CITRIS Report: The San Francisco Community Safety Camera Program

An Evaluation of the Effectiveness of San Francisco's Community Safety Cameras

Jennifer King, UC Berkeley School of Law
Deirdre K. Mulligan, UC Berkeley School of Information
Steven Raphael, UC Berkeley Goldman School of Public Policy

University of California, Berkeley
CITRIS – Center for Information Technology
Research in the Interest of Society

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Overview

This study evaluates the effectiveness of the City of San Francisco's Community Safety Camera (CSC) program. Chapter 1 describes the origins of the CSC program and the City of San Francisco's primary and secondary policy objectives for it, as expressed in the statements, technical choices, policies, and practices made by the Mayor's Office, the City's Board of Supervisors, the Police Commission, the San Francisco Police Department, and other entities and individuals that have played key roles in shaping the program as it exists today. Chapter 2 provides an empirical analysis of the CSC program's effectiveness in deterring crime, particularly violent crime. Chapter 3 analyzes the effectiveness of the CSC program as a investigatory and evidentiary tool, and considers the program's effectiveness in supporting the secondary objectives of facilitating community participation, oversight and accountability, and the protection of privacy and related interests. Chapter 4 considers the managerial and technical aspects of the system that span all objectives, based on our findings. Chapter 5 provides guidance and recommendations to the City for the CSC program based on its current objectives, and offers preliminary thoughts on possible alternatives the City may consider for the program.

Executive Summary

Figure ES-1: Community Safety Camera and Notice on Buchanan St. in the Western Addition

Scope of the CITRIS Report

In March 2008, the City of San Francisco commissioned an interdisciplinary team of University of California (UC) Berkeley researchers[1] through the University of California's CITRIS (The Center for Information Technology Research in the Interest of Society)[2] to conduct a six-month study of the City's Community Safety Camera (CSC) program. This document represents the research team's final report and supercedes the findings of a preliminary report issued by this team in mid-March 2008.

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[1] Jennifer King, Research Specialist, Samuelson Law, Technology, & Public Policy Clinic, UC Berkeley School of Law; Professor Deirdre Mulligan, UC Berkeley School of Information; Professor Steven Raphael, UC Berkeley Goldman School of Public Policy.
[2] Information available at www.citris-uc.org.

The request to evaluate the City's seventy-one Community Safety Cameras came from the San Francisco Police Commission, the governmental body charged with primary oversight over the program, and was called for in the Ordinance passed by the City's Board of Supervisors in 2006, codifying the CSC program and requiring its annual evaluation, including an analysis of "camera locations, the crime statistics for the vicinity surrounding each camera both before and after the camera is installed, crime statistics from surrounding vicinities, the number of times the SFPD requested copies of the recorded images, the number of times the images were used to bring criminal charges, the types of charges brought, and the results of the charges." The Board of Supervisors authorized this report to fulfill the Ordinance requirement.

This study provides a comprehensive evaluation of the CSC program's effectiveness. The approach is unlike any evaluation of municipally owned criminal video surveillance systems conducted in the United States to date, and is both broader and deeper than our March preliminary report, which focused only on an initial analysis of crime statistics. The evaluation takes a multifaceted empirical approach to examining the system's effectiveness, combining policy, technological, and management analysis with a quasi-experimental evaluation of criminal incident data to provide a comprehensive understanding of the myriad factors that have influenced system operations and efficacy. The research team used the following sources and methods:

- Document analysis, including the Municipal Ordinance governing the CSC program, documents and data provided by City agencies regarding the camera systems specifications, management, policies, and procedures, and documents published to the SFGov.org website
- Interviews with over thirty program stakeholders and end-users
- Review of minutes and video recordings of public hearings
- Review of relevant press releases and news articles
- Site visits conducted with the cities of Los Angeles and Chicago for comparative insights, in addition to previous site visits conducted by CITRIS researchers
- Empirical and quasi-experimental statistical analysis of 59,706 crime incident reports dated January 1, 2005 and January 28, 2008

By employing multiple, cross-discipline methods to examine the CSC program, the CITRIS team determined the program's efficacy in relation to the City's goals for the program. Per our analysis of the information sources we have listed, the primary CSC program goals are to deter crime, particularly violent crime, and to provide San Francisco police investigators with forensic evidence to assist in the investigation of crimes committed within view of the Community Safety Cameras. We should note that while the focus on violent crime was not to the exclusion of other forms of crime, our investigation does reveal it to be a primary focus of the program. These information sources also reveal several second-order[3] objectives that both inform and constrain the City in its pursuit of the primary objectives. These secondary objectives include fostering community participation in decisions about the CSC program, facilitating public oversight and accountability of program use and effectiveness, and minimizing intrusions on personal privacy and related interests.

