2018.

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BOARD OF SUPERVISORS

CITY AND COUNTY OF SAN FRANCISCO BOARD OF SUPERVISORS

BUDGET AND LEGISLATIVE ANALYST

1390 Market Street, Suite 1150, San Francisco, CA 94102 (415) 552-9292 FAX (415) 252-0461

May 31, 2019

TO: Government Audit and Oversight Committee

FROM: Budget and Legislative Analyst

SUBJECT: June 6, 2019 Government Audit and Oversight Committee Meeting

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Item 3	Department:
File 17-0096	Administrative Services

EXECUTIVE SUMMARY

Legislative Objectives

• The proposed ordinance would amend the Administrative Code to require installation and use of telematics vehicle tracking systems in all motor vehicles owner or leased by the City and used by law enforcement, subject to waiver by the City Administrator.

Key Points

- In 2016, the Board of Supervisors approved an ordinance to amend the City's Administrative Code to add Section 4.10-2, to require that (i) by January 1, 2017, all nonexempt City Departments install and use vehicle telematics systems in all vehicles owned and leased by the City; and (ii) the City Administrator submit an annual report to the Mayor and the Board of Supervisors with aggregate data on motor vehicle use based on data collected from those systems.
- The City's Administrative Code Section 4.10-12 provides an exemption to vehicles used by the Police Department, the Sheriff's Department, the Adult Probation Department, and the Juvenile Probation Department. The code also exempts vehicles used the by District Attorney's Office and the City's Attorney's office for investigations. The proposed ordinance would require that these City departments install telematics in vehicles that are currently exempt under the Administrative Code.

Fiscal Impact

- According to Fleet Management, there are currently 1,732 vehicles that are owned by the City that do not currently have telematics installed. Installing telematics in all those vehicles (upper bound estimate) would result in one-time costs ranging from \$342,806 to \$370,364.
- In addition to the one-time costs, vehicle telematics require ongoing monthly subscription costs. Fleet Management estimates the annual subscription costs to be between \$442,000 and \$460,000.

Recommendations

- Amend the proposed ordinance to set the date to comply to a date subsequent to approval by the Board of Supervisors.
- Approval as amended is a policy matter for the Board of Supervisors.

MANDATE STATEMENT

According to Charter Section 2.105, all legislative acts shall be by ordinance and require the affirmative vote of at least a majority of the members of the Board of Supervisors.

BACKGROUND

Vehicle telematics, also known as black boxes or global positioning system (GPS) tracking, is viewed as an important tool to help the City achieve the goals of Vision Zero. Vehicle telematics allow the City to track vehicles individually and collect and report data on their location, history, speed, mechanical diagnostics, safety, and other information.

In 2016, the Board of Supervisors approved an ordinance to amend the City's Administrative Code to add Section 4.10-2, to require that (i) by January 1, 2017, all non-exempt City Departments install and use vehicle telematics systems in all vehicles owned and leased by the City; and (ii) the City Administrator submit an annual report to the Mayor and the Board of Supervisors with aggregate data on motor vehicle use based on data collected from those systems.

The City's Administrative Code Section 4.10-12 provides an exemption to vehicles used by the Police Department, the Sheriff's Department, the Adult Probation Department, and the Juvenile Probation Department. The code also exempts vehicles used the by District Attorney's Office and the City's Attorney's office for investigations. Each of these departments must submit a statement to the City Administrator identifying the vehicles for which an exemption is claimed and justify the need for the requested exemption.

According to the Annual Telematics Report submitted in February 2018, telematics devices were installed in 4,163 vehicles, or 54 percent of the City's total vehicle fleet at the time. As the ordinance exempts certain vehicles, the systems were not installed in the remaining 3,506 vehicles in the City fleet, including the 1,683 public safety and investigative service vehicles and 1,823 pieces of equipment such as lawn mowers, carts, and forklifts exempt from this regulation. According to Mr. Keigo Yoshida, Business Manager at Fleet Management, close to 100 percent of City vehicles that are currently mandated to have telematics are compliant with the Administrative Code.

DETAILS OF PROPOSED LEGISLATION

The proposed ordinance would amend the Administrative Code to require installation and use of telematics vehicle tracking systems in all motor vehicles owned or leased by the City and used by law enforcement, subject to waiver by the City Administrator.

The proposed ordinance would also affirm the Planning Department's determination under the California Environmental Quality Act (CEQA).

Deadline for implementation

The proposed ordinance states that vehicles used by the Police Department, the Sheriff's Department, the Adult Probation Department, or the Juvenile Probation Department for law enforcement purposes, or by the District Attorney's Office or the City Attorney's Office for investigations, must comply with the ordinance by January 1, 2018. The proposed ordinance

was originally introduced in January 2017, and therefore, should be amended to set the date to comply to a date subsequent to approval by the Board of Supervisors.

CEQA Determination

In January 2017, the Planning Department determined that the proposed ordinance is not defined as a project under CEQA guidelines as it does not result in a direct or indirect physical change in the environment.

FISCAL IMPACT

One-time costs

According to Fleet Management, there are currently 1,732 vehicles that are owned by the City that do not currently have telematics installed, but should with the passage of the proposed ordinance. These vehicles are used on public roads and include sedans, pick-ups, SUVs, motorcycles, and three-wheeled carts used by the Municipal Transportation Agency. Fleet Management estimates that one-time installation costs would be approximately \$342,806, as shown in Table 1 below.

