

2021 Annual Surveillance Usage Review: Closed Circuit Television (CCTV) Traffic Cameras

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Report Highlights

Background

This 2021 Annual Surveillance Usage Review includes the Seattle Department of Transportation (SDOT) closed circuit television (CCTV) traffic cameras. CCTV traffic cameras are remotely controllable video cameras installed on traffic poles along major roads in Seattle. The SDOT



Source: Seattle Department of Transportation Traffic Cameras Fact Sheet

Transit Operations Center uses CCTV traffic cameras to monitor traffic conditions and quickly respond to traffic issues. The cameras provide live video or updated static images 24 hours a day on the public [Traveler Information Map](#). Other City departments use CCTV traffic cameras to respond to emergencies and to monitor major city-wide events. In 2021,

we completed an initial surveillance technology usage [audit](#) of the CCTV traffic cameras covering activities from January 2019 through June 2020. This audit covers July 2020 through December 2021.

What We Found

We reviewed SDOT's use of CCTV traffic cameras and found that SDOT is in compliance with the terms of Seattle Municipal Code 14.18.060. SDOT told us that their use of CCTV traffic cameras has remained the same since our previous review. SDOT has implemented all the recommendations from our initial audit of CCTV traffic cameras (see Appendix A). Our next review of CCTV traffic cameras will be published in 2023.

Department Response

SDOT stated that they concurred with the report.



WHY WE DID THIS AUDIT

Seattle Municipal Code 14.18.060 requires the City Auditor to annually review City Council approved surveillance technologies used by City of Seattle departments. This 2021 Annual Surveillance Usage Review includes the Seattle Department of Transportation (SDOT) closed circuit television (CCTV) traffic cameras.

HOW WE DID THIS AUDIT

To accomplish the audit's objectives, we:

- Reviewed the usage of CCTV traffic cameras for compliance with Seattle Municipal Code 14.18.060
- Reviewed the Closed Circuit Television "Traffic Cameras" Surveillance Impact Report
- Interviewed SDOT officials
- Reviewed and analyzed CCTV cost data
- Reviewed customer inquiry data

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EXECUTIVE SUMMARY

We reviewed the annual usage of the Seattle Department of Transportation’s closed circuit television traffic cameras for compliance with Seattle Municipal Code 14.18.060. Below is a summary of the results of our work.

14.18.060 Provision	Compliance Determination	Auditor’s Assessment	Recommendations
A. How the surveillance technology has been used, how frequently, and whether usage patterns are changing over time	<p>Yes</p> 	In compliance.	None.
B. How often the surveillance technology or its data are being shared with other entities, including other governments in particular	<p>Yes</p> 	In compliance.	None.
C. How well data management protocols are safeguarding individual information	<p>Yes</p> 	In compliance.	None.
D. How deployment of the surveillance technology impacted or could impact civil liberties or have disproportionate effects on disadvantaged populations, and how those impacts are being mitigated	<p>Yes</p> 	In compliance.	None.
E. A summary of any complaints or concerns received by or known by departments about the surveillance technology and the results of any internal audits or other assessments of code compliance	<p>Yes</p> 	In compliance.	None.
F. Total annual costs for use of the surveillance technology, including personnel and other ongoing costs	<p>Yes</p> 	In compliance.	None.

INTRODUCTION

Audit Overview

Seattle Municipal Code (SMC) 14.18.060 requires the City Auditor to annually review the surveillance technologies used by all City of Seattle (City) departments, except for those used by the Seattle Police Department. SMC 14.18 resulted from concerns about privacy, the lack of a process for the City's acquisition of surveillance technologies, and the risks that such technologies could pose to civil liberties related to privacy, freedom of speech or association, or have a disparate impact on specific groups through over-surveillance.

The City Auditor produces an initial audit report for each City Council approved surveillance technology to determine whether it has been used in compliance with applicable provisions of the Seattle Municipal Code. After initial surveillance technology reviews, the City Auditor will conduct annual reviews of technologies in a single Annual Surveillance Usage Review report.

