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# **Automated License Plate Recognition (ALPR) Use by Law Enforcement: Policy and Operational Guide**

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## **Introduction**

Law enforcement agencies throughout the nation are increasingly adopting automated license plate recognition (ALPR)<sup>1</sup> technologies to enhance their enforcement and investigative capabilities, expand their collection of relevant data, and expedite the tedious and time consuming process of manually comparing vehicle license plates with lists of stolen, wanted, and other vehicles of interest. ALPR systems function to automatically capture an image of the vehicle's license plate, transform that image into alphanumeric characters using optical character recognition or similar software, compare the plate number acquired to one or more databases of vehicles of interest to law enforcement and other agencies, and to alert the officer when a vehicle of interest has been observed. The automated capture, analysis, and comparison of vehicle license plates typically occurs within seconds, alerting the officer almost immediately when a wanted plate is observed.

This National Institute of Justice (NIJ)–supported project<sup>2</sup> was designed to assess and document ALPR implementation and operational experiences among law enforcement agencies in the United States, and to identify emerging implementation practices to provide operational and policy guidance to the field. Several data collection techniques were used to gather information for this project, including 1) a survey of law enforcement agencies to assess the scope of the current ALPR implementation, deployment, and operational uses, 2) site visits to interview law enforcement practitioners and observe ALPRs system in operation, and 3) reviewing documents and policies addressing ALPR implementation and use.

## **Police Use of License Plate Data**

As noted, law enforcement practitioners are often searching for vehicles that have been reported stolen, are suspected of being involved in criminal or terrorist activities, are owned by persons who are wanted by authorities, have failed to pay parking violations or maintain current vehicle license registration or insurance, or any of a number of other legitimate reasons. Victims and witnesses are frequently able to provide police with a description of a suspect's vehicle, including in some cases a full or partial reading of their license plate number. Depending on the seriousness of the incident, officers may receive a list of vehicles of interest by their agency at the beginning of their shift, or receive radio alerts throughout the day, providing vehicle descriptions and plate numbers including stolen vehicles, vehicles registered or associated with wanted individuals or persons of interest, vehicles attached to an AMBER<sup>3</sup> or missing persons alert, and "be on the lookout" or "BOLO" alerts.<sup>4</sup> These lists may be sizable depending on the jurisdiction, population size, and criteria for the list, and can present challenges for the patrol officer.

## **An Overview of Automated License Plate Recognition (ALPR) Technology**

ALPR systems generally consist of a high speed camera with an infrared (“IR”) filter or two cameras—one high resolution digital camera and one IR camera—to capture images of license plates; a processor and application capable of performing sophisticated optical character recognition (OCR) to transform the image of the plate into alphanumeric characters; application software to compare the transformed license plate characters to databases of license plates of interest to law enforcement; and a user interface to display the images captured, the results of the OCR transformation, and an alert capability to notify operators when a plate matching an agency’s “hot list” is observed.

ALPR systems are able to capture up to 1,800 plates per minute at speeds up to 120-160 miles per hour.<sup>5</sup> Systems range in cost from \$10,000 - \$22,000, depending on the manufacturer and the specific configuration specified, and agencies have often been able to fund acquisition through federal grant funding sources.

### *Cameras*

Camera hardware is significant to the front-end component of any ALPR system. Since the initial image capture forms a critically important part of the ALPR system and will often determine the overall performance, ALPR systems typically use still or video cameras specialized for the task.

### *User Interface*

In vehicle-mounted ALPR systems, captured images are displayed on a user interface—either a dedicated computer for the ALPR system, or use of the in-field computer already installed in the police vehicle—so the officer can be alerted when a vehicle on one of the hot lists has been observed in the vicinity of the officer. The user interface allows the officer to compare the ALPR OCR interpretation of the license plate number to ensure the accuracy of the “read,” and to see the larger, contextual image to help the officer in identifying which specific vehicle has the plate of interest. In addition, the user interface also typically enables the officer to manually enter plates on vehicles of interest, manage hot list information, deal with alert queues, and run reports.

### *Software*

As vehicles pass through the field of view of the ALPR camera a picture is taken of license plate and the vehicle. A series of algorithms are performed on the image to isolate the plate and render the alphanumeric characters into an electronically readable format. The sophistication and complexity of each of these algorithms determines the accuracy of the system.

