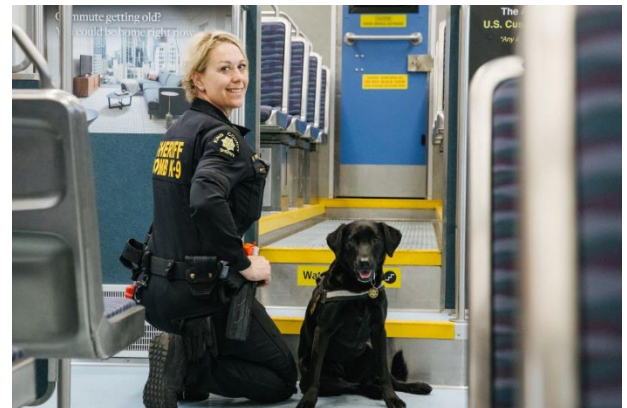


Contract Deliverables for Transit Police Audit

Report #: 2022-08

Internal Audit

Final Audit Report



Sound Transit Audit Division

September 30, 2022

Sound Transit's Title VI notice of rights

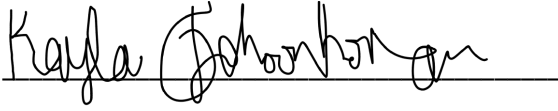
Sound Transit conducts Title VI equity analyses for service and fare decisions to ensure they are made as equitably as possible.

More information on Sound Transit's Title VI notice of rights and the procedures to file a complaint may be obtained by:

- Phone: 888-889-6368; TTY Relay 711;
- Email: stdiscriminationcomplaint@soundtransit.org;
- Mailing to Sound Transit, Attn: Customer Service, 401 S. Jackson St. Seattle, Washington 98104-2826; or
- Visiting our offices located at 401 S. Jackson St. Seattle, Washington 98104.

A complaint may be filed directly with the Federal Transit Administration Office of Civil Rights, Attention: Complaint Team, East Building, 5th Floor – TCR, 1200 New Jersey Avenue, SE, Washington, DC 20590 or call 888-446-4511.

Report Prepared by:

A handwritten signature in black ink, appearing to read "Kayla Schoonhoven", is written over a horizontal line.

Kayla Schoonhoven, Sr. Performance Auditor (Lead Auditor)

Reviewed (QA/QC) by:

Heather Wright, Deputy Director, Audit Division

Approved for release by:

Patrick Johnson, Director, Audit Division

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Executive Summary

Why did we audit?

As more riders return to use transit for work, sports, special events and travel, passenger safety is at the forefront of Sound Transit’s (ST) focus.

To help ensure passengers feel safe while on our systems, Sound Transit has contractual agreements with King County Sheriff’s Office (KCSO) for law enforcement services, forming what is known as the Sound Transit Police.

Sound Transit, as the agreement owner, is the accountable authority for overseeing our contractor and ensures that deliverables such as patrols and enforcements are taking place on our modal systems through regular reporting on minimum required hours and patrols to occur.

Our audit objective was to assess contract deliverables by reviewing transit police availability during peak service periods for Link & Sounder service. We also wanted to evaluate the degree to which requirements outlined in agency agreement was being met.

Ultimately, we evaluated current processes to determine if the current law enforcement program is effective and efficient enough to scale up operations as the agency and systems grow over the next few years.

What we found

Overall, we found that contract deliverables of service by KCSO are not being met. Through our evaluation of current agreements, interviews with multiple staff from both agencies, as well as reviewing process, procedure, and contractual reporting we found control deficiencies in the following areas:

- The availability, hours of service, and stations that transit security are required to be patrolling contractually are not being met by KCSO;
- Information sharing between agencies (ST Public Safety and KCSO) is severely lacking in areas such as coordination, training, etc.

Despite these deficiencies, both ST Public Safety and KCSO’s ST Police expressed that they strongly value passenger safety and are committed to collaborate to improve processes and ensure passenger needs are met with the resources available.

