



November 2015

SCREENING PARTNERSHIP PROGRAM

TSA Can Benefit from Improved Cost Estimates

Accessible Version

GAO Highlights

Highlights of [GAO-16-19](#), a report to congressional requesters

Why GAO Did This Study

The Transportation Security Administration (TSA) screens approximately 1.8 million passengers and their property at our nation's airports every day to ensure, among other things, that persons do not carry prohibited items into airport boarding areas or on flights. In 2004, TSA created the Screening Partnership Program (SPP), allowing TSA-regulated airports to apply to have screening of passengers and property performed by private contractors. TSA develops cost estimates to determine what its costs would be to perform screening services at SPP airports. These estimates provide a basis of comparison for program and procurement decisions.

GAO was asked to review the SPP. This report addresses: (1) the extent to which TSA developed and reported reliable cost estimates for providing screening services at SPP airports; and (2) how TSA uses cost estimates in selecting SPP contractors and the extent to which TSA monitors contract values relative to its cost estimates. GAO compared TSA's cost estimates to best practices for developing federal cost estimates, analyzed selection and monitoring in the 13 contracts in which estimates were used, and interviewed TSA and contractor officials.

What GAO Recommends

GAO recommends that TSA: (1) revise its 2013 cost estimating methodology to conform to best practices; (2) provide cost comparisons to Congress on a regular basis; and (3) compare and update estimates when major changes to contract values occur. TSA concurred with the recommendations. View [GAO-16-19](#). For more information, contact Jennifer Grover at (202) 512-7141 or GroverJ@gao.gov.

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TSA Can Benefit from Improved Cost Estimates

What GAO Found

Based on an analysis of TSA's cost estimating practices and methodology developed in 2013 against best practices, TSA's cost estimates have some strengths, but also have limitations in four general characteristics needed to reflect a high-quality and reliable cost estimate. TSA's cost estimating practices reflect certain strengths, including a revised cost estimating methodology that provides sufficient details for TSA staff to develop and document cost estimates. However, limitations in each of the four characteristics of a high quality cost estimate (comprehensive, well-documented, accurate, and credible) prevent TSA's estimates from being reliable. For example, TSA's cost estimates are not fully comprehensive because they include only the costs incurred by TSA to perform screening at an airport and not the total costs incurred by the federal government such as retirement benefits and insurance. Further, TSA's estimates are not regularly updated to reflect changes to the program that could affect costs and do not include an analysis that addresses the uncertainty inherent in cost estimates. A methodology that is more closely aligned with best practices for cost estimation can provide more reliable information.

While multiple congressional committees have sought improved information on the cost effectiveness of the SPP to oversee the program, TSA has not reported cost comparisons between federal and private screening at SPP airports to policy makers. Since 2013, TSA has prepared comprehensive annual reports that include, among other things, a comparison of actual private costs with estimated federal costs. According to TSA officials, they have not shared these reports with Congress because they are developed for internal use. Although TSA has no standing requirement to report this information, doing so (such as on an annual basis), can better position policy makers to assess and understand the effectiveness of the SPP program and its effects on federal costs.

TSA limits its selection of contractors to those who propose costs less than or equal to TSA's estimated costs to perform the same services. However, once it has awarded a contract, TSA does not continually monitor the value of the contract relative to its estimated costs throughout the contract period. TSA also does not update its estimated costs to account for changes during the contract period that affect the estimates. TSA has determined that it will not consider a contractor's proposal to perform screening at an airport if the proposed cost exceeds TSA's estimated costs to perform screening services at an airport, and will only further evaluate those proposals that are less than or equal to TSA's estimated costs. However, over the contract period, the value of the contract may increase or decrease due to modifications that address changes to the work. For example, if an airport opens a new terminal, the contract might be modified to accommodate the need to hire additional staff. Some of these changes may also affect TSA's estimated costs for performing the services provided in the contract. Therefore, continually monitoring how contract values compare to TSA's estimated costs, and ensuring the cost estimates are updated to correspond to major changes in the program or contract, would provide program officials and policymakers with more accurate information about the relative costs of operating airports with federal and private screeners.