This 2021 Annual Surveillance Usage Review only includes the Seattle Department of Transportation (SDOT) closed circuit television (CCTV) traffic cameras because it is the only surveillance technology we have performed an initial review on that is still in use. Our office previously reviewed SDOT's license plate readers, but SDOT reported this technology is no longer functioning and will be physically dismantled in 2022 (see [Surveillance Usage Review: Seattle Department of Transportation License Plate Readers](#)).

Our objectives were to report on:

- A. How the surveillance technology has been used, how frequently, and whether usage patterns are changing over time.
- B. How often the surveillance technology or its data are being shared with other entities, including other governments in particular.
- C. How well data management protocols are safeguarding individual information.
- D. How deployment of the surveillance technology impacted or could impact civil liberties or have disproportionate effects on disadvantaged populations, and how those impacts are being mitigated.
- E. A summary of any complaints or concerns received by or known by departments about the surveillance technology and the results of any internal audits or other assessments of code compliance.

- F. Total annual costs for use of the surveillance technology, including personnel and other ongoing costs.

In 2021, we completed the initial [audit](#) of the CCTV traffic cameras covering activities from January 2019 through June 2020. This audit covers July 2020 through December 2021.

Background

[Seattle Municipal Code 14.18](#) requires City departments to obtain City Council approval of their surveillance technologies acquisition through a Surveillance Impact Report (SIR). The City Council approved SDOT's [CCTV traffic camera SIR](#) in 2019 through [Ordinance 125936](#).

CLOSED CIRCUIT TELEVISION TRAFFIC CAMERAS

Technology Description

Closed circuit television (CCTV) traffic cameras are Seattle Department of Transportation (SDOT) remotely controllable video cameras installed on traffic poles along major roads in Seattle. SDOT Transit Operations Center uses CCTV traffic cameras to monitor traffic conditions and quickly respond to traffic issues. Other City departments use CCTV traffic cameras to respond to emergencies and to monitor major city-wide events. The cameras provide live video or updated static images 24 hours a day on the [Traveler Information Map](#), a website that displays real-time traffic conditions in Seattle. See our [initial CCTV audit](#) for more detailed information on the CCTV system. In Appendix A, we include a list of the recommendations from our initial CCTV audit and the implementation status.

Annual Usage Review Summary

A. Use and Trends

SDOT told us that their use of CCTV traffic cameras has remained the same since our 2021 audit. CCTV traffic cameras are available for continuous public use 24 hours a day, 365 days per year. Between July 2020 and December 2021, SDOT replaced 14 cameras, removed 2 cameras, and added 43 cameras.

B. Data Sharing

As reported in our previous audit, SDOT allows the following City entities to log into the CCTV system's server (Cameleon):

- SDOT Transportation Operations Center
- SDOT Maintenance Operations Unit Dispatch
- SDOT Traffic Signal Shop
- SDOT Traffic Signal Timing Engineers
- Seattle Emergency Operations Center
- Seattle Executive Protection Unit
- Seattle Fire Alarm Center
- Seattle Police Operations Center

In 2021, SDOT implemented use agreements with Cameleon users to specify that users cannot use the system for civil or criminal enforcement purposes (see Appendix A, Recommendation 4).

C. Data Management Protocols

SDOT has Camera Control Protocol Guidelines that specify how CCTV traffic cameras and their data can be used. For example, these protocols allow the SDOT Transit Operations Center to record video for internal traffic studies, but employees must delete the video files

within 10 days. In 2021, SDOT began an active engagement with cybersecurity experts from the Seattle Information Technology Department to review CCTV practices and receive guidance for improving SDOT's security posture (see Appendix A, Recommendation 5).

