

# Massachusetts Anti-Dumping Program Deploys IQeye Megapixel Technology in Boston and Surrounding Towns

MassDEP Environmental Strike Force looks to control illegal dumping



All major cities are plagued with the problem of illegal dumping on city streets, alleys, vacant lots—anywhere someone with unwanted construction materials, appliances, yard trash, contaminated soil, or other junk can find to dispose of it without paying a fee, they will. In addition to the visual blight on a community, the major expense of cleaning up all that illegally dumped material is quite burdensome on already constrained city budgets.

## The Challenge

“Deterrence is great”, said Tim Dame, Investigator for the MassDEP Environmental Strike Force, “but our primary job is to catch dumpers and hold them accountable.”

In 2005, while Dame and other MassDEP staff were in Boston’s Roxbury neighborhood investigating an incident, a neighbor approached the group and asked what could be done about the large, ugly pile of construction debris and appliances dumped right next to her yard. For Dame, a light bulb went off. This problem represented a serious quality of life issue and a great example of the “Broken Window” theory: broken windows that stay broken only invite more vandalism, just like piles of illegally dumped materials represent a flashing “Dump Here” sign.

Since that call to action in Roxbury, Dame and colleagues began researching and experimenting with basic analog cameras and digital video recorders. Having met with some success, the team received additional funding to expand the project scope and investigate other, more sophisticated technologies. The goal of the program from the beginning has been to identify, prosecute, and ultimately deter perpetrators dumping solid waste on city streets, vacant lots, and public land.

## The Solution

By mid-2009, after more than four years of research and literally building the surveillance units from the ground up, Dame knows well the factors that are most important for project success: image quality, low power consumption, reliable triggering of recording, and a unit that is self-contained—that is, put it up and let it run without a lot of care and feeding.

To date, Dame and MassDEP have developed a number of successful setups using IQeye 302, 501, and 753 megapixel camera models on solar or marine battery power with day/night capabilities, so the camera can effectively record the dumping but also capture the license plate information to send out fines and/or aid in further prosecution.

The emerging “model” for successful covert surveillance involves IQeye megapixel cameras; power from flexible solar panels, and cameras housed in generic, gray electrical boxes (purchased at any building supply store) mounted high up on poles to protect the cameras and provide a good field of view. “We want the camera systems to run efficiently without a great deal of manual

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intervention, and we also need to be nimble, so that we can move cameras easily to locations where we’re having dumping,” Dame said. The MassDEP staff has added Wi-Fi technology to the evolving camera model. Now Dame and colleagues can sit in their cars, click a button to activate a wireless router, and download video without disturbing the cameras or drawing attention to the on-going surveillance operation.

## The Highlights

- > Over the course of 4+ years, the MassDEP Environmental Strike Force through dedicated trial and error has developed a successful covert camera system, deploying several IQeye models, that has overcome multiple design and performance challenges.
- > Using covert video surveillance over about 3 years of operation, MassDEP in just Boston and 3 neighboring towns has successfully caught and prosecuted 34 cases of illegal dumping resulting in many tens of thousands of dollars in fines collected.
- > Once MassDEP is alerted to a new dumping incident, staff download the footage from the onboard recording and burn the JPEG frames of the incident onto a CD or create an AVI file. They then run the vehicle plate number and the municipality issues a ticket, often for \$1,000 or more. If the perpetrator is a contractor or the waste is of a “nastier” variety”, fines can run up to \$25,000 per incident.
- > IQeye cameras have been an essential ingredient to the project’s excellent results. IQeye benefits include superior image quality; day/night capability to capture essential images like license plate data; low power consumption so cameras can run at least seven days untouched; built-in flash memory to capture key data over a period of days and weeks; and sophisticated motion detection functionality to save on storage and ensure target incidents are captured.



- > As Dame stated, “From the beginning of the program, it’s clear that the IQinVision technology has increased our ‘hit rate’, the number of successful prosecutions from incidents recorded. The IQeye’s low power draw allows us to keep the cameras on all the time, so we don’t miss a thing. We’re running at about 2-4 frames per second, which is more than enough for the forensic level of detail we need for investigation and prosecution.”
- > In addition to Boston, 3 cities have deployed the MassDEP “model”; more communities are evaluating deployment; and MassDEP has fielded inquiries from around the country about their project.
- > After only 90 minutes of training by the project integrator, Dame was up and running on IQeye technology and empowered to deploy and adjust the IQeyes in such a way as to maximize his design and the project results.
- > The program’s success has garnered significant TV and print press, emphasizing a high-profile message of deterrence and providing MassDEP with much needed visibility and public support.
- > In terms of ROI, for all the municipalities, fine dollars go back to them; for the DEP, the fines go back into state coffers. After initial fine amounts covered the cost of the camera units, the rest has helped improve city budget bottom lines by reducing refuse removal costs and allowing public works employees to be utilized for more important tasks.