

Law Enforcement Robots Datasheet

July 2016

Robots are an increasingly common sight in U.S. law enforcement agencies. These unmanned ground vehicles are used for roles that are deemed too hazardous for law enforcement officers, such as inspecting and disarming explosive ordnance.

The influx of robots into civilian law enforcement agencies follows the widespread integration of unmanned vehicles into the U.S. military, where they have played an important role—particularly in explosive ordnance disposal operations—in Iraq and Afghanistan. During the invasion of Afghanistan, for example, the U.S. Army used an iRobot 310 Small Unmanned Ground Vehicle to search mountain caves for members of al-Qaeda. During the war in Iraq, the Army purchased thousands of robots to for use by bomb disposal teams.

As these wars have wound down, the Pentagon has transferred a growing number of these robots to U.S. law enforcement agencies. These exchanges take place under what's known as the 1033 Program, a Defense Logistics Agency Disposition Services (DLA) initiative to reutilize, transfer, donate, or sell excess military equipment to civil agencies. The 1033 Program covers the transfer of a wide variety of usable property items each year, including many robots. While most of the robots that are acquired by police are intended for primarily for bomb disposal, they may also be utilized for other missions such as reconnaissance and entering a building ahead of a squad.

Besides the 1033 Program, law enforcement agencies have also acquired robots using federal funds from the Department of Justice or Department of Homeland Security. Most of these funds are directed towards federal agencies such as the Federal Bureau of Investigation (FBI), Bureau of



Alcohol, Tobacco, Firearms, and Explosives (ATF), or the Customs and Border Protection agency (CBP).

We have analyzed public 1033 transfer data as well as public contract announcements in order to identify robots currently in use by domestic law enforcement agencies. This is only a partial accounting based on publicly available source materials and should not be viewed as a comprehensive list of every robot currently in service with U.S. police, nor does it reflect the total amount that has been spent on this technology by police. The data does not include, for example, robot procurement carried out by individual offices without federal assistance.

Key Findings

- The rate of transfers to law enforcement agencies has increased from less than 10 transfers each year prior to 2010 to over 200 transfers so far in 2016.
- A majority of robots were transferred to local law enforcement, and just under a third of all robots were transferred to 20 federal agencies.
- The total initial value of all the robot equipment transferred to law enforcement agencies was \$55.2 million.
- The most frequently transferred robot was the Exponent MARCbot IV.



Findings: 1033 Program

Within the 1033 public records, which are current up to May 2016, we have identified at least 717 transfers of unmanned systems to 280 law enforcement agencies across the country. These transfers included 987 items (in numerous cases, a single transfer included more than one robot). These agencies included local, state, and federal entities; 248 local agencies received 597 items, 13 state agencies received 31 items, and 19 federal agencies received 359 items.

Transfers by Agency Type

	Unique Agencies	Total Transfers	Total Units
Police	139	328	348
Sheriff	109	243	249
DOJ/FBI	10	73	311
State	10	25	25
DOJ/ATF	3	24	24
Highway	3	6	6
DHS/Immigration and Customs Enforcement	2	3	4
DHS/Customs and Border Protection	1	10	10
CIA	1	3	5
DOJ/Bureau of Prisons	1	1	4
DOJ/Marshal	1	1	1
Total	280	717	987

FBI San Francisco is the single agency that received the most transfers, followed by FBI Los Angeles and the Covina Police Department in California. FBI Dallas received the most units: 99 in total.

Transfers by Agency Level

	Unique Agencies	Transfers	Units
Local	248	571	597
State	13	31	31
Federal	19	115	359
Total	280	717	987

Top Agencies Transfers and Units

Department	Transfers	Units
DOJ/FBI San Francisco, CA	40	139
Covina PD, CA	34	34
West Covina PD, CA	22	22
LA County Sheriff, CA	22	22
Allen Co Sheriff, OH	21	21
Greeley PD, CO	16	16
DOJ/ATF Wichita, KS	11	11
Law Enf VA Fire Marshal	11	11
Las Vegas Metro PD North, NV	2	99

Agencies in 43 states received transfers. California received the most transfers, a total of 167, followed by Ohio, Alabama, and Virginia.

Top States by Transfers and Units

State	Transfers	Units
CA	167	272
OH	40	40
AL	35	40
VA	33	35
AZ	32	53
WA	30	29
CO	28	28
TX	28	125
KS	23	23
NM	22	22

These transfers have been occurring at an increasing rate. In 2011 there were 43 transfers, in 2014 there were 143. There have been 201 transfers so far in 2016.

*Note: This data only reflects transfers of robots that are still in use as of July 2016.

Transfers by Year

Year	Transfers
2003	3
2005	3
2006	1
2010	4
2011	43
2012	97
2013	141
2014	143
2015	81
2016	201

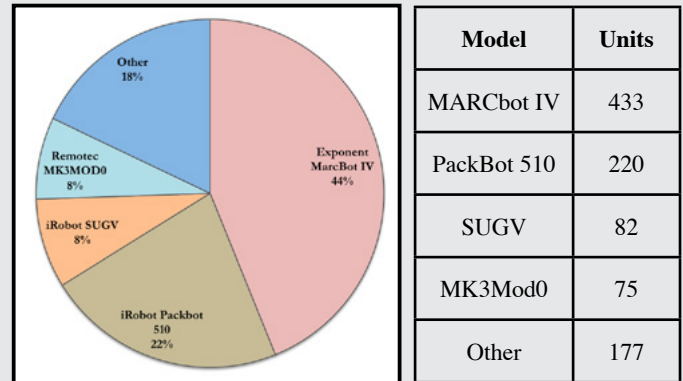
The total initial value of all the robots acquired by law enforcement through the 1033 program is \$55,232,278. A variety of systems have been transferred, ranging from small cheap systems to large expensive units. Just under half of all acquired systems, 471 out of 987, initially cost between five and ten thousand dollars. Four hundred and twenty-three units cost \$50,000 or more.