The findings presented here are limited to the efficacy of the CSC program; they do not include any other camera systems, public or private, in operation within the City of San Francisco. Furthermore, while this report attempts to offer suggestions both for improving the existing system as well as for other strategic approaches the City may consider, it focuses primarily on issues that influenced the *effectiveness* of the current CSC program. For example, the report identifies several issues related to the technical configuration of the system and includes suggestions for improving it, but makes no specific hardware purchasing suggestions because that level of detail exceeds the scope of our investigation. Furthermore, while we are aware that many of the suggestions made in this report have significant budgetary impact, providing possible costs or an evaluation of budget impact is also outside the scope of this project. While San Francisco may seek additional information, we are optimistic that this report will provide substantial assistance as the City makes decisions about the future of the CSC program and other existing and potential uses of public video surveillance cameras.

Finally, where possible we have included information on best practices as well as data from other U.S. municipalities to provide a limited basis of comparison; this information is based both on site visits conducted for this study as well as previous research conducted by the CITRIS team. However, to date there is no state or federal legislation governing the use in the United States of video surveillance systems like the CSC program, and there is only limited data available about other cities' use of, and

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[3] Secondary in this context does not convey any absolute sense of the rank importance of the values or objectives. Rather, it is meant to reflect the fact that the CSC program was not instituted as a means of advancing these secondary objectives but had to attend to these objectives while attempting to pursue its primary missions of deterring and investigating crime.

experience with, video surveillance systems.[4] While some industry and public interest organizations have issued guidelines related to public video surveillance, none currently cover the entire spectrum of system usage issues; some guidelines relate specifically to legal issues, others to employee policies and procedures, and none to our knowledge attempt to set "performance goals" to help evaluate whether or not a system "works." As this report argues, the efficacy of public video surveillance is extremely context dependent and also relies largely upon the goals of the entity deploying the system; there is no singular objective measure by which a system can be evaluated, a key reason why such evaluations are difficult to perform.

Contents of the Report

The report consists of five chapters and two appendices:

- Chapter 1 provides an overview of the CSC program and establishes the program's goals, which are used as a basis for guiding the evaluation.
- Chapter 2 presents the detailed findings of the program's crime deterrence goals based on empirical analysis of criminal incident report data and quasi-experimental comparative analysis. The methods used to conduct these analyses are explained.
- Chapter 3 presents the findings from analysis of the program's investigatory goal and secondary goals.
- Chapter 4 presents the findings from the management analysis and technical evaluation.
- Chapter 5 presents recommendations for each of the areas outlined in the preceding chapters with the goal of improving the existing program; suggestions for future directions, including the use of actively monitored cameras, are also discussed.
- Appendix 1 provides an overview of the criminological theory that seeks to explain how video surveillance deters crime.
- Appendix 2 gives a comprehensive overview of the technical components of the CSC system, including an analysis of the network structure and current hardware configuration.

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[4] While some cities have been willing to share data about their programs (such as usage guidelines, number of cameras, and budgetary information), many others are reluctant and will refuse to make this information public outside of a formal request governed by the relevant state's freedom of information laws.

Key Findings by Area of Analysis

Findings and recommendations are presented for each methodological focus area (policy/legal, quasi-experimental/statistical, managerial, and technical). Please note that while we provide a summary of our recommendations here, all recommendations are presented in more detail in Chapter 4.

Key Findings of the Empirical and Quasi-Experimental Statistical Analysis of the Criminal Deterrence Goal of the Program (details available in Chapter 2)

One of two primary goals of the CSC program is to deter violent crime. These findings review the effectiveness of the CSC program for deterring violent crimes and other types of crime.

Effect of the CSC Program on Violent Crime. We find no evidence of an impact of the Community Safety Cameras on violent crime. Violent incidents do not decline in areas near the cameras relative to areas further away, we observe no decline in violent crimes occurring in public places, and we observe no statistically significant differences in the relationships between the before-after change in crime and the distance from the camera locations for our locations receiving cameras and our comparison sites.

Effect of the CSC Program on Homicides. Analysis of specific violent crime rates reveals a decline in overall homicides in areas near the cameras but an increase in areas far from the cameras, suggestive of a displacement effect. However, disaggregating the data into homicides occurring in public as opposed to private areas yields little evidence of a decline in homicides near the cameras or a significant increase in homicides far from the cameras. Thus homicide patterns in the areas surrounding the cameras during the time period before, during, and after camera installation are consistent with random variation in this crime series.