D. Impacts on Civil Liberties

We reviewed 186 customer inquiries about the CCTV system and determined that two were related to impacts on civil liberties. Both inquiries requested that SDOT reposition cameras aimed at someone's residence. We verified that SDOT repositioned one camera; the other request did not have enough information to follow up on.

Live streaming video from CCTV traffic cameras is publicly available, and SDOT has limited control over how the public uses this data. SDOT helps protect individual privacy by setting the cameras to low resolution so license plate numbers and faces cannot be clearly seen.

A potential civil liberties concern is if an unauthorized user accessed the CCTV system and controlled the cameras remotely, by changing the camera aim or zoom level to focus on an individual. SDOT mitigates this risk by regularly consulting with City cybersecurity experts to review potential data security risks to the CCTV system.

In 2021, SDOT also began documenting the rationale for where to place new CCTV traffic cameras, to ensure locations are chosen based on traffic needs and are not disproportionately located in disadvantaged areas of the city (see Appendix A, Recommendation 16).

E. Complaints, Concerns, and Other Assessments

SDOT documents all inquiries they receive about CCTV technology in a log. We reviewed all CCTV related inquiries between July 2020 and December 2021 and summarized our observations in Exhibit 1. During our audit, SDOT discovered that they had not sent responses to every customer who submitted an inquiry. In July 2022, SDOT revised their inquiry response standard operating procedure to clarify roles and responsibilities, so all customers receive a response within 10 business days.

We also reviewed the City of Seattle Department of Facilities and Administrative Services [Customer Service Bureau](#) database of comments and complaints, and found no related to CCTV traffic cameras. We could locate no other internal audits or assessments of code compliance related to SDOT's CCTV traffic cameras for the period of our review.

Exhibit 1: Customer Inquiries About CCTV Traffic Cameras (July 2020 to December 2021)

Number of Inquiries	Inquiry Topic*
90	Request for camera footage
31	Cameras or website not working as intended
26	Request to change camera aim or zoom in/out
16	Question related to camera functionality, ownership, and use
15	Unrelated to CCTV or not enough information to categorize
6	Request to add a camera at a new location
2	Privacy or civil liberties concern
186	Total

Source: Seattle Office of City Auditor analysis of the Seattle Department of Transportation’s customer service request system.

*We reviewed inquiries about CCTV traffic cameras received from July 2020 and December 2021 and categorized them based on the primary subject of the inquiry.

F. Total Annual Costs

SDOT provided the estimated total annual costs for using the CCTV system, including personnel and other ongoing costs (see Exhibit 2). SDOT also estimated the cost of the CCTV traffic camera replacements and additions from July 2020 to December 2021 (see Exhibit 3).

Exhibit 2: Estimated Costs of Operating the CCTV System, July 2020 to December 2021

Cost Description	July – Dec 2020	2021
2021 annual license fee		\$6,329
Personnel costs*	\$793,224	\$1,414,574
Maintenance costs	\$71,017	\$259,969
Total	\$864,241	\$1,680,872

Source: Seattle Office of City Auditor analysis of Seattle Department of Transportation data.

*SDOT provided these estimated personnel costs based on how often the Transit Operations Center staff use the CCTV system.

Exhibit 3: Estimated Costs of CCTV Traffic Camera Replacements and Additions, July 2020 to December 2021

Number of Cameras	Camera Cost*	Labor Cost	Total Cost
14 camera replacements	\$112,868	\$15,317	\$128,185
43 cameras added	\$346,666	\$94,093	\$440,759

Source: Seattle Office of City Auditor analysis of Seattle Department of Transportation data.

*SDOT stated that they purchased no new CCTV traffic cameras during 2021, so we used the 2020 purchase price for these calculations. SDOT removed two CCTV traffic cameras between July 2020 and December 2021.