### *Hot lists*

Once the OCR read is obtained, the information is then compared against a database of vehicles of interest, typically known as a “hot list.” Hot list information can come from a variety of sources, and is discussed in more detail later in this report. The purpose of these lists is to alert the officer that a vehicle displaying a license plate number that is included on a hot list has been identified by the ALPR camera.

### *ALPR Data*

Collectively referred to as ALPR data, the images and the metadata associated with them are the primary forms of information collected by an ALPR system. The ALPR data may be stored in the individual ALPR units until it is either transferred to another server or discarded. Data files compiled in ALPR systems typically contain the following information:

- Black and white plate image;
- Contextual color image;

- Electronically readable format of plate alphanumeric characters (optical character recognition (OCR)) of license plate numbers;
- Location and GPS coordinates;
- Time and date of image capture;
- Camera identification (mobile cameras may capture officer and vehicle/unit number)

### ALPR Deployment

Automated license plate recognition (ALPR) technology was invented in 1976 in the Police Scientific Development Branch (PSDB), Home Office, United Kingdom.<sup>6</sup> The European Secure Vehicle Alliance (ESVA) notes that the “Provisional Irish Republican Army (IRA) terrorist bombings in the City of London resulted in the establishment of the ‘ring of steel’ in 1993 – a surveillance and security cordon using initially CCTV cameras.

The Home Office Police Standards Unit and the Association of Chief Police Officers (ACPO) began testing dedicated “intercept teams” using ANPR across nine police forces in the multi-phased “Project Laser” beginning 2002.<sup>7</sup> Following success of the Laser pilots, the Police Standards Unit invested £32 million for development of the National ANPR Data Centre (NADC) and a Back Office Facility (BOF), which provide data storage and analytic tools for forces in England and Wales, and support deployment of ANPR at national, regional and local levels. By the end of the first quarter of 2010, the NADC was receiving approximately 10-12 million license plate reads per day from over 5,000 ANPR cameras, had the capacity to receive up to 50 million reads per day, and maintained a database of more than 7 billion vehicle sightings.<sup>8</sup>

Law enforcement agencies throughout the United States are increasingly implementing ALPR systems. Larger agencies are more likely to have implemented ALPR than smaller agencies, most likely the result of the costs of the technology and the relative sizes of the jurisdictions. The 2007 Law Enforcement Management and Administrative Statistics (LEMAS) survey (the most current LEMAS data available) indicates that as of September 30, 2007, nearly half (48%) of the largest law enforcement agencies (i.e., those with 1,001 or more sworn officers) were regularly using ALPR, as were nearly one-third (32%) of agencies with 500-1,000 sworn officers. In contrast, none of the smallest agencies (i.e., those with fewer than 50 sworn officers) reported regularly using ALPR and only 9% of agencies with 51-100 officers were using it.<sup>9</sup>

Table 1  
LEMAS 2007 Data<sup>10</sup>

Agency Size (Sworn Personnel)	As of September 30, 2007, agency did NOT use license plate readers on a regular basis	As of September 30, 2007, agency used license plate readers on a regular basis	% Using ALPR
≤50	5	0	0%
51-100	20	2	9%
101-250	450	71	14%
251-500	144	34	19%
500-1000	50	24	32%
1001+	42	39	48%
TOTAL	711	170	19%

## Survey of ALPR Use by Law Enforcement

In order to assess the scope of current ALPR implementation, deployment, and operational uses among local, state and tribal law enforcement agencies throughout the United States, a random sample of 500 local, state, and tribal law enforcement agencies was selected from 2003 LEMAS sample agencies.<sup>11</sup>

Table 2  
Distribution of Agency Size in Survey Sample

Agency Size (sworn)	Number	Percent
≤50	213	48.0%
51-100	77	17.3%
101-250	65	14.6%
251-500	29	6.5%
501-1000	30	6.8%
1001+	30	6.8%
Total	444	100.0%

The survey, which was administered in September 2009, was conducted in two phases. In the first phase, agencies were contacted to determine whether they were using an ALPR system and if so, to identify a program point of contact for further research. The full questionnaire was distributed in the second phase to the point of contact in agencies who had indicated they were currently using ALPR. Agencies were given a choice between completing the survey online or by paper. The survey was comprised of 29 questions addressing policy and technical issues, operational practices associated with mobile, fixed and portable deployments, and seeking a brief narrative discussion of lessons learned.

A total of 305 agencies responded to the first phase of the survey, providing a response rate of 61.0%. Of the jurisdictions responding, 235 agencies (77.0%) indicated that they were not using ALPR, while 70 agencies (23.0%) responded that they were using ALPR.