Table 1: Estimated One-Time Cost of Installation

Item	Unit Price	Quantity		Cost
5500 Telematics Device	\$85		1,587	\$134,895
Connection Harness	\$35		1,587	\$55,545
Asset Guard Telematics Device	\$150		145	\$21,750
Installation Labor	\$65		1,732	\$112,710
Sales Tax (8.5% On Hardware)				\$18,036
Total				\$342,806

In the past, departments have also chosen to install AssetGuards onto vehicles and equipment exempt from the ordinance, such as trailers, off-road equipment, and utility carts. If departments voluntarily installed AssetGuards onto their exempt devices, it would cost the City an additional \$27,558 in one-time costs, for a total of \$370,364.

On-going costs

In addition to the one-time costs, vehicle telematics require ongoing subscription costs. Fleet Management estimates the annual subscription costs to be between \$442,000 and \$460,000, depending on the voluntary installation of asset guards onto exempt devices.

According to Mr. Yoshida, all costs are an upper bound estimate as the costs were calculated with the premise that no City department will apply for a waiver of the code.

RECOMMENDATIONS

- 1. Amend the proposed ordinance to set the date to comply to a date subsequent to approval by the Board of Supervisors.
- 2. Approval as amended is a policy matter for the Board of Supervisors.

CITY AND COUNTY OF SAN FRANCISCO BOARD OF SUPERVISORS

BUDGET AND LEGISLATIVE ANALYST

1390 Market Street, Suite 1150, San Francisco, CA 94102 (415) 552-9292 FAX (415) 252-0461

Policy Analysis Report

To:

Supervisor Yee

From:

Budget and Legislative Analyst's Office

Subject:

Vehicle Telematics for City Vehicles

Date:

February 23, 2015

Summary of Requested Action

You requested that our office research the cost estimates and considerations of implementing and maintaining a vehicle telematics, or black box, program for all City-owned vehicles. The potential program would cover a broad range of capabilities and policy objectives. The devices can be used for monitoring and analysis of vehicle cost efficiency, use optimization, post-incident investigation, and other implicit benefits such as fraud/waste prevention and encourage safer driving practices.

Fred Bronnan

For further information about this report, contact Fred Brousseau at the Budget and Legislative Analyst's Office.

Executive Summary

- Vehicle telematics, sometimes known as black boxes or global positioning system (GPS) tracking, allow for tracking vehicles individually and collecting and reporting data on their location, history, speed, mechanical diagnostics, safety and other information.
- Vehicle telematics systems have the potential to save the City significant time, money and, potentially, lives. Data collected from vehicle telematics devices in City vehicles can help the City correct and improve unsafe driving habits, inappropriate use of City vehicles, and missed vehicle maintenance. The systems can provide information to refute groundless claims against the City regarding vehicle accidents.
- Vehicle telematics are currently in place in 2,332 vehicles and planned for 776 more in the near-term for a total of 3,108 vehicles. Deploying these systems across the City's remaining 4,733 vehicles in the fleet would cost an estimated \$1.3 million in one-time equipment and installation costs and approximately \$1.8 million for ongoing annual service, training and support costs.

- For maximum effectiveness, data collected and reported from vehicle telematics systems need to be analyzed and used by managers to improve vehicle cost-effectiveness and performance. If treated as an additional tool for managers, some of their time and use of the system would be absorbed into their current duties though in some cases, use of the telematics data would be replacing manual monitoring systems.
- If departments don't fully utilize it, some of the value of the system's data might go to waste. However, even if partially used to monitor and improve just one objective such as vehicle usage, case studies from other governments suggest that significant benefits can be realized early on.
- To fully realize the benefits of a telematics system, the Board of Supervisors should ensure that City departments have plans in place to use and manage system data, with any privacy concerns also addressed. The Board of Supervisors should also ensure that system security is incorporated into current and future agreements with the City's vehicle telematics vendors.

Introduction

The City and County of San Francisco (the City) has a fleet of 7,841 active vehicle assets including sedans, parking enforcement vehicles, fire trucks and heavy equipment such as bulldozers and backhoes. While these vehicle assets are critical to many of the City's core services, they also can also represent a liability for the City. They expose the City to safety and financial liabilities in the event of accidents and inadequate maintenance, are vulnerable to misuse and theft, and they have the potential to produce more emissions than necessary if not operated properly. Management of these assets, and their liabilities, can be aided by current vehicle telematics technology.

Vehicle Telematics

Vehicle telematics, sometimes known as black boxes or global positioning system (GPS) tracking, allow for tracking vehicles individually and collecting and reporting data on their location, history, speed, mechanical diagnostics, safety and other information. Typically vehicle telematics systems are comprised of data recording devices, often referred to as "black boxes" installed in vehicles, with the recorded data transmitted to remote systems using cellular data or, in some instances, satellite data connections.

In recent years, many commercial vehicle fleets managed by the private sector have implemented vehicle tracking and telematics systems at a rapid pace and in nearly every commercial industry. Industry sources report that adoption of these technologies grew by 305 percent between 2005 and 2010¹, and is thought to have continued at a similar pace into 2014². In recent years, government agencies have also begun implementing these systems across the United States. For example, in 2014 the California Department of Transportation (Caltrans) spent \$2.5 million, or an average of \$333 per vehicle, to outfit 7,500 sedans, trucks, snowplows and portable signs with telematics systems, and a data-reporting service that will cost another \$1.5 million annually, or an average of \$200 per vehicle per year.³ Another example is the City of Los Angeles's pilot program testing systems in 50 police vehicles beginning in January 2015 at a similar per-vehicle cost to Caltrans⁴. Vehicle telematics systems are also already deployed on 2,332 of the 7,841 vehicle assets, or approximately 30 percent, owned by San Francisco, discussed further below.

