



October 2020

TSA ACQUISITIONS

TSA Needs to Establish Metrics and Evaluate Third Party Testing Outcomes for Screening Technologies

Why GAO Did This Study

TSA relies on technologies like imaging systems and explosives detection systems to screen passengers and baggage to prevent prohibited items from getting on board commercial aircraft. As part of its process of acquiring these systems and deploying them to airports, TSA tests the systems to ensure they meet requirements.

The 2018 TSA Modernization Act contained a provision for GAO to review the third party testing program. GAO assessed the extent to which TSA (1) used third party testing, and (2) articulated its goals and developed metrics to measure the effects of third party testing.

GAO reviewed TSA's strategic plans, acquisition guidance, program documentation, and testing policies. GAO interviewed officials from TSA's Test and Evaluation Division and acquisition programs, as well as representatives of vendors producing security screening systems and companies providing third party testing services.

What GAO Recommends

GAO is recommending that TSA develop metrics to measure the effects of third party testing on efficiency, assess its effects on efficiency, and assess whether third party testing contributes to supplier diversity and innovation. DHS concurred with GAO's three recommendations and has actions planned to address them.

View [GAO-21-50](#). For more information, contact Marie A. Mak at (202) 512-4841 or MakM@gao.gov

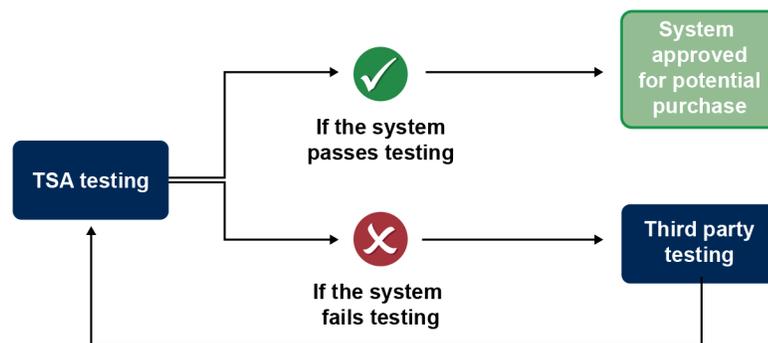
TSA ACQUISITIONS

TSA Needs to Establish Metrics and Evaluate Third Party Testing Outcomes for Screening Technologies

What GAO Found

In 2013, the Transportation Security Administration (TSA) introduced the concept of third party testing—having an independent testing entity verify that a security screening system meets certain requirements. The concept is that screening system vendors would take this additional step either prior to submitting their technologies to TSA or if their system failed TSA's test and evaluation process. The goal is for third party testing to reduce the time and resources that TSA spends on its own testing. However, since introduced, TSA has directed only three vendors that failed TSA tests to use third party testing, with varying outcomes. In two other cases, TSA supplemented its test capabilities by using third party testers to determine that systems installed at airports were working properly. TSA officials and industry representatives pointed to several reasons for third party testing's limited use since 2013, such as the cost to industry to use third party testers and TSA's reluctance to date to accept third party test data as an alternative to its own. Despite this, TSA officials told GAO they hope to use third party testing more in the future. For example, in recent announcements to evaluate and qualify new screening systems, TSA stated that it will require a system that fails TSA testing to go to a third party tester to address the identified issues (see figure).

Example of Use of Third Party Testing When a System Experiences a Failure in TSA's Testing



Source: GAO analysis of Transportation Security Administration (TSA) policy and guidance. | GAO-21-50

TSA set a goal in 2013 to increase screening technology testing efficiency. In addition, TSA reported to Congress in January 2020 that third party testing is a part of its efforts to increase supplier diversity and innovation. However, TSA has not established metrics to determine third party testing's contribution toward the goal of increasing efficiency. Further, GAO found no link between third party testing and supplier diversity and innovation. Some TSA officials and industry representatives also questioned third party testing's relevance to these efforts. Without metrics to measure and assess the extent to which third party testing increases testing efficiency, TSA will be unable to determine the value of this concept. Similarly, without assessing whether third party testing contributes to supplier diversity and innovation, TSA cannot know if third party testing activities are contributing to these goals as planned.

Contents

| | | |
|-------------|---|----|
| Letter | | 1 |
| | Background | 3 |
| | TSA's Use of Third Party Testing Has Been Limited but Has Evolved to Supplement Its Own Test Capabilities | 8 |
| | TSA Third Party Testing Goals Lack Metrics and Clear Link to Outcomes | 13 |
| | Conclusions | 16 |
| | Recommendations for Executive Action | 17 |
| | Agency Comments | 17 |
| Appendix I | Comments from the Department of Homeland Security | 19 |
| Appendix II | GAO Contact and Staff Acknowledgments | 22 |
| Table | | |
| | Table 1: Examples of Systems that Used Third Party Testing to Remedy Failures in Testing | 9 |
| Figures | | |
| | Figure 1: Phases of TSA Test and Evaluation Process and Opportunities for Third Party Testing Use | 5 |
| | Figure 2: Use of Third Party Testing When a System Experiences a Failure during TSA Qualification and Operational Testing | 7 |

This is a work of the U.S. government and is not subject to copyright protection in the United States. The published product may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.



October 29, 2020

Congressional Committees

The Transportation Security Administration (TSA)—a component of the Department of Homeland Security (DHS)—screens individuals, their luggage, and carry-on bags to keep prohibited items, such as explosives and contraband, from being brought onto commercial aircraft. TSA relies to a large extent on security-related screening technologies, such as explosives detection systems and advanced imaging devices. In 2018, TSA anticipated spending over \$3.6 billion by the end of fiscal year 2023 on screening technologies, which would include testing the systems to ensure they meet the agency’s requirements, such as the ability to screen a certain number of bags within a specific time period.

