

PERFORMANCE AUDIT



Office of the
Washington
State Auditor
Pat McCarthy

WSDOT Toll Collection System Replacement Project

Assessing the Toll Division's project planning,
vendor procurement, contract management
and project oversight

December 6, 2022

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Executive Summary

State Auditor's Conclusions (page 23)

Tolls collected by the Washington State Department of Transportation (WSDOT) from Washington drivers help pay for specific highway lanes, bridges and other transportation infrastructure. Concerns about recent cost overruns and delays in the implementation of WSDOT's new tolling system led legislators to require this performance audit as an independent review of the project.

We found the department's Toll Division followed state requirements and many leading practices in its project to replace the first-generation tolling system, reflecting positive improvement in project management since our previous performance audits. WSDOT did take steps to hold its vendor accountable, including negotiating for damages, when the vendor's struggles with documentation and staffing requirements led to significant delays in the project. WSDOT plans a future phase of implementation for the new tolling system, and we identified areas in which the agency can further improve its management of such large projects. Importantly, those recommendations include being more transparent about the full costs of large projects.

Background (page 7)

The Washington State Department of Transportation (WSDOT) Toll Division is responsible for the state's toll collection system, which helps fund transportation projects. The Toll Division works in coordination with other divisions and external agencies for the procurement, development, operation and strategic financial planning of the state's toll collection system. In 2017, with its first electronic tolling contract due to end, WSDOT moved to replace the tolling system and the customer service center under separate contracts. The Legislature approved \$30 million in 2017 for the replacement project.

As delays to the rollout of the replacement tolling system mounted, legislators voiced concerns about their causes and costs. To address these concerns, the Legislature required the Toll Division to contract with the Office of the Washington State Auditor for a performance audit designed to evaluate the department's project planning, vendor procurement, contract management and project oversight.

WSDOT's Toll Division followed state requirements and leading practices throughout the project, including those designed to mitigate risks (page 12)

The Toll Division followed state requirements and many leading practices to replace the first-generation tolling system. The Department of Enterprise Services guidelines and project management literature recommend identifying business needs early in the planning process by defining the problem or opportunity to be addressed. During the planning and procurement phases, managers in the Tolling Division established the project needs. As a result, WSDOT decided to split the system vendor and customer service into two contracts, which was intended to attract better quality bidders and improve the Toll Division's visibility of system issues. The Department of Enterprise Services guidelines and project management literature recommends that project managers identify and track risks throughout a project. The Toll Division also considered risks starting early in project planning and continued risk mitigation during contract management.

Despite the Toll Division's efforts to minimize risks, vendor performance delayed the project by more than two years (page 15)

The back-office system vendor repeatedly missed deadlines and needed numerous extensions. The many missed deadlines meant the launch date was delayed at least eight times. We found two main contributing factors to the delays. First, the vendor struggled to follow WSDOT's documentation requirements. WSDOT also required the vendor to follow a linear software development approach that the vendor was less familiar with. This approach required approvals at each step before the vendor was allowed to move to the next step of the development process. The vendor's unfamiliarity resulted in deliverables that did not meet WSDOT's standards. Second, the vendor struggled to hire and retain staff in critical positions. Specifically, the vendor found it difficult to comply with WSDOT's requirement that its technology project manager be located in Washington for the duration of the project. Additionally, frequent turnover in other key positions staffed by the vendor caused further delays. While Phase 1 delivered core functions along with some new functions upon launch, the Toll Division deferred other features to Phase 2.

Toll Division estimates for total project costs exceeded the budget by \$13 million, and relied on a reporting method that did not include total project costs (page 19)

Phase 1 was not completed until July 2021, and WSDOT estimated that the cost of the entire project increased from \$30 million to \$43 million. Much of the \$13 million in cost overruns were driven by extending other contracts while waiting for the back-office system to be ready. A liquidated damages clause in the contract with the back-office system vendor will help the state recoup most losses. While the original contract clause had a maximum cap of about a half-million dollars, Toll Division managers negotiated additional liquidated damages, which exceeded the amount in the contract by \$10 million. However, because some components were deferred to Phase 2, the true cost of the project will not be known until it has been completed. Furthermore, WSDOT relied on a reporting method that did not include total project costs.

Recommendations (page 24)

We made a series of recommendations to the Washington State Department of Transportation to reduce the risk of delays on future information technology projects and maintain continuity in the management and oversight of the project.

Recommendations include: ensuring the vendor has demonstrated the ability to use the project management method required by WSDOT; developing a process for assessing the risk and benefits of requiring an on-site project manager; and requiring future vendors to have a contingency plan to reduce the risk of being unable to fill key project management positions due to turnover.

We also recommended that WSDOT address the need for complete reporting of total project costs and develop a public cost reporting method that reflects all project costs for the Toll Division's projects.

Next steps

Our performance audits of state programs and services are reviewed by the Joint Legislative Audit and Review Committee (JLARC) and/or by other legislative committees whose members wish to consider findings and recommendations on specific topics. Representatives of the Office of the State Auditor will review this audit with JLARC's Initiative 900 Subcommittee in Olympia. The public will have the opportunity to comment at this hearing. Please check the JLARC website for the exact date, time, and location (www.leg.wa.gov/JLARC). The Office conducts periodic follow-up evaluations to assess the status of recommendations and may conduct follow-up audits at its discretion. **Appendix A** addresses the I-900 areas covered in the audit. **Appendix B** contains information about our methodology.