Table 3  
Distribution of ALPR Usage by Agency Size (n=305)

No. Sworn	ALPR Use				n
	No		Yes		
≤ 50	128	89.5%	15	10.5%	143
51-100	46	79.3%	12	20.7%	58
101-250	28	80.0%	7	20.0%	35
251-500	17	77.3%	5	22.7%	22
501-1000	11	50.0%	11	50.0%	22
1001+	5	20.0%	20	80.0%	25
Total	235	77.0%	70	23.0%	305

As with other research assessing ALPR deployment by law enforcement agencies, this survey demonstrated that larger agencies were more likely to have implemented the technology. This survey, however, found substantially greater adoption of ALPR among smaller agencies than has been observed

in earlier research.

The longer, more detailed phase two survey was sent to the 70 agencies who confirmed they were using ALPR, of which 40 agencies (57.1%) responded.<sup>12</sup> Respondents were broadly arrayed throughout the nation.

Nearly one-third (31%) of responding agencies were smaller (less than 100 sworn officers) and over half (53%) were larger agencies, with 500 or more sworn officers. Over half (60%) were municipal police agencies, and nearly one-quarter (23%) were Sheriff's officers.

Table 4  
Distribution of Agency Size of Sample Respondents

Agency Size (sworn)	n	%
25-49	7	18%
40-99	5	13%
100-249	5	13%
250-499	2	5%
500-999	10	25%
1000+	11	28%
Total	40	100%

Table 5  
Distribution of Agency Type of Survey Respondents

Agency Type	n	%
Municipal	24	60%
Sheriff	9	23%
State	7	18%
Total	40	100%

The vast majority of agencies (95%) indicated that they had implemented mobile ALPR. Of the seven agencies that have implemented fixed ALPR, five reported using both mobile and fixed ALPR, and each of the five employed 1,000 or more sworn officers.

Table 6  
Types of ALPR Systems Implemented

Type of ALPR Used	n	%
Mobile	38	95%
Fixed	7	18%
Portable	4	10%

Locating and recovering stolen vehicles was the primary purpose for ALPR implementation in nearly two-thirds (62%) of responding agencies, followed by vehicle and traffic enforcement (28%) and investigations (25%).

Table 7  
Primary Purposes for ALPR Implementation

Primary Purposes for ALPR	n	%
Auto theft	25	63%
Vehicle & traffic enforcement	11	28%
Investigations	10	25%
Identifying vehicles of interest	5	13%
Warrants	2	5%
Intelligence/homeland security	2	5%
Other	5	13%

Agencies report a broad range of business value in using ALPR, including increasing their recovery of stolen vehicles (68%), arrests (55%), and officer productivity (50%).

Table 8  
Business Value of ALPR Implementation

Business Value	n	%
Increase stolen vehicle recoveries	27	68%
Increase in arrests	22	55%
Increase productivity	20	50%
Solving more crimes	14	35%
Other	8	20%

Fewer than half (43%) of responding agencies are part of a regional ALPR system, and only 40% report sharing ALPR data with any other agencies.

Table 9  
Regional ALPR Program Participation

Part of a Regional System	n	%
Yes	17	43%
No	23	58%
Total	40	100%

### ALPR Policies

In order to be effective, ALPR technology must be properly implemented and integrated into the daily operations of law enforcement agencies. Developing and enforcing policies defining the strategic objectives of an agency's program, training requirements, deployment options, operating procedures, hot list management, proper use and maintenance of the technology, and data collection, retention, sharing, and access enables law enforcement to effectively manage ALPR.

Agency policies typically:

1. Define the ALPR system and its data as "for official use only" (FOUO),
2. Restrict and audit queries of the ALPR dataset, and
3. Require that all operators of the equipment receive proper training before use.<sup>13</sup>

Essential components of that training include:

1. Ensuring that appropriate hot list information is as current and accurate as possible, and
2. Clear directions that when the ALPR unit matches an observed vehicle’s license plate with a record in the hot list and alerts the officer (also known as a “hit”), that the officer must verify:
  - a. the ALPR “read” was accurate (i.e., that the ALPR OCR software has properly interpreted the license plate number),
  - b. the issuing State matches the plate on record, and
  - c. the circumstance that triggered the alert is still current, e.g., that the vehicle is still wanted or stolen.
3. If the record in the hot list was created based on the status of the registered owner (e.g., the owner has an outstanding warrant for arrest, or their driving privileges are suspended or revoked), the officer must also be cognizant of the fact that the driver may not be the registered owner.
4. Additionally, depending on the nature of the alert (e.g., a “hit” on the Terrorist Watch List), the officer may be directed to notify another agency (e.g., the Terrorist Screening Center) and hold the person, surreptitiously watch but not contact the person, or simply document the contact and forward the information to others.<sup>14</sup>