The Audit Division is Sound Transit’s independent assurance function that improves how the agency is operated and managed, ensuring public funds are managed transparently, and ultimately keeping employees, contractors, and our riding public safe.

Audit Process

Our audit involved reviewing agreements, memorandums, policies, procedures, and reports relating to services provided by KCSO to Sound Transit. We also performed multiple field observations at random times during peak revenue service for both Link and Sounder Commuter Rail Service.

Through our analysis and field work, we identified areas where the contract deliverables are currently being met and where opportunities to improve the achievement of the contract deliverables should be considered.

Conclusions

We conclude that although the deliverables outlined in the agreement and subsequent revisions, or additions were effective in the past, significant changes in external conditions over the past couple of years have significantly strained agency resources responsible for contractual oversight of our transit security contractors; strongly hindering the achievement of the agency's overall objective to ensure of a safe rider experience.

Without policy changes, strengthened oversight of contractual obligations, and clearer two-way information sharing between the agencies, the law enforcement function may not be effective and efficient enough to scale up as the footprint of the agency expands.

Lastly, we identified **one (1) finding** and **one (1) observation** related to areas where contract deliverables are not being met.

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1. Finding & Observation Summary

The audit team completed its review and identified one (1) finding: *Contract deliverables are not being met* and one (1) observation.

We grouped our finding into two overall categories:

- Quantitative Deliverables (e.g., number of service hours, station sweeps, etc.)
- Qualitative Deliverables (e.g., information sharing, training, etc.)

Finding 1: Contract deliverables are not being met

Audit Risk Rating: 3B (Serious)

Our field work demonstrated the following areas where deliverables¹, outlined in the 2018 agreement between ST and KCSO and the 2022 Memorandum of Understanding issued in March of 2022, are not currently being met. The following are examples in each area of deliverables that did not meet the expected minimum requirements:

Quantitative Deliverables

For 5 of the 18 weeks (28%) for which past performance reporting was provided, patrol hours provided did not meet the minimum expectation of 276 weekly hours of deputies patrolling on or around Link Light Rail. The total patrol hours provided over this 18-week period totaled 6,565.45 hours, which in total, exceeded the 4,968 expected hours across the period with some weeks significantly exceeding expectations and others falling short.

For 15 of the 17 weeks (88%) for which past performance reporting was provided, at-grade crossing and education enforcement for pedestrian safety around trains and collision prevention did not meet the minimum expectation of 5% of the total weekly patrol time. 5% of the total 15,029 reported patrol hours for this 17-week period is approximately 751.45 hours. The total actual hours provided was 342.58 or 46% of the expected hours that were fulfilled.

Qualitative Deliverables

We also found that joint trainings, staff 'all-hands' meetings, and other coordinated activities between ST, KCSO and contracted security staff are not occurring as expected on a regular basis.

Coordination is strong around planned events (e.g., sporting events, concerts, holidays, etc.) but is lacking in day-to-day operations. This decreases the overall effectiveness and efficiency of the agency's' public safety effort as a coordinated function and may cause duplicated efforts in some area and gaps in others.

¹ Deliverables from KCSO to ST are outlined in the agreement GA0078-18, initiated in 2018 and amended in 2019. An additional specification in the form of a 'Memorandum of Expectations' was issued in March 2022 that includes expected hours, services, etc.

Additionally, we found that information may flow down to reach operational staff at various levels in both ST and KCSO, however it may not reach them in a timely manner. Information generally includes new or emphasized initiatives ST is shares with KCSO. Equally important, information may not be flowing “up”, such as concerns that KCSO deputies are share with ST.

During the engagement, auditors conducted field observations on Sound Transit’s modal systems (primarily Link and Sounder) to assess the degree to which law enforcement officers were visible to passengers and available for help or questions (if needed).

In over 30 hours of observations on the transit system, we found law enforcement was largely absent from being present during peak service hours, only observing law enforcement on two occasions throughout our field observations. More details regarding the methodology and observations made can be found in section 2 “Approach to this audit”.