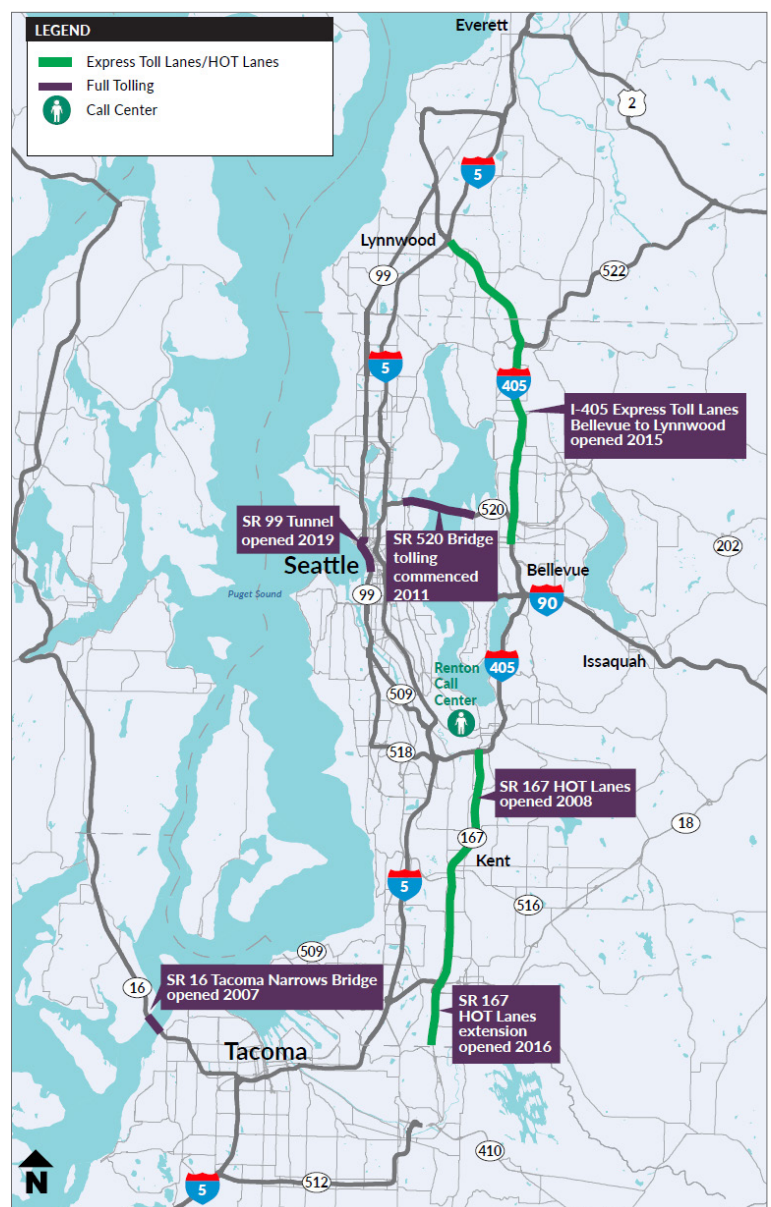
Background

Washington State Department of Transportation is responsible for the state's toll collection system, which helps fund transportation projects

More than 20 years after removing the last remaining toll (in 1985 on the Hood Canal Bridge), Washington returned to tolling in 2007 to pay for the new span of the Tacoma Narrows Bridge. Since then, it has expanded tolling operations to include the State Route (SR) 520 bridge, the SR 99 tunnel, the SR 167 high-occupancy lanes between Auburn and Renton, and the Interstate 405 express toll lanes between Bellevue and Lynnwood. (See the map in Exhibit 1 for current tolled route locations.) The revenues collected from Washington's tolled lanes, bridges and tunnel pay for toll operations, infrastructure maintenance and debt from the original construction. Toll revenue also helps pay for tolling transportation projects throughout the state.

In addition to toll booths, these lanes, bridges and tunnel use a system of cameras and sensors to gather vehicle information to assess and collect appropriate tolls from drivers. The all-electronic system allows drivers to pay tolls without stopping, which keeps traffic moving. Furthermore, the system is programmed to use real-time data about traffic volume and speeds to adjust the price of certain tolls. By raising tolls during peak travel times, variable tolling encourages motorists to carpool to use high-occupancy lanes for free, use public transit or drive in off-peak hours.

Exhibit 1 – Washington collects tolls on two lanes, two bridges and one tunnel in the Puget Sound region



Source: WSDOT.

The Toll Division is responsible for the state's electronic toll collection system in coordination with other divisions and external agencies

WSDOT's Toll Division is responsible for the procurement, development, operation and strategic financial planning of the state's toll collection system. It must coordinate its activities with multiple divisions within the agency. For example, data collected by the toll system is used by divisions responsible for accounting and financial reporting, information technology (IT), engineering, road planning and construction.

When the division invests in large IT projects, it must also work with state oversight agencies including the Office of the Chief Information Officer and the Office of Financial Management. The Office of the Chief Information Officer has two specific responsibilities for all state agencies conducting large, complex technology projects:

- It provides oversight, specifically ensuring that projects meet security standards and quality assurance standards
- It validates that the project is properly planned, and that it continues to be managed to meet progress targets

The Office of Financial Management and the Office of the Chief Information Officer both serve as financial oversight for these projects. Agencies must submit a technology budget for approval to the Office of the Chief Information Officer on large technology projects. The technology budget segments the work of the project and the budget for the project into chunks, called gates. When a chunk of work is to begin, agencies must get approval from the Office of the Chief Information Officer and the Office of Financial Management to receive funds for that gate.

In 2017, with its first tolling contract due to end, WSDOT moved to replace both system and vendor

WSDOT's first toll system was procured through the Tacoma Narrows Bridge project and was placed into operation in 2007. In 2009, WSDOT awarded its second tolling system contract – for both the back-office computer system and customer service – to Electronic Transaction Consultant Corporation. This contract was set to expire in 2018. The first-generation system came online and began collecting tolls in 2011.

However, the system had some limitations. It could not easily integrate new toll roads or future tolling operation changes. It also had flaws in its transaction processing software, and lacked certain features such as collections and write-off capability. Some of these features had not been included in the system design,

some were deferred in favor of other work, and others were implemented but had programming errors. See **Appendix C** for information about earlier performance audits that discussed these and related issues.

The Legislature approved \$30 million in 2017 to replace the first-generation tolling system, which WSDOT developed under two contracts

In 2017, the Legislature approved a transportation budget that allocated \$30 million for the Toll Division to replace the first-generation tolling system. This amount included \$2 million for the planning and contract award processes and \$28 million to develop a replacement toll collection system. The new toll collection system's implementation and operational costs would also be funded with toll revenue. According to the June 2022 Transportation Revenue Forecast, the Toll Division estimated that toll revenue will be \$401 million in the 2021-23 biennium. This represents about 6 percent of the state's total transportation revenues.

The first-generation system had been offered and developed as a single contract comprising both customer service and back-office electronic systems needed for the cameras, sensors and billing systems to function. Before WSDOT requested vendor proposals in December 2016, the Toll Division restructured the overall replacement project from a single contract to two contracts.