*Note: the acquisition cost represents the value of the item when it was acquired by the DoD. The value of the item at time of transfer might be substantially lower than stated in the data.

Transferred Units by Price

Unit Cost	Units
\$0	38
\$1 - \$250	36
\$251 - \$5,000	2
\$5001 - \$10,000	471
\$10,001 - \$20,000	3
\$20,001 - \$50,000	21
\$50,001 - \$100,000	240
>\$100,001	176

Transfers by Unit Model Type



Findings: Federal Contracts and Grants

USAspending.gov, the online database that details federal spending and assistance, includes at least 173 contracts and grants totalling \$8.85 million for unmanned ground vehicles for law enforcement. These contracts and grants were issued between 2007 and 2016 by the Department of Justice and the Department of Homeland Security. The majority of these funds—\$6.25 million—were allocated for federal agencies such as the FBI. Of the 173 transactions, city and state law enforcement jurisdictions received 25 grants totalling \$2.63 million to purchase or upgrade robots. In 2015, there were 42 contracts and grants awarded, more than any previous year.

While it cannot be confirmed that this data presents a full accounting of contracts and grants for law enforcement robots, it does offer insight into the distribution of funds. For example, nine of the top ten biggest contracts for robots awarded by the DoJ went to either the FBI or ATF. The city of Billings, Montana received a \$151,000 DHS Federal Emergency Management Agency grant to re-organize its teams of bomb squads and to purchase an additional robot.

Northrop Grumman Remotec, Inc., the maker of the ANDROS robots, was the single largest awardee of DHS and DoJ contracts, receiving \$2.43 million, followed by ReconRobotics with \$900,514. ReconRobotics, a Minnesota-based company, makes the Throwbot, a reconnaissance robot popular among law enforcement and military personnel.

Law Enforcement Robots Datasheet

Platforms

The majority of the robots currently in service with law enforcement agencies are remotely-controlled by an operator and are designed for bomb disposal or reconnaissance. Here is a selection of some of the most popular robots used by law enforcement.

TALON

The QinetiQ Talon series are a variety of tracked unmanned ground vehicles for military, law enforcement, and first responder applications. The Talon platform can be equipped with multiple cameras capable of high-definition video capture, an extendable arm for gripping objects, and a two-way communications system.

TALON Specifications

Length	34 in	Width	22.5 in
Height	33 in	Weight	115 lbs
Max Speed	5.2 mph	Payload	25-100 lbs
Audio Range	.5 mi	Run Time	3 hrs



PackBot

The iRobot PackBot is an unmanned ground robot used for reconnaissance and explosive ordnance disposal. It is one of the most widely used ground robots in existence, with thousands of units sold to military, security, and law enforcement customers. This small tracked robot can climb stairs, operate under one meter of water and navigate through rubble.

PackBot Specifications

Length	35 in	Width	20.5 in
Height	7 in	Weight	24 lbs
Max Speed	5.8 mph	Arm Lift Capacity	30 lbs
Range	4 mi	Run Time	4 hrs



MARCbot

The Multi-function Agile Remote-Controlled Robot (MARCbot) is a small, low cost unmanned ground vehicle made by Exponent Inc. Like the PackBot and other similar robots, the MARCbot was developed in the early 2000s in response to threats posed by IEDs to U.S. forces in Iraq.

MARCbot Specifications

Length	24 in	Width	19.5 in
Height	13.5 in	Weight	32 lbs
Range	980 ft	Run Time	6 hrs



ANDROS F6

The Northrop Grumman Remotec ANDROS F6 is a heavy-duty unmanned ground vehicle designed for explosive ordnance disposal. The ANDROS is one of the largest and most expensive robots in its class.

ANDROS F6 Specifications

Length	3.3 ft	Width	1.5 ft
Height	4.9 ft	Weight	441 lbs
Max Speed	3 mph	Run Time	3-4 hrs



ThrowBot

The ReconRobotics Throwbot XT is a small unmanned ground system that can be literally thrown into a potentially dangerous or inaccessible space in order to collect video data. It is designed to be used by infantry, engineering, and explosive ordnance disposal units, as well as by law enforcement officers.

ThrowBot Specifications

Length	8.2 in	Width	7.6 in
Height	4.5 in	Weight	1.2 lbs
Max Speed	1.5 fps	Throw Shock Resistance	120 ft
Range	300 ft	Run Time	1 hr

Sources

The 1033 Program data was obtained from the website of the Law Enforcement Support Office at the Defense Logistics Agency. The contracts and grants data was obtained from USAspending.gov, an online database of federal government transactions. The platform specifications were obtained from the manufacturer websites and product brochures.

Images

Staff Sgt. Maria Bowman
Multi-National Corps Iraq Public Affairs
Staff Sgt. Brian Kohl / U.S. Army
Senior Airman Janelle Patiño / U.S. Air Force
Sgt. Derek Kuhn / U.S. Army
Airman 1st Class Eboni Reece / U.S. Air Force
Accessed via the Defense Imagery and Video Database

Nathan Reece provided data analysis support.

About

The Center for the Study of the Drone at Bard College is an interdisciplinary research institution founded in 2012 that examines the novel and complex opportunities and challenges presented by unmanned technologies in both the military and civilian sphere.

30 Campus Road
Annandale-on-Hudson, New York
12504



Correction: An earlier version of this report incorrectly stated that law enforcement agencies paid a discounted rate to acquire these systems. Law enforcement agencies do not purchase these items.