Causes and Impact

Through our observations and analysis, we conclude that the above finding is derived from several contributing factors including:

1. The law enforcement program has not been revised to reflect current operating conditions.

The current law enforcement program was designed and implemented prior to the impacts of the COVID-19 pandemic. Impacts include consistently lower ridership, new legislation and regulations impacting law enforcement operations, changes to the fare enforcement program at Sound Transit, among others.

Although some of these impacts were initially perceived as temporary, it is evident that many of these impacts are now permanent (e.g., lower ridership due to a shift in previous commuters transitioning to remote work, significant staff leaving the law enforcement industry, etc.).

The law enforcement function is directed to perform in a significant number of responsibility areas on a continuous basis. Throughout the audit we noted that the law enforcement program consistently was understaffed and unable to meet the agreed-upon level of service across all required functions. This has left the current program consistently understaffed and has caused some services, such as explosive detection with K-9s, to be reduced or suspended to meet minimum requirements in other areas, such as patrols.

2. Contractual Non-compliance; Coordination and Information Sharing.

The law enforcement program requires consistent two-way communication and coordination. We found that both ST and KCSO feel that information sharing, and overall coordination is limited with both sides lacking visibility into the others’ priorities and limitations.

This has restricted the feedback shared between the agencies across various levels of staff and has led to ST and KCSO having separate approaches and methods to best achieve the outlined program goals. Several required reports (e.g., number of sweeps performed) and coordination requirements (e.g., cross-training between agencies, all-hands staff meetings, etc.) currently do not exist or existed only prior to the COVID-19 pandemic. Other functions such as the crossing education and enforcement program have been temporarily suspended or significantly reduced to fill requirements in other areas, even though the partners may not agree on which areas should be reduced to support others.

The impact of these differing approaches shows there is a practical drift between agreement expectations and what is being delivered.

3. Program goals and metrics are not aligned.

The overall law enforcement program goal, as re-emphasized in the 2022, is to “prioritize reducing crimes against persons and promote the general perception of system safety.” Current reporting requirements do track crime response times, however a significant number of the weekly and monthly reported metrics focus on what deputies are doing (e.g., patrolling, riding a vehicle, sweeping a facility, etc.), where the activity is performed (e.g., “top 5” stations, mode of transportation, etc.) and for what duration.

In interviews we performed with both ST Public Safety and KCSO, the current metrics are not easily gathered and reported by KCSO due to computer-aided dispatch (CAD) system limitations and do not provide insights ST needs to adjust and provide effective, coordinated public safety services.

These metrics also don’t provide direct feedback on the perceived system safety.

If these causes are left unmitigated, the long-term impacts could include significant impacts and degradation to operations and passenger safety. Refer to **Appendix A** for additional details on hazard ratings.

Observation 1: Diversity, Equity, and Inclusion Considerations

During this engagement, we observed that Diversity, Equity, and Inclusion have not been incorporated into Sound Transit’s Law Enforcement function. At the time of the last agreement revision in 2019, Sound Transit had not begun work to become an anti-racist organization ([commitment made in 2020](#)).

With this consideration, the agreement was not constructed, and has not yet been revised to consider any of these initiatives and their potential impact on the law enforcement function. We **recommend** that Sound Transit revisit the agreement and its associated documents to ensure that requirements outlined align with other agency initiatives and overall strategic direction. Refer to section **5. Diversity, Equity, and Inclusion Review** for additional details.

2. Approach to this audit

To comprehensively evaluate whether the intended deliverables² had been achieved, we looked at the 2019 (most recent revision) agreement between ST and KCSO for law enforcement services and a recent (March 2022) Memorandum of Understanding (MOU) issued to KCSO by ST. Using this information, auditors compared these expectations with the current conditions and performance of KCSO providing services as Sound Transit Police. The following describes the methodology used to arrive at this final report.

Step 1: Planning, Scope, and Objectives

During the planning process, the audit team met with key stakeholders, reviewed documents and prior audit reports and performed research to better understand the area under consideration. Through a risk-based analysis, we identified where prior audits may have already provided insight and excluded these from the scope of this audit. We then focused on areas that had not yet been observed as well as current contract performance. These together informed our audit scope and objectives which guided the selection of focus areas for the field work phase.