- **Contract 1 to develop and maintain the back-office systems.** This includes hardware, such as computer equipment, and the software needed for the system to function. The back-office system processes images captured by toll cameras, creates toll transactions and manages customer accounts and toll-related financial information. This contract established that work would be delivered in two phases, with Phase 1 due to be completed in December 2018 and Phase 2 features delivered by December 2019.
- **Contract 2 for customer service operations.** This contract encompassed hiring, training and managing the people who handle billing and accounts, as well as customer concerns and disputes. The contract also covered the lease, furniture, and equipment costs for vendor-provided facilities. The customer service work relies on data processed by the back-office system. The contract established an operational date of December 2018.

The Toll Division set a separate Phase 1 go live date to ensure the core functions of the back-office system would be ready for the opening of the SR 99 tunnel in February 2019. "Go live" refers to when the system is operational for transaction processing and toll revenue collection. Delivering the core functions separately from Phase 2 work was also meant to allow management to end the contract with the first-generation system vendor as soon as possible. Ultimately, Phase 1 was not operational until July 2021.

As shown in **Exhibit 2**, the Toll Division signed a contract with ETAN Industries, the back-office system vendor, in 2017, and Shimmick, the customer service vendor, in early 2018.

Exhibit 2 – History of WSDOT electronic toll collection system projects

Time	Description
December 2009	First-generation tolling system contract awarded, covering back-office systems and customer service
February 2011	Tolling system operational for collecting tolls
January 2014	Planning began for replacement system
July 2017	New back-office system contract awarded to ETAN Industries
March 2018	New customer service contract awarded to Shimmick
June 2018	Original expiration date of first-generation contract
December 2018	Original Phase 1 operational date for new back-office system Customer Service Center operational
December 2019	Original Phase 2 operational date for new back-office system
July 2021	Actual Phase 1 operational date for new back-office system
TBD	Actual operational dates for Phase 2 features of back-office system

Source: Auditor created from WSDOT information.

The Toll Division expected Phase 1 of the system to be operational by the end of 2018. Phase 1 of the replacement included the core system functions needed to transition from the first-generation system. Additional functions were to be added in Phase 2, during which time the customer service operation would also transition from the previous vendor. However, Phase 1 was not operational until July 2021. This was three years after the contract for the first-generation system was supposed to end, and more than two years after the system replacement was to have been completed. As a result, the original vendor maintained the toll system and customer service operations for three years beyond the original contract expiration date. Back-office system work planned for Phase 2 has not yet been rescheduled.

This audit examined the Toll Division's planning, procurement and management of the toll collection system replacement project

As delays to the rollout of the replacement tolling system mounted, legislators voiced concerns about their causes and costs. These concerns included the Toll Division's design and procurement process, as well as the project's cost overruns and delays. To address these concerns, the Legislature required the Toll Division

to contract with the Office of the Washington State Auditor for a performance audit designed to evaluate the department's project planning, vendor procurement, contract management and project oversight. As the primary concerns were with the back-office system delays, the audit focused on the back-office system and vendor, with only limited review of the customer service vendor.

This audit was designed to answer the following questions:

1. Did the Toll Division's project planning process accurately identify critical needs and risks of the project before starting its procurement process?
2. Did the Toll Division's procurement and vendor selection approach address its project needs and project risks?
3. Are there opportunities for the Toll Division to reduce risk and improve vendor accountability in its contract management and project oversight processes?

Audit Results

Toll Division followed state requirements and leading practices throughout the project, including those designed to mitigate risks

Overall, the Toll Division, within the Washington State Department of Transportation (WSDOT), followed state requirements and many leading practices during its project to replace the first-generation tolling system. **Exhibit 3** sets out the actions or processes the division undertook and whether the activity was a state requirement or a leading practice recommended by project management experts. The division complied with or followed all those we identified as significant, including those particularly meant to identify and mitigate risks to project schedule, scope or budget. Numbers in the table correspond with numbers in parentheses in the paragraphs below the exhibit.

Exhibit 3 – Summary of WSDOT Toll Division actions compared to state requirements and leading practices

#	Action or process	State required	Leading practice	WSDOT followed
Planning and procurement				
1	Determine project needs during planning	✓	✓	✓
2	Follow state guidelines for vendor selection processes	✓		✓
3	Financial review of vendor suitability	✓	✓	✓
4	Identify project risks early in project planning	✓	✓	✓
5	Submit documented project plans to Office of Chief Information Officer (OCIO)	✓		✓
During the project				
6	Track risks in a log to ensure they are captured and addressed		✓	✓
7	Evaluate risks as they occur and adjust plans to mitigate them	✓	✓	✓
8	Employ independent contractors or consultants to oversee the project	✓		✓
9	Meet regularly with vendors during the project		✓	✓
10	Submit funding requests to OCIO at predefined checkpoints	✓		✓

During the planning and procurement phases

Managers in the Toll Division established the project needs during project planning (1), and as a result made decisions aimed at attracting better quality bidders. The Department of Enterprise Services guidelines and project management literature recommend identifying business needs early in the planning process by defining the problem or opportunity to be addressed. The goal is to determine what work should be included in the project. As part of this process, the division decided to split what had been a single contract for the first-generation tolling system vendor into two contracts. The intent behind splitting the services into two contracts was to attract more and higher-quality bids and improve the Toll Division's visibility of system issues.

As the division moved into the vendor selection process, managers followed both state requirements and leading practices. For example, they followed the state's Department of Enterprise Services guidelines for vendor selection (2). Toll Division managers also sought a financial review of the vendor's suitability for the proposed contract. The financial review team was composed of WSDOT financial employees (3). The review team raised concerns about the back-office system vendor's cash flow and identified steps management could take to mitigate those concerns before awarding the contract (4). The division's decision to segment the project, releasing payments only upon completion of a segment, provided mitigation for the finding of the financial review. Managers also assumed more direct oversight over the vendor.

The Toll Division submitted the plan for the project to the state's Office of the Chief Information Officer for approval, as required by law (5). The plan documented the business needs and project risks identified during the planning process. In addition, the plan incorporated the requirement that the Office of the Chief Information Officer would provide financial oversight of the project after it began.

During the project delivery phases

Department of Enterprise Services guidelines and project management literature recommend that project managers identify and track risks throughout a project. The Toll Division considered risks starting early in project planning and continued risk mitigation during contract management. As a best practice, risk management includes identifying things that could go wrong and developing strategies to manage those risks. Division managers developed a risk log, which listed risks and ranked them in terms of likelihood and impact (6). The log also considered ways to prevent risks from materializing as problems, and techniques to deal with them if they did occur (7). Management re-evaluated project risks and response plans regularly throughout the project.