Nearly half of responding agencies (19 agencies, 48%) indicated that they had a policy addressing ALPR use and operations, and six agencies (15%) noted they were in the process of developing or planning one. Among agencies that have or are developing ALPR policies, the policies usually address data access (68%), data retention (48%), and data sharing (44%).

Table 10  
Policy Issues Addressed by Agencies  
That Have or are Developing ALPR Policies (n=25)

Policy Issues	n	%
Data access	17	68%
Data retention	12	48%
Data sharing	11	44%
Deployment	6	24%
Data quality	4	16%
Other	4	16%

*Hot List Management*

Law enforcement agencies may create, access, and/or maintain any of a variety of lists of vehicles of interest, and these lists are universally known as “hot lists.” Hot lists may include the license plate numbers of stolen vehicles, stolen license plates, vehicles owned or associated with wanted or missing persons, vehicles suspected of being involved in criminal or terrorist activities, owned by persons whose driver license has been suspended or revoked, and for any of a host of other legitimate purposes.<sup>15</sup>

Over half (53%) of responding agencies indicated that their hot lists were updated wirelessly, either via cellular networks (28%) or using Wi-Fi/hotspots (25%). Over one-third (38%) of agencies use USB drives to upload hot list information to their mobile ALPR systems. Nearly half (43%) of agencies update their hot lists once each day, while over a quarter (28%) update their hot lists two or three times per day, or at each shift change.



Figure 11  
Hot List Update Methods

Hot List Updated by	n	%
USB drive	15	38%
Wi-Fi/Hotspot	10	25%
Cellular	11	28%
Other	4	10%

Figure 12  
Hot List Update Frequency

Hot List Updated	n	%
Once a day	17	43%
Twice a day	5	13%
Three times a day	2	5%
Each shift	4	10%
Multiple times per shift	6	15%
As needed	1	3%
No response	5	13%

Stolen vehicles and vehicle license plates are the most obvious and frequent sources of data contained in law enforcement hot lists (88% and 83%, respectively among agencies responding to our survey). Vehicles owned or operated by wanted persons, those associated with AMBER alerts, and those registered to drivers who have had their driving privileges suspended or revoked, or who have no valid insurance, also figure prominently in hot lists created or accessed by law enforcement.<sup>16</sup>

Table 13  
Hot List Content Management

Hot List Content	n	%
Stolen vehicles	35	88%
Stolen plates	33	83%
Wanted persons	24	60%
AMBER alerts	18	45%
Suspend/Revoked Drivers	12	30%
No insurance	10	25%
Parking scofflaws	8	20%
Other	17	43%

#### *Data Retention*

In addition to providing real-time alerts to officers and agencies when a vehicle on a hot list is identified, ALPR data are also a rich source of information for a variety of investigative operations. Jurisdictions vary widely in their ALPR data retention policies. Canada retains “hits” for two years, but limits retention of “non-hits” to no more than 90 days.<sup>17</sup> New Jersey allows retention of ALPR data for five years,<sup>18</sup> while

Maine limits it to 21 days.<sup>19</sup> Law enforcement agencies in the Washington, D.C. region show similar diversity in their retention schedules, ranging from 30 days to 3 years. Respondents to our survey demonstrated comparable diversity in their ALPR data retention policies.

Table 14  
Data Retention Policies of Survey Respondents

Data Retention	n	%
No storage	2	5%
30 days or less	7	18%
2-6 months	7	18%
1 year	2	5%
2 years	2	5%
3-5 years	3	8%
Indefinitely	5	13%
Based on capacity	2	5%
In development	2	5%
Unknown	2	5%
No answer	6	15%
Total	40	100%

A total of 40% of respondents indicated they retain ALPR data for six months or less (n=16). Five respondents (13%) indicated they retain ALPR data indefinitely, while two indicated that retention is based on the storage capacity of the equipment they had installed.