Effect of the CSC Program on Property Crime. We find statistically significant and substantial declines in property crime within view of the Community Safety Cameras. Within 100 feet of camera locations, Part 1 felony incidents[5] decline by 24 percent. We do not see corresponding declines in the immediately adjacent areas or observe increases in property crime in these areas. When we analyze incidents occurring in public and incidents occurring in private places separately, we find statistically significant

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[5] According to the FBI's Uniform Crime Reporting classifications, Part 1 crimes are: Criminal Homicide, Forcible Rape, Robbery, Aggravated Assault, Burglary, Larceny-theft (except motor vehicle theft), Motor Vehicle Theft, and Arson.

and substantial declines (on the order of 30 percent) near the cameras for crimes occurring in public only, and no relationship between distance from the camera and the change in crime for property crime occurring in private locations. Finally, we do not observe corresponding relative changes in crime near the cameras for areas in our comparison sample. Thus, all three tests point to a significant deterrent effect of the cameras on property crime.

Effect of the CSC Program on Part 1 Property Offenses. Analysis of specific Part 1 property offenses reveals that the entire impact of the Community Safety Cameras on property crime rates is occurring through an impact on larceny theft. Included in this broad crime category are pickpocketing, purse snatching, theft from buildings, and thefts from automobiles (though not automobile theft).

Effect of the CSC Program on Drug Offenses, Prostitution, and Vandalism. We find no evidence of any effect of the cameras on drug incidents, or on prostitution, vandalism, and incidences described as suspicious occurrences.

Effect of the CSC Program at Individual Camera Locations. We include a limited set of site-by-site estimates of the deterrent effects of the cameras. We caution against reading too much into these estimates, as the degree of statistical uncertainty is fairly large. This lack of precision is driven by the much smaller sample of days used to tabulate average daily incidents before and after installation, when we estimate relative impacts on a location-by-location basis rather than pool all locations together. With this caveat in mind, we observe three locations with particularly significant declines in property crime near the cameras (26th and Treat Ave.; Haight and Webster; and the cluster of cameras at Jones and Ellis and Turk and Taylor). At the remaining locations, the estimates are too imprecise to rule out effects of the camera installations comparable in magnitude to those observed for the pooled sample of locations. A similar caveat applies with regard to violent crime. Nonetheless, we do observe two locations where there are statistically significant declines in average daily violent incidents in the area near the cameras but not in more distant areas (19th and Mission, and Mission and Geneva).

Key Findings of the Analysis of the Investigatory Goal and Secondary Goals (details available in Chapter 3)

The second primary goal of the CSC system is to provide SFPD investigators with a forensic tool to investigate crime that occur within view of the cameras and to assist in the prosecution and defense of charged crimes. This section discusses the effectiveness of the CSC program in supporting that objective as well as the performance of the program in relation to the secondary objectives identified by the CITRIS team.

Benefits of CSC for Criminal Investigations. SFPD officers and others note that despite poor image quality, CSC footage has been useful for criminal investigations; while there are occasional instances where suspects or witnesses can be identified, more often footage is helpful in establishing a sequence of events for a crime or placing witnesses at a scene. As of August 2008 the SFPD had requested CSC footage 120 times, or approximately three requests per month over the past three years. Since the program began in 2005, CSC footage has assisted the SFPD in charging a suspect with a crime in six cases.[6] There has been limited success with the cameras acting as a "silent witness," with footage standing in for witness testimony; some anecdotal evidence suggests that the existence of CSC program footage can actually deter witnesses from cooperating under the assumption that the cameras have caught all necessary evidence. Finally, according to a San Francisco public defender, CSC footage contributed to charges against suspects being dropped or amended by the DA's office's on at least two occasions.

Issues with CSC for Investigations. Poor image quality (in particular with images captured at night) and a low frames-per-second recording rate (leading to choppy video that can miss detail, such as a car passing through an intersection) are the top complaints investigators and others had about the CSC system. The generally poor quality often makes it impossible to identify suspects and witnesses, as well as crucial details such as license plates on vehicles. Furthermore, some complaints were voiced about the process for requesting footage (in time-sensitive investigations, investigators preferred viewing footage prior to requesting copies in order to see if any valuable data was captured by the cameras). While one attorney we spoke with in the DA's office claimed that juries will not convict based on

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[6] Id.

camera footage alone, regardless of how good it is, as noted there is some anecdotal evidence that the existence of the CSC system may actually contribute to additional noncooperation as witnesses become less willing to risk retaliation due to their perception of the power of the alternative evidence provided by the cameras. While no specific evidence was offered to support this, some system users believe the camera footage may encourage witnesses to step forward because it can support their recollection of events, and perhaps encourage their belief that a conviction will result from their testimony, thereby reducing concerns about possible retaliation. More data about how the CSC program affects the actions of witnesses and other participants is necessary to fully understand how it integrates into the investigatory and prosecutorial processes.