Safety Benefits

Vehicle telematics has the potential to improve safety, reduce operating costs, reduce vehicle emissions, and identify potential fraud and waste. One of the simplest benefits of vehicle telematics is that driver behavior can be improved by simply knowing the system is in place and that their vehicle use is being monitored, which can encourage more driver attention to safer and more efficient driving practices. Beyond this, managers can be alerted or observe in reports that certain employees are engaging in unsafe driving practices such as harsh acceleration or braking. Such results were realized in Yolo County in 2012, when the Yolo County Sheriff's Department used speed data collected from their vehicle telematics system to coach deputies' driving practices, specifically targeting unjustified highspeed driving above 90 miles per hour. Once the system was implemented they reported that over half of the deputies dropped their incidents of unjustified highspeed driving to zero, and the rest had two or fewer incidents. ⁵

There is also a financial benefit to improving driving habits. Over the past five years the City has paid a total of \$76.9 million in settlements and judgments from claims

¹ Nam D. Pham, Ph.D., "The Economic Benefits of Commercial GPS Use in the United States and the Costs of Potential Disruption", June 2011 NDP Consulting, accessed January 27, 2015

² Directions Magazine <u>"Almost 50 Million Non-trucking Commercial Fleet Vehicles Equipped with Telematics by the End of 2019"</u>, accessed January 27, 2015

³ Jon Ortiz, "Caltrans outfits fleet with high-tech devices", October 10. 2014, The Sacramento Bee: the state worker, accessed January 27, 2015

⁴89.3KPCC, "LAPD to track how safely officers are driving patrol cars LAPD Begins Tracking Officer Driving" December 22, 2014, accessed January 27, 2015

⁵ Larry Cecchettini, "Don't Just Provide Training, Change Culture How Yolo County, Calif., used Below 100 to drive down crashes & save money", March 2014 Issue, and online Monday, March 24, 2014, accessed January 27, 2015

and litigation relating to its vehicles⁶. Since the presence of telematics systems makes drivers more aware and attentive and allows managers and supervisors to identify and correct unsafe driving habits and drivers, some accidents could be avoided altogether, which would save the City money in its annual settlements and judgments. When accidents do occur, the data recorded by a telematics system can be used to correct driver behavior in cases where City drivers are shown to be at fault or to provide data to dispute claims against the City when drivers were not at fault. Compared to eye-witness accounts, which can be obscured by memory and imprecision, telematics systems record accurate and precise information that can be used to exonerate drivers, and reduce wrongful claims and litigation against the city.

Efficiency Benefits

Vehicle telematics systems can also reduce costs through monitoring and reporting vehicle efficiency. This is can be achieved through reduction of vehicle idling time using driver scorecards, wireless vehicle maintenance alerts, and optimized fleet utilization. Without a telematics system maintenance and diagnostics rely on regular and time consuming visits to the City's central shops or other repair facilities. In contrast, telematics systems wirelessly report vehicle diagnostics such as engine warnings or malfunctioning airbag systems, and can remotely report annual smog check information on most new vehicles, saving additional in-person diagnostic checks. These efficiency benefits also overlap with the safety benefits as fewer miles on the road and early system warnings equates to a lower exposure to safety liabilities. In 2011 the City of Sacramento spent \$100,000 to outfit a tracking system in 184 of its vehicles, and immediately realized a reported \$60,000 in fuel savings in the first month by reducing vehicle idling time and unnecessary use. ⁷

Similar results were observed when the Eastern Municipal Water District in Riverside County installed vehicle telematics systems in its fleet of 350 vehicles. The District calculated that employees drove 165,000 fewer miles and saved \$354,000 in the first six months.⁸

⁶ Settlements and judgments can vary year to year depending on a number of factors and when larger settlements are spread across multiple years. In the past five fiscal years the smallest year was \$6.4 million paid in 2013, the median year was \$16.5 million paid in 2011, and the largest year was \$19.6 million paid in 2010.

⁷ City of Sacramento results reported in Memo to City of Missoula City Council from Park and Recreation Director Dona Gaukler, "GPS Fleet management benefits" May 5, 2011, accessed January 27, 2015

⁸ Shelley Mika, Government Fleet "Case Study: Water District Reduces Operating Costs with Telematics", government-fleet.com, December 2013, accessed January 23, 2015

Environmental and Other Benefits

City departments could use vehicle telematics tools to optimize their fleet and comply with the City's Healthy Air and Clean Transportation Ordinance (HACTO), which requires an annual 5 percent citywide fleet reduction from July 2011 to July 2015. A telematics system would help City Departments identify underutilization or inefficient use (e.g. excessive idling) of vehicles, and implement strategies to optimize fleet usage, thus lowering operating costs and enabling fleet reductions. As costs for fuel, maintenance, and inefficient vehicles are saved, reductions in the levels of vehicle emissions would also be realized.

Tracking and reducing vehicle emissions would help departments report and reduce their annual emissions for the City's Climate Action Plan initiative that began in 2004 with a Citywide goal of reducing greenhouse gas emissions. Departments are required to track and report their emissions and update their plans annually. Other benefits such as discouraging unauthorized use, identifying fraud, and preventing waste have the potential to save the City additional money. Additionally, under the City's current vehicle telematics contract with USA Fleet Solutions covering vehicles already using this technology, roadside assistance services are included such as 25 miles of towing, fuel delivery, tire changes, and lost/stolen vehicle recovery. These included services are not necessarily part of all telematics systems on the market.