While TSA conducts its own testing of systems prior to qualifying them for use, the agency has identified third party testing as a key element to help streamline its acquisition process. Third party testing is when a vendor of security screening equipment selects an industry member or independent laboratory, such as a nationally recognized test laboratory, to conduct testing for the vendor to verify that its system meets certain requirements. The concept is that vendors would take this additional step either prior to submitting technologies to TSA, or if their equipment failed the TSA testing and evaluation process and they needed to conduct further development and testing.

TSA reported in January 2020 that approximately 51 percent of all systems failed its testing, which delayed its timeline for acquiring and fielding airport screening technologies.¹ Our prior work has highlighted this issue as well.² TSA noted that vendors’ systems would get stuck in a test, fix, and retest cycle that was time consuming and expensive for TSA, as its program offices pay for retesting. Further, according to TSA officials, the delays resulted in TSA expending its limited resources and tying up test facilities to remedy the systems that had failed. Third party

¹TSA, *Report to Congress: TSA Efforts to Diversify Security Technology* (Jan. 13, 2020).

²GAO, *TSA Acquisitions: Further Actions Needed to Improve Efficiency of Screening Technology Test and Evaluation*, [GAO-16-117](#) (Washington, D.C.: Dec. 17, 2015). We recommended that TSA (1) finalize its third party testing strategy before implementation of further requirements, and (2) conduct a comprehensive assessment of testing data to identify key factors contributing to any acquisition inefficiencies. TSA has implemented both of the recommendations.

testing was intended to alleviate some of these issues. In May 2013, TSA began encouraging vendors to proactively use third party testing to provide more mature systems in response to procurement opportunities.

In 2018, in the TSA Modernization Act, Congress required TSA to enable vendors of security screening technology to obtain testing and verification by an appropriate third party and enable the third party testing to be an alternative to TSA's testing.³ The TSA Modernization Act also included a provision that GAO review TSA's third party testing program. This report examines the extent to which TSA has (1) used third party testing, and (2) articulated its goals for the use of third party testing and developed metrics to measure its effects.

We examined the extent to which TSA has used third party testing from May 2013 through September 2020. We selected May 2013—when TSA first included the use of third party testing in its test and evaluation guidance—through September 2020 to capture all possible instances since TSA started using third party testing. We reviewed TSA's acquisition guidance, test and evaluation policies and procedures, and documentation related to security screening technology acquisitions to determine when TSA allowed or required third party testing, and what oversight mechanisms were in place to assess vulnerabilities to national security; conflicts of interest; and fraud, waste, and abuse with regard to third party testing. In addition, we interviewed officials from TSA's Acquisition Program Management office, Test and Evaluation Division, Checked Baggage Technologies Division, and Checkpoint Technologies Division to identify third party testing participants and gather information about their experience with third party testing. We also interviewed the DHS Director of the Office of Test and Evaluation and four vendors of security screening technologies or systems that used third party testing during the TSA test and evaluation process. In addition, we interviewed three companies that provide test and evaluation services (two companies that provided services for systems going through TSA's testing process and one identified through our own market research), and representatives of the Security Manufacturers Coalition, which represents the transportation security industry, to obtain their views on third party testing.

To determine the extent to which TSA articulated goals for the use of third party testing and developed metrics to measure its effects, we reviewed

³FAA Reauthorization Act of 2018, Pub. L. No. 115-254, § 1911 (2018).

TSA's strategic plans and test and evaluation policies and procedures. We also reviewed statutes and guidance relevant to federal agencies' establishment of performance goals, metrics, and evaluation of progress, such as the Government Performance and Results Act (GPRA) Modernization Act of 2010. We interviewed TSA testing officials regarding TSA's existing and planned mechanisms for tracking systems throughout the test and evaluation process and any efforts to assess testing data. We also interviewed officials from TSA's Requirements and Capabilities Analysis office, its Innovation Task Force, and officials from TSA security screening technology acquisition programs in the Checked Baggage Technologies and the Checkpoint Technologies Divisions; vendors of security screening technologies or systems; and industry representatives to understand their roles in third party testing.

We conducted this performance audit from November 2019 to October 2020 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

TSA buys and installs screening equipment at airports to support risk-based screening requirements, replace aging equipment, add detection capabilities, and improve performance. In its fiscal year 2021 budget request, TSA reported that there are approximately 15,000 units of screening equipment operating in or in the process of being deployed to airports across the nation.

TSA Screening Technology: Advanced Imaging Technology

TSA uses advanced imaging technology to screen passengers for threats without physical contact. This technology detects a wide range of metallic and nonmetallic threats on passengers and highlights the location of potential threats on a generic passenger outline for further assessment by transportation security officers.