Prosecution and Defense Investigatory Issues. In interviews, both prosecutors and defense attorneys reported that they were not consulted during the initial design of the CSC program. Defense counsel was particularly concerned with the lack of a special process through which they could access CSC program footage from the Department of Emergency Management. Amendments to the CSC Ordinance in 2008 responded to defense counsel concerns by adding a specific provision for defense counsel access and increasing the retention period of CSC program footage. But the amendments also raise questions about how CSC program footage relates to standard discovery processes and state and federal law with respect to the rights of the accused and the obligations of the prosecution. Defense counsel, the current director of the Mayor's Office of Criminal Justice (MOCJ) and the DA's office voiced some concerns with this set of issues during our interviews. The Ordinance now provides rules to govern access to footage by both the prosecution team (the investigators) and defense counsel. However, the unusual administrative structure and the Ordinance provisions governing access to the CSC program footage, as well as the increase in requests for CSC program footage under the amended access provisions, are increasing demands on the system and may have a significant impact on the system going forward as the issues are worked out by the parties involved. Clarifying the relationship between the CSC program and existing legal obligations and procedures and documenting the needs of stakeholders would facilitate better planning and resource allocation to support foreseeable program uses. It may also provide a basis for revising the access provisions under the Ordinance to meet access and oversight objectives while minimizing the burdens associated with both.

Key Findings Affecting the Secondary Objectives of the CSC System

As we noted earlier, our sources of analysis reveal several second-order objectives that both inform and constrain the City in its pursuit of the primary objectives. These secondary objectives are reflected in both procedural and substantive limitations placed on the growth and use of the CSC program. Among them:

- Community Participation—including public discussion about the expansion of CSC program, notice to individuals in areas under surveillance, a test that requires the consideration of the affected community's concerns, and a requirement that significant support from the affected community exists for a proposed camera installation.

- Accountability and Oversight—including constraining the CSC program to the investigation, prosecution, and defense of specific crimes, processes that facilitate auditing, and annual reporting on the program's use and effectiveness.

- Protection of Privacy, Freedom of Expression, and Related Rights—including limiting the areas under surveillance, foregoing real-time monitoring of cameras, and turning cameras off during demonstrations.

We now discuss each point in detail.

Community Participation. There is evidence that the public notice and hearing process have effectively engaged the community in a dialogue about the CSC system. Compared to other cities that have adopted surveillance cameras as part of a policing strategy, San Francisco has been far more transparent about its aims, processes, and conclusions.[7] The Ordinance itself is one among very few that govern surveillance cameras across the country. It is the only measure requiring that the affected community's concerns be considered in making decisions about whether to install cameras in specific places. The City is one of the first municipalities to conduct an outside evaluation of its video surveillance system for distribution

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[7] Many of the nonprofit organizations and scholars that have raised concerns about the proliferation of video surveillance cameras across the country have been specifically disturbed by the lack of public input on and regulation of the programs. See "Under the Watchful Eye: The Proliferation of Video Surveillance Systems in California," Mark Schlosberg and Nicole A. Ozer (discussing lack of enforceable regulations and lack of policies guiding such systems in California, with the exception of San Francisco as of June 2006), The California ACLU Affiliates, Aug. 2007. Available at: http://www.aclunc.org/issues/government_surveillance/asset_upload_file140_7730.pdf. See also *Guidelines for Public Video Surveillance: A Guide to Protecting Communities and Preserving Civil Liberties* (recommending public oversight and accountability through "a detailed, participatory and transparent process" in which "members of the community that would be affected by a proposed system should have the opportunity to participate in the decision to create such a system, as well as the subsequent major decisions affecting its coverage and capabilities") pp. 20–21, The Constitution Project, 2006. Available at: www.constitutionproject.org/pdf/Video_Surveillance_Guidelines_Report_w_Model_Legislation4.pdf.

to the public and for use in making decisions about the future of the program. The quantity and quality of information provided to the public about the CSC program through this report is unparalleled.

Accountability and Oversight. The Ordinance constrains the CSC program to the criminal context, limits police use of CSC program footage to investigations of specific crimes, and builds in processes to facilitate auditing. The policies and structures of the CSC program limit potential misuse of the cameras and footage, but also limit the SFPD's ability to determine for itself how to best use the CSC program cameras and resulting footage in its efforts to reduce crime. Interviews with investigators and Department of Emergency Management (DEM) staff reveal that CSC program footage sometimes is viewed prior to being formally requested, and at times written requests are not subsequently filed with DEM. Investigators view footage before deciding whether to request copies of CSC program footage to reduce workload demands on DEM and the SFPD supervisors and to more quickly assess the footage's potential evidentiary value. This approach to previewing footage does not result in the detailed records generated under the standard and exigent processes for investigator access to CSC program footage, as called for by the Ordinance. The lack of comparable records documenting the purpose of access to CSC program footage limits the ability to audit and analyze system use.

