Oakland Police Department

SURVEILLANCE SYSTEMS TOOLKIT

Merchant Watch & Neighborhood Watch
www.oaklandnet.com/merchantwatch
www.oaklandnet.com/neighborhoodwatch

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ACKNOWLEDGEMENTS

This toolkit was compiled by the following staff in the Neighborhood Services Division:

SPECIAL THANKS

BEST PRACTICES FOR SURVEILLANCE SYSTEMS

PURPOSE
This toolkit was developed as a guide for those interested in installing surveillance systems. The information was originally created for businesses, but all the principles can be applied to residential areas as well.

INTRODUCTION
A video surveillance system basically includes the following:
1. a camera to capture images day and night
2. a recorder to record the images
3. a monitor to view the images

There are so many ways for the system to fail:
1. Wrong camera
2. Right camera used the wrong way
3. Not making the most of your site plan
4. Not getting the most of your recording equipment
5. Insufficient training of staff that works with the equipment

Surveillance systems play a vital role in preventing the same crime from happening again and assisting police in the apprehension of suspects. Recognition quality imagery is recommended for aiding law enforcement. These six points will help guide you in selection, set up, and maintenance of a good system:
1. Resolution
2. Camera position
3. Lighting
4. Image detail
5. Maintenance
6. Site plan

Resolution
Is the resolution high enough for facial recognition?
- The recommended minimum resolution by the FBI is **480** horizontal lines.
- The Oakland Police Department (OPD) encourages even higher resolution: minimum **620** horizontal lines. To capture license plates, a minimum of **720** horizontal lines is highly recommended.
- A **digital** system is highly recommended to record onto DVDs instead of videotapes.
- Webcams are not recommended. They are sufficient for internet use. However, they are blurry and out of focus due to resolution too low for recognizing faces and other details.

Camera Position
Are cameras positioned for clear view of the subject?
- The camera should be placed or zoomed as close **to eye level** as possible to capture facial features. Avoid the common mistake of viewing only the top of heads or baseball caps!

- Do your best to keep the camera out of public view.
- To respect the privacy of your neighbors, do not point your camera onto other private property. Cameras should only capture images on your private property and/or public streets and sidewalks.

Lighting
Is the lighting adequate to capture images both day and night?
- Since natural lighting changes as the day progresses, do install **lighting near cameras** to turn on in the afternoon or night to provide more lighting to **supplement infrared LED** as needed.
- In parking lots, install **timers** for lighting and adjust them as seasons change. For instance, as it gets darker earlier in the fall and winter, reset timers to turn lights on sooner.

Image Detail
Is your recorder set up for the best image detail?
- In terms of frame size, the subject's head should fill **15%** of the frame.
- For lens speed, OPD recommends a minimum of 7.5 frames per second (fps); **30 fps** or higher would be ideal. A faster lens allows for more lighting, greater depth of field, better focus, and contrast. Fewer frames per second saves on drive space, but the problem is that there will be fewer images. Now you see him, now you don't!

Maintenance
Are you maintaining and managing your system?
- Surveillance systems should be properly **maintained and operational**.
- Surveillance tapes/CDs/DVDs should **not be recorded over** multiple times.
- OPD encourages keeping surveillance footage for **30 days**.
- There should be someone at the business who knows how to operate the system.

Site Plan
Do you have a site plan detailing system specifications?
- Cameras should be placed at **entrances, exits**, aisles, registers, restrooms, break rooms, and **other key points**.
- Make sure trees, signs, banners, shelves, and other objects are not blocking the camera.
- Putting together a site plan with correct camera coverage (locations), positioning, frames per second, and lighting leads to more likely getting a recognition quality recording.

Camera
- Frames per second: 7.5 fps minimum; 30 fps or higher ideal
- Resolution: 480 lines minimum; 620 lines or higher ideal
- Infrared LED (to enhance night recording); install additional lighting as needed
- Weather/vandalism resistant dome
- Industry standard cables (avoid proprietary cables): coaxial for analog/wired cameras and CAT-5 for IP cameras

DVR (Digital Video Recorder)
- 500 GB hard drive minimum
- Industry standard cables (avoid proprietary cables)
- Exportability: DVD burner or USB port (to extract files onto a flash drive)
- For Apple products, check for compatibility with Mac OS and Mac supported Internet browsers

Monitor
- Television or computer monitor
- Remotely via wireless devices

Other Features

Technology evolves rapidly, so features and prices are subject to change.

Motion activated cameras help as follows:
- Saves space on your DVR because the camera records only when it detects motion
- Sends email or SMS/text alerts to notify you of activity on and around your property

Wired cameras commonly purchased are analog CCTV (closed circuit television). Digital options that allow for images to be saved to a computer or DVR are becoming more popular. There are also wired analog cameras that can record to either a VCR or DVR.