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Abbreviations

ATSA	Aviation and Transportation Security Act
CFO	Office of the Chief Financial Officer
DHS	Department of Homeland Security
FAA	Federal Aviation Administration
FTE	fulltime equivalent
ID/IQ	Indefinite delivery/indefinite quantity
SCA	Service Contract Act
SPP	Screening Partnership Program
TSA	Transportation Security Administration
TSO	Transportation Security Officer

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November 16, 2015

Congressional Requesters:

The Department of Homeland Security's (DHS) Transportation Security Administration (TSA) is responsible for screening the approximately 1.8 million passengers and their property traveling through our nation's airports every day to ensure, among other things, that persons do not carry prohibited items into airport sterile areas or on flights.¹ In 2004, TSA created the Screening Partnership Program (SPP), allowing commercial (i.e., TSA-regulated) airports an opportunity to apply to TSA to have the screening of passengers and property performed by TSA-approved qualified private-screening contractors.² As of June 2015, contractors perform passenger and baggage screening services at 21 airports across the country.³ At each of the SPP airports, TSA continues to be responsible for overseeing screening operations, and the contractors must adhere to TSA's security standards, procedures, and requirements. Since the program's inception, congressional committees, industry stakeholders, and TSA have sought to determine how screening costs compare at airports with private and federal (i.e. TSA-employed) screeners, and TSA does produce cost estimates that attempt to predict what it would cost the agency to provide passenger and baggage screening services at airports that have opted out or plan to opt out of federal screening. Our previous work, including a January 2009 briefing and a March 2011 update, raised concerns with TSA's methodology for

¹The sterile area is the portion of an airport defined in an airport's security program that provides passengers access to boarding aircraft and to which access is generally controlled by TSA through the screening of persons and property. See 49 C.F.R. §1540.5.

²There are approximately 450 commercial airports as of September 2015. We refer to airports that are participating in the SPP as SPP airports and the screeners in those airports as private screeners. We refer to airports that do not participate in the SPP as non-SPP airports and the screeners at those airports as federal screeners.

³Of the 21 airports, 7 have transitioned to private screeners since September 2014. One additional airport has been accepted into the SPP but, as of September 2015, was awaiting contract award.

developing its cost estimates.⁴ In 2013, TSA developed a revised methodology for developing cost estimates for each SPP airport that addressed some of the design limitations we previously cited. The resulting numbers are used to estimate the cost to convert an airport from federal to non-federal screeners or to convert an SPP airport back to federal screeners and the expected operational costs. The estimates are used to provide a basis of comparison in internal reports and as part of TSA's revised contracting strategy for selecting contractors at SPP airports, which incorporates the estimates in an effort to award contract values at or below what it would cost TSA to screen passengers and property at an airport.

As additional airports consider applying to the SPP and as TSA continues to seek ways to improve its ability to compare the costs of private and federal screeners, you asked that we examine TSA's approach to estimating costs, how these estimates are used in procuring screening services, and how TSA continues to adapt its SPP procurement policies and processes. This report addresses: (1) the extent to which TSA has developed and reported reliable cost estimates for providing screening services for SPP airports; (2) how TSA uses cost estimates in selecting SPP contractors and the extent to which TSA monitors contractor costs relative to its cost estimates; and (3) how the SPP has changed since the beginning of fiscal year 2014.

To determine the extent to which TSA developed reliable cost estimates, we compared TSA's cost estimation practices with leading best practices identified in GAO's Cost Estimating and Assessment Guide, which establishes a consistent methodology that is based on best practices and that can be used across the federal government for developing, managing, and evaluating cost estimates.⁵ The best practices in the guide

⁴See GAO, *Aviation Security: TSA's Cost and Performance Study of Private-Sector Airport Screening*, [GAO-09-27R](#) (Washington, D.C.: Jan. 9, 2009) and GAO, *Aviation Security: TSA's Revised Cost Comparison Provides a More Reasonable Basis for Comparing the Costs of Private-Sector and TSA Screeners* [GAO-11-375R](#) (Washington, D.C.: Mar. 4, 2011).