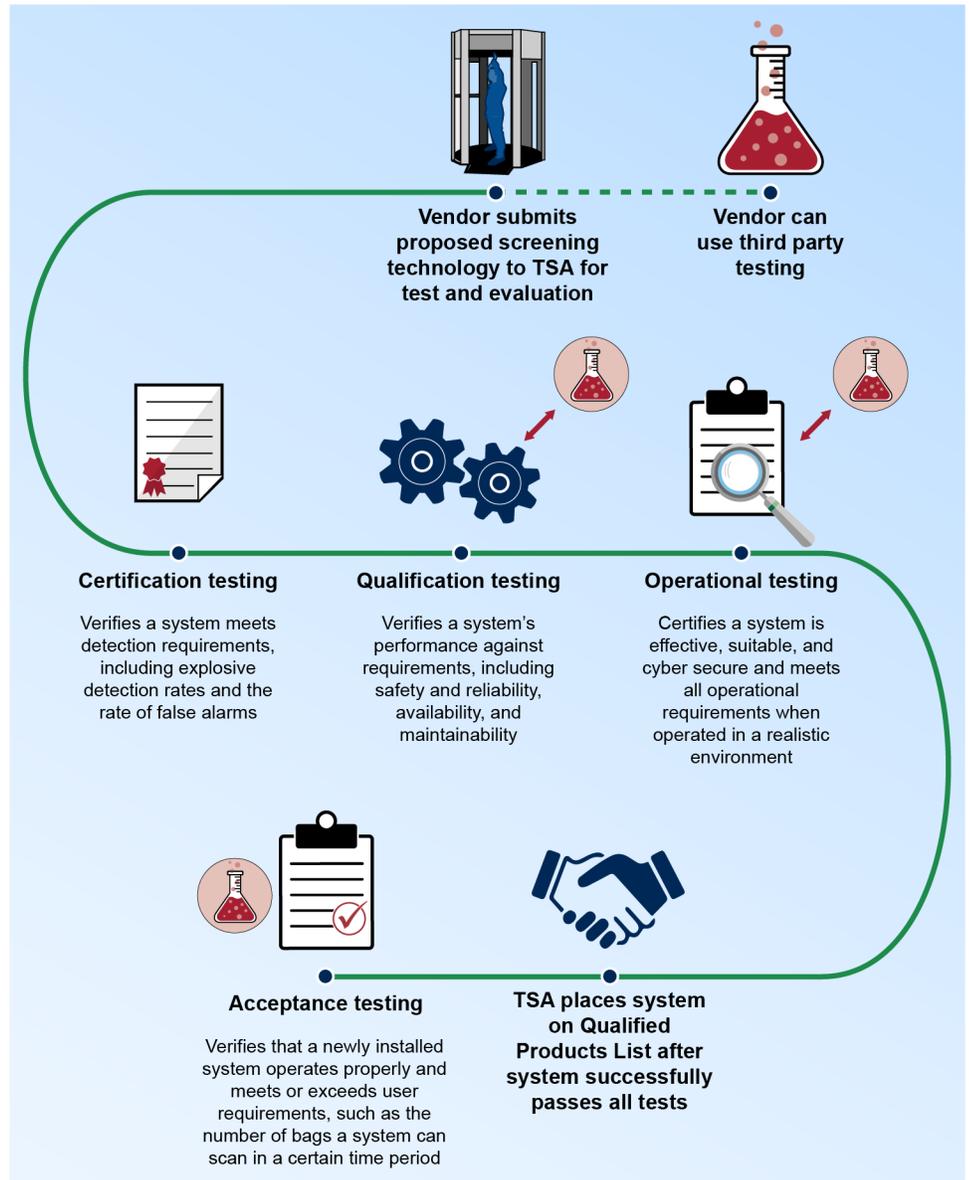


Source: GAO analysis of Transportation Security Administration (TSA) information (text); GAO (image). | GAO-21-50

TSA's test and evaluation process for this equipment consists of a series of phases that ensure a system meets requirements—and thus is qualified to be acquired by TSA—and that the system functions properly once installed. According to TSA acquisition policy, test and evaluation is essential to ensure TSA is buying a mature, effective, and suitable system prior to making a significant investment.⁴ Third party testing can be used throughout the test and evaluation process at various points in time. Figure 1 shows a notional depiction of the phases of TSA's test and evaluation process and opportunities for third party testing use.

⁴TSA Office of Acquisition Program Management, *TSA Acquisition Qualification Policy, Version 1.0*. (Dec. 14, 2017).

Figure 1: Phases of TSA Test and Evaluation Process and Opportunities for Third Party Testing Use



Source: GAO analysis of Transportation Security Administration (TSA) policy and guidance. | GAO-21-50

To start the process, TSA announces its intent to evaluate and qualify new security screening systems for a specific purpose—such as explosive detection—and the necessary requirements for the system.

Vendors of security screening technology apply to TSA in response to the announcement to have their systems tested for compliance with TSA's requirements, such as explosive detection standards. TSA Test and Evaluation officials stated that the optimal use of third party testing is prior to a system entering TSA's test and evaluation process. The vendor would include the third party test data results in its application to TSA. Once the application is approved, certification testing is the first phase of the test and evaluation process. According to TSA, DHS's Transportation Security Laboratory is uniquely qualified and equipped to conduct certification testing of explosives detection systems for TSA.⁵ Once the Transportation Security Laboratory certifies that a system has met TSA explosive detection standards and demonstrated acceptable rates of false alarms, it will progress to the next phases.

