Personal Privacy Impact Evaluation for the Use of Vehicle-Mounted Automated License Plate Recognition (ALPR) for Parking Management and Enforcement in Alameda, California

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Introduction:

The City of Alameda City Council and City staff recognize that all people have an inalienable right to privacy, and the City of Alameda is committed to protecting and safeguarding this right.

The purpose of this report is to evaluate the potential privacy impacts of the use of Vehicle-Mounted Automated License Plate Recognition (ALPR) for parking management and enforcement in Alameda, California and to identify mitigations and actions that can be implemented to safeguard privacy and minimize the potential impacts.

This report was modeled on a similar report prepared by the City of Oakland and advices and guidance of Secure Justice, a non-profit organization based in Oakland dedicated to ensuring adoption of government policies, programs and contracts that are consistent with democratic values and principles of human rights. The City of Alameda staff would like to thank the City of Oakland staff for their work and Secure Justice for their guidance and advice.

Vehicle-Mounted Automated License Plate Recognition (ALPR) Technology: An Overview

Vehicle-mounted Automated License Plate Recognition (ALPR) technology automates the processing of vehicle license plate and compliance information. ALPR uses specially-designed cameras mounted on parking enforcement vehicles to capture digital images from parked vehicles as they drive down the street. Optical character recognition technology converts images of license plates into readable formats that allow various applications including information matching, lookup, aggregating and storage.

The technology transform the images from the cameras into alphanumeric characters and store the images, plate information, and related metadata in a restricted-access database. Once in the database, the technology is able to compare the license plate characters to databases of license plates of interest and archive photo evidence and metadata in support of citations issued ("hits") according to evidence retention standards consistent with City and State law. The technology also allows archiving of anonymous information about parking usages (e g., number of vehicles present on a given street at a given time and date) to support parking management decision-making.

The specific data types collected with ALPR technology include still images of vehicle license plate state and number; vehicle wheel positions; and vehicle make, model, color, and type. ALPR technologies also capture metadata related to the images, including: time and date of image, location of image (GPS coordinates); and camera identification (parking technician and vehicle/unit number).

Proposed Use and Benefits of ALPR Technology in Alameda

The City of Alameda Police Department, Public Works Department, and Planning, Building and Transportation Planning Department propose to use ALPR technology for parking management and enforcement purposes throughout the City.

Staff expects the ALPR system to:

- Save staff time and taxpayer dollars in the ongoing effort to promote compliance to parking rules and regulations
- Increase the productivity of the City's parking control technicians by automating the parking enforcement process including capturing license plate information, time-stamping the images, and confirming validity of parking permits and payments;
- Increase compliance and revenue generation from the City's existing parking management programs in the Park Street and Webster Street commercial districts;
- Allow for the cost effective implementation of paid parking programs at the City's three ferry terminals; and
- Reduce or eliminate dependency on professional service contracts and increase staff's capacity to develop and implement parking management strategies, including demand responsive parking pricing, which have been shown to increase parking availability and, as a result, reduce the amount of time that drivers hunt for parking places and thereby reducing the emission of harmful greenhouse gas emissions.

The ALPR systems would be mounted on City-owned Parking Enforcement vehicles operated by Parking Technicians trained in proper ALPR operation. The primary areas within the City where ALPR technology will be used include the three ferry terminals and the surrounding areas and the Park Street and Webster Street commercial districts and surrounding areas.

Working together, the three departments would utilize the ALPR technology to better manage the public parking supply and improve the effectiveness of the parking enforcement program. Specifically, the technology would support modernization, improvement, and expansion of the existing parking programs to include:

- "Virtual chalk," automating the time-stamping of vehicles in time-limited parking spaces and areas;
- "Digital permits," including daily, hourly, and other limited-duration permits for city owned parking facilities, parking lots, and on-street parking in neighborhoods and surrounding areas.
- Parking payment verification, including "pay-by-phone" and "pay-by-plate," on-street and off-street;
- "Hotlist" identification, including scofflaw and stolen vehicles;
- Parking demand management information and data, including parking occupancy and turn-over counts and analysis in support of future decision making about rates, programs, and transportation demand management strategies; and
- Supporting "smart parking" applications with occupancy information, including mobile apps providing parking availability and wayfinding information.

Potential Impacts of ALPR use on Civil Liberties and Privacy

The City of Alameda recognizes that the use of ALPR could raise concerns regarding real and/or perceived threats to civil liberties and privacy. The City in not proposing to track movement of individuals using ALPR.   However, the City understands that the public may be concerned that

the collection and analysis of this information over time could potentially be used to generate a detailed profile of an individual's movement or abused for other inappropriate purposes.