ALPR systems are typically deployed in public venues—on public streets, roadways, highways, and in public parking lots. As such, there is little “expectation of privacy” associated with observing a vehicle and its license plate numbers at a specific location, date and time.<sup>20</sup> Law enforcement is free to observe and even record information regarding a person’s or a vehicle’s movements in public venues. There are, however, key issues that may emerge when ALPR data is systematically collected and retained.

In *United States v. Jones*<sup>21</sup>, which dealt with police attaching a global positioning system (GPS) tracking device to the defendant’s vehicle in order to track his movements over the course of 28 days, the U.S. Supreme Court concluded that attaching the device to the defendant’s vehicle was a “search” within the scope of the Fourth Amendment and, absent a warrant, the evidence obtained was inadmissible. Police had actually obtained a warrant, but they installed the device one day after the 10 day warrant had expired and in another jurisdiction (Maryland, instead of Washington, DC). Although the Court decided the case on the fairly narrow issue that by attaching the GPS tracking device to the undercarriage of Jones’ vehicle, “[t]he Government physically occupied private property for the purpose of obtaining information. We have no doubt that such a physical intrusion would have been considered a ‘search’ within the meaning of the Fourth Amendment when it was adopted.”<sup>22</sup> Justice Alito’s concurring opinion (which was joined by Justices Ginsburg, Breyer, and Kagan) argues that the case should have been decided on whether Jones’ “reasonable expectations of privacy were violated by the long-term monitoring of the movements of the vehicle he drove.”<sup>23</sup>

Although *Jones* dealt specifically with GPS tracking devices, the separate concurring opinions of five of the Justices reference the variety of evolving technologies that increasingly enable law enforcement to

track and record the movement of persons and vehicles without requiring the installation of special tracking technologies. Although there may be no reasonable expectation of privacy in any particular sighting of a vehicle traveling on a public roadway, the systematic capture, storage, and retrieval of ALPR data may nevertheless raise important privacy concerns.

In *U.S. Department of Justice v. Reporters Committee for Freedom of the Press*<sup>24</sup>, the U.S. Supreme Court recognized a difference between public records that might be found after a diligent search of courthouse files, county archives, and local police stations throughout the country and a computerized summary located in a centralized clearinghouse of information. The Court ruled that the electronic compilation of otherwise publicly available but difficult to obtain records, altered the privacy interest implicated by disclosure of that compilation.<sup>25</sup> Automation overwhelms what the Court referred to as the *practical obscurity*<sup>26</sup> associated with manually collecting and concatenating the individual public records associated with a particular person into a comprehensive, longitudinal criminal history record.

ALPR records may be implicated when agencies systematically capture and record these independent public records and assemble them into a longitudinal file or provide the ability to analyze them as such. The technological convergence that enables the systematic collection, concatenation, and analysis of such massive datasets may challenge established concepts of what is public, what is private, and what is a “reasonable expectation of privacy.” What ALPR data is collected, how the data is collected, how long the data are retained, who can access the data and for what purposes, and what kind of analytic tools and methodologies are available to query and analyze ALPR data are all critical issues that may impact public acceptance and legal approval.<sup>27</sup>

Creating and enforcing a comprehensive agency policy, which addresses ALPR objectives, deployment, records management, data quality, hot list management, systems security, data retention and purging, access and use of stored ALPR data, information sharing, accountability, and sanctions for non-compliance can help to ensure that data are properly collected, used, and managed.

## **Conclusion**

ALPR technology is a significant tool in the arsenal of law enforcement and public safety agencies. It automates a tedious, distracting, and manual process that officers regularly complete in their daily operations, and vastly improves their efficiency and effectiveness in identifying vehicles of interest among the hundreds or thousands they observe in routine patrol. Moreover, it generates a rich and enduring record of vehicle sightings, complete with time, date, and geographic location information for each observation. This data can substantially enhance the investigative capacity of law enforcement, and greatly contribute to intelligence collection and analysis functions.

Realizing the core business values that ALPR promises, however, can only be achieved through proper planning, implementation, training, deployment, use, and management of the technology and the information it provides. Like all tools and technologies available to law enforcement, ALPR must also be carefully managed. Agencies must clearly articulate their strategic goals and tactical objectives for the technology, and this strategy should be tightly aligned with the broader strategic plans of the agency. Thorough and ongoing training is required to ensure that the technology performs effectively, and that users are well versed in the operational policies and procedures defined and enforced by the agency.

Policies must be developed and strictly enforced to ensure the quality of the data, the security of the system, compliance with applicable laws and regulations, and the privacy of information gathered.