Protection of Privacy, Freedom of Expression, and Related Rights. San Francisco has adopted a strong framework to govern the installation and use of the CSC system in a manner that respects the City's commitment to protecting privacy and associated rights. The Ordinance limits what the CSC program cameras can record to "areas perceptible to the human eye from public streets and sidewalks," and where the camera view incidentally will capture private areas, such as residences, the City employs digital masking to block recording of those areas. In 2007, the San Francisco Police Commission conditioned CSC program expansion on responding to formal requests to turn off cameras during political demonstrations. The Ordinance also limits who may receive access to CSC program footage, the purposes for which access may be provided, and subsequent disclosures of footage. Furthermore, the public hearings required by the Ordinance when new CSC program camera installations are proposed provide all interested parties an opportunity to consider privacy and other concerns. And the Ordinance requires that concerns of the "affected community," including privacy concerns, be weighed against the potential deterrent effect in the Police Commission's assessment of whether or not to approve a proposed CSC program camera installation.

The CSC program provides a rich set of protections and restrictions on system use and footage access designed to protect privacy and related interests. However, additional training and guidance on specific issues—such as how much footage to request during an investigation and how to use the footage-viewer software—would facilitate the achievement of these secondary objectives. Translating policies into systems and practices that can support them is an important part of implementing these secondary objectives. Developing policies and practices depends upon a management team that attends to the needs of the system users, including their need to comply with Ordinance requirements and otherwise facilitate the ability to meet the range of secondary objectives.

Key Findings of the Performance and Management Analysis (details available in Chapter 4)

In this section we present the key findings of our analysis of the performance and management of the CSC system. According to a 2005 U.K. Home Office evaluation of thirteen closed circuit television (CCTV) programs, "three key team characteristics determined whether the CCTV systems were designed to meet their objectives: access to appropriate technical expertise, full engagement of end-users, [and the] suitability of [the] project manager."[8] This finding echoes similar comprehensive studies of CCTV systems, identifying managerial aspects as crucial components in determining why some CCTV systems appear to succeed in their objectives and others fail.

Pilot Status of Program. The CSC program was expanded from a pilot project of two cameras to a far more complex system of seventy-one cameras as of April 2008, without formal recognition that the program had grown into a full-scale technology project.[9] This growth, combined with the failure to allocate the resources and attention the program's size requires, is a key problem in CSC program management. Official acknowledgement must be made by MOCJ and the Police Commission that this program is no longer a pilot; accordingly we suggest implementing the recommendations made in this report, in particular instituting a project manager role and formal review of the existing technical

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[8] Gill, Martin and Spriggs, Angela. "Home Office Research Study 292: Assessing the Impact of CCTV." United Kingdom Home Office Research, Development and Statistics Directorate, February 2005. Accessed September 4, 2008 at http://www.homeoffice.gov.uk/rds/cctv2.html.
[9] The Police Commission still considers the CSC project to be a pilot pending the conclusion of this report.

infrastructure and user requirements as discovered by CITRIS[10] during this evaluation. We do not recommend continuation or expansion of the CSC program unless these issues are addressed.

Lack of Project Manager, End-User Requirements, and Feedback. The most significant management oversight in the CSC program is the lack of a project manager. The Ordinance does not explicitly place a specific department or individual in charge of the CSC program, though the Mayor's Office of Criminal Justice functionally directs the program. However, due to high turnover at MOCJ, a lack of consistent management has limited the efficacy of the CSC project. Because most of the system's users have little or no understanding of its technical aspects, without a clear position of oversight and contact the technical issues that hamper system usage or efficiency go unreported and unsolved. The lack of a dedicated project manager and appropriate planning has also meant that during the project development phase and afterward there were no attempts to gather and document user requirements. Finally, a program of this scope and size requires a dedicated manager to ensure successful implementation.

Key Findings of the Hardware and Network Analysis (details available in Chapter 4)

This section presents the key findings of our technical assessment of the CSC system. This assessment provides the basis for recommendations to improve image quality and other technical issues for the existing system.