Toll Division managers took other steps to ensure they were monitoring the vendor's work. For example, they hired consultants to provide independent and objective project oversight (8). These consultants evaluated work products and the project schedule each month for the project's duration. The consultants identified and tracked project risks and made recommendations to Toll Division management for corrective action in monthly reports. Division managers also held regular meetings with vendors (9). They established a regular meeting schedule with both the back-office system and customer service project vendors to review the project schedule, evaluate progress, and collaborate on deliverables. These regular meetings with the vendors were important to manage risks and address any concerns as they arose.

Finally, the division applied for funding as required by oversight agencies (10). Throughout the project, the Toll Division project team requested funding at predefined checkpoints. The Office of the Chief Information Officer certified each funding request by verifying that the project was adequately planned and managed and had met progress targets.

Despite Toll Division's efforts to minimize risks, vendor performance delayed the project by more than two years

Answer in brief

The back-office system vendor repeatedly missed deadlines and needed numerous extensions. These multiple missed deadlines meant the launch date was delayed at least eight times. We found two main contributing factors to the delays. First, the vendor struggled to follow WSDOT's documentation requirements. WSDOT also required the vendor to follow a linear software development approach that the vendor was less familiar with. This approach required approvals at each step before the vendor was allowed to move to the next step of the development process. The vendor's unfamiliarity resulted in deliverables that did not meet WSDOT's standards. Second, the vendor struggled to hire and retain staff in critical positions. Specifically, the vendor found it difficult to comply with WSDOT's requirement that its technology project manager be located in Washington for the duration of the project. Additionally, frequent turnover in other key positions staffed by the vendor caused further delays. While Phase 1 delivered core functions along with some new functions upon launch, the Toll Division deferred other features to Phase 2.

The back-office system vendor repeatedly missed deadlines, and needed numerous extensions

The Toll Division contracted with ETAN Industries to develop the replacement back-office system for tolling operations, which included providing both computer hardware and software. However, the replacement system was not operational until more than two and a half years after it was due. ETAN accepted full responsibility for the project's delays in a May 2019 letter to the Secretary of Transportation.

Multiple missed deadlines meant the launch date was delayed at least eight times

ETAN missed required deadlines almost from the start of the project. The contract, signed in July 2017, called for the replacement back-office system Phase 1 to go live in December 2018. But the vendor was unable to meet even early deadlines for plans and design documents. To minimize the effect on the Phase 1 go live date, the Toll Division agreed to defer some system functions to Phase 2. In November 2018, a month before the scheduled Phase 1 launch, ETAN asked for an extension, followed by another extension, then another. All told, ETAN needed eight

extensions before the back-office system launched in July 2021, almost 30 months after the contracted delivery date.

Despite the delays, division managers decided to continue working with ETAN rather than find a new vendor. Because ETAN owns the operating system software, hiring a new vendor would have required starting the software development process from scratch. Additionally, engaging a new vendor would have incurred more delay and required additional funding, as both time and additional funds would be needed to advertise and award a new contract. The Office of the Chief Information Officer, which provided required oversight of the IT systems portion of the replacement project, endorsed the division's decision.

The vendor struggled to follow WSDOT's documentation requirements, contributing to delays

To ensure quality standards, WSDOT required the vendor follow a linear software development approach, with approvals at each step before the vendor was allowed to move to the next step of the development process. The process also required extensive documentation of the product plans and design. The vendor said they were more familiar with an iterative development process, and the level of documentation required by WSDOT was more than the vendor's staff were used to generating. The vendor's unfamiliarity resulted in deliverables that did not meet WSDOT's standards. Division managers sent documents back to the vendor for revisions more often than the schedule anticipated. The repeated rework and necessary corrections further delayed ETAN's efforts to meet project milestones.

Later in 2019, a Toll Division consultant took over scheduling responsibility from ETAN when the division realized project scheduling was insufficiently detailed to keep the project and vendor staff on track.

The vendor's struggles to hire and retain staff in critical positions also contributed to project delays

ETAN found it difficult to comply with WSDOT's requirement that its technology project manager be located in Washington for the duration of the project. Requiring a local project manager was not unusual in 2017. However, there has been an increasing trend of remote work, facilitated by new tools and shifts in business culture. WSDOT's contract specified that a qualified IT project manager be in place from when it began in 2017, so this person could work closely with Toll Division staff. ETAN managers said it was difficult to find a project manager with experience with tolling systems who lived in, or was willing to move to, Washington. The project manager ETAN hired in December 2017, five months after the project started, proved to have insufficient skills for the project. This project manager left the company in March 2019. The delay in hiring, compounded by problems managing the project, contributed to early delays.

Frequent turnover in other key positions at ETAN – such as the project manager – occurred in 2019 before the COVID-19 pandemic, and caused further delays. Only four of the 13 key positions were held by the same employee for the project’s duration: project executive, project principal, quality assurance executive and accounting system lead. The turnover in other key positions meant ETAN had to repeatedly reshuffle project leads. The company lacked enough personnel with expertise to quickly fill these positions, and in some cases had to resort to having a single person serve in multiple roles. Project management experts note that the lack of continuity in key project management positions can create confusion for the team and cause delays as each new person comes up to speed on assigned responsibilities.

While Phase 1 delivered core functions along with some new functions upon launch, the Toll Division deferred other features to Phase 2

In July 2021, Phase 1 of the back-office system went into operation, replacing the core functions of the first-generation tolling system, such as customer account management and pay-by-mail invoice generation and distribution. Phase 1 also included new features and system upgrades that were not part of the previous system. These new functions included:

- **Single customer account concept.** The previous system had a “two database” design limitation. One database tracked customers with pre-paid accounts, while the other tracked toll violators who paid afterward by mail. These two critical databases did not communicate with each other. The dual accounts resulted in some customers being unaware of delinquent tolls, which frustrated those customers. The replacement system included upgrades to enable unified customer accounts.
- **Automated write-offs.** WSDOT writes off uncollectable debts as part of its regular business process. Write-offs typically relate to customer debts that are deemed uncollectable, such as due to bankruptcy or an adjustment to resolve a customer dispute. Because the previous system did not support automated write-offs, Toll Division staff had to manually adjust receivables in its financial reports to accurately reflect what the agency expected to collect. The new write-off module will automatically flag transactions for final review by Toll Division accounting staff and save staff time preparing financial reports. In addition, write-offs should occur more seamlessly with WSDOT’s accounting system.
- **Scalable integration.** Adding new toll facilities or connecting the tolling system with other WSDOT systems had been costly and risky to implement in the first-generation system. The replacement system can more easily add new tolled highway features, but also has the potential to offer integrations with other transportation systems.