Our audit scope included processes and controls from March 2019 (most recent revision of the agreement) to August 26, 2022. This included any policies, procedures, directives, trainings, memorandums, meetings, data, and reporting from this period as well as additional field observations performed by auditors.

The objective of the audit was to determine whether Sound Transit has effective controls in place to ensure that the contract deliverables for Transit Police consistently meet the quantity and quality needs of the agency as outlined in the 2019 agreement and 2022 Memorandum of Expectations, as well as in practice.

Step 2: Field Work and Reporting

During field work, auditors performed assessments and analyses, also known as ‘tests’ where expectations based on the agreement and Memorandum of Expectations were compared to the current state to determine the degree to which deliverables were being achieved. These tests included data analytics, interviews with stakeholders and reviews of additional documents provided during the audit. The results of these assessments informed our conclusions regarding quantitative and qualitative deliverables and the associated finding.

For the observation portion of field work, audit staff rode both Link Light Rail (1 Line) and Sounder Commuter Rail. Auditors performed observations in two categories: (1) as part of their regular commute to/from ST offices and (2) intentional trips to assess the

² Deliverables from KCSO to ST are outlined in the agreement GA0078-18, initiated in 2018 and amended in 2019. An additional specification in the form of a ‘Memorandum of Expectations’ was issued in March 2022 that includes expected hours, services, etc.

audit objectives. Audit intentionally spent more time on Link due to the expected distribution of patrol hours as outlined in the Memorandum of Expectations.

Intentional trips included the following attributes:

Mode	Link Light Rail (1 Line)		Sounder Commuter Rail	
Type of Ride	"Long" Trip	"Short" Trip	Sounder North Line	Sounder South Line
Did auditors exit the train?	Yes, at each stop and walked around the station if the entire station was not visible from the train.	No, auditors remained on the train and looked for officers on the platform at each stop.	No, auditors remained on the train and looked for officers on the platform at each stop.	No, auditors remained on the train and looked for officers on the platform at each stop.
Average # of trains boarded per observation	27	3	1	1
Time of Ride	One AM Peak commuting period, and one PM peak commuting period	One AM Peak commuting period, and one PM peak commuting period	One AM Peak commuting period, and one PM peak commuting period	One AM Peak commuting period, and one PM peak commuting period
# of intentional observations performed	2 – one auditor each trip	2 – three auditors on one trip, one auditor on the second trip	2 – one auditor each trip	2 – two auditors one trip, five auditors on the second trip

The results of these field observations informed our conclusions about visibility of law enforcement staff to passengers the associated finding.

Audit Division Standards

The Audit Division conducted this work under the framework outlined in its charter. It governed itself adhering to the mandatory elements of The Institute of Internal Auditors' (IIA) International Professional Practices Framework (IPPF or "Red Book"), including the Core Principles for the Professional Practice of Internal Auditing, the Code of Ethics, the International Standards for the Professional Practice of Internal Auditing (the Standards), and the Definition of Internal Auditing.

The division conducts audits in accordance with Generally Accepted Government Auditing Standards (GAGAS or "Yellow Book") promulgated by the United States Government Accountability Office (GAO).

Additionally, the Audit Division is also committed to following safety oversight standards set forth by the Federal Transit Administration (FTA), Federal Railroad Administration (FRA), as well as all other relevant requirements or standards for auditing.