Pros	Cons
- Reliable, stable; signal cannot be intercepted - Cameras do not need electrical outlets; powered through cables - Less expensive system, allowing for many cameras and weeks of recording time on DVR - Cameras can be replaced/upgraded	- Requires wire routed through attic, roof, or walls; can be expensive - Resolution not as good as high-end IP, but sufficient for single family residence
Example: Q-SEE QT428-436-5, $300 for 4 cameras, 8 channel DVR, and cables; purchased by a Lincoln Heights resident	

Wireless cameras are becoming more popular as prices drop. Furthermore, digital options are becoming more popular than analog.

Pros	Cons
• Easily installed or moved • Some systems not affected by range and signal issues, e.g. Logitech HomePlug Powerline Networking allows video to stream through electrical outlets	• Concrete, dense materials block signal range, and cordless phones, other wireless devices weaken the signal and video quality • Still needs to be plugged in or use batteries (replace as needed) • More expensive than wired • Recording device usually sold separately • Usually a maximum of 4 wireless cameras per installation environment
Examples • Foscam F18918W, $80 per camera; purchased by an Eastlake resident • Logitech Alert 750e Outdoor Master System, $350 per camera; purchased by a group of Montclair residents	

IP (Internet Protocol, a.k.a. network) cameras have their own IP address to send video over a Local Area Network (LAN). Users can view, record, store, and manage the images either locally or remotely over the network infrastructure. Wireless options are becoming increasingly more popular. IP cameras are typically digital instead of analog.

Pros	Cons
• Very high resolution • New cameras can be added to the network at anytime	• Quality IP systems are much more expensive • Most systems do not include a recording device
Example: Sony IPPZ6114, $1,000 per camera, no DVR	

REFERENCES
CCTV, http://en.wikipedia.org/wiki/Closed-circuit_television_camera
FBI: Caught on Camera, http://www.youtube.com/watch?v=u5Oj2FDwLXs
Home Security Systems Review, http://home-security-systems-review.toptenreviews.com/
Wireless Camera Review, http://wireless-camera-review.toptenreviews.com

Other Resources
How to Install a Home Security Camera, http://www.ehow.co.uk/how_2020755_camera-home-security.html

GETTING ORGANIZED

POWER IN NUMBERS
In your neighborhood or business district, if you team up, you may be able to acquire group discounts for surveillance systems. Below are simple tips to organize your neighbors, merchant and resident alike, to increase your buying power:

1. Research vendors of surveillance systems
2. Invite vendors to provide demonstrations of their systems
3. Select a vendor based on criteria such as price, value, and convenience of use
4. Conduct outreach to neighbors interested in a group discount

SAMPLE SPECIFICATIONS BY COMMITTEE
Below are specifications for two systems offered by one vendor (Cypress Video) selected by a team in a neighborhood business district in Oakland. The cost was approximately $1,400 per set of 4 cameras (2 indoor, 2 outdoor), DVR, monitor, and other supplies listed below.

Cameras
Camera Model 1: Model S650IR
Vandal-resistant armor dome camera with infrared (IR) night vision
2.8~12mm auto iris vari-focal lens
650 line high resolution
35 infra-red LED
3D digital noise reduction
Backlight compensation
Sens-up, poly-carbonated impact resistant dome able to withstand repeated blows from a 10-pound hammer, 4-axis adjustment, IP68 Weather-proof rating (i.e. protected against dust and remained functional even when submerged in water under pressure), 5.7" diameter x 4.6" height

Camera Model 2: Model E620IR
Vandal-resistant metal mini-dome camera with infrared (IR) night vision
2.9 or 3.6 or 6mm fixed lens
620 line high resolution
25 infrared LED
60' IR range
3-axis adjustment
IP68 Weather-proof rating, 4" diameter x 3.5" height

DVR
4-Channel PPro4000 H264 security DVR
Built-in DVD-RW for video backup
500 GB storage
Real-time display, real-time recording
Dual video streaming
Multi-tasking, dynamic/static IP support

Each channel records individually, optimized for network and
Internet access, support remote access by PC, iPhones, iPads, Android phones, Windows phones, Blackberry
120 frames per second (fps) live & recording
User friendly, simple operation, advanced central monitoring software that can view multiple
DVRs from one location
Remote DVR adjustments
Multi-language including English, Spanish, Chinese, Korean, etc.

Customer to provide electrical outlets, and for remote viewing, an Internet connection near DVR.

Monitor
17" LCD monitor

Other
Cables, Mounting Kit, Power Supply

OUTREACH
Appendix A includes a sample outreach letter created by a committee in Chinatown. The letter explains their process and recommendations for interested merchants to participate if they so desire.

This committee contacted three vendors for presentations and selected Central Computer's basic package, starting from $788 that included 4 cameras (3 indoor, 1 outdoor), 4 channel DVR, and LCD monitor.

Furthermore, every participating merchant has a "Neighborhood Camera Program" logo flyer or sticker in their window (as seen in the upper left corner of Appendix A).

WHO DO I CONTACT IF I HAVE VIDEO FOOTAGE?

CRIMES IN PROGRESS

For any type of crime in progress, threatening situation, or other emergencies, please call **911 or by cell phone (510) 777-3211**.