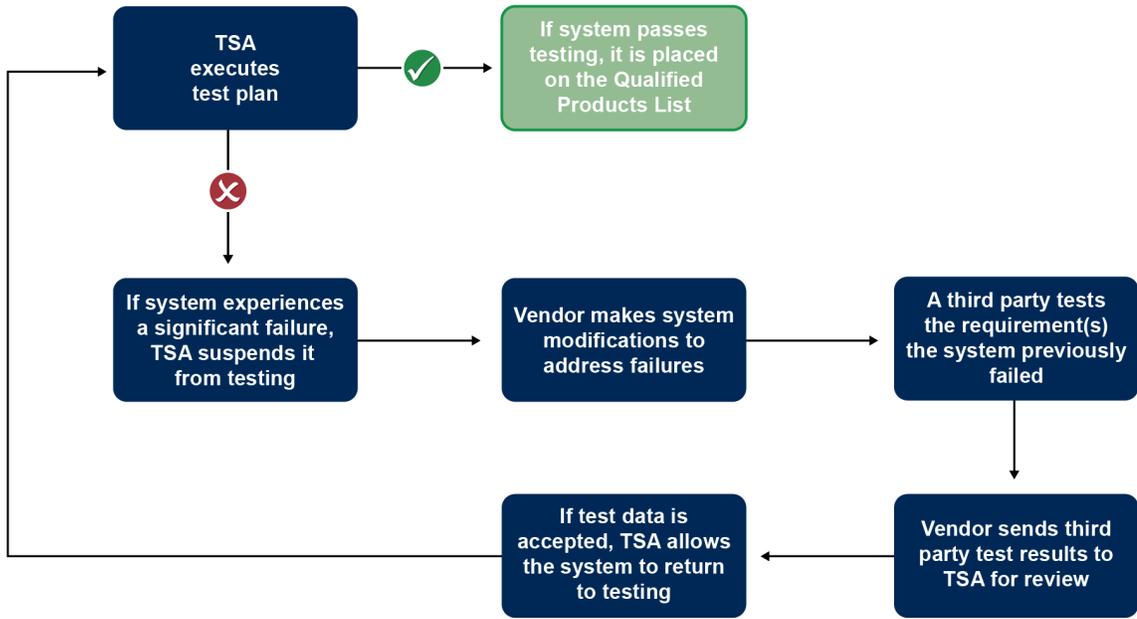
The next phases in the process are qualification testing—which occurs at TSA's Systems Integration Facility (TSIF)—and operational testing, which occurs on-site at an airport. The TSIF replicates the airport environment, which allows TSA to test a system's performance against technical requirements such as system capacities; human factors; physical characteristics; safety; and system reliability, availability, and maintainability. TSA's Test and Evaluation Division officials stated that they performed qualification and operational tests on 14 systems from January 2017 to August 2019.⁶ Third party testing can be used in these phases if a system experiences significant failures during testing.⁷ When this happens, TSA may suspend the vendor's system from the test and evaluation process. The vendor can then attempt to fix the system, undergo third party testing at its own expense, and provide the results to TSA to demonstrate that the system now meets the requirements. TSA officials said they review third party test data and accept it on a case-by-case basis. If accepted, the system will be allowed to resume the TSA test and evaluation process. Figure 2 provides an overview of how third party testing addresses a system failure during TSA's qualification and operational testing phases.

⁵TSA Test and Evaluation officials told us that they are exploring options to expand explosive detection testing capability to see if other companies can perform the tests.

⁶According to TSA Test and Evaluation officials, their focus is to ensure systems meet TSA requirements rather than tracking the number of systems that go through the test and evaluation process. This process is focused on determining capability and functionality.

⁷A significant failure has the potential to jeopardize safety, security, or other critical requirements and prevent or adversely affect the accomplishment of an essential capability with no known work-around solution.

Figure 2: Use of Third Party Testing When a System Experiences a Failure during TSA Qualification and Operational Testing

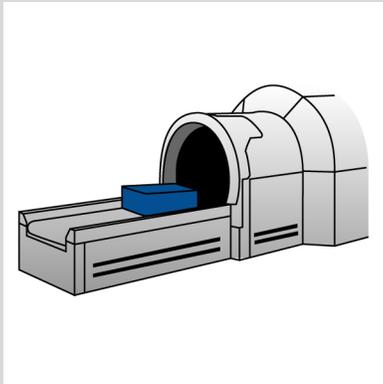


Source: GAO analysis of Transportation Security Administration (TSA) policy and guidance. | GAO-21-50

Note: Under special circumstances, TSA will consider allowing a vendor to resume TSA testing without third party test results depending on the failure in question and demonstration of its resolution.

TSA Screening Technology: Explosives Detection System

TSA uses explosives detection systems to screen checked baggage. These systems detect the presence of explosives and improvised explosive device components in checked baggage. Depending on the airport, the systems may be standalone or integrated with an airport's baggage handling systems.



Source: GAO analysis of Transportation Security Administration (TSA) information (text); GAO (image). | GAO-21-50

After a system has successfully completed qualification and operational testing, it will be added to TSA's Qualified Products List, where it can be procured by TSA to be deployed to commercial airports.

After TSA places a system on the Qualified Products List and purchases it for use in an airport, the system will undergo a site acceptance test when units are installed for the first time. This testing verifies that the equipment meets or exceeds the site-specific operational requirements and functions properly in the airport. For example, checked baggage inspection systems—which consist of an integrated explosives detection system and a baggage handling system—would undergo an integrated site acceptance test to ensure the combination of equipment is working properly as installed. Third party testers can be used to conduct site acceptance testing.

TSA's Use of Third Party Testing Has Been Limited but Has Evolved to Supplement Its Own Test Capabilities

To date, TSA has only used third party testing in a limited number of cases during the qualification, operational, and site acceptance testing phases. In 2013, TSA introduced the concept of third party testing in part as a remedy for the ongoing test-fix-retest cycle that can occur in the qualification and operational testing phases. More recently, TSA has allowed third party testers to conduct site acceptance testing on TSA's behalf to supplement its own capabilities. Although use of third party testing has been limited, TSA officials noted that they plan to use it more in the future, and are encouraging vendors to use third party testing prior to entering the test and evaluation process.

Since 2013, TSA Used Third Party Testing to Remedy Failures for Three Systems

Through our review of TSA documentation and interviews with TSA officials, we identified three security screening systems that underwent third party testing between July 2011 and March 2019. The systems' outcomes varied. One system took almost 4 years to complete operational testing, while a second system took over 7 years. The third system never completed testing. This was in part because the three systems experienced multiple failures during operational testing, resulting in repeated test-fix-retest cycles. TSA ultimately directed the vendors to use third party testing. In comparison, a TSA program official we spoke

with estimated that if a security screening system does not experience test failures, it takes about 24 months to progress through the entire qualification process. See table 1 below for more detail.

Table 1: Examples of Systems that Used Third Party Testing to Remedy Failures in Testing

| Security screening system | Start of operational testing | Type of failures identified in testing | Date system placed on the qualified products list |
|----------------------------------|-------------------------------------|--|--|
| System 1 ^a | July 2011 | Low reliability, issues with archiving, reviewing, and clearing images | February 2015 |
| System 2 ^a | October 2011 | Low reliability, errors related to software and bag tracking | March 2019 |
| System 3 | Prior to February 2016 | X-ray failures and lack of safety features | n/a ^b |

Source: GAO analysis of Transportation Security Administration (TSA) documentation. | GAO-21-50.