3. Background

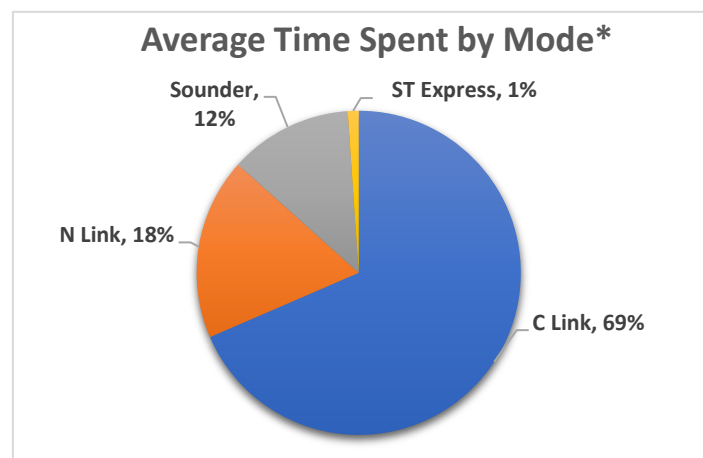
ST is committed to the safety of our passengers, employees, contractors, and the public and emphasizes that commitment through 'Safety' and 'Passenger Focus' as two of our key values. The Public Safety function of Sound Transit has a variety of programs and processes that help ensure these values are carried out in our operations. As part of these programs, the Public Safety team oversees a blend of in-house staff, contracted security staff and law enforcement that help keep our transit systems safe and provide a sense of safety to those who use the systems.

In 2018, ST established an operating agreement with the King County Sheriff's Office (KCSO) to provide law enforcement services for Sound Transit systems; including Light Rail, Sounder, ST Express and the parking garages or 'park & ride' facilities that ST manages. These law enforcement services came to be known as "Sound Transit Police". Law enforcement services differ from contracted security services, in that the deputies providing the services are sworn law enforcement officers and have additional authority to perform functions such as arrests and criminal investigation, that security staff cannot.

KCSO deputies are contracted to provide a variety of services to Sound Transit, including the following:

- General patrol of ST transit systems and stations
- Response to dispatched calls for service (911 calls)
- Trained Explosive K-9 dogs and handlers
- Anti-Terrorism Teams
- Criminal Investigation Unit
- Crime Analysis and Reporting

Based on changes in the operating environment over the course of the COVID-19 pandemic, Sound Transit re-evaluated and emphasized its priorities by issuing a Memorandum of Expectations to KCSO in March of 2022. This memorandum outlines expectations for items such as service hours to be provided, distribution of service hours and reporting requirements.



*Data from 4/1/22 through 7/31/22

Since the memorandum was issued, KCSO deputies have spent approx. 87% of patrol hours on Link (1 Line), 12% on Sounder and 1% on ST Express.

This is not inclusive of the time spent on additional services KCSO provides (outlined above).

Patrol hours can include time spent on trains, platforms, stations, garages, etc. as well as time spent 'sweeping' these areas for any potential issues.

4. Analysis

Our testing focused mainly on whether the deliverables³ of both the agreement and memorandum of expectations were currently being met across quantitative, qualitative, and perceived safety from a rider perspective.

Qualitative and quantitative testing included information gathered since the memorandum was issued and covered an operational period of April 1, 2022, through August 8, 2022. Fieldwork observations were performed from July 27, 2022, through August 26, 2022.

The following table summarizes the attributes analyzed to determine whether the minimum expectations as outlined in the agreement or memorandum were met.

#	Category	Testing Attribute	Results*
1	Quantitative	Patrol hours provided	<input type="checkbox"/> Link hours were under the minimum service requirements 28% of the time. <input checked="" type="checkbox"/> Sounder hours consistently exceeded requirements.
2	Quantitative	Stations and locations serviced (e.g., "Top 5")	<input checked="" type="checkbox"/> Hours spent at the "Top 5" locations consistently exceeded requirements.
3	Quantitative	Sweeps performed	🟡 Data unavailable**
4	Quantitative	Crossing education and enforcement hours provided	<input type="checkbox"/> Crossing education and enforcement hours did not meet the minimum expectations 88% of the time. None of the weeks observed met the 80/20 requirement for distribution of hours between Link and Sounder.
5	Qualitative	Information sharing	<input type="checkbox"/> Information is not consistently shared beyond management of ST and KCSO.
6	Qualitative	Joint training and meetings	<input type="checkbox"/> Joint meeting and trainings have not recently (last event in 2020) been held with all staff across agencies.
7	Qualitative	Coordination between agencies (ST, KCSO, contracted security)	<input checked="" type="checkbox"/> Special event coordination and planning across agencies is consistent. <input type="checkbox"/> Day-to-day operation coordination is lacking or non-existent.