Upon arrival of the responding officer(s), if you have video footage, then please inform the officer(s) right away in order for them to retrieve it or inform a technician to retrieve it.

VIOLENT CRIMES

Robbery or Assault

If you have video that may assist in the investigation of a **robbery** (a.k.a. person to person mugging or store hold up) **or assault, please call 911 (by cell phone 777-3211).**

Homicide or Shooting

If you have video that may assist in the investigation of a **homicide or shooting, please call 911 (by cell phone 777-3211).** Information and evidence may also be anonymously emailed to **oaklandhomicide@oaklandnet.com.**

PROPERTY CRIMES

If you have video for a property crime such as residential or commercial burglary, auto theft, auto burglary, etc., that **already occurred** to *your property* (no suspect in sight), then please do the following:

- Call the **OPD non-emergency # (510) 777-3333** to request an officer to take a report and retrieve the video.

  OR
- Report the property crime online at www.oaklandpolice.com.
- After you receive your **Report Document # (RD#) via email**, please visit the **Police Administration Building at 455 7th St. (238-3455)** during the hours of 8am-6pm, Monday-Friday or 8am-4pm on weekends (press buzzer to gain entry on weekends). Please **provide the desk officer with the RD# and video footage.** The officer will write a supplemental report using that same RD# and submit the video to the property section.

If your building manager, neighbor, or other persons inform you **after your report has been taken that they have video that may assist in the investigation**, then please do the following:

- Provide that person with the **RD#**.
- That person can call the **OPD non-emergency # (510) 777-3333** to request an officer to take a report and retrieve the video. **Please provide the RD# to the dispatcher and responding officer.** The officer will write a supplemental report using that same RD# and submit the video to the property section.

  OR

- That person can visit the **Police Administration Building at 455 7th St. (238-3455)** during the hours of 8am-6pm, Monday-Friday or 8am-4pm on weekends (press buzzer to gain entry on weekends). Please **provide the desk officer with the RD# and video footage.** The officer will write a supplemental report using that same RD# and submit the video to the property section.

Chinatown Neighborhood Video Crime Watch

Dear Business Owners:

To make Oakland Chinatown safer and to discourage criminal activities, the Asian Advisory Committee on Crime, Chinatown Neighborhood Crime Prevention Council and Oakland Police Department (OPD) are canvassing Chinatown to encourage the business community to participate in the "Chinatown Neighborhood Video Crime Watch," a program aimed to prevent crime.

Business owners are encouraged to install an additional camera outside and in front of their business or to install a new system, including an exterior camera. OPD will help business to determine camera angle and log all the exterior cameras. So that when a crime occurs police can retrieve video footage as evidence to identify and apprehend criminals.

With an overwhelming support from the Chinatown business community, many business owners wish to install a new system. A security camera system demonstration had been organized and 3 venders, Central Computers, Reed Brothers Security and US Security Network Inc., were invited to participate. Later, a community based committee was formed to make recommendations to the community according to three categories, price, value and convenience of use.

A deliberate decision was made by the community to recommend Central Computer's *basic package* which starting from $788, including a 4 channel DVR, 3 indoor cameras, 1 outdoor camera and a LCD monitor. Please note that price may vary depending on individual business establishment's setting; however, labor cost is free. For detail information please contact Candy Kwong, Sales Manager, Central Computers, at 415-495-5888 Ext. 2109 or candyk@centralcomputer.com.

Thank you for participating in the Chinatown Neighborhood Video Crime Watch. If you have any questions feel free to contact Officer Alan Yu at 510-xxx-xxxx.

親愛的商業東主

為了令屋崙(奧克蘭)華埠更加安全及阻止罪行的發生,亞裔防罪諮詢委員會(AACC),華埠鄰里防止罪案委員會(NCPC)和屋崙(奧克蘭)警察局誠意邀請華埠的商業社區參與名為「華埠社區視像犯罪監察」的社區防罪計劃。

很多華埠的商業已經設置閉路電視監察系統。如果華埠所有商業能夠與警方合作,把現有系統中的一個攝像機策略性地指向商業門前的街道。這樣做的話,在短時間內整個屋崙(奧克蘭)華埠就能被監察攝像機所覆蓋。

屋崙(奧克蘭)警方將會記錄和為所有參與商業的攝像機攝影位置製表,萬一有罪行發生(例如打劫銀行),警方犯罪調查科將可以透過各商業的攝像機取得重要的線索去偵查罪案和拘捕罪犯。警員將會為攝影機安裝位置和影像質素等問題提供諮詢。

配合計劃,參與的商業將會獲得一個標誌/窗戶貼紙放在攝像機附近。作用是通知所有來到華埠的人,任何的罪行將會被拍攝下來和被嚴懲。計劃的中心目標是「**防罪**」。

我們同時鼓勵華埠商業參與「商家守望(Merchant Watch)」計劃,建立聯網相互守望。

請考慮參加「華埠社區視像犯罪監察」計劃。如有任何查詢可致電余劍倫警員,電話 510-xxx-xxxx。