However, the division decided to defer two other functions designed to address limitations in the previous system to Phase 2: the collections module and the data warehouse. The state will not realize the intended benefits of all planned system improvements until after Phase 2 is implemented.

- **Collections module.** The first-generation system lacked integrated collections, because the Toll Division did not purchase that vendor's collections module. WSDOT expected to increase the amount of revenue brought in from delinquent accounts by adding a collections module in the replacement system.
- **Data warehouse.** The replacement system was intended to have a data warehouse feature to collect data from a range of sources including the tolling system, roadside cameras and sensors, and the state's financial data system. The combined data should help Toll Division managers make better-informed decisions through improved reporting, data analysis and forecasting.

While the back-office system upgrade improves the system's ability to integrate with other systems, many integrations have not occurred. Completing these integrations will rely on other WSDOT divisions and toll agencies in other states. Two examples of future integrations are:

- **Integrating Washington State Ferries with *Good To Go!*** This initiative would allow customers to pay for ferry tickets using the *Good To Go!* toll collection pass. This integration depends on Washington State Ferries upgrading its ticketing system.
- **National interoperability.** This initiative would allow WSDOT customers to use their *Good To Go!* pass to pay at toll facilities in other states, such as California, and customers from those states to pay Washington tolls with their state's toll system. This integration depends on toll agencies in other states using technology similar to Washington's.

Toll Division estimates for total project costs exceeded the budget by \$13 million, and relied on a reporting method that did not include total project costs

Answer in brief

Phase 1 was not completed until July 2021 and WSDOT estimated the cost of the entire project increased to \$43 million. Much of the \$13 million in cost over-runs was driven by extending other contracts while waiting for the back-office system to be ready. A liquidated damages clause in the ETAN contract will help the state recoup most losses. While the original contract clause had a maximum cap of about a half-million dollars, Toll Division managers negotiated additional liquidated damages, which exceeded the amount in the contract by \$10 million. However, because some components were deferred to Phase 2, the true cost of the project will not be known until it has been completed. Furthermore, WSDOT relied on a reporting method that did not include total project costs.

Because Phase 1 was not completed until July 2021, WSDOT estimated the cost of the entire project increased from \$30 million to \$43 million

Toll Division managers said they estimate the entire cost for the back-office system replacement project will cost \$43 million. This is almost \$13 million more than budgeted and was due almost entirely to vendor contract extensions.

The estimated cost was based on actual costs plus department estimates for the cost of delays and expected future costs. We verified some actual costs but did not evaluate other figures because they were based on WSDOT's analysis of invoices and future expectations which we did not review. Where possible, we verified the reasonableness of estimated costs of delay based on information provided by the Toll Division.

Millions in cost over-runs were driven by extending other contracts while waiting for the back-office system to be ready

Each time the Toll Division had to extend the go live date for Phase 1 of the back-office system, it also had to extend contracts for Shimmick, the customer service vendor, and the consultants who supported the project. These contract extensions caused more than \$12 million of the project's \$13 million in cost increases.

The 30-month delay while Shimmick waited for the back-office system to be ready meant the Toll Division paid that vendor \$7.2 million more. The company hired and trained staff more than once while also paying for leases on new customer service centers. During the delays, the Toll Division kept some of these people busy, but there was not enough work for all, leading to layoffs. The division also paid Shimmick for the customer service centers during the period of delay, which added to the costs.

Toll Division managers also decided to extend contracts for the project consultants who supported the project, for an additional cost of \$5 million. They did so to ensure continuity of project management support, oversight of the project schedule and independent oversight of the back-office system's quality.

A liquidated damages clause in the ETAN contract will help the state recoup most losses

Despite working many more months on the back-office system replacement project than planned, ETAN will not receive any additional payment above the contracted price. Instead, WSDOT took advantage of a liquidated damages clause included in the contract with ETAN. The clause was intended to motivate the vendor to deliver the project on schedule. In general, if one party to a contract does not comply with the agreed terms, they are “in default”. Liquidated damages are a specified amount of money owed by the defaulting party when the actual cost of the default is difficult to determine. Thus, liquidated damages are a way for a contract to have consequences for non-compliance, other than terminating the contract.

For the back-office system replacement contract, the liquidated damages clause had a maximum cap of about a half-million dollars. Toll Division managers said that when they determined the appropriate liquidated damages amount, they worried that a high amount might cause bidders to increase their prices to protect themselves from higher costs. Federal guidance supports this caution, recommending that contracting officers consider the potential impact on contract pricing before inserting a liquidated damages clause.

Toll Division managers negotiated additional liquidated damages, which exceeded the amount in the contract by \$10 million

Despite the contract's half-million-dollar liquidated damages clause, ETAN repeatedly failed to meet the contractually required go-live date for Phase 1. As part of the process to amend the contract and revise the guaranteed delivery date, Toll Division managers negotiated additional liquidated damages. The division ultimately assessed total liquidated damages of \$10.5 million, about \$10 million more than allowed in the original base contract.

Toll Division managers had two goals for increasing the liquidated damages: to push the vendor to adhere more closely to the schedule and to be compensated for a portion of the additional costs caused by the delay. While managers did want to increase what the agency could recover from ETAN, they were also concerned that the financial impact on the vendor could threaten the project’s completion.

To put this concern in perspective, the Toll Division expects to pay ETAN \$15.4 million when the project is complete and plans to collect \$10.5 million in liquidated damages. Nearly 70 percent of the vendor’s revenue from conducting this project will be returned to the Toll Division. In fact, WSDOT has already collected \$1.7 million of the total \$10.5 million as of May 2022, as shown in Exhibit 4. The Toll Division plans to collect \$5.9 million by the time the agency achieves “System Acceptance,” which it anticipates will happen in early 2023, and the remaining \$2.9 million from ongoing deductions to monthly operations payments. ETAN has already agreed to these repayments and committed to them in contract amendments.