"Meta data" comprised of individual data points such as phone numbers or license plate numbers can be miss-used to invade privacy and threaten civil liberties. For example, Stanford lawyer and computer scientist Jonathan Mayer was able to use a simple homemade app that captured data points from phone numbers (but never the content of the phone calls) to accurately identify 80% of the volunteers in his study, using only open source databases such as Yelp, Facebook, and Google. Among the many individuals he identified, he successfully identified a woman that had an abortion, another woman that had cancer, and a man collecting guns and growing marijuana in his home. Today, data scientists can accurately identify over 95% of individuals based solely on 4 geospatial (time, location) data points. Human are creatures of habit, typically driving the same way to work, our house of worship, and our neighborhood grocery store. Current attempts to "de-identify" or anonymize data are insufficient, due to modern day computing power and the sheer collection of data points available from public and private sources.

Specific potential impacts of the use of ALPR technology for parking management and enforcement on civil liberties and privacy, include:

Identity capture. The public may be concerned that ALPR will capture personally identifiable information without notice or consent. Although ALPR does not independently generate information that identifies vehicle occupants, license plate information can be used to determine the registered owner. In addition, vehicle occupants or immediate surroundings (including addresses) may be pictured. As a result, it is possible that individuals with access to this data could do additional research to identify the individual.

Misidentification. The public may be concerned that, if ALPR data is widely accessible and inaccurate, individuals may be misidentified as the person driving a vehicle that is violating parking rules or is a scofflaw or stolen vehicle. Misidentification could lead to improper enforcement actions against the individual.

Activity monitoring. The public may be concerned that ALPR data will enable individuals' behaviors to be revealed to and/or monitored by the City or other government agencies, their partners or affiliates, companies interested in targeted marketing, and/or the public. Such concerns may include basic information about when individuals are in certain locations, as well as concerns about what government or individuals may infer from this data (i.e. marital fidelity, religious observance, or political activity). Although ALPR data is gathered from public places, this could conflict with an individual's expectation of locational privacy.

Mitigations and Actions to Eliminate or Minimize the Risk of Impacts to Privacy and Civil Liberties

In recognition of the potential risks, the City of Alameda will take the following steps to mitigate any perceived potential risk inherent in collecting this data.

Program Design Mitigations

1. The City will use ALPR technology according to the proposed ALPR for Parking Management and Enforcement Use Policy as well as all applicable laws, policies and administrative instructions;

2. The City will not use or deploy ALPR technology in a manner that is discriminatory, viewpoint-based, or biased via algorithm;
3. The City will maintain access and retention policies for the two categories of information collected: 1) "Reads", which are images of license plates on vehicles that are not violating parking requirements and are not stolen or scofflaw vehicles; and 2) "Hits", which are images of license plates on vehicles that are violating parking requirements or are stolen or scofflaw vehicles. Read data will be deleted within 24 hours and Hit data will be retained for a maximum of two years.
4. The City will only use ALPR to support compliance with parking regulations and parking management initiatives. ALPR data collected during parking enforcement is only used by employees and contractors who are responsible for processing citations and handling parking payments.
5. The City will conduct annual audits of ALPR data to ensure a reasonable standard of data accuracy and to verify that system operators and administrators are following use policies;
6. The City will keep the public informed about planned and actual ALPR usage, as well as changes that would significantly affect privacy, civil rights, or civil liberties.

Identity capture and/or activity monitoring mitigations.

1. The City will not use ALPR to collect any information that is not already captured manually by City Parking Control Technicians;
2. The City will aim ALPR cameras downward towards the street, to the extent possible, to avoid capturing the faces of vehicle occupants or identifiable details or immediate surroundings;
3. Where personal identity information, such as faces and house numbers, is captured in still images that are retained by the City or those acting on its behalf, that data will be obfuscated or cropped through technical means such that it is no longer identifiable or reasonably re-identifiable. Personal identity information collected by ALPRs that cannot be technically obfuscated will be used solely for the purpose(s) specified in the City's citation notice.

Misidentification mitigations:

1. The City will restrict ALPR data access to registered users, who will be properly trained and will access the ALPR database through a password-protected system;
2. The City will conduct annual audits of ALPR data to ensure a reasonable standard of data accuracy and to verify that operators and administrators are following use policies;
3. The City will offer a mechanism for individuals who believe that their vehicle has been mistakenly identified to contest the information.

Activity monitoring mitigations.