Note: The systems are not identified by name given the sensitivity of the information.

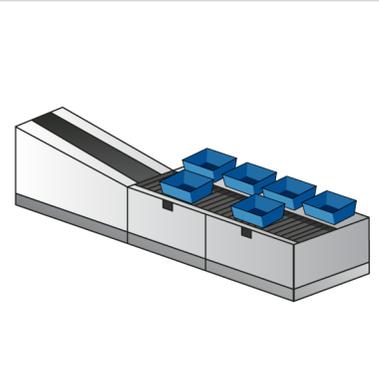
^aSystem entered the qualification process prior to TSA finalizing initial guidance for third party testing.

^bTSA advised the vendor to use third party testing in 2016, and then the vendor withdrew its system from the qualification process in 2017.

In 2019, TSA Began Using Third Parties for the Acceptance Testing Phase for Some Equipment

TSA Screening Technology: Automated Screening Lanes

TSA uses Automated Screening Lanes to automate elements of checkpoint carry-on baggage screening to increase throughput and improve bag search handoff. This technology augments existing X-ray screening technology for carry-on baggage. Features include multiple stations that enable several passengers to place their items into bins simultaneously, enhanced bin tracking and data capabilities, and automated bin returns.



Source: GAO analysis of Transportation Security Administration (TSA) information (text); GAO (image). | GAO-21-50

Beginning in September 2019, TSA expanded the use of third party testing to include site acceptance testing for its Capabilities Acceptance Process. This process allows donors—such as airports, airlines, or industry stakeholders—to purchase TSA-qualified security screening equipment and donate it to TSA. As a part of this process, donors are responsible for the procurement of equipment, installation, acceptance testing, and mitigation of any acceptance test failures.⁸ Donors use a TSA-approved contractor to conduct these activities in coordination with authorized TSA representatives. Once the equipment is installed at the airport, the contractor conducts acceptance testing in accordance with the TSA-approved test plans, thereby supplementing TSA's test and evaluation capabilities. The contractor provides the test results to TSA officials, who review and analyze the data to determine if the system passes or fails.

As of April 2020, third party testing under the Capabilities Acceptance Process was being used for site acceptance testing of the automated screening lanes technology at the San Francisco, California and LaGuardia, New York airports. The first use of this process started in the San Francisco Airport in December 2019. In a memorandum of understanding with TSA, the airport commission agreed to contract with a TSA-approved third party tester to provide testing support for its donation. TSA officials explained that in this instance, the third party test data were accepted in place of TSA test data.

TSA Acknowledged Limited Use of Third Party Testing but Has Started Encouraging Its Use

TSA officials acknowledged that the anticipated benefits of third party testing have not been realized, in part due to the lack of incentives for vendors to participate prior to the test and evaluation process. TSA

⁸TSA's Capabilities Acceptance Process provides an opportunity for airport, airlines or industry stakeholders to accelerate their acquisition timelines by donating transportation security equipment to TSA. TSA identifies technologies and specific configurations of previously qualified security screening equipment it will accept for donation on its Acceptable Capability List, which is updated periodically. The third party tester conducts the acceptance testing at the airport and TSA verifies the results. The donor ensures the latest TSA-approved configuration is installed.

officials and industry representatives offered several reasons for the limited use of third party testing to date.

- **Additional cost.** According to Test and Evaluation officials, there is no incentive for vendors to pay the cost for third party testing prior to entering the TSA test and evaluation process. They explained that TSA tests are free to vendors, while third party testing costs are borne exclusively by the vendors of the systems, which can be particularly discouraging for small businesses. Industry representatives agreed that it may be difficult for small businesses to proactively use a third party tester because of the expense. Third party testers told us that costs varied widely depending on the scope of testing activities and provided estimates that ranged from tens of thousands to hundreds of thousands of dollars.
- **TSA reluctance to accept third party data.** Vendors said they may be more incentivized to invest in third party testing in advance of submitting technologies to TSA if they had assurances that third party test data would be accepted and thus reduce the amount of TSA testing. According to vendors, TSA officials suggested at industry gatherings that the agency would accept third party test data; however, to date, vendors said this has not happened.⁹ In fact, according to TSA officials and industry representatives, after third party testing was complete for the security screening systems that were in the test-fix-retest cycle described earlier, TSA testing officials did not accept the results from the third party tester in lieu of further TSA testing. Instead, TSA fully retested the systems at the TSIF. This retesting can help address any potential concerns with national security, conflicts of interest, or fraudulent activities related to third party testing; however, industry representatives noted that it created a disincentive for vendors to proactively use third party testing. TSA officials we spoke with stated they accept third party test data on a case-by-case basis. According to its third party testing guidance, TSA, upon reviewing the third party testing data, reserves the right to retest the system at the TSIF during the qualification and operational testing phase to ensure the system meets requirements.
- **Limited time frames.** Industry representatives said that there is not enough time to perform third party testing before entering the test and

⁹TSA periodically organizes Industry Days with transportation security equipment industry members such as manufacturers and potential third party test organizations. TSA provides information on its priorities, solicits feedback, and emphasizes collaboration with industry in refining testing protocol. It last discussed third party testing and data acceptance at its 2016 and 2018 Industry Days.

evaluation process. They said that TSA generally allowed about 90 days from the announcement of its requirements to the submission deadline. During that window, vendors told us they try to adapt their systems to incorporate TSA's requirements, but industry representatives explained that it is not enough time to make changes to the system, much less have it tested by a third party. According to the industry representatives, this leads to systems that TSA may classify as needing further development work. A TSA acquisition program official stated that on a case-by-case basis and when it makes sense, TSA will consider expanding the submission window to 1 year to ensure vendors have enough time to adapt their systems to incorporate the requirements and to have as many vendors participate as possible. For example, they expanded the window to almost one year (from October 2019 to September 2020) for a recent announcement for an explosives detection system.