System Architecture and Hardware. CITRIS identified several system architecture and hardware issues that, if addressed, would improve the quality of the existing system. Many of these issues were already known to the City's Department of Technology and Information Systems [DTIS], but have not been addressed for budgetary reasons. DTIS never received specific user requirements, such as mandating that recorded images capture a sufficient level of detail at specific recording distances to identify individual humans or details such as license plates, which have affected recording quality. Requirements such as these would have allowed DTIS to calibrate recording quality and distance in accordance with existing storage space and budget and allowed DTIS to advise MOCJ and the Police Commission concerning potential trade-offs between quality and optimal camera numbers. In addition, to the best of

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[10] Due to the scope of this study, we can outline only the most pressing issues our research uncovered, and were unable to probe all user, business, and technology requirements in depth. Additional inquiry is needed to fully capture such requirements.

our knowledge MOCJ has not had staff with in-depth technology expertise. It appears likely that MOCJ staff, who were responsible for day-to-day management of the CSC system, were unaware of the technical complexities involved with managing the CSC program, particularly as it grew beyond its small pilot status into a major undertaking. This lack of understanding led to additional issues with the efficacy of technology usage in this program.

Lack of Data Analytics and Technology Infrastructure at SFPD. The SFPD's technology infrastructure is out of date. SFPD only recently created a Chief Information Officer (CIO) role; prior to that, officers with limited or no technology experience were rotated through a technology command position every three years. While the creation of a permanent civilian CIO position is a positive development, the department still faces significant obstacles. A detailed analysis of the SFPD's technology infrastructure is outside the scope of this report, but the CITRIS team did interview the SFPD's former CIO to ascertain the general state of technological support and resources in the context of either maintaining or expanding the CSC program. From that interview we confirmed that the department's information infrastructure was nearly twenty years out of date and that SFPD faces the significant task of tackling basic technology infrastructure problems. With these limitations, it does not appear possible for SFPD to integrate any of the technological aspects of the CSC program within its operations. This presents a substantial challenge when considering future changes or expansions to the CSC program, given that tightly integrating the program in the Department's policing strategies and goals would provide key benefits.

Department of Emergency Management [DEM] End-User and Technical Issues. It does not appear that any formal requirements were gathered to assess the needs of or impact on DEM staff members, who manage CSC records and requests, during the CSC program's development. While the existing process for requesting CSC footage is time consuming, it appears workable with the current level of requests. However, it does not appear to be scalable if the program continues to grow. Since the pilot began in 2005, the number of requests has increased steadily each year, and the 2008 Ordinance changes that allow the defense counsel to request footage are increasing the number of requests by approximately 50 percent, according to DEM. If the City adds additional cameras, it would be inadvisable to do so without assessing the impact on DEM staff, and at minimum purchasing additional equipment to allow multiple requests to be processed simultaneously. Substantial improvements or changes to the CSC program

require a complete restructuring of the system's end-user component, including a specific requirements-gathering phase to ensure users' needs are met.

Lack of Documentation and Training for SFPD and Others. The CITRIS team found that training and documentation on how to view video footage burned to DVD discs was not provided to SFPD officers, the DA's office, or the Public Defender's Office. SFPD officers initially were issued a bulletin informing them of the installation of the first set of cameras in 2005[11], and an updated bulletin was issued in 2007[12] with a comprehensive list of camera locations current as of August 6, 2007. Both bulletins briefly describe the procedures for obtaining footage, but discuss no guidelines for use or give any specific instructions for viewing footage or any other relevant training. We are unaware if either the DA's office's office or public defenders' offices issued any formal notices to their respective staffs.

Summary of Primary Recommendations (all recommendations available in Chapter 5)

Depending on San Francisco's priorities and finances, there are other technological approaches to consider that would either enhance the passive framework the City has used to date or would introduce an actively monitored system. Either change in approach will require reevaluating the CSC program's goals to ascertain whether the new approach will continue to support the goals of providing forensic evidence to investigators and deterring crime[13]. In the final chapter of this report we give general recommendations for both strategic approaches. However, we must note, as we do throughout this report, that based on existing research there is no guarantee these recommendations will succeed, due to video surveillance's inherent limitations as a crime-fighting tool and to the system's dependence on multiple contextual factors that can contribute to its success or failure. As such, if the City chooses to take a different approach, we would advise that it does so cautiously, through an evidence-based process that allows for clear measurement and assessment of the system's goals and results.

Improvements to the Existing CSC System

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[11] SFPD Bulletin 05-164
[12] SFPD Bulletin 07-174
[13] As noted earlier, most existing evaluations provide mixed or no support for the use of video surveillance to specifically target violent crime. Any change in technology will necessitate a discussion about the City's crime deterrence goals and an evaluation of how the change may or may not support those goals.