Emergency Management Benefits

Vehicle telematics offer potential benefits for emergency management, medical response and law enforcement. For example, vehicle telematics were used during the 2013 Rim Fire in the Stanislaus National Forest, which burned 257,135 acres and reached the edges of Hetch Hetchy Reservoir watershed. The San Francisco Public Utilities Commission (SFPUC), which had installed vehicle telematics several years prior, reports that it used vehicle location data to efficiently manage emergency response and account for its staff and equipment.

City public safety departments not currently using vehicle telematics such as the Police, Fire, and Sheriff's Departments could also potentially benefit from these technologies. For example, the Police Department does not currently have any location or telematics technology deployed in its cars, and dispatchers have limited information on the location of police vehicles at any given moment. A telematics system could augment and support the current voice-reporting system, giving dispatchers the ability to more efficiently assign resources when incidents or emergencies occur.

Privacy and Security Issues

As with any information technology, vehicle telematics raises policy considerations concerning individual privacy rights and system security. Similar to City owned computers, email and internet access, employee use of which can be monitored by City management, vehicles are also the City's property and, with proper controls in place, should reasonably be expected to be monitored as a management control. In fact, various management methods are currently in place at present to monitor City vehicle use, but in departments without vehicle telematics, these are mostly manual systems, without systematically collected and reported real-time usage data available.

The City's vehicle use policy, adopted in 2014 states that "...operating an organizational vehicle is a privilege." The policy, which is primarily focused on promoting safe driving and speed reduction, specifically addresses vehicle telematics in the Business Use Declaration of the Program:

"...the City reserves the right to install GPS systems in order to complement the City's Asset Management Program. GPS data may be used during the course of vehicular incident or personnel disciplinary investigations." [Item 19]

In the current vehicle telematics system deployed in some City vehicles, none of the information collected is shared publicly. Instead, the system provides a secured web application where approved managers can logon, monitor, and manage their fleet's data. Access to the system and data on specific vehicles is only granted to information on vehicles within the managers' purview or oversight. The Department of Human Resources reports that there are no known limitations in any labor contracts that would exclude the use of telematics systems on City vehicles.

Any security vulnerabilities vehicle telematics present might also be considered in connection with privacy. Recent research⁹ and inquiries into the automotive industry¹⁰ have identified security vulnerabilities apparent in consumer vehicles from a wide range of manufacturers. These vulnerabilities exist regardless of the presence of vehicle telematics systems. However, the research implies that vehicle telematics systems could add an additional entry point that could further expose

⁹ Dr. Charlie Miller and Chris Valasek, <u>"Adventures in Automotive Networks and Control Units,"</u>, accessed February 10, 2015

¹⁰ Staff of Senator Edward J. Markey, "Tracking & Hacking: Security & Privacy Gaps Put American Drivers at Risk", February 9, 2015

Memo to Supervisor Yee February 23, 2015 Page 7

vehicles to potential vulnerabilities. To mitigate this risk, current and future implementations of telematics systems in the City should consider both physically and digitally securing these units to prevent tampering and block malicious access.

If expanded Citywide, maintaining enterprise-level security and privacy standards that meet the same standards used for other information regarding City employees could ease any privacy and security drawbacks.

San Francisco's Current System

As of December 26, 2014, the City had installed telematics systems on 2,332 vehicles out of 7,841 total vehicle assets, or approximately 30 percent of the total fleet. Departments can opt into the system, which is managed by the General Services Agency's Fleet Management/Central Shops Department. An additional 776 vehicles are planned to have systems installed in the near-term, for a total of 3,108 vehicles. Until September 2014, individual City departments had implemented vehicle telematics systems through individual contracts with different contractors and a variety of systems. In September 2014, the Fleet Management/Central Shops Department consolidated the various contracts into one contract with USA Fleet Solutions¹¹ serving all City departments using the same technology and service level. This standardized system and contract offers installation, support, and training for these systems across all departments. The distribution of the 3,108 City vehicles with vehicle telematics installed, by department, is shown in Figure 1.

¹¹ USA Fleet Solutions is a reseller of the Networkfleet service, which is owned by Verizon.

Figure 1: City Departments Participating in Vehicle Telematics Program

Department	# of Vehicles
San Francisco Municipal Transportation Agency	930
Public Utilities Commission	774
Department of Public Works	596
Recreation and Parks Department	306
Public Health Department	120
Building Inspection Department	100
Port of San Francisco	94
Human Services Agency	64
Department of Technology	50
Airport Commission	42
General Services Agency Central Shops	18
Treasure Island Authority	- 13
Real Estate Department	1
Tota	al 3,108 ¹²

Source: Fleet Management/Central Services Department

The largest participating department is the San Francisco Municipal Transportation Agency (SFMTA), which has installed telematics devices in 930 of its non-revenue fleet, or vehicles that do not provide direct transit services. These vehicles are primarily used by the portion of SFMTA that oversees bike and pedestrian programs, taxis, parking and traffic control operations in the City. Vehicle telematics are not being used for SFMTA's revenue fleet of light rail vehicles, buses and trolley cars, as discussed further below.