⁵GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs (Supersedes [GAO-07-1134SP](#)), [GAO-09-3SP](#)* (Washington, D.C.: Mar. 2, 2009). The methodology outlined in this guide is a compilation of best practices that federal cost-estimating organizations and industry use to develop and maintain reliable cost estimates throughout the life of a government program. The best practices were developed in conjunction with government and industry experts in the cost-estimating community.

are the basis for a high-quality, reliable cost estimate. Specifically, we reviewed TSA's overall methodology and practices for developing SPP cost estimates as well as the 13 official cost estimates that have been used in the procurement process for individual airports and supporting documents for each estimate.⁶ We interviewed TSA officials who are responsible for developing and using the cost estimates to gain further insight into the decisions and assumptions made during the development of the cost estimates. We evaluated TSA's practices and cost estimates to determine the extent to which they met or did not meet leading best practices. To determine the extent to which TSA reports cost comparisons between SPP and non-SPP airports to policy makers, we reviewed TSA directives on SPP reporting and interviewed TSA program officials.⁷ We also assessed TSA internal reporting guidance using GAO's Standards for Internal Control in the Federal Government, which indicates that management should externally communicate the necessary quality information to achieve the entity's objectives.⁸

To determine how TSA uses its cost estimates in selecting SPP contractors, we reviewed 10 contracts representing 20 of the 22 airports in the SPP at the time of our work. We selected all of the contracts that were active at the time of our review, except two. We did not review the contracts for (1) Kansas City International Airport due to an ongoing dispute over TSA's award of the SPP contract and contract renegotiations during the time of our review and (2) Punta Gorda Airport because the contract award was pending at the time of our review.⁹ For each contract,

⁶TSA also provided unofficial cost estimates for eight airports that were awarded contracts prior to the development of the current cost estimation methodology. We reviewed these for context but did not include them in our analysis.

⁷We did not assess other TSA communications to Congress, such as briefings.

⁸GAO, *Standards for Internal Control in the Federal Government*, [GAO/AIMD-00-21.3.1](#) (Washington, D.C.: Nov. 1999).

⁹The ongoing dispute between TSA and the incumbent (now former) screening company at Kansas City International Airport, who had performed screening services at the airport since 2002, originated with TSA's April 2010 solicitation for screening services at the airport and the incumbent's subsequent challenges to TSA's award of the contract to another company. See *Firstline Transportation Security, Inc. v. United States*, 119 Fed. Cl. 116 (2014) (filed under seal November 13, 2014, and reissued for publication November 25, 2014). After the Court of Federal Claims upheld TSA's February 2014 award of the contract to the new (non-incumbent) contractor, TSA began negotiations with the new and incumbent contractors to transition screening services and restructure the contract, which would have an impact on the total contract award amount. Due to these circumstances, we excluded Kansas City International Airport from our analysis.

we analyzed contract documents to identify where the cost estimates were used or not used at various stages in the procurement process including, among other stages, solicitation and contract award. We also interviewed TSA headquarters officials knowledgeable about TSA's use of cost estimates in the procurement process and reviewed TSA policy documents regarding the use of the cost estimates in the procurement process. To determine the extent to which TSA compares contractor costs to TSA's estimated costs, we interviewed TSA officials to determine whether cost estimates are updated based on changes to the contract and whether cost estimates were considered when issuing contract modifications. We also evaluated TSA's current process and practices regarding monitoring of contract costs against leading best practices for cost estimating that include comparing planned and actual performance against approved program baselines.¹⁰ Additionally, to determine the extent to which changes can occur during the contract's period of performance, we reviewed contract modifications that increased or decreased the value of the contract from August 2009 to May 2015 for contracts that were active during the time of our review.