TSA officials anticipate more use of third party testing in future acquisitions because they have incorporated it as a part of the agency's process to evaluate and qualify systems in two announcements.

- In April 2019, TSA announced the establishment of next generation requirements for explosives detection systems. The announcement calls for potential vendors to consider using third party testing prior to submitting their system to TSA to determine if it is ready. The announcement also states that if the system experiences more than one failure in TSA testing, the vendor must use a third party tester, at the vendor's expense, before TSA will continue testing or the system will be removed from the process. In the announcement, failure is defined as at least one significant failure, an unacceptable cluster of nonsignificant failures, or a TSA determination that the system has a significant issue that will prevent it from passing testing. The vendor will have 6 months to demonstrate the failure has been resolved using third party testing.
- In January 2020, TSA issued a similar announcement for advanced imaging technology that included the same instructions.

TSA acquisition program officials told us they are currently reviewing initial vendor document submissions for both announcements. Because these efforts are ongoing, it is not yet known the extent to which vendors will choose to incorporate third party testing in their submissions.

For future acquisitions of security equipment, TSA formalized third party testing in its guidance and put in place some oversight protections. For example, TSA will review the vendor-proposed test plans and assess the

risk of accepting third party test data. If TSA accepts the test plans, the data are eligible for review to forgo further TSA testing. TSA's 2019 Test and Evaluation Guidebook states this review will be conducted in consultation with the Test and Evaluation lead assigned to the program and will consider such factors as knowledgeable testing officials; the test conditions, such as equipment available at the facility (e.g. does the third party tester have a baggage handling system); and proposed test scenarios, among others.

The Capability Acceptance Process also incorporated oversight measures for site acceptance testing. In TSA's memorandum of understanding with the airport commission in San Francisco, TSA specified that acceptance testing for the airport could not be obtained by the original equipment manufacturer or any affiliated organization. Additionally, TSA Test and Evaluation officials told us that TSA preapproved the test plans, monitored test execution, and reviewed third party test data, which is consistent with the terms and conditions. TSA officials explained that in this case, they had prior experience with the third party tester and knew the tester was qualified.

TSA Third Party Testing Goals Lack Metrics and Clear Link to Outcomes

TSA's Goal to Increase Testing Efficiency Lacks Metrics to Measure Effect of Third Party Testing

In its Test & Evaluation Process Guide, TSA set a goal to increase screening technology testing efficiency and introduced third party testing as a tool to achieve this goal by increasing the maturity of the systems entering TSA test and evaluation. The goal of improved efficiency in test and evaluation is consistent with TSA's department-wide strategy to speed up the acquisition process to field systems faster, and its priority to rapidly field innovative technologies. Further, TSA's report to Congress, *TSA Efforts to Diversify Security Technology*, reiterates the goal of increasing test and evaluation efficiencies.¹⁰ In addition to the testing efficiency goal stated in TSA guidance, program officials often reiterated

¹⁰This report states that it was written to satisfy section 1913 of the TSA Modernization Act (P.L. 115-254), requiring TSA to develop a strategy to promote a diverse marketplace for the security technology industry and to increase the participation of small business innovators.

to us the importance of this goal during our review. However, TSA has not established metrics to measure progress toward this goal.

The GPRA Modernization Act of 2010 establishes that in addition to setting objective, quantifiable, and measurable performance goals, federal agencies should describe how these goals are to be achieved and measure progress.¹¹ TSA policies and guidance do not identify any metrics with regard to the efficiency goal. Furthermore, at the time of our review, TSA officials stated that they had not yet identified any metrics pertaining to third party testing and its contribution to the goal of testing efficiency. TSA Test and Evaluation officials told us that it would be difficult to develop baselines for the screening systems' general test and evaluation timelines, as the systems have varying requirements and levels of complexity. Officials also added that due to limited use of third party testing, they had insufficient data to determine its effect.

However, TSA has the tools and ability to develop test and evaluation baselines. For example, TSA Test and Evaluation officials regularly work with program offices to develop cost and schedule baselines for their programs, which include expected timelines for test and evaluation. One acquisition program office explained that they work with the TSIF to determine the duration for test planning, execution, review and oversight, and reporting. Additionally, TSA demonstrated the ability to track testing baselines by conducting an analysis in May 2016 to identify potential test and evaluation inefficiencies.¹² The analysis identified potential inefficiencies in the test and evaluation process such as lack of standardized processes that affected communication and insufficient tracking and reporting processes that decreased TSA's ability to identify, track, and assess key metrics.¹³ A TSA Test and Evaluation official noted

¹¹GPRA Modernization Act of 2010, Pub. L. No. 111-352 (2011), codified at 31 U.S.C. § 1115 *et seq.*

¹²This analysis was conducted in response to a recommendation from a previous GAO report, [GAO-16-117](#). In order to ensure that reforms TSA had underway were informed by existing information, GAO recommended that TSA conduct and document a comprehensive assessment of testing data available to date—such as timeframes for completing testing, costs incurred, and testing delays across all technology areas—to identify key factors contributing to any acquisition inefficiencies and potential areas for reform.

¹³TSA reported that it has since established a number of initiatives to address these issues such as a structured requirements development process that engages stakeholders and an engineering requirements change review board.

that TSA could use the tool from this analysis to determine the system baselines for comparison as more systems include third party testing in their qualification process.