³ Deliverables from KCSO to ST are outlined in the agreement GA0078-18, initiated in 2018 and amended in 2019. An additional specification in the form of a 'Memorandum of Expectations' was issued in March 2022 that includes expected hours, services, etc.

8	Field Observations	Visibility and availability of law enforcement to an average passenger	☒ Based on field observations, the likelihood of seeing or being able to find a law enforcement officer is low for the average passenger.
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*A ☑ indicates the expected conditions were met and ☒ indicates the expected conditions were not met.
 **For testing 3 "Sweeps Performed" it was found that although this is an expected deliverable, metrics for this attribute are not currently tracked or reported.

The results of these tests have informed our audit finding and overall conclusion.

5. Diversity, Equity, and Inclusion Review

During this engagement, we also sought to understand how Diversity, Equity and Inclusion have been incorporated into Sound Transit’s Law Enforcement function. At the time of the last agreement revision in 2019, Sound Transit had not begun work to become an anti-racist organization ([commitment made in 2020](#)).

With this consideration, the agreement was not constructed, and has not yet been revised to consider any of these initiatives and their potential impact on the law enforcement function.

Since the agreement was initiated, there have also been significant changes in the legal and political landscape regarding law enforcement; some of which implemented changes in how transit law enforcement conducts operations. These changes were driven, in part, by the same events and circumstances that led Sound Transit to its anti-racist commitment. Additionally at this time, there were ongoing changes within the agency regarding fare enforcement and the associated methods for collecting, enforcing and penalizing fare evasion or non-payment.

We found that the Memorandum of Understanding issued in March of 2022 also did not address these changes in agency strategic direction or external landscape and their impact to the law enforcement function.

Considering these factors, we **recommend** that Sound Transit revisit the agreement and its associated documents to ensure that requirements outlined align with other agency initiatives and overall strategic direction.

6. Conclusion & Recommendations

Although programmatic changes to law enforcement functions were made for conditions perceived to be temporary, such as a pandemic; Audit finds that additional programmatic changes to these functions should reflect the agency's current operating environment.

We recommend the following actions to Sound Transit to help address the causes of the finding:

- **Determine what makes passengers feel safe or helps increase their perception of a 'safe' system.** There is potential that other types of staffing, programs, and station or system features may help passengers feel safe when using ST systems. Audit recommends exploring work with the Passenger Experience department or King County for existing data or information, surveying riders or partnering with other transit agencies that have performed similar work.
- **Evaluate the design of the current safety program and identify areas where services may overlap, have gaps, or can specialize.** As noted earlier in the report, law enforcement has different authority than security or other safety staff. However, security staff and law enforcement are often tasked with similar responsibilities such as having a presence on trains and platforms, performing sweeps, and interacting with passengers who need direction or assistance. Considering the current staffing constraints of the law enforcement and security industries it may benefit ST to re-design the roles and responsibilities each group has, to better serve each necessary function and reduce potential shortages or lack of coverage. Additionally, specializing the focus of certain groups (e.g., Law Enforcement and explosive detection K-9s) on their areas of strength can provide additional benefits⁴.
- **Increase coordination between ST and KCSO.** Throughout our observations and interviews Audit noted that the overall law enforcement program and its expectations may have been developed by the agencies separately, rather than in collaboration with each other. Audit observed opportunities for KCSO to emphasize services, provide data and support initiatives based on their experiences and observations in the field that would better serve Sound Transit's goals for public safety and feedback on its efforts.

⁴ The FTA sponsored a report of pros and cons of K9 Units in public transportation, which demonstrates some of the benefits of having a K9 service as part of a transit system's safety program. National Academies of Sciences, Engineering, and Medicine 2002. K9 Units in Public Transportation: A Guide for Decision Makers. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24721>.