To determine how the SPP has changed since the beginning of fiscal year 2014, we reviewed SPP policy documentation and other SPP procurement documents, such as SPP contracts and requests for proposals to understand TSA's procurement process. We reviewed TSA and Department of Labor guidance regarding wages and interviewed TSA acquisition and program officials knowledgeable about TSA's procurement process to determine what procurement related changes had occurred since the beginning of fiscal year 2014. We visited nine airports that had private screeners or were at various stages of preparing for private screeners and spoke to SPP stakeholders at each airport, including airport directors, contractors, TSA federal security directors and federal screeners who had transitioned—or were preparing for transition—to obtain their perspectives on how SPP changes have impacted airport operations. We selected SPP airport locations to visit based on their proximity to other SPP airports and to provide a variety of perspectives based on those airports time in the program. We also met with each of the five private screening contractors with SPP contracts at the time of our review and related industry associations to obtain their

¹⁰[GAO-09-3SP](#).

perspective on changes that have occurred in the program and their experiences as participants in the procurement process.

We conducted this performance audit from August 2014 to November 2015 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

Program History and Participants

On November 19, 2002, pursuant to the Aviation Transportation Security Act (ATSA), TSA began a two year pilot program at five airports using private screening companies to screen passengers and checked baggage.¹¹ In 2004, at the completion of the pilot program, and in accordance with ATSA, TSA established the SPP, whereby any airport authority, whether involved in the pilot or not, could request a transition from federal screeners to private, contracted screeners.¹² In general, the SPP allows commercial airports an opportunity to “opt out” of federal screening by applying to TSA to have private screeners perform passenger and baggage screening functions, with a private screening company (i.e., a contractor) assuming responsibility for the hiring,

¹¹See Pub. L. No. 107-71, § 108(a), 115 Stat. 597, 611-13 (2001); 49 U.S.C. § 44919. The pilot program was to assess the feasibility of having qualified private screening companies provide airport security screening services in lieu of federal screeners at one airport from each of TSA’s security risk categories. One airport from each security risk category was selected to participate: (1) San Francisco International Airport—category X, (2) Kansas City International Airport—category I, (3) Greater Rochester International Airport—category II (now a category I airport), (4) Jackson Hole Airport—category III, and (5) Tupelo Regional Airport—category IV. TSA classifies commercial airports in the United States into one of five security risk categories (X, I, II, III, and IV) based on various factors, such as the total number of takeoffs and landings annually, and other special security considerations. In general, category X airports have the largest number of passenger boardings, and category IV airports have the smallest.