OBJECTIVES, SCOPE, AND METHODOLOGY

Objectives

Our audit objectives were to review the Seattle Department of Transportation's (SDOT) use of closed circuit television (CCTV) traffic cameras, for compliance with Seattle Municipal Code (SMC) 14.18.060:

- A. How surveillance technology has been used, how frequently, and whether usage patterns are changing over time.
- B. How often surveillance technology or its data are being shared with other entities, including other governments in particular.
- C. How well data management protocols are safeguarding individual information.
- D. How deployment of surveillance technologies impacted or could impact civil liberties or have disproportionate effects on disadvantaged populations, and how those impacts are being mitigated.
- E. A summary of any complaints or concerns received by or known by departments about their surveillance technology and the results of any internal audits or other assessments of code compliance.
- F. Total annual costs for use of the surveillance technology, including personnel and other ongoing costs.

Scope

The scope for this audit included CCTV activities from July 2020 to December 2021. We reported on the items in SMC 14.18.060 and reviewed the status of the recommendations from our 2021 audit.

Methodology

To accomplish the audit's objectives, we performed the following:

- Reviewed the usage of CCTV traffic cameras for compliance with Seattle Municipal Code 14.18.060
- Reviewed the Closed Circuit Television "Traffic Cameras" Surveillance Impact Report
- Interviewed SDOT officials
- Reviewed and analyzed CCTV cost data
- Reviewed customer inquiry data from SDOT's customer service request system

- Reviewed data from the City's Department of Facilities and Administrative Services Customer Service Bureau database of comments and complaints received from July 2020 to December 2021

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

APPENDIX A

Recommendations from Previous CCTV Audit

Audit Recommendation	Implementation Status
<p>Recommendation 1: The Seattle Department of Transportation should develop and implement a process that captures all new and installed CCTV traffic cameras in the city, particularly those added via capital projects.</p>	<p>Implemented. The Seattle Department of Transportation (SDOT) updated the CCTV Standard Operational Policy document with the process that documents adding CCTV to SDOT's Asset Management System.</p>
<p>Recommendation 2: The Seattle Department of Transportation should prominently post a notification when the Traveler Information website is accessed that the system is intended to be used to monitor traffic and for no other purpose.</p>	<p>Implemented. Upon clicking a camera icon on the Traveler Information Map, a banner scrolls across the screen stating, "The CCTV system and associated data are intended for traffic monitoring or traffic management and for no other purpose."</p>
<p>Recommendation 3: Operational Policy 2 should be clarified to: 1) state that non-Seattle Department of Transportation (non-SDOT) City departments are authorized to use the CCTV system and data for any reason if it is related to traffic management, 2) define the two exceptions for using the CCTV system and data for non-traffic management purposes, and 3) define what is meant by "to monitor a major city-wide event."</p>	<p>Implemented. The Seattle Department of Transportation (SDOT) updated the CCTV Standard Operational Policy document to state that non-SDOT users may use the CCTV system as it relates to traffic management, including any exceptions for non-traffic purposes. A definition has been provided for what qualifies as a major city-wide event.</p>
<p>Recommendation 4: The Seattle Department of Transportation (SDOT) should develop and execute use agreements with non-SDOT departments that use the CCTV system and specify in the agreements that the system shall not be used for civil or criminal enforcement purposes by non-SDOT departments.</p>	<p>Implemented. The Seattle Department of Transportation (SDOT) created a Traffic User Agreement outlining the rules of use for operating the CCTV system and stating that the system shall not be used for civil or criminal enforcement purposes by non-SDOT departments. This shall be signed annually by CCTV users.</p>
<p>Recommendation 5: The Seattle Department of Transportation should engage cybersecurity experts to conduct regular security assessments of the CCTV traffic cameras system and to follow-up on the implementation progress of a 2015 network security risk report. The regular security assessments should specifically address data security and the risk of CCTV traffic cameras data being inadvertently or improperly shared. This work could be done by the City of Seattle's Information Technology Department or by an independent cybersecurity consultant.</p>	<p>Implemented. The Seattle Department of Transportation (SDOT) has an active engagement with assigned Seattle Information Technology Department (ITD) cybersecurity experts. This includes recurring meetings to review practices and technologies while providing guidance for improving SDOT's overall security posture.</p>
<p>Recommendation 6-1: The Seattle Department of Transportation should clarify in its Camera Control Protocol what is meant by the term "absolutely necessary to allow the operator to perform a vital component of their jobs" with respect to operators zooming in close enough to discern personally identifiable information. Providing examples of what are included and excluded could help to clarify the meaning of this term.</p>	<p>Implemented. The Seattle Department of Transportation updated the CCTV Standard Operational Policy document by defining the phrase in the Rules of Use, Section 2.3.a.</p>