Building robust auditing requirements into agency policies will help enforce proper use of the system, and reassure the public that their privacy interests are recognized and respected.

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<sup>1</sup> Automated license plate recognition (ALPR) technology is variously referred to as license plate readers (LPR), automatic number plate recognition (ANPR, primarily in the UK), automatic vehicle identification (AVI), and car plate recognition (CPR). ALPR is fairly commonly used throughout the United States, however, and for purposes of this report it will be used throughout.

<sup>2</sup> This project, conducted by the International Association of Chiefs of Police (IACP), was supported by Grant No. 2007-MU-MU- K004 from the National Institute of Justice. The National Institute of Justice is a component of the U.S. Department of Justice, Office of Justice Programs, which also includes the Bureau of Assistance, the Bureau of Justice Statistics, the Community Capacity Development Office, the Office for Victims of Crime, the Office of Juvenile Justice and Delinquency Prevention, and the Office of Sex Offender Sentencing, Monitoring, Apprehending, Registering, and Tracking (SMART). Points of view or opinions contained in this document are those of the author(s) and do not necessarily represent the official position or policies of the U.S. Department of Justice. Reference herein to any specific commercial products, processes, or services by trade name, trademark, manufacturer, or otherwise does not constitute or imply its endorsement, recommendation, or favoring by the IACP or the United States Government. With respect to documentation contained herein, neither the IACP nor the United States Government, nor any of their employees make any warranty, express or implied, including but not limited to the warranties of merchantability and fitness for a particular purpose. Further, neither the IACP nor the United States Government, nor any of their employees assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product or process disclosed.

<sup>3</sup> The America's Missing: Broadcast Emergency Response (AMBER) system was created in 1996 as an early warning system designed to help immediately broadcast information on missing and abducted children. <http://www.amberalert.gov/> accessed June 4, 2012.

<sup>4</sup> Be on the lookout, or BOLO alerts, provide the names and identifying information on individuals who are of investigative interest to law enforcement agencies. <http://www.fbi.gov/news/testimony/terrorism-preparedness-2>, accessed June 4, 2012.

<sup>5</sup> <http://www.elsag.com/faqs.htm>, <http://pipstechnology.com/news/faq/>, <http://www.vigilantvideo.com/index.html>, accessed June 4, 2012

<sup>6</sup> Many references indicate that PSDB developed ANPR in 1976 (see, e.g., Ch. Jaya Lakshmi, A. Jhansi Rani, K. Sri Ramakrishna, and M. KatiKiran, "A Novel Approach for Indian License Plate Recognition System," 6 *International Journal of Advanced Engineering Sciences and Technologies*, 10-14, 2011, at <http://ijaest.iserp.org/archieves/9.2-A16-30-11/Vol-No.6-Issue-No.1/3.IJAEST-Vol-No-6-Issue-No-1-A-Novel-Approach-for-Indian-License-Plate-Recognition-System-010-014.pdf>, accessed June 4, 2012; "Drivers on police files for life," *This is Cornwall*, June 30, 2009, at <http://www.thisiscornwall.co.uk/Drivers-police-files-life/story-11398048-detail/story.html>, accessed April 30, 2012), though these and many others appear to quote liberally the brief developmental history of ALPR posted on Wikipedia: "ANPR was invented in 1976 at the Police Scientific Development Branch in the UK. Prototype systems were working by 1979, and contracts were let to produce industrial systems, first at EMI Electronics, and then at Computer Recognition Systems (CRS) in [Wokingham](#), UK. Early trial systems were deployed on the [A1 road](#) and at the [Dartford Tunnel](#). The first arrest through detection of a stolen car was made in 1981." [http://en.wikipedia.org/wiki/ANPR#Development\\_history](http://en.wikipedia.org/wiki/ANPR#Development_history), accessed June 4, 2012.

<sup>7</sup> PA Consulting Group, *Police Standards Unit: Thematic review of the use of automatic number plate recognition within police forces*, December 2006, at [http://gemini.gmu.edu/cebcp/LPR/Thematic\\_Review\\_of\\_ANPR\\_v2\[1\].pdf](http://gemini.gmu.edu/cebcp/LPR/Thematic_Review_of_ANPR_v2[1].pdf), accessed June 4, 2012.

<sup>8</sup> ACPO, *ANPR Strategy for the Police Service—2012-2013*, (2010) at <http://www.acpo.police.uk/documents/crime/2010/201010CRIANP01.pdf>, pp. 9 and 11, accessed June 4, 2012.