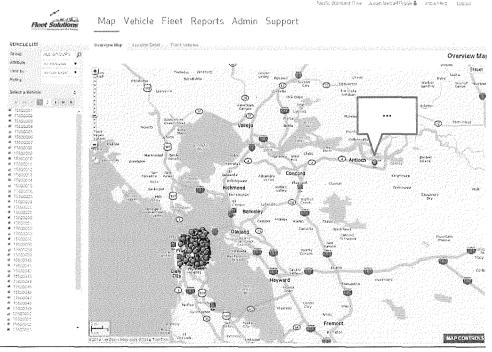
While still in its implementation phase, select SFMTA managers have been granted access to monitoring of their staff's vehicle use. SFMTA managers are granted access to only the vehicles relevant to their purview and can view reports and setup monitoring alerts pertinent to the nature of their operation's vehicle use. For example, with limited training on the system, managers have been able to establish geo-fences, or geographic areas such as the City's boundaries for vehicles for which they are responsible. When vehicles not assigned for take home use or other activities outside of the City cross the geo-fence, managers can receive instantaneous alerts or subsequent summary reports. Managers are then able to follow up with users of the City's vehicles that have crossed the established boundaries to determine why the vehicle was outside of City boundaries and correct any possible misuse of City property.

 $^{^{12}}$ As of the end of December 2014, telematics systems using the new contract had been installed on 2,332 vehicles. An additional 776 are scheduled to be installed in the near-term bringing the total to 3,108

The panel on the top in Figure 2 shows the real-time location within the City of all vehicles for which a particular manager is responsible. The panel on the bottom shows part of an alert message that would be sent to the manager reporting the real-time location of a vehicle not authorized to leave the City.

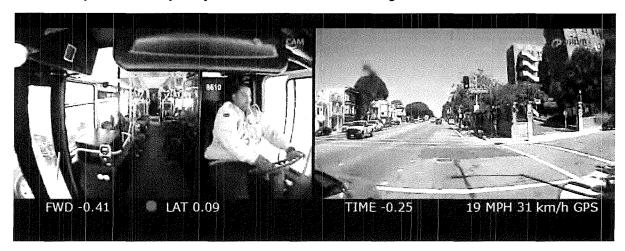
Figure 2: Managers can easily monitor potential unauthorized vehicle activity





The San Francisco Municipal Transit Agency (SFMTA) revenue fleet already has partial systems in place that achieve some of the features and policy objectives of a full vehicle telematics system. The revenue fleet includes the light rail vehicles, buses and trolley cars that provide MUNI services across the City. All of the vehicles are outfitted with a NextBus system, which uses GPS and cellular radio signals to estimate arrival estimates to passengers. SFMTA reports that information is not used for fleet management purposes. The revenue fleet also has camera systems in place. Notably, the bus and trolley fleet have a system called DriveCam that records video when activated by fast acceleration or hard braking, examples of which are presented in Figure 3. The SFMTA reports that after the first year of operation in 2010, the total number of bus accidents dropped from 964 in 2009 to 483 in 2010, a 50 percent decrease. Additional information on the partial systems used by the SFMTA's revenue fleet is discussed in the Appendix.

Figure 3: SFMTA's DriveCam systems record eight seconds of video before and four seconds after a fast acceleration or hard braking event.



City-Wide Implementation Cost Estimates

Equipment and Service Costs

If vehicle telematics systems were implemented in all 4,733 City vehicle assets that currently do not have any systems, including SFMTA's revenue fleet, the City would incur approximately \$1,312,033 in one-time equipment and installation costs under the current contract, or an average of \$277.21 per unit. Unit cost could vary slightly as some specialized vehicles might require unique mounting hardware or installation.

For ongoing maintenance, data collection and reporting and staff training, the cost would be \$1,782,337 annually for the 4,733 vehicles, or an average of \$376.58 per vehicle. This assumes almost all additional vehicles use cellular data (as opposed

Memo to Supervisor Yee February 23, 2015 Page 11

to the more expensive satellite data option), and includes other costs such as training and system administration staff.

The vast majority of systems already installed in the City's fleet use the standard two-minute reporting interval in which vehicle locations are reported every two minutes. However, the location of some vehicles, such as SFMTA's 300 parking enforcement vehicles, is reported every 30 seconds. This option costs slightly more at \$370.20 per unit per year instead of the \$274.20 per year for two minute interval reporting under the City's current contract. The \$1.3 million ongoing cost estimates assume that the Police, Fire, and Sheriff's Departments' 1,251 vehicles would also require 30-second cellular reporting, given the potential benefits to managing time-sensitive emergency response activities. There may be other instances where the more expensive 30-second reporting service could be beneficial.

In some rare cases telematics units that use satellite communication instead of cellular may be useful in remote areas or occasions when cellular networks are unavailable. Currently, 10 of these satellite units are deployed in vehicles used by the Public Utilities Commission, for managing water and power systems at the City's Hetch Hetchy Reservoir in the Sierra Nevada. The satellite units cost more at \$771.83 per unit to purchase and install, and \$419.40 per year for 15 minute reporting intervals compared to \$274.15 one-time installation costs for most City vehicles and between 179.40 and \$370.20 for vehicles using cellular coverage. This use of satellite connectivity would likely be a rare exception since most of City's fleet operates within City boundaries or in relatively urban areas with cellular coverage. Accordingly, additional satellite units were not considered in the cost estimates.