Audit Recommendation	Implementation Status
<p>Recommendation 6-2: The Seattle Department of Transportation should clarify in its Camera Control Protocol what is meant by the phrase “compelling traffic operational needs” with respect to the prohibition of recording video images. Providing examples of what are included and excluded could help to clarify the meaning of this phrase.</p>	<p>Implemented. The Seattle Department of Transportation updated the CCTV Standard Operational Policy document by defining the phrase mentioned in the Rules of Use, Section 2.4.a, and Section 3.1.</p>
<p>Recommendation 7: The Seattle Department of Transportation (SDOT) should resolve the inconsistencies in operational policies in the SIR and the Camera Control Protocol regarding references to where cameras may be used to view/monitor conditions (i.e., SDOT-owned roadways, public rights-of-way, and/or sidewalks).</p>	<p>Implemented. The Seattle Department of Transportation updated the Rules of Use contained in the SIR and the Camera Control Protocol, now called the CCTV SOP, to mirror each other exactly.</p>
<p>Recommendation 8: Operational Policy 3.0, #3 in the City Council-adopted Condensed Surveillance Impact Report (CSIR) states: To the extent feasible, CCTV public feed must be terminated during such times as personally identifiable information is visible on the feed. This operational policy is not included in the City Council-adopted Surveillance Impact Report (SIR). The Seattle Department of Transportation should update the SIR and/or CSIR to make both documents consistent.</p>	<p>Implemented. The Seattle Department of Transportation updated the Operational Policy section in the CSIR (Section 3.0 – 3.3) and the SIR (Section 5) to make them consistent.</p>
<p>Recommendation 9: References in the Surveillance Impact Report and the Seattle Department of Transportation’s (SDOT) CCTV Camera Use Policy regarding the destruction/deletion of files of recordings are inconsistent. SDOT should revise these policies to be consistent with one another and specify whether the number of days refers to working days or calendar days.</p>	<p>Implemented. The Seattle Department of Transportation updated the CCTV Standard Operational Policy, Surveillance Impact Report, and Condensed Surveillance Impact Report documents to make them consistent in referring to the deletion of recordings within 10 business days.</p>
<p>Recommendation 10-1: The Seattle Department of Transportation should include in its CCTV system data sharing/use agreements with other City departments language that they should not record what they view through the cameras.</p>	<p>Implemented. The CCTV Traffic Camera User Agreement states in Rule of Use # 4, “Video images shall not be recorded.”</p>
<p>Recommendation 10-2: The Seattle Department of Transportation should consult with the City Attorney’s Office to determine whether a notification could be added to the Traveler Information website that recording from this public website should be prohibited.</p>	<p>Implemented. The Seattle Department of Transportation updated the Traveler Information website to include this language.</p>
<p>Recommendation 11: The Seattle Department of Transportation (SDOT) should develop a structured training program, including a schedule for periodic re-training, for non-SDOT users of Cameleon that is appropriate to their use of the system.</p>	<p>Implemented. The Seattle Department of Transportation (SDOT) reported that each year on the date of hire, non-SDOT users of Cameleon shall view a presentation on how to operate the Cameleon application, and sign/re-sign the CCTV Traffic User Agreement indicating an understanding of and commitment to abide by the Rules of Use stated in the document.</p>