Exhibit 4 – ETAN will pay \$10.5 million to the Toll Division in liquidated damages using three methods

Description of payment	Amount paid to Toll Division
Deductions to implementation payments (as of May 2022)	\$1.7 million
Anticipated by early 2023	\$5.9 million
Deductions to monthly operations payments	\$2.9 million
Total	\$10.5 million

However, because some components were deferred to Phase 2, the true cost of the project will not be known until it has been completed

The \$43 million total project cost estimated by the Toll Division as of September 2022 includes at least \$1.8 million to complete deferred components of the back-office system. However, during audit fieldwork, the Toll Division was still in the early stages of planning Phase 2 work. Over the course of the audit, Toll Division staff provided us with multiple estimates for Phase 2 costs ranging from \$1.8 million to \$4 million for completing the same deferred components. According to the back-office system vendor’s contract, the deferred components will cost an additional \$2.1 million, plus annual adjustments as noted in the vendor contract.

Toll Division staff said they hope to begin work on Phase 2, incorporating the deferred back-office components, sometime after July 2023. Until that work is completed, the state's costs for Phase 2 and the project in total will not be known.

Furthermore, WSDOT relied on a reporting method that did not include total project costs

Although WSDOT complied with cost reporting and cost oversight requirements from the Office of the Chief Information Officer and Office of Financial Management's perspective, the reporting method it used did not include total project costs. The required reporting was published through a publicly accessible website intended to promote transparency in the planning and implementation of major technology investments. While WSDOT relied on the website maintained by the Office of the Chief Information Officer, project management practices recommend that actual project costs reflect the amount spent to complete the work and that variances are tracked with periodic re-estimates of the cost of remaining work.

When asked why the agency did not report the total cost, WSDOT staff said they reported an estimated project cost of \$32 million using the reporting format required by the Office of the Chief Information Officer for large technology projects. The complex project included costs related to both the technology project and the customer service operations, but the Chief Information Officer's report focused on the technology costs.

WSDOT also gave the Legislature quarterly reports on project progress, which included a narrative of project activities completed. However, the quarterly reports did not contain a budget-to-actual comparison of total project cost. While WSDOT primarily reported on the technology costs of the project, state government transparency and project management best practices would recommend reporting all costs of the project to interested parties, including those costs related to the replacement customer service operations portion of the work.

State Auditor's Conclusions

Tolls collected from Washington drivers help pay for specific highway lanes, bridges and other transportation infrastructure. Concerns about recent cost overruns and delays in the implementation of the Washington State Department of Transportation's new tolling system led legislators to require this performance audit as an independent review of the project.

We found the department's Toll Division followed state requirements and many leading practices in its project to replace the first-generation tolling system, reflecting positive improvement in project management since our previous performance audits. WSDOT did take steps to hold its vendor accountable, including negotiating for damages, when the vendor's struggles with documentation and staffing requirements led to significant delays in the project. WSDOT plans a future phase of implementation for the new tolling system, and we identified areas in which the agency can further improve its management of such large projects. Importantly, those recommendations include being more transparent about the full costs of large projects.

Recommendations

To the Washington State Department of Transportation

To reduce the risk of delays and maintain continuity in the management and oversight of the project, as described on pages 15-18, we recommend that WSDOT:

1. Ensure that during information technology vendor selection, the apparent successful vendor has demonstrated the ability to deliver the project following the software development approach the agency has selected.
2. Develop a process to evaluate the benefits of requiring an information technology vendor's project manager to be on-site or allowing remote work against the risk of the vendor not being able to fill the position.
3. For projects determined to be high risk by the Office of the Chief Information Officer, require that information technology vendors identify a contingency plan in their proposals that mitigates risk of turnover in key project management positions.

To address the need for transparency in reporting total project costs, as described on pages 19-22, we recommend WSDOT:

4. Add to an existing reporting method, or work with the Office of the Chief Information Officer and Office of Financial Management to develop a public cost reporting method, to show all project costs for Toll Division projects. Reporting all costs for the project will demonstrate transparent government.

Agency Response



STATE OF WASHINGTON

November 15, 2022

The Honorable Pat McCarthy
Washington State Auditor
P.O. Box 40021
Olympia, WA 98504-0021

Dear Auditor McCarthy:

Thank you for the opportunity to review and respond to the State Auditor's Office performance audit report, "WSDOT Toll Collection System Replacement Project." The Washington State Department of Transportation and Office of Financial Management worked together to provide this response.

WSDOT's back-office system and customer service operations are the backbone of the *Good To Go!* tolling program. These systems and services guide how we interact with our customers to provide them the best experience possible when paying for tolls in Washington state. When it came time to replace these systems and services as our previous contracts neared expiration, WSDOT's Toll Division welcomed the opportunity to make system improvements to benefit our customers in meaningful ways.

While WSDOT was not pleased with the delays in delivering this program, the launch of the new back-office system and customer service operations in July 2021 was a success. WSDOT and the Office of the Chief Information Officer worked hard to prioritize customer experience in our decision making. Ultimately, the decision to allow additional time for system development, testing and quality assurance was the correct one as the transition occurred with minimal impact to customers.

As the report points out, WSDOT's Toll Division followed state requirements, leading guidance and best practices throughout the procurement and implementation of the project. While the vendor's performance did lead to delays, WSDOT took steps to hold the vendor accountable and reduce delays where possible. We also communicated with our stakeholders about the delays and their associated costs.

Thank you for the opportunity to participate in this audit, which will assist us in our efforts to improve in this area. Please thank your team for their excellent work and collaborative and transparent approach throughout the audit.

Sincerely,

Roger Millar, PE, FASCE, FAICP
Secretary
Washington State Department of Transportation

David Schumacher
Director
Office of Financial Management

cc: Jamila Thomas, Chief of Staff, Office of the Governor
Kelly Wicker, Deputy Chief of Staff, Office of the Governor
Nick Streuli, Executive Director of Policy and Outreach, Office of the Governor
Mandeep Kaundal, Director, Results Washington, Office of the Governor
Tammy Firkins, Performance Audit Liaison, Results Washington, Office of the Governor
Scott Frank, Director of Performance Audit, Office of the Washington State Auditor
Amy Scarton, Deputy Secretary, WSDOT
Julie Meredith, Assistant Secretary, WSDOT

OFFICIAL STATE CABINET AGENCY RESPONSE TO THE PERFORMANCE AUDIT ON THE WSDOT TOLL COLLECTION SYSTEM REPLACEMENT PROJECT – NOVEMBER 15, 2022

The Washington State Department of Transportation (WSDOT) and Office of Financial Management (OFM) provide this management response to the State Auditor's Office (SAO) performance audit report received on October 24, 2022.