Figure 4: Cost of Adding Vehicle Telematics to the remainder of City Vehicles using City's existing vendor

	Total Number	Already On Full Telematics Systems	Total Without Vehicle Telematics	One-Time Cost to Add per Unit (Equipment & Installation)	One-Time Cost to Add(Equipment & Installation)	Annual Cost of Added Systems per Unit	Annual Cost of Added Systems
Primary Fleet:	5,623	3,108 ¹³	2,515	274.15	689,487	321.95	809,709
Requiring 2-minute cellular updates	3,937	2,673	1,264	274.15	346,526	274.20	346,589
Requiring 1-minute cellular updates	125	125	<u>-</u>	274.15	÷	322-20	-
Requiring 30-second cellular updates ¹⁴	1,551	300	1,251	274.15	342,962	370.20	463,120
Requiring 15-minute satellite updates	10	10	-	771.83	Œ	419.40	Ė
Component Fleet	1,168	-	1,168	286.56	334,702	228.75	267,178
Vehicles, Requiring 2- minute cellular updates	608	-	608	274.15	166,681	274.20	166,714
Trailers Requiring 15- minute cellular updates	560	-	560	300.04	168,023	179.40	100,464
SFMTA Revenue Fleet ¹⁵	1,050	÷	1,050	\$274.15	287,853	\$274.20	287,910
System Administration 4 FTE							400,000
Training Costs 16							4,640
Repair and Support Costs ¹⁷				elekt erretike enlyene en kwellet falle keel keel hele toe beleemen.	ang kantakan sa kabata Salahaji dala Tata dalah.		12,900
Total Citywide Fleet	7,841	3,108	4,733	\$ 277.21	\$1,312,033	\$376.58	\$ 1,782,337

Source: Unit and annual service costs from City contract with USA Fleet Solutions "Global Positioning System/ Automated Vehicle Locator (GPS/AVL) For the Term September 1, 2014 through August 31, 2018." Annual administration, training and repair costs are estimates by the Budget and Legislative Analyst.

¹³ As of the end of December 2014, telematics systems using the new contract had been installed on 2,332 vehicles. An additional 776 are scheduled to be installed in the near-term bringing the total to 3,108.

¹⁴ Currently, 300 vehicles use the 30-second reporting interval. An assumed additional 1,251 Police, Fire, and Sheriff's Departments' vehicles would also use the 30 second reporting intervals.

¹⁵ As discussed above and in the Appendix, SFMTA's revenue fleet has partial systems in place that achieve some of the features and policy objectives that a full vehicle telematics system would.

¹⁶ Assumes that the General Services Agency's Fleet Management/Central Shops Department will conduct 40 hours of training annually at the rate of \$116 per hour.

¹⁷ Assumes that 50 hours of repair work will be required annually at the rate of \$108 and that a 100 hours of technology support provided annually by the contractor will be provided at \$75 per hour.

Management and Analysis Costs

A critical consideration of any telematics system is how the data generated by the system is used and analyzed. Without analysis of the data to determine how to more efficiently route vehicles, coach employees with poor driving habits to drive more safely, ensure timely vehicle maintenance or refute groundless claims that City vehicles were responsible for damages, the system will yield fewer benefits.

There are different scenarios for how the data can be used and managed, each with different cost implications. In one scenario access to the data and its analysis can be deployed as another tool for managers to use. This assumes that managers will primarily run pre-generated reports and the cost of their time will be absorbed in existing duties, as the system will serve as another tool to enhance their responsibilities. This scenario might be feasible in smaller departments, but may erode the value of the telematics system in a large department with hundreds of cars to manage. The larger departments would probably benefit from greater dedicated staff time to provide more sophisticated monitoring and reporting to managers. In any case, without time or staff dedicated to the analysis and management of the data the system might be wasted, resulting in data being collected from telematics equipment that yields little value to the City.

The Fleet Management/Central Shops Department estimates that it requires approximately one full time equivalent (FTE) to administer the program for every 2,000 devices. If four FTE were allocated for the 7,841 full Citywide fleet at approximately \$100,000 per FTE, this would bring the annual cost to \$400,000. The Fleet Management/Central Shops Department reports that even with the larger departments that currently have dedicated administration of the program, that at least one of these four FTE would be required for central administration. This estimate is drawn from their recent experience launching the current program; where the Fleet Management/Central Shops Department continues absorb these costs providing central oversight and administration.

In any case, training is required to enable fleet managers, department managers, or analytical staff to utilize the system. So far, the Fleet Management/Central Shops Department has hosted system introduction and kick-off trainings for various departments. There have been five of these sessions totaling 40 hours at the Central Shop's rate of \$116 per hour, or a total of \$4,640. Even after vehicles have the technology installed, training sessions will likely need to continue on a periodic basis. Beyond these in-person training sessions, the Fleet Management/Central Shops Department has been developing training manuals and on-line training modules in how to manage and analyze the data. This is mostly a one-time activity that will be easily shared with future users of the system. So far, the Fleet Management/Central Shops Department has absorbed these development costs and its own time as implementers of the system.

Other Costs

There are other potential costs that are not addressed in the unit cost estimates above, such as technical support and repairs. The vendor's contract includes repair and technical support at hourly rates ranging from \$75 to \$115 per hour. In addition, the Fleet Management/Central Shops Department charges \$108 per hour to departments for repair and replacement work. The majority of the units, with the exception of the satellite units, are offered with a lifetime warranty from the contractor. This tempers the potential cost of physical repairs since replacement and swapping of units is said to be fast and at a negligible time cost. Given the recent implementation of the system and contract the frequency of repairs and problems has not been tested.