Management Response

Prepared by: Kenneth Cummins
Date: September 16, 2022
Audit: Contract Deliverables for Transit Police Audit (AUD-PA-2022-08)

Finding 1: Contract deliverables are not being met (Rating: 3B - Serious)

Management Response:

Management partially agrees with the audit report finding, as outlined below.

Management disagrees that the deliverables of the 2018 agreement are not being met. The 2018 agreement did not outline any measurable deliverables required to be fulfilled by the King County Sheriff's Office. It was implemented to only ensure that King County Sheriff's Office provided dedicated law enforcement services to Sound Transit as outlined in the agreement. In the event King County Sheriff's Office could not provide deputies, a reconciliation would occur, requiring King County Sheriff's to pay money back for services that could not be fulfilled.

Management does agree that the deliverables outlined in the 2022 Memorandum of Understanding issued in March of 2022 are not currently being met. The 2022 Memorandum of Understanding intended to deliver a picture of Sound Transit's expectations of service provided there was no active emergency response or dispatch call for service. The memorandum of understanding has metrics and measurements in place that are:

1. Based on full staffing of deputies.
2. All deputies were present during the work week with no paid time off or injuries.
3. Are aspirational as an illustration of the areas in which Sound Transit wishes for service.

The memorandum of understanding was not intended to be a Key Performance Indicator (KPI) to measure the level of services provided to Sound Transit.

However, withstanding the 2022 memorandum, deputy staffing levels do not meet our requirements as outlined in Appendix B of the agreement. The inability to meet staffing levels is a function of law enforcement staffing nationwide at historically low levels, individuals not being interested in law enforcement as a career, retirements/resignations outpacing recruitments, and the COVID-19 vaccine mandate. Like all law enforcement agencies in the State of Washington, the King County Sheriff's Office are down a significant number of deputies across all their precincts and contract cities, including Sound Transit.

On average, it takes 6-12 months to recruit a candidate and then 18 months for that candidate to attend the necessary training and testing before that individual is a functioning law enforcement officer able to work independently. King County Sheriff's

Office recruiting and training projections have Sound Transit at full staffing by the end of 2025.

Action Plan:

On September 09th, 2022, Sound Transit named a new Chief of Police from the King County Sheriff's Office. As of this management response, a transition plan and date is anticipate that the new Chief will be in place beginning of October, followed by issuance of a new memorandum of understanding (based on current staffing levels and adjusted priorities) shortly thereafter.

Timeline for corrective action:

3rd Quarter 2023 – reissue memorandum of understanding to reflect current staffing levels and adjusted priorities for service that are compatible with KCSO's ability to provide meaningful data

4th Quarter 2025 for full staffing.

Appendix A: Audit Finding Risk Rating Process

To aid process owners in prioritization of the audit findings resulting from the audit, a level of audit risk will be assigned by assessing two factors: 1.) the probability that the associated problem will occur at some point in the future, and 2.) the impact or severity of that problem in relation to the overall business process.

Using the same Risk Assessment Matrix already in used throughout the agency and based on the MIL-STD-882-E; audit findings are qualitatively assessed based on the worst credible case that is anticipated from the result of human error, design inadequacies, component failure or a malfunction.

Risk Rating Scale						
	Severity	Catastrophic (1)	Critical (2)	Major (3)	Marginal (4)	Negligible (5)
Probability	Frequent (A)	High (1A)	High (2A)	High (3A)	Serious (4A)	Medium (5A)
	Probable (B)	High (1B)	High (2B)	Serious (3B)	Serious (4B)	Medium (5B)
	Occasional (C)	High (1C)	Serious (2C)	Serious (3C)	Medium (4C)	Low (5C)
	Remote (D)	Serious (1D)	Medium (2D)	Medium (3D)	Low (4D)	Low (5D)
	Improbable (E)	Medium (1E)	Medium (2E)	Low (3E)	Low (4E)	Low (5E)
	Eliminated (F)	Eliminated				