SAO PERFORMANCE AUDIT OBJECTIVES

The SAO's audit addressed three objectives:

- Did the Toll Division's project planning process accurately identify critical needs and risks of the project before starting its procurement process?
 - Did the Toll Division's procurement and vendor selection approach address its project needs and project risks?
 - Are there opportunities for the Toll Division to reduce risk and improve vendor accountability in its contract management and project oversight processes?
-

Recommendations to the Washington State Department of Transportation:

SAO Recommendations 1-3

1. Ensure that during information technology vendor selection, the apparent successful vendor has demonstrated the ability to deliver the project following the software development approach the agency has selected.

STATE RESPONSE: During the procurement effort for the WSDOT back-office system, WSDOT asked those who submitted proposals to respond with a certification that their team could meet each of the requirements included in the Request for Proposals. The successful vendor, ETAN, included a certification that it could deliver the project using the required Waterfall Software Development Method. ETAN also indicated in its proposal that it would deliver all the required system development documentation in the manner required by the contract, and the specified documentation would be delivered and approved by WSDOT prior to ETAN moving on to the next step in each process.

As stated in this audit, once the project had been awarded to ETAN, it was clear to the WSDOT project management team that the ETAN team would struggle to deliver the project using the required software development methodology. In response, WSDOT worked with ETAN to agree on a hybrid methodology that would allow for a continual process of documentation and revision throughout the development process. While this hybrid methodology proved to be successful in allowing the project to progress toward completion, ETAN's performance resulted in significant schedule delays.

WSDOT agrees to explore additional steps in its procurement process that may bring this issue to light sooner in future procurements. For example, procurement documents could require vendors to indicate in their proposal what software development methodology was used in each project reference, or we could ask vendor references specific questions regarding software development methods. This approach may help guide procurement and early project efforts.

2. Develop a process to evaluate the benefits of requiring an information technology vendor's project manager to be on-site or allowing remote work against the risk of the vendor not being able to fill the position.

STATE RESPONSE: WSDOT agrees with this recommendation. In 2016, when the contract and procurement documents were developed, it was a best practice to require that the project manager be “on site” for the duration of the project development and implementation efforts. More modern business practices and technology allow for effective remote work and coordination, and the risks and benefits of each approach should be evaluated for future procurements.

3. For projects determined to be high risk by the Office of the Chief Information Officer, require that information technology vendors identify a contingency plan in their proposals that mitigates risk of turnover in key project management positions.

STATE RESPONSE: Retention of key personnel is a challenge for all project teams, especially given the current hiring and recruiting environment. WSDOT agrees that asking vendors to provide an approach to handling turnover in key project management positions and including that approach in the evaluation of the vendor would provide some mitigation for this risk.

Action Steps and Time Frame for SAO Recommendations 1-3:

- Consider SAO’s recommendations, or an appropriate alternative, as best practices in guidance provided by the WSDOT Enterprise Technology Project Management Office. *By June 30, 2023.*

SAO Recommendation 4: Add to an existing reporting method, or work with the Office of the Chief Information Officer and Office of Financial Management to develop a public cost reporting method, to show all project costs for Toll Division projects. Reporting all costs for the project will demonstrate transparent government.

STATE RESPONSE: Throughout the implementation of the WSDOT back-office system and customer service replacement projects, WSDOT communicated with stakeholders at regular intervals. This included regular coordination and status of project delivery, delays and their associated costs to the OCIO, OFM, the Governor’s Office and the Legislature.

WSDOT also worked collaboratively with both OFM and OCIO to develop a cost reporting method that would allow for project costs to be reported through OCIO’s Washington State Information Technology Project Dashboard. Since this project was comprised of both a large IT project (the back-office system replacement) and a smaller professional services contract (the customer service replacement project), decisions were made in coordination with OCIO to exclude some “customer service” costs, that were not related to the IT project, in the cost reporting on OCIO’s Project Dashboard. However, as explained above, the customer service delay costs were communicated to stakeholders at regular intervals.

WSDOT agrees that for future projects under the oversight of the OCIO, the reporting methodology should ensure that all project costs are reported to demonstrate transparency.

Action Steps and Time Frame:

- WSDOT will work with the OCIO to provide additional information on the existing OCIO Project Dashboard, noting that the reported delay costs represent only the costs associated with the Back Office Replacement Project. *By January 31, 2023.*
- WSDOT will work with the OCIO on a methodology to report total project costs for future projects under OCIO oversight. This best practice will be incorporated into guidance provided by the WSDOT Enterprise Technology Project Management Office. *By June 30, 2023.*

Appendix A: Initiative 900 and Auditing Standards

Initiative 900 requirements

Initiative 900, approved by Washington voters in 2005 and enacted into state law in 2006, authorized the State Auditor’s Office to conduct independent, comprehensive performance audits of state and local governments.

Specifically, the law directs the Auditor’s Office to “review and analyze the economy, efficiency, and effectiveness of the policies, management, fiscal affairs, and operations of state and local governments, agencies, programs, and accounts.” Performance audits are to be conducted according to U.S. Government Accountability Office government auditing standards.

In addition, the law identifies nine elements that are to be considered within the scope of each performance audit. The State Auditor’s Office evaluates the relevance of all nine elements to each audit. The table below indicates which elements are addressed in the audit. Specific issues are discussed in the Results and Recommendations sections of this report.

I-900 element	Addressed in the audit
1. Identify cost savings	No.
2. Identify services that can be reduced or eliminated	No.
3. Identify programs or services that can be transferred to the private sector	No.
4. Analyze gaps or overlaps in programs or services and provide recommendations to correct them	No.
5. Assess feasibility of pooling information technology systems within the department	No.
6. Analyze departmental roles and functions, and provide recommendations to change or eliminate them	No.

I-900 element	Addressed in the audit
7. Provide recommendations for statutory or regulatory changes that may be necessary for the department to properly carry out its functions	No.
8. Analyze departmental performance data, performance measures and self-assessment systems	No.
9. Identify relevant best practices	Yes. We identified best practices in project management that apply to creation of a new product such as the tolling back-office system.