Future equipment upgrades by 2017 may also be necessary when the current cellular network technology in the system, known as 2G, will begin to be phased out. The devices will continue to work, but with declining efficiency and coverage. In the future, the Fleet Management/Central Shops Department estimates that, similar to consumer smartphones, vehicle telematics devices might benefit from equipment upgrades every three to four years to maintain compatibility with network technology. Whenever equipment updates are deemed necessary in the future, one-time equipment and installation costs would be incurred.

Ways to Save

The total cost of implementing telematics systems Citywide could be lowered by excluding some vehicles that already have some type of telematics installed. In particular the SFMTA's revenue fleet and vehicle assets such as trailers could be excluded. The SFMTA's revenue fleet already has systems that cover many of the benefits of a full telematics system, and its next generation fleet will have a full telematics system pre-installed. SFMTA plans to phase out existing buses for the new vehicles over the next few years, but the current light rail vehicles are expected to remain in operation until 2025.

Figure 5: Potential Cost Reduction for Vehicle Telematics if Certain Vehicles Excluded

	Total Vehicles	One-Time Costs	Annual Cost for Added Systems
SFMTA Revenue Fleet	1,050	\$ 287,853	\$ 287,910
Trailers	560	\$ 168,023	\$ 100,464
Total	1,610	\$455,876	\$388,374

Source: Vehicle counts from SFMTA.

If the technologies in the current SFMTA revenue fleet are deemed sufficient for the timing being, then an estimated one-time cost of \$287,853 and an annual cost Memo to Supervisor Yee February 23, 2015 Page 15

of \$287,910 of the total estimated costs for the full fleet shown in Figure 5 could be removed.

A second option would be to exclude the City's 560 trailers in its component fleet. The trailers range in size and use from small equipment trailers used by the Department of Public Works, to highly technical and equipped Fire Department trailers. The trailers are expensive City assets that would benefit from a tracking and telematics system particularly in terms of tracking their location and managing use. However, since the trailers are generally used in conjunction with other vehicles that would otherwise have telematics installed, installation of the devices on trailers could be duplicative. Trailers have slightly higher one-time costs of \$300.04 per unit, because the equipment must be housed in a weatherproof box, but have a lower annual cost of \$179.40 per unit since they transmit less data. The exclusion of trailers from a Citywide vehicle telematics programs would reduce the cost estimate by another \$168,023 of one-time costs and \$100,464 of annual costs.

Conclusion

Vehicle telematics systems have the potential to save the City significant time, money and potentially people's lives if implemented across the fleet's 7,841 vehicles. Private industry and other governments have found significant and rapid benefits from use of these systems. Given the value of the City's vehicle assets, in both their financial worth and in the services they provide, better managing these assets and their potential liabilities would have a citywide impact.

The Board of Supervisors could consider the deployment of these systems as a tool capable of achieving a variety of policy objectives covering safety, efficiency, cost savings, limiting environmental impact, and adding tools for emergency management and law enforcement.

To fully realize the benefits of a telematics system, the Board of Supervisors should ensure that City departments have plans in place to use and manage system data, with any privacy concerns also addressed. The Board of Supervisors should also ensure that system security is incorporated into current and future agreements with the City's vehicle telematics vendors.

Appendix

SFMTA's Partial Telematics System Already in Place

The City's Municipal Transit Agency (SFMTA) revenue fleet has partial systems in place that achieve some of the features and policy objects that a full vehicle telematics system would. The revenue fleet includes the light rail vehicles, buses and trolley cars that provide MUNI services across the city. All of the vehicles are outfitted with a NextBus system, which uses GPS and cellular radios to estimate arrival estimates to passengers. The SFMTA reports that information is not used for fleet management purposes, and does not have the full capabilities of a full telematics system.

The current generation of light rail vehicles made by Breda has a combination of technologies that cover many of the same areas that a full telematics system would, but may lack the same level of precision that a dedicated telematics system might otherwise provide. The vehicles have fault recorder computers which record speed and braking data. The systems are intended mostly for mechanical diagnostics, and the SFMTA reports that the system doesn't always function properly, but has occasionally been used in accident reconstruction. These recorders reportedly work best while underground in the subway, where Automatic Train Control computers are active. The light rail vehicles also have cameras that record train operators and can be reviewed if an incident occurs. Overall, the combination of technologies covers many same areas that a full telematics system would, but may lack the same level of precision and reporting capabilities that a dedicated telematics system might provide.

The bus and trolley fleet also have a similar combination of technologies, which also lacks the same level of precision and reporting that a full telematics system could provide. The bus and trolley fleet had a system known as DriveCam installed over five years ago. The system has a camera pointed at the driver and a second camera pointed outward recording the driver's general view. The cameras are always on but only record video when activated. They are activated by fast acceleration and hard braking. They then record eight seconds of footage from before activation, four seconds after activation, and vehicle's speed is noted too. These devices lack the same telemetry precision other systems might yield, but they have been noted as effective at encouraging driver safety. After the first year of operation in 2010, the total number of bus accidents dropped from 964 in 2009 to 483 in 2010, a 50 percent decrease. The DriveCam units cost the SFMTA approximately \$508 not including the labor and installation, and cost approximately \$479 per year, not including training and technical support. Even without the full capabilities of a telematics system, DriveCam seems to have provided an effective safety tool.