1. The City will not retain ALPR data beyond specified time periods.
2. The City will only use trained and registered uses-users to access ALPR data.
3. The City will use ALPR data only for parking management and enforcement purposes.
4. The City will share still images and metadata only with:
    The public, to enable online search and payment of parking citations-by citation number, not by license number when applicable;
    Third-parties involved in City parking management and enforcement.

5. The City will ensure that systems and data will not be disseminated outside of the City of Alameda unless dissemination is required by law, or fulfills an authorized purpose and complies with the City's ALPR use policy.
6. The City will make an Annual Surveillance Report describing how the technology was used.

Third Party Vendor Security Mitigations

The City shall require all third-party vendors for its parking management systems to:

1. Ensure the security of their systems and customer data as the highest priority and ensure that all the proper security measures from an application, operating system, hardware, and network perspective are in place and updated regularly to ensure personal privacy.
2. Utilize industry-standard firewalls and intrusion detection systems to ensure that no unauthorized access to systems or data is obtained.
3. Constantly monitor for any new security alerts and patches that need to be applied to operating systems, hardware, and/or network and perform regular internal security audits to make sure that all system security measures are kept up to date and no new vulnerabilities exist.
4. Ensure that access to all systems shall require a valid user ID and password that is set to expire at regular intervals. Each user shall be given access to specific functions based on job role and each user's access and activity shall be logged for auditing purposes."

Costs

Initial Purchase Cost. The City of Alameda plans to equip five (5) parking enforcement vehicles with ALPR equipment at a one-time cost for equipment and setup of approximately $340,000.

Ongoing Costs The annual, recurring costs of the five vehicle-mounted APLR systems is expected to be $30,000 payable to the vendor.

Personnel Costs There will be no additional personnel costs for the use of ALPR. ALPR supplements and improves the existing Parking Enforcement Program. Parking Enforcement Technicians and a supervisor will be trained by the City's vendor to use the ALPR system for parking enforcement activities. Existing Transportation Planning staff and Public Works staff will use occupancy data from the system in support of demand-responsive parking and other transportation-related initiatives.

Potential Sources of Funding With ALPR-equipped vehicles, increases in Parking Control Technician productivity will result in additional daily citations and an increase in public compliance with existing parking meter and parking lot payment requirements, which will result in additional revenues for parking management. With ALPR- equipped vehicles, the City will generate additional parking permit revenue and additional parking citation revenue annually.

Alternatives

The alternatives to using the proposed ALPR solution include:

- Continuing to capture license plate images as part of the citation issuing process with handhelds;
- Continuing to time-stamp vehicles in time-limited parking spaces and areas by staff typing plate information into handhelds;

- Issuing permits for Residential Permit Parking (RPP) areas by using bumper stickers and hanging placards, the procurement, processing, and use of which would be relatively costly and inconvenient and less environmentally friendly;
- Verifying meter payments using "pay-by-phone" and "pay-by-plate," which would require staff to type plate information into their handhelds;
- Limiting "Hotlist" vehicle identification, including scofflaw and stolen vehicles, to those vehicles that are processed manually through handhelds;
- Continuing to conduct parking occupancy and turn-over counts and analysis in support of parking management programs intermittently and less reliably by costly consultants or, when available, student interns;
- Forgoing "Smart parking" applications, including mobile apps providing parking availability and wayfinding information, which will be less reliable without the use of ALPR.

Track Record

Similar to many cities throughout the State, the City of Alameda Police Department has utilized ALPR technology on two police vehicles for over five years. For example, the cities of Berkeley, Oakland, and Sacramento have been using ALPR for similar purposes. Alameda staff is not aware of any privacy issues or concerns arising from the programs in Alameda, Oakland, Berkeley, or Sacramento.

Conclusions:

The City of Alameda recognizes the need and importance of preserving the civil liberties and privacy of the community. The City also recognizes the potential risks of using ALPR technology to the preservation of privacy and civil liberties. The City also recognizes the environmental, social, and economic necessity to cost effectively manage the public parking supply.

The City believes that the risks to personal privacy and civil liberties posed by the use of ALPR can be effectively minimized or eliminated by the implementation of the mitigations recommended in this report. With the mitigations in place, the City of Alameda believes that the community can achieve the environmental, social and economic benefits of cost effective parking management with minimal risk of loss of personal privacy or civil liberties.

Questions or comments concerning this draft Impact Assessment should be directed to Andrew Thomas, Planning, Building and Transportation Director via email at athomas@alamedaca.gov or phone at (510) 747-6881.