<sup>9</sup> The Law Enforcement Management and Administrative Statistics (LEMAS) survey is conducted every 3-4 years by the Bureau of Justice Statistics, Office of Justice Programs, U.S. Department of Justice. LEMAS "collects data from

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over 3,000 state and local law enforcement agencies, including all those that employ 100 or more sworn officers and a nationally representative sample of smaller agencies. Data are obtained on the organization and administration of police and sheriffs' departments, including agency responsibilities, operating expenditures, job functions of sworn and civilian employees, officer salaries and special pay, demographic characteristics of officers, weapons and armor policies, education and training requirements, computers and information systems, vehicles, special units, and community policing activities." See: <http://bjs.ojp.usdoj.gov/index.cfm?ty=dcdetail&iid=248>, accessed June 4, 2012.

<sup>10</sup> These figures were tabulated online from the LEMAS 2007 dataset (Section VI-Equipment, question 32, LPREADER) accessible through the National Archive of Criminal Justice Data. <http://www.icpsr.umich.edu/icpsrweb/NACJD/series/92>, accessed June 4, 2012.

<sup>11</sup> Although the initial sample was 500 agencies, agency size was not known in 56 of the agencies, who were subsequently dropped from the sample.

<sup>12</sup> It should be noted that in follow-up conversations, many of the 30 agencies that had indicated they had implemented ALPR but did not respond to the phase two survey, explained that they had only recently begun to use ALPR.

<sup>13</sup> See, e.g., South Portland Police Department, *Standard Operating Procedures: Automated License Plate Reader (ALPR)*, Policy # 8-82-F, September 20, 2010, <http://www.maine.gov/sos/SPPD-SOP.pdf>; New York State Division of Criminal Justice Services, *Operation of License Plate Readers for Law Enforcement Agencies in New York State: Suggested Guidelines*, June 2007 <http://www.elsag.com/media/content/NYDCJS%20LPR%20Policy.pdf>; New York State Division of Criminal Justice Services, *Suggested Guidelines: Operation of License Plate Reader Technology*, 2011, <http://criminaljustice.state.ny.us/ofpa/pdfdocs/finallprguidelines01272011a.pdf>; Campbell Police Department, *Automated License Plate Readers: Policy 462*, 2010. <http://www.ci.campbell.ca.us/AgendasMinutes/2010/ca04062010/Item%2008.pdf>; Charlotte-Mecklenburg Police Department, *Standard Operating Procedure: License Plate Reader*, April 29, 2011, <http://gemini.gmu.edu/cebcp/Charlotte-Mecklenberg%20SOP.pdf>; International Association of Chiefs of Police, *Model Policy: License Plate Readers*, August 2011 <http://iacppolice.ebiz.uapps.net/personifyebusiness/OnlineStore/ProductDetail/tabid/55/Default.aspx?ProductId=1223>; Paula T. Dow, *Law Enforcement Directive Promulgating Attorney General Guidelines for the Use of Automated License Plate Readers (ALPRs) and Stored ALPR Data*, Directive No. 2010-5, December 3, 2010, at <http://www.state.nj.us/oag/dcj/agguide/directives/Dir-2010-5-LicensePlateReaders-120310.pdf>; and Kent Police, *G10 Automatic Number Plate Recognition (ANPR)*, July 2010, [http://www.kent.police.uk/about\\_us/policies/g/g10.html](http://www.kent.police.uk/about_us/policies/g/g10.html), all accessed June 4, 2012.

<sup>14</sup> The different types of law enforcement response described here are discussed in the Charlotte-Mecklenburg Police Department SOP, *op. cit.*, at p. 4, for three levels of Terrorist identified by Terrorist Screening Center in their Terrorist Watch List. In addition, officers are instructed to contact the Terrorist Screening Center by telephone, not by radio.