The SFMTA's next generation fleet will come with full vehicle telematics systems, with live video transmission as a standard feature. The bus and trolley fleet will

Memo to Supervisor Yee February 23, 2015 Page 17

gradually be replaced by vehicles provided by New Flyer, but the current generation of buses and trolleys will not begin to be phased out until 2019. The SFMTA's light rail system is also getting 215 modern vehicles from Siemens that will arrive between 2016 and 2030. However, these will only augment the current generation of light rail vehicles and not replace them outright. The current generation of light rail vehicles is expected to remain in place until 2025.

BOARD of SUPERVISORS



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1 Dr. Carlton B. Goodlett Place, Room 244
San Francisco 94102-4689
Tel. No. 554-5184
Fax No. 554-5163
TDD/TTY No. 554-5227

January 31, 2017

File No. 170096

Lisa Gibson Acting Environmental Review Officer Planning Department 1650 Mission Street, 4th Floor San Francisco, CA 94103

Dear Ms. Gibson:

On January 24, 2017, Supervisor Yee introduced the following legislation:

File No. 170096

Ordinance amending the Administrative Code to require the installation and use of telematic vehicle tracking systems in all motor vehicles owned or leased by the City and used by law enforcement agencies, subject to waiver by the City Administrator; and affirming the Planning Department's determination under the California Environmental Quality Act.

This legislation is being transmitted to you for environmental review.

Angela Calvillo, Clerk of the Board

By: Erica Major, Assistant Clerk Board of Supervisors

Attachment

c: Joy Navarrete, Environmental Planning Jeanie Poling, Environmental Planning

> Not defined as a project under CEQA Guidelines Sections 15378 and 15060(c)(2) because it would not result in a direct or indirect physical change in the environment.

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MEMORANDUM

TO:

Naomi Kelly, City Administrator

Ivar C. Satero, Airport Director, San Francisco Airport Joanne Haves-White, Fire Chief, Fire Department

Micki Callahan, Director, Department of Human Resources Trent Rhorer, Executive Director, Human Services Agency Ed Reiskin, Executive Director, Municipal Transportation Agency

William Scott, Chief, Police Department

Elaine Forbes, Executive Director, Port Department

Jeff Adachi, Public Defender

Barbara A. Garcia, Director, Department of Public Health Harlan Kelly, Jr., General Manager, Public Utilities Commission

Mohammed Nuru, Director, Public Works

Phil Ginsburg, General Manager, Recreation and Parks Department

Vicki Hennessy, Sheriff, Sheriff's Department

Jose Cisneros, Treasurer, Office of the Treasurer and Tax Collector

FROM:

Erica Major, Assistant Clerk, Government Audit and Oversight Committee

Board of Supervisors

DATE:

January 31, 2017

SUBJECT:

LEGISLATION INTRODUCED

The Board of Supervisors' Government Audit and Oversight Committee has received the following proposed proposed legislation, introduced by Supervisor Yee on January 24, 2017:

File No. 170096

Ordinance amending the Administrative Code to require the installation and use of telematic vehicle tracking systems in all motor vehicles owned or leased by the City and used by law enforcement agencies, subject to waiver by the City Administrator; and affirming the Planning Department's determination under the California Environmental Quality Act.

If you have any comments or reports to be included with the file, please forward them to me at the Board of Supervisors, City Hall, Room 244, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA 94102.

Cathy Widener, San Francisco Airport C: Kelly Alves, Fire Department Susan Gard, Department of Human Resources Krista Ballard, Human Services Agency Kate Breen, Municipal Transportation Agency Janet Martinsen, Municipal Transportation Agency Dillon Auyoung, Municipal Transportation Agency Rowena Carr, Police Department Kristine Demafeliz, Police Department Sergeant Rachael Kilshaw, Police Department Daley Dunham, Port Department Greg Wagner, Department of Public Health Colleen Chawla, Department of Public Health Juliet Ellis, Public Utilities Commission Frank Lee, Public Works Sarah Madland, Recreation and Park Department Katherine Gorwood, Sheriff's Department Theodore Toet, Sheriff's Department Eileen Hirst, Sheriff's Department Amanda Kahn Fried, Office of the Treasurer and Tax Collector Print Form

Introduction Form

By a Member of the Board of Supervisors or the Mayor

2011 JAN 2 PM 3: 50
Time stamp
or meeting date

I he	reby submit the following item for introduction (select only one):	or meeting date
\boxtimes	1. For reference to Committee. (An Ordinance, Resolution, Motion, or Charter Amendmen	nt)
	2. Request for next printed agenda Without Reference to Committee.	·
	3. Request for hearing on a subject matter at Committee.	
	4. Request for letter beginning "Supervisor	inquires"
	5. City Attorney request.	
	6. Call File No. from Committee.	
	7. Budget Analyst request (attach written motion).	
	8. Substitute Legislation File No.	
	9. Reactivate File No.	
	10. Question(s) submitted for Mayoral Appearance before the BOS on	
	se check the appropriate boxes. The proposed legislation should be forwarded to the following Small Business Commission	ssion
Spons		orm.
Yee		
Subje	eet:	
Ordin	nance- Telematics Vehicle Tracking System for City Law Enforcement Vehicles	
The to	ext is listed below or attached:	, \
	nance amending the Administrative Code to require the installation and use of telematic vehic motor vehicles owned or leased by the City and used by law enforcement agencies	le tracking systems
	Signature of Sponsoring Supervisor:	The state of the s
For C	Clerk's Use Only:	