In addition, in 2018, the TSA Modernization Act directed TSA to establish performance objectives with metrics for testing and verification of screening technologies, including activities conducted by appropriate third parties, and to submit a report to appropriate committees of Congress in October 2020 on progress in reaching these performance objectives.¹⁴ The TSA Modernization Act provides that the objectives should ensure progress is made, at a minimum, toward reducing time for each phase of testing while maintaining security, eliminating delays in the test process, and increasing accountability. It also directed TSA to establish and track metrics for the performance objectives of each type of security screening technology submitted, including systems that underwent third party testing. The TSA Modernization Act further directs TSA to include the metrics in the report. Additionally, the report should provide, among other things, a comparison of progress in testing and verification of screening technologies conducted by TSA and third party testers. Test and Evaluation officials informed us that the report is in draft and it is too early to gauge the results of third party testing. Without metrics to measure progress toward its goal of increasing testing efficiency, TSA will not be positioned to know whether third party testing effectively improves testing efficiency.

TSA Included Third Party Testing in Its Supplier Diversity Plan but Has Not Established Any Linkage

In its January 2018 report to Congress, *TSA Efforts to Diversify Security Technology*, TSA stated that third party testing is a means to help it reach other acquisition goals—increasing supplier diversity and increasing innovation—by decreasing vendor time spent in TSA test and evaluation.¹⁵ However, TSA has not established the link between third party testing and these goals. Specifically, the report notes that there is a barrier to vendors to enter this market because of the time and cost associated with the test and evaluation process, and that a lengthy process for vendors to have their systems qualified delays the process of getting a contract with TSA. The report also states that TSA expects third party testing to decrease TSA’s cost and time by ensuring the systems are mature enough upon entry.

¹⁴FAA Reauthorization Act of 2018, Pub. L. No. 115-254, § 1911 (2018).

¹⁵GAO is conducting ongoing audit work on TSA’s strategy to diversify its security technology marketplace.

We found no evidence that third party testing will increase supplier diversity or attract more innovation. In fact, both TSA officials and industry representatives we spoke with questioned third party testing's relevance to diversifying the transportation security equipment market, increasing small business participation in TSA's acquisition process, or increasing innovation. As discussed above, they noted that small businesses generally cannot afford the cost associated with third party testing. For example, one third party tester informed us that some smaller vendors and start-up companies have reached out to them for testing services but could not afford it. TSA officials and industry representatives instead pointed to other efforts within TSA, such as the Innovation Task Force—which exists to promote innovation in security screening technology—and its Office for Small Business Programs, as tasked with achieving these goals.¹⁶

According to the GPRA Modernization Act of 2010, an agency should describe how its goals will be achieved, including the activities that contribute to achieving the goals; assess if the activities are contributing to the goals as planned; and identify the goals at risk of not being achieved and strategies for improvement. Although TSA has stated to Congress that third party testing will help achieve its goals of supplier diversity and innovation, there is a lack of evidence to support this statement. Without an understanding of the effect of third party testing on its goals, TSA cannot reliably know whether third party testing diversifies the transportation security equipment market, increases small business participation in TSA's acquisition process, or increases innovation.

Conclusions

For over a decade, TSA has experienced challenges in testing and approving new security systems to meet ever changing threats. As far back as 2013, TSA advocated for the use of third party testing as an answer to some of these challenges, and yet to date, it has used third party testing only a handful of times and has not yet developed metrics to measure results. By developing metrics and then measuring the extent to which third party testing helps it to achieve its goal of increasing efficiency, TSA would be better able to understand and articulate the perceived benefits of third party testing. With regard to perceived benefits, there is no evidence that third party testing supports supplier diversity and innovation. In fact, agency officials and industry representatives

¹⁶We have previously reported on agency's small business offices. See GAO, *Small Business Contracting: Actions Needed to Demonstrate and Better Review Compliance with Select Requirements for Small Business Advocates*, [GAO-17-675](#) (Washington, D.C.: Aug. 25, 2017).

suggested it discourages small business participation. Without assessing whether third party testing contributes to supplier diversity and innovation, TSA cannot know if third party testing activities are supporting these goals as planned.

Recommendations for Executive Action

We are making the following three recommendations to TSA:

The Administrator of TSA should establish metrics to measure the effects of third party testing on the efficiency of the test and evaluation process. (Recommendation 1)

When performance metrics have been established, the Administrator of TSA should assess gains in efficiency resulting from third party testing. (Recommendation 2)

The Administrator of TSA should assess whether third party testing contributes to its goals of increasing supplier diversity and innovation. (Recommendation 3)

Agency Comments

We provided a draft of this report to DHS for review and comment. In its comments, reproduced in appendix I, DHS concurred with each of the three recommendations and indicated they expect to complete actions to implement them by August 2021. TSA also provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committees, the Acting Secretary of Homeland Security, and the TSA Administrator. In addition, the report is available at no charge on the GAO website at <https://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-4841 or MakM@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made significant contributions to this report are listed in appendix II.



Marie A. Mak
Director, Contracting and National Security Acquisitions

List of Committees

The Honorable Roger F. Wicker
Chairman

The Honorable Maria Cantwell
Ranking Member
Committee on Commerce, Science, and Transportation
United States Senate

The Honorable Ron Johnson
Chairman

The Honorable Gary C. Peters
Ranking Member
Committee on Homeland Security and Governmental Affairs
United States Senate

The Honorable Bennie G. Thompson
Chairman

The Honorable Mike Rogers
Ranking Member
Committee on Homeland Security
House of Representatives

Appendix I: Comments from the Department of Homeland Security

U.S. Department of Homeland Security
Washington, DC 20528



**Homeland
Security**

October 16, 2020

Ms. Marie A. Mak
Director, Contracting and National Security Acquisitions
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

RE: Management Response to Draft Report GAO-21-50, "TRANSPORTATION SECURITY ACQUISITIONS: TSA Needs to Establish Metrics and Evaluate Third Party Testing Outcomes for Screening Technologies"

Dear Ms. Mak:

Thank you for the opportunity to comment on this draft report. The U.S. Department of Homeland Security (DHS) appreciates the U.S. Government Accountability Office's (GAO) work in planning and conducting its review and issuing this report.