Audit Recommendation	Implementation Status
<p>Recommendation 12: The Seattle Department of Transportation’s (SDOT) Transportation Operations Center should maintain documentation of when training was completed for all Cameleon users (within and outside of SDOT).</p>	<p>Implemented. The Seattle Department of Transportation (SDOT) reported that the CCTV Traffic User Agreement is signed via Adobe Sign, and Agreements are kept in SDOT’s Adobe Sign library.</p>
<p>Recommendation 13: The Seattle Department of Transportation should work with the City Records Manager and the City Auditor to identify the appropriate retention and ensure it is listed correctly on the SDOT retention schedules so that Cameleon logs meet both the City’s recordkeeping requirements and maintain availability of the logs for the City Auditor’s Office to complete annual surveillance usage reviews of the CCTV technology.</p>	<p>Implemented. The City Records Manager has recommended a deletion policy for information in the system identified as System Usage – Monitoring to be deleted after 2 years and 6 months to adequately cover the 2-year time frame that would allow an annual usage review of Surveillance technology each September as indicated in Ordinance 125679 Section 5.</p>
<p>Recommendation 14: The Seattle Department of Transportation should rewrite Surveillance Impact Report Operational Policy 9 to clarify which logs the requirements are referring to.</p>	<p>Implemented. The Seattle Department of Transportation (SDOT) noted that there is no Operational Policy 9, but SDOT updated Operational Policy 8.2 to state, “Additionally, per the operational policy outlined above, SDOT will retain quarterly Cameleon software usage logs of all access to and operations of the CCTV, including streaming stop/start, recording dates, and topics.”</p>
<p>Recommendation 15: Section 8.2.1 in the Closed-Circuit Television Camera (CCTV) Surveillance Impact Report should be revised to accurately reflect the current practice of each camera being checked once daily by Seattle Department of Transportation CCTV camera operators to ensure that it is in its home preset position.</p>	<p>Implemented. The Seattle Department of Transportation (SDOT) revised Section 8.2.1 of the CCTV SIR to state that CCTV cameras are checked once daily to ensure that it is in the home preset position.</p>
<p>Recommendation 16: The Seattle Department of Transportation should begin consistently documenting the rationale for its decisions about where to locate new CCTV cameras.</p>	<p>Implemented. The Seattle Department of Transportation stated that Section 8 of the CCTV Standard Operational Policy document explains the steps to be taken to document the rationale for CCTV locations.</p>
<p>Recommendation 17: To ensure that the Seattle Department of Transportation can appropriately respond to and report on complaints about misuse of surveillance technologies, it should document all complaints and concerns from all sources, including from social media.</p>	<p>Implemented. The Seattle Department of Transportation developed a log to document concerns about the misuse of surveillance technologies from all sources.</p>

APPENDIX B

Seattle Office of City Auditor Mission, Background, and Quality Assurance

Our Mission:

To help the City of Seattle achieve honest, efficient management and full accountability throughout City government. We serve the public interest by providing the City Council, Mayor and City department heads with accurate information, unbiased analysis, and objective recommendations on how best to use public resources in support of the well-being of Seattle residents.

Background:

Seattle voters established our office by a 1991 amendment to the City Charter. The office is an independent department within the legislative branch of City government. The City Auditor reports to the City Council and has a four-year term to ensure their independence in deciding what work the office should perform and reporting the results of this work. The Office of City Auditor conducts performance audits and non-audit projects covering City of Seattle programs, departments, grants, and contracts. The City Auditor's goal is to ensure that the City of Seattle is run as effectively, efficiently, and equitably as possible in compliance with applicable laws and regulations.

How We Ensure Quality:

The office's work is performed in accordance with the Government Auditing Standards issued by the Comptroller General of the United States. These standards provide guidelines for audit planning, fieldwork, quality control systems, staff training, and reporting of results. In addition, the standards require that external auditors periodically review our office's policies, procedures, and activities to ensure that we adhere to these professional standards.

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