The recommendations we give to improve the current CSC program rest on several assumptions. First, that the City sees value in a forensic investigatory tool for the SFPD and other departments. Second, that the City finds there is value in the deterring the type of property crimes, as opposed to violent crimes, our research found the CSC system effects. And third, if the City remains committed to the existing CSC strategic model, then this report should identify the critical issues that, if addressed, would facilitate improvements to that model. To that end, our recommendations provide guidance on improving the CSC system's functioning as a tool for deterring property crime or supporting investigation and prosecution, or both. In sum, if the technical and policy recommendations we make are followed, we would expect the CSC image quality to improve and be on par with the quality other cities are experiencing. If the management issues already discussed are addressed, within whatever strategic model the City wishes to follow the program should be better optimized to meet its goals and reflect the expressed needs of its users. Should the City wish to change the design and goals of the program, we would argue that these management recommendations and the need to collect user requirements would still be required; they reflect deficiencies that must be addressed in the successful administration of any technical project, and to resolve issues specific to video data capture.

Use of CSC Footage as an Investigatory Tool. We recommend providing a more structured process for SFPD investigators to access specific footage to determine its utility prior to formally requesting a copy; identify strategies for expanding community understanding about the strengths and limits of the CSC system in order to support a more informed discussion of the CSC program; and, with regard to the use of footage as a forensic tool, ensure the CSC program is compliant where practicably possible with the guidelines and best practices set forth by the Law Enforcement and Emergency Services Video Association (LEVA),[14] as well as solicit feedback specifically from the SFPD forensic video investigator regarding any changes to the system including changes made as a result of this report.

The process for accessing CSC program footage should be reformed to provide accountability for all its use, particularly to create a separate process for investigators to view specific footage on site at DEM prior to formally requesting footage under the Ordinance. Such access would reduce the DEM/ SFPD workload associated with identifying relevant evidence in CSC program footage. Audit logs of

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[14] LEVA guidelines and best practices for acquisition of digital multimedia evidence and forensic analysis are available at www.leva.org.

such access should be maintained and include the identity of the requestor, the specific crime under investigation, the footage reviewed, and whether or not a copy was later requested.

Prosecution and Defense Investigatory Issues. We recommend that the relationship between CSC program administration and procedures and existing legal obligations and procedures be further clarified to facilitate planning and resource allocation to support foreseeable program uses. We also recommend that DEM be allocated additional storage capacity to support the thirty-day footage-retention period, or that alternatives to a blanket thirty-day retention rule be considered and the Ordinance further amended. It is possible that the purpose of the revised Ordinance—to provide defense counsel time to assess whether CSC footage should be requested—for which the camera footage retention period was extended could be achieved through other mechanisms that would place fewer demands on program resources. For example, an automated process for retaining CSC camera footage relevant to every crime report for an extended period of time could be established. This would allow the bulk of CSC camera footage to be purged within a shorter period of time, while ensuring that footage relevant to crimes is maintained and available to investigators and defense counsel.

CSC Program Management Recommendations. A primary owner must be established for the CSC program. In our assessment, to date, MOCJ has provided insufficient oversight, coordination and management. As noted earlier, turnover within MOCJ has contributed to the lack of consistent management. From a functional standpoint, we would recommend that the program be managed by SFPD; however, as discussed in Chapter 4 there is no infrastructure or personnel within the SFPD to handle the complexities of this system. Therefore, placing the CSC program within SFPD would require investing in technical and administrative systems to support it. Placing the CSC program within the SFPD would likely yield a greater degree of integration into other policing strategies and practices, with potential benefits, than keeping it within the primary purview of MOCJ. However, placing it within SFPD could have ramifications for defense counsel access and other policy issues. Regardless of where it is placed, we recommend appointing a project manager whose experience includes coordinating efforts among multiple stakeholders. Ideally, this person would have some experience and familiarity with technical systems. The project manager should be the single point of contact for all CSC program-related issues. All CSC program users should be made aware of the project manager's role and responsibilities and contact information. If the CSC project manager does not have technical experience,

the entity in charge must identify a corresponding technical lead (likely at DTIS) who can act as a single point of contact for the CSC project manager on all technical issues with the CSC system. We recommend convening stakeholders to retool the mechanisms for dealing with public defender access and witness protection issues in the CSC system. The current incomplete approach raises a host of problems and questions about how the system relates to the normal criminal justice processes.

Technical Recommendations for CSC Infrastructure. Increasing storage capacity at DEM would increase the frame rate of stored CSC program footage, thereby improving its quality while also enabling DEM to store footage for the thirty-day period required under the Ordinance.[15] It might also improve efficiency for downloading footage. DTIS estimates the cost of this recommendation may exceed $3MM. In addition, should the City wish to expand the CSC program, a realistic and detailed assessment is essential to determine the potential impact on SFPD technology infrastructure, to examine how an expanded CSC program would fit with the SFPD's strategic technology goals; and to study whether the SFPD's existing data analytics capabilities would work with any such expansion. This assessment should include analysis of the type of crime and incident data that would be beneficial to share with a camera system to inform strategic deployment, as well as the type of data a camera system could provide to a centralized crime data repository to better inform data analysis.