Compliance with generally accepted government auditing standards

We conducted this performance audit under the authority of state law (RCW 43.09.470), approved as Initiative 900 by Washington voters in 2005, and in accordance with generally accepted government auditing standards as published in *Government Auditing Standards* (July 2018 revision) issued by the U.S. Government Accountability Office. 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.

The mission of the Office of the Washington State Auditor

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Appendix B: Objectives, Scope and Methodology

Objectives

This audit reviewed the Washington State Department of Transportation's project planning, vendor procurement, contract management and project oversight of the implementation of the replacement toll collection system, conducted by its Toll Division. The audit addressed the following objectives:

1. Did the Toll Division's project planning process accurately identify critical needs and risks of the project before starting its procurement process?
2. Did the Toll Division's procurement and vendor selection approach address its project needs and project risks?
3. Are there opportunities for the Toll Division to reduce risk and improve vendor accountability in its contract management and project oversight processes?

For reporting purposes, the audit findings and conclusions have been organized into three key messages. The messages relate to the original objectives as follows:

- WSDOT's Toll Division followed state requirements and leading practices throughout the project, including those designed to mitigate risks (pages 12-14). This message addresses Objectives 1 and 2.
- Despite Toll Division's efforts to minimize risks, vendor performance delayed the project by more than two years (pages 15-18). This message addresses Objective 3.
- Toll Division estimates for total project costs exceeded the budget by \$13 million, and relied on a reporting method that did not include total project costs (pages 19-22). This message addresses Objective 3.

Scope

The Legislature required WSDOT to contract with the State Auditor's Office for a performance audit of WSDOT's Tolling System Replacement Project. The Legislature asked for the audit to include an evaluation of the department's project planning, vendor procurement, contract management and project oversight. Although we communicated with the two vendors the Toll Division hired to work on the replacement project, neither was the subject of this audit.

This audit focused on the Toll Division's management of contracts associated with the toll collection system replacement project, which included only the back-office system and the customer service center. In fact, because the primary concerns about the project were the back-office system delays, the

audit focused primarily on the replacement back-office system and vendor with only limited review of the replacement customer service center. The audit did not consider the roadside systems and vendors that operate the cameras and sensors as these were not included in the replacement project.

Methodology

We obtained most of the evidence used to support the findings, conclusions, and recommendations in this audit report during our fieldwork period (February to July 2022). We have summarized the work we performed to address each of the audit objectives in the following sections.

Objective 1: Did the Toll Division’s project planning process accurately identify critical needs and risks of the project before starting its procurement process?

To address this objective, we reviewed the Toll Division’s planning documents, including responses to earlier performance audits of the tolling system (see Appendix C). These documents included notes from workshops where participants listed desired toll system features and possible risks; white papers used early in the planning process to identify features and risks; and risk registers, which describe potential hazards and mitigation methods to avoid or address them. We compared the Toll Division’s planning process to project management leading practices and to state laws.

Objective 2: Did the Toll Division’s procurement and vendor selection approach address its project needs and project risks?

To address this objective, we reviewed procurement documents and interviewed Toll Division management about the process to identify qualified potential bidders, solicit and evaluate bids, and vet the selected vendor before the contract was signed. We compared the Toll Division’s activities to project management best practices, including guidance from Washington’s Department of Enterprise Services. We also evaluated whether the risks that occurred had been considered in the risk assessment. The goal was to determine whether the Toll Division took adequate steps to identify and mitigate risks with the vendor prior to contract award.

Objective 3: Are there opportunities for the Toll Division to reduce risk and improve vendor accountability in its contract management and project oversight processes?

To address this objective, we interviewed:

- Toll Division staff about the costs of the project and how the project was funded
- Executives at both the replacement back-office system and customer service operations vendors
- Staff from the Office of Financial Management
- Staff from the Office of the Chief Information Officer

We also reviewed documents including:

- Vendor contracts to understand staff requirements, liquidated damage clauses, vendor pricing and more
- Correspondence between Toll Division management and the vendors
- Replacement back-office system vendor contract and amendments to understand the structure of liquidated damages
- Toll Division policies and procedures used to measure performance, assess liquidated damages, and track the amount of damages assessed
- Payment records, tracking logs and other sources of data to show how vendor performance was measured, what liquidated damages were assessed, and confirm payment was made
- Budget and expenditure reports to identify the difference between planned and actual project costs of the tolling system replacement project
- System design documents to understand the design components planned to be completed with the original budget
- Toll Division change management processes and procedures to determine if they were a cause for deviating from the planned design of the project
- System cost information from the Office of the Chief Information Officer Project Dashboard

We also:

- Considered best practices used to reduce project risk and improve vendor accountability in contract management and project oversight
- Assessed how the Toll Division determined the value of new liquidated damages that were added with contract amendments
- Evaluated if there were areas where the Toll Division's contract management and project oversight process do not align with best practices

Work on internal controls

We determined the following internal controls were significant to the audit objectives:

- Risk assessments and risk management during project planning and through contract management
- Project management and contract management policy and procedures that are aligned with best practices and legal requirements
- Investment plan and external agency oversight
- Vendor procurement policy and procedures that are aligned with best practices and legal requirements
- Gated funding oversight
- Independent and objective consultant oversight

- Invoice review to ensure system functionality and quality of work prior to paying the system vendor
- Liquidated damages to hold the vendor accountable to project schedule delays

We assessed the Toll Division's design of these controls and determined they should be capable of achieving their objectives. We also assessed the implementation of these controls and determined all existed and were placed into operation during the period of evaluation. We did not assess the operational effectiveness for these controls.

Appendix C: Earlier Tolling System audits

In 2013, the Office of the Washington State Auditor released [Washington's Tolling Program: Lessons Learned from Project Delays](#). The audit was prompted by delays encountered in the installation of the first tolling system. The State Auditor found that the delays were caused by technology barriers, disagreements about system needs, deadline pressure and an unclear management approach. The audit recommended clearer lines of authority and responsibility, as well as a new set of policies and procedures to guide implementation of tolling projects.

In 2016, the Office released [Washington Department of Transportation: Improving the Toll Collection System](#). The audit found that the tolling system lacked key functions and had limitations that affected toll processing, collection and managerial reporting. The audit found that the issues were caused by the department's limited attention to adding necessary expertise, establishing functions and processes, and completing tolling system development. The 2016 audit recommended enhanced leadership and management strategies to prevent these issues from recurring during development of the next-generation toll collection system and the addition of more tolled facilities such as the SR 99 tunnel.



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– Pat McCarthy, State Auditor

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