Resolution Requirements

Risk Score	Risk Level	Risk Rating	Minimum Actions	Risk Acceptance / Responsibility
1A, 1B, 1C, 2A, 2B, 3A	High	Unacceptable	Stop work & immediate correction required to reduce risk.	Not Acceptable. Executive Team is informed.
1D, 2C, 3B, 3C, 4A, 4B	Serious	Undesirable	Mitigation strategy required to reduce risk within 30 days of identification of risk.	Acceptable with risk controls and monitoring. Director-level committee review and approval.
1E, 2D, 2E, 3D, 4C, 5A, 5B	Medium	Acceptable w/ review	Monitor and consider actions to further reduce risks.	Acceptable with risk controls and monitoring. Technical Level committee review and approval.
3E, 4D, 4E, 5C, 5D, 5E	Low	Acceptable	Acceptable without further mitigation. May be accepted by the business unit in coordination with Audit and Safety.	Acceptable without further mitigation. May be acceptable by the business unit with coordination with Audit and Safety.
N/A	Eliminated	Eliminated	No actions needed.	N/A

Risk Matrices

Severity	Catastrophic (1)	Critical (2)	Major (3)	Marginal (4)	Negligible (5)
System Disruption / Operations	> 24 hrs Substantial or total loss of operations	12 – 24 hrs Partial shutdown of operation	4 – 12 hrs Prolonged disruption of operations	1 – 4 hrs Brief disruption of operations	<1 hour Minor to No disruption
Financial	>\$5,000,000	\$1,000,000 – 4,999,999	\$249,999 – 999,999	\$10,000 – 249,999	< \$10,000
Reputational	Prolonged negative media coverage for >30 days and / or irreparable reputational damage, resulting in government intervention	Ongoing negative media coverage for >14 days but ≤ 30 days causing serious reputational damage, resulting in government intervention.	Ongoing negative media coverage >7 days but ≤14, causing major reputational damage and possible government intervention	Ongoing negative media coverage for ≥ 24 hours but ≤ 7 days, causing some reputational damage	Negative media coverage for ≤ 24 hours, causing minor reputational damage
Injury	Several deaths (≥3) and / or numerous (≥3) serious injuries (excluding suicides or by natural causes)	1 -2 deaths and/or 2 or more serious injuries	Multiple minor injuries and possible serious injury (Ambulance transport)	Minor injury such as bruising, abrasions, bleeding; possible medical services required	No injuries
Equipment	Total loss of equipment or system interruption requiring more than 30 days to repair.	Significant loss of equipment or system interruption requiring more than 14 days but less than 30 days to repair.	Some loss of equipment or system interruption requiring more than 24 hours but less than 14 days to repair.	Minor system loss of equipment or system interruption requiring less than 24 hours to repair.	Minor damage to equipment or minor system interruption with no immediate repair necessary.
Regulatory	Cease and desist orders are delivered by regulators. Critical assets and facilities are forced by regulators to be shut down.	Governmental, regulator investigations, and enforcement actions, lasting longer than a year. Violations that result in multiple large non-financial sanctions; OR Regulators force the removal and replacement of management positions. Regulators begin agency monitoring activities.	Violations that result in significant fines or penalties above and beyond what is codified or a regulator enforces non-financial sanctions; OR Significant new and updated regulations are enacted as a result of an event.	Violations that result in fines or penalties	Self-reported or regulator identified violations with no fines or penalties

Probability Level	Likelihood of event in specific item	MTBE in Operating Hours **	Occurrence in time
Frequent (A)	Will occur frequently.	<1,000 oh	1 per week, likely to occur several times per month
Probable (B)	Will occur several times.	1,000 – 100,000 oh	1 per month, likely to occur several times per year
Occasional (C)	Likely to occur sometime.	100,000 – 1,000,000 oh	Once per year, likely to occur several times within 10 years
Remote (D)	Unlikely but possible to occur.	1,000,000 – 100,000,000 oh	1 per 10 years or likely to occur several times within 100 years
Improbable (E)	So unlikely, occur may not be experienced.	> 100,000,000 oh	1 per 100 years
Eliminated (F)	Risk removed / eliminated	Never	N/A