Technical End-User Recommendations. In addition to identifying the process and feature needs of users such as the DA's office, public defenders, and SFPD investigators, the City must also investigate the needs of the system's technical users. This includes an increase in the efficiency and reliability of the download and DVD burn process for DEM staff, as well as in-depth evaluation—with DEM staff participation—of existing processes and requirements.

Polices, Procedures, Training, and Documentation Recommendations One considerable deficiency with the existing program is the general lack of written policies and procedures, training materials, and general documentation across the board. MOCJ or an appropriate entity should develop policies, practices, and training materials to assist in implementing the Ordinance and optimizing use of CSC system resources. Policy and practices guidelines are needed on how to use the system generally and in a manner consistent with the Ordinance. The CSC project manager should create documentation and

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[15] Interview with DTIS staff.

training materials for all CSC users on how to access CSC footage using the proprietary software viewer.

Considering Other Technological Approaches

Depending on San Francisco's priorities and finances, there are other technological approaches to consider that would either enhance the passive framework the City has used to date or would introduce an actively monitored system. Either change in approach will require reevaluating the program's goals to ascertain if the approach continues to support the goals of providing forensic evidence to investigators and to deter crime[16]. However, even with our recommendations in place, CSC program leaders must be clear-eyed about the limitations to the current strategic approach and candid with City residents about those limitations, as community members often request installation of surveillance cameras without understanding their inherent limitations as well as, in this case, the fact that the Community Safety Cameras are not actively monitored by SFPD. For example, adding additional cameras to existing sites, or to additional locations around the City, may increase the investigatory power of the program but does not address the issue of deterring violent crime. As we have explained at several points in this report, research to date concludes that public video surveillance generally is not effective or only somewhat effective in deterring violent crime; any success at combating violent crime may entirely depend on a specific deployment context (to be discussed later in this section) and not on the mere presence of cameras.

Enhancing the Existing Passive System. San Francisco leaders could consider adding technological measures to the system to specify and target specific criminal behavior. Examples include integrating the City's investment in ShotSpotter gunshot detectors with the camera network, or adding automatic threat-detection software. The City could also consider deploying a model of limited active monitoring driven by the technologies mentioned here as well as by emergency calls for service and officer reports from the field in order to respond quickly to emergencies. All of these suggestions have limitations, which are discussed in detail in Chapter 4.

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[16] As noted throughout this study, most existing evaluations provide mixed or no support for the use of video surveillance to specifically target violent crime. Any change in technology will necessitate a discussion about the City's crime deterrence goals and an evaluation as to how the change may or may not support those goals.

Active Approach—Real-Time Monitored Video Surveillance. Nearly every subject we interviewed for this study mentioned live monitoring of video surveillance cameras in some context; typically, interviewees assumed that if the SFPD monitored the cameras the CSC system would be far more effective. Generally, assumptions that live monitoring will dramatically improve the CSC program are not based on concrete evidence.[17] The vast majority of evaluation research, conducted on monitored systems, offers evidence that monitoring surveillance cameras will not guarantee effectiveness in deterring crime. We discuss the benefits and limitations of monitoring—and the related resource allocations it requires—and make an extremely specific and qualified recommendation for the City to consider should it wish to pursue a live monitored system. In sum, should the City wish to experiment with an actively monitored system, we recommend it use a highly targeted model that focuses installing a significantly greater number of cameras in one to two discrete areas (as opposed to the existing strategy of installing only two to four cameras at many locations throughout the City), chosen on the basis of set criteria such as crime types and rates and the physical characteristics of the area. This model would coordinate the strategy and response tightly with SFPD and the local community. Furthermore, it requires a long-term commitment to both the project (including increased resources for SFPD and other City units in order to respond to increased calls for service and related issues in the targeted areas) as well as for evaluating the effectiveness of the effort. This suggestion is based primarily on the results of the Los Angeles Police Department's efforts with video surveillance in that city's MacArthur Park and Jordan Downs areas. However, no matter what approach San Francisco decides to take, we highly recommend it conduct careful and critical research, reviewing both existing evaluations as well as conducting site visits to other municipalities, before adopting any technological changes to the current CSC program. Furthermore, we recommend that for any changes the City implements it do so with a clear evaluation strategy in place to ensure that the program's effectiveness can be measured optimally over time.

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[17] "Major academic books on CCTV have shown the ambivalence of its employment. While mostly advocates and critics believe that visual surveillance technology works, these studies explain that CCTV has to be seen in broader social and political contexts and that every optimistic belief in the effectiveness of technology is pure fantasy." Hempel, Leon and Topfer, Eric. *Urbaneye: CCTV in Europe. Final Report*. August 2004, pg. 17. Available at http://www.urbaneye.net/results/ue_wp15.pdf.