<sup>15</sup> The South Portland (ME) Police Department, for example, identifies the following sources of hot list information: "a) NCIC Stolen Vehicle files, as available; b) NCIC Stolen plates and Stolen Canadian plates, as available; c) NCIC Wanted persons, as available; d) NCIC Missing or Endangered person files, as available; e) NCIC Federal Immigration Violators, as available; f) NCIC Supervised Release (Federal Probationers), as available; g) NCIC Nationwide Domestic Violence Protection Orders, as available; h) NCIC Violent Gang and Terrorist Organization File, as available; i) NCIC Sexual Offender; j) BMV records of Suspended Drivers / Habitual Offenders and / or Suspended Registrations, as available; k) and Official BOLOs or alerts, based on specific and articulable facts of a concern for safety, wrongdoing or a criminal investigation, or pursuant to a civil order (e.g., PFA or PHA) or official law enforcement bulletin or teletype (e.g., vehicles associated with crime incidents, suicidal, homicidal, missing or wanted persons, AMBER ALERTS, stolen vehicles, or similar vehicles of interest)." South Portland Police Department, *Standard Operating Procedures, ALPR, Policy # 8-82-F*, September 20, 2010, at p. 8-82-F-2, at <http://www.maine.gov/sos/SPPD-SOP.pdf>, accessed June 4, 2012.

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<sup>16</sup> For examples of the types of files and data included in other agency hot lists, see Norm Gaumont and Dave Babineau, “The Role of Automatic License Plate Recognition Technology in Policing: Results from the Lower Mainland of British Columbia,” *Police Chief Magazine*, vol. LXXV, no. 11, November 2008; Washington Association of Sheriffs and Police Chiefs, *Guidelines for Washington State Law Enforcement: Operation of Automated License Plate Readers*, September 2008, p. 5; Russell Neville, “Cincinnati Regional Automatic License Plate Recognition Technology Project,” *The Police Chief Magazine*, vol. LXXVI, no. 6, June 2009.

<sup>17</sup> Gaumont, *op. cit.*

<sup>18</sup> *Attorney General Guidelines for the Use of Automated License Plate Readers (ALPRs) and Stored Data*, (Trenton, NJ: Office of the Attorney General), Issued December 3, 2010; Effective January 18, 2011, at <http://www.state.nj.us/oag/dcj/agguide/directives/Dir-2010-5-LicensePlateReaders1-120310.pdf>, accessed June 4, 2012.

<sup>19</sup> Me. Rev. Stat. Ann. tit. 29-A, §2117-A (Use of automated license plate recognition systems), at <http://www.mainelegislature.org/legis/statutes/29-A/title29-Asec2117-A.html>, accessed June 4, 2012

<sup>20</sup> Justice Harlan first articulated a “constitutionally protected reasonable expectation of privacy” in *Katz v. United States*, 389 U.S. 347 (1967), at 361. Justice Harlan’s two-fold test is “first that a person have exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as ‘reasonable.’” *Id.*

<sup>21</sup> No. 10-1259, Argued November 8, 2011—Decided January 23, 2012, at <http://www.supremecourt.gov/opinions/11pdf/10-1259.pdf>, accessed June 4, 2012.

<sup>22</sup> *Id.*, at p. 4.

<sup>23</sup> *Id.*, Justice Alito, with whom Justice Ginsburg, Justice Breyer, and Justice Kagan join, concurring in the judgment, p. 2.

<sup>24</sup> 489 U.S. 749 (1989).

<sup>25</sup> “...the issue here is whether the compilation of otherwise hard-to-obtain information alters the privacy interest implicated by disclosure of that information. Plainly there is a vast difference between the public records that might be found after a diligent search of courthouse files, county archives, and local police stations throughout the country and a computerized summary located in a single clearinghouse of information.” *Id.*, at p. 764.

<sup>26</sup> “...the privacy interest in maintaining the practical obscurity of rap-sheet information will always be high. When the subject of such a rap-sheet is a private citizen, and when the information is in the Government’s control as a compilation, rather than as a record of ‘what the Government is up to,’ the privacy interest ... is, in fact, at its apex, while the FOIA-based public interest in disclosure is at its nadir.” *Id.*, at 780. The Society of American Archivists defines practical obscurity as: “The principle that private information in public records is effectively protected from disclosure as the result of practical barriers to access.” at [http://www.archivists.org/glossary/term\\_details.asp?DefinitionKey=3053](http://www.archivists.org/glossary/term_details.asp?DefinitionKey=3053), accessed June 4, 2012.

<sup>27</sup> Lum, et. al., surveyed residents of Fairfax County, Virginia, to assess public perceptions of ALPR technology and police legitimacy. Lum, et. al., *op. cit.*, at pp. 78-99. Also see, Anthony Abdalla, *Policy Issues Regarding Automated License Plate Recognition Technology*, no date, at [http://www.police-writers.com/articles/policy\\_automated\\_license\\_plate\\_recognition\\_technology.html](http://www.police-writers.com/articles/policy_automated_license_plate_recognition_technology.html), accessed June 4, 2012.