The Department is pleased to note GAO's recognition of the importance of the Transportation Security Administration's (TSA) work in assessing that critical Transportation Security Equipment (TSE) is rigorously evaluated with a focus on supporting Transportation Security Officers (TSOs) in performance of their safety and security role.

As a leader in the transportation security network, TSA's work to increase the effectiveness of TSE and rapidly deploy improved capabilities to the field is continuous. Acquiring and maintaining a baseline of aviation security is a complex task, and TSA cannot do it alone. Consequently, TSA is committed to maintaining the strong partnerships across governments, industry, and other stakeholders that are integral to success in this shared security mission.

The draft report contained three recommendations, with which the Department concurs. Attached find our detailed response to each recommendation. DHS previously submitted technical comments under a separate cover for GAO's consideration.

**Appendix I: Comments from the Department of
Homeland Security**

Again, thank you for the opportunity to review and comment on this draft report. Please feel free to contact me if you have any questions. We look forward to working with you again in the future.

Sincerely,

**JIM H
CRUMPACKER**

Digitally signed by JIM H
CRUMPACKER
Date: 2020.10.16 13:27:10
-04'00'

JIM H. CRUMPACKER, CIA, CFE
Director
Departmental GAO-OIG Liaison Office

Attachment

**Attachment: Management Response to Recommendations
Contained in GAO-21-50**

GAO recommended that the TSA Administrator:

Recommendation 1: Establish metrics to measure the effects of third party testing on the efficiency of the test and evaluation process.

Response: Concur. Since the inception of third-party testing, TSA's Test and Evaluation Division developed a methodology to track test delays across the breadth of TSA technical capabilities. This tool allows TSA to build a baseline and conduct trend analysis of all testing, including test delays by capturing and reviewing data by equipment type, vendor, and test phase. This analysis allows TSA to produce metrics highlighting critical failure points leading to delays. Based upon tracking approximately 450 systems, the historical primary cause of delay is systems' immaturity entering the certification and qualification phase. TSA's Test and Evaluation Division intended to capture the same data for third-party tested systems and determine the reduction in failure points, if any. To date, the limited participation in third-party testing by vendors has not provided sufficient data to populate meaningful metrics. Estimated Completion Date (ECD): November 30, 2020.

Recommendation 2: When performance metrics have been established, assess gains in efficiency resulting from third party testing.

Response: Concur. TSA continues to look for opportunities to continuously improve our processes and facilitate the rapid deployment of critical capabilities to the field. To date, third-party testing did not produce any measurable effects because of limited industry acceptance of third-party testing, as well as lack of voluntary participation. Consequently, TSA's Test and Evaluation Division will continue to assess the third-party testing concept, and other viable ways to improve performance. ECD: May 31, 2021.

Recommendation 3: Assess whether third party testing contributes to its goals of increasing supplier diversity and innovation.

Response: Concur. Third-party testing was not conceived as a method to increase supplier diversity or innovation, but was instead intended to increase the maturity of systems entering the certification and qualification process, as well as reduce the time spent in the TSA acquisition cycle. Third-party testing, in some cases, may potentially discourage small businesses, as it can be a relatively expensive process. Nevertheless, as part of our continuous process improvement, TSA's Acquisition and Program Management Division will continue to explore alternative strategies, in addition to third-party testing, to reduce the acquisition timeline. In so doing, TSA will assess whether third-party testing increases supplier diversity and innovation. ECD: August 31, 2021.

Appendix II: GAO Contact and Staff Acknowledgments

GAO Contact

Marie A. Mak at (202) 512-4841 or MakM@gao.gov

Staff Acknowledgments

In addition to the contact named above, Tatiana Winger (Assistant Director), LeAnna Parkey (Analyst-in-Charge), Peter W. Anderson, William Bauder, Adie Lewis, Jill Schofield, Roxanna Sun, and Anne Louise Taylor made key contributions to this report.

GAO's Mission

The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through our website. Each weekday afternoon, GAO posts on its [website](#) newly released reports, testimony, and correspondence. You can also [subscribe](#) to GAO's email updates to receive notification of newly posted products.

Order by Phone

The price of each GAO publication reflects GAO's actual cost of production and distribution and depends on the number of pages in the publication and whether the publication is printed in color or black and white. Pricing and ordering information is posted on GAO's website, <https://www.gao.gov/ordering.htm>.

Place orders by calling (202) 512-6000, toll free (866) 801-7077, or TDD (202) 512-2537.

Orders may be paid for using American Express, Discover Card, MasterCard, Visa, check, or money order. Call for additional information.

Connect with GAO

Connect with GAO on [Facebook](#), [Flickr](#), [Twitter](#), and [YouTube](#).
Subscribe to our [RSS Feeds](#) or [Email Updates](#). Listen to our [Podcasts](#).
Visit GAO on the web at <https://www.gao.gov>.

To Report Fraud, Waste, and Abuse in Federal Programs

Contact FraudNet:

Website: <https://www.gao.gov/fraudnet/fraudnet.htm>

Automated answering system: (800) 424-5454 or (202) 512-7700

Congressional Relations

Orice Williams Brown, Managing Director, WilliamsO@gao.gov, (202) 512-4400, U.S. Government Accountability Office, 441 G Street NW, Room 7125, Washington, DC 20548

Public Affairs

Chuck Young, Managing Director, youngc1@gao.gov, (202) 512-4800 U.S. Government Accountability Office, 441 G Street NW, Room 7149 Washington, DC 20548

Strategic Planning and External Liaison

James-Christian Blockwood, Managing Director, spel@gao.gov, (202) 512-4707 U.S. Government Accountability Office, 441 G Street NW, Room 7814, Washington, DC 20548