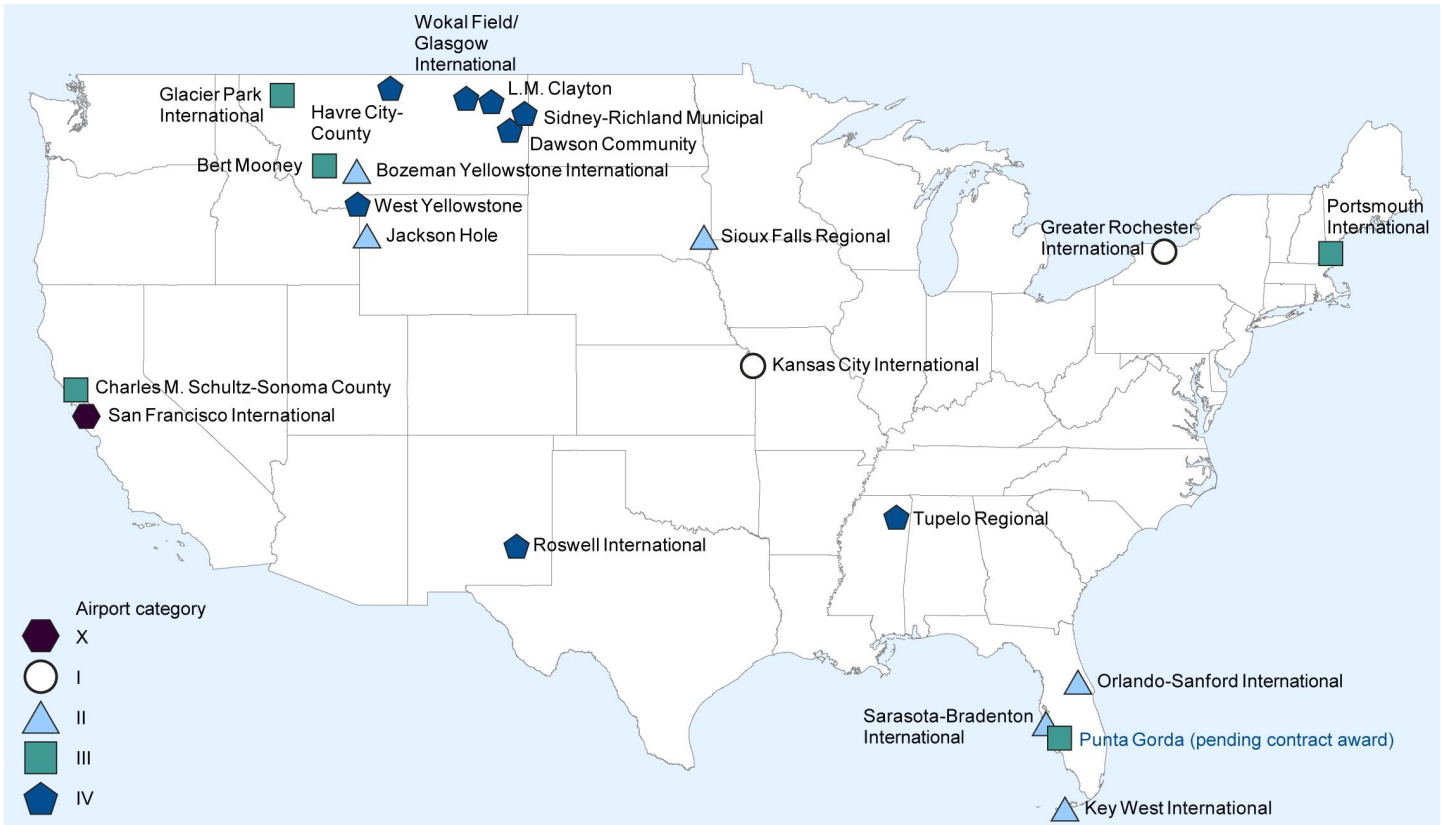
¹²See Pub. L. No. 107-71, § 108(a), 115 Stat. at 611-13; 49 U.S.C. § 44920, as amended.

training, and management of the screening workforce.¹³ At airports with private screeners, TSA continues to be responsible for overseeing airport security operations and ensuring that the contractors provide effective and efficient screening operations in a manner consistent with law, regulation, and other TSA requirements.¹⁴ As shown in figure 1, as of July 2015, there are 21 airports operating with private screeners and an additional airport awaiting contract award.

¹³For purposes of this report, a commercial airport is any airport in the United States that operates pursuant to a TSA-approved security program in accordance with 49 C.F.R. pt. 1542 and at which TSA performs or oversees the performance of screening services.

¹⁴The SPP contractor's responsibilities include recruiting, assessing, and training screening personnel to provide security screening functions in accordance with TSA regulations, policies, and procedures.

Figure 1: Airports Participating in the Screening Partnership Program



Source: GAO analysis of Transportation Security Administration data; MapInfo (map). | GAO-16-19

Note: TSA classifies commercial airports in the United States into one of five security risk categories (X, I, II, III, and IV) based on various factors, such as the total number of takeoffs and landings annually, and other special security considerations. In general, category X airports have the largest number of passenger boardings, and category IV airports have the smallest.

TSA's Cost Estimates

When TSA compares the costs of private and federal screeners, TSA estimates the costs that it would incur to have federal screeners operate at an SPP airport in a given year. Past estimates have varied from stating that federal screeners would be 17 percent less expensive than private screeners in 2007 to less than 1 percent less expensive in 2013. In our January 2009 report we evaluated the methods TSA used to compare the estimated costs of federal screeners to private screeners. We found that TSA's cost estimating methodology's design had some strengths, such as recognizing that cost savings would be limited by the requirement that

private contractors must follow standard TSA protocols but we also found limitations that could affect the validity and reliability of cost comparisons, and its usefulness in informing future management decisions.¹⁵ Accordingly, we recommended that if TSA planned to rely on its cost comparison of federal and private screeners for future decision making, the agency should update its analysis to address the limitations identified.¹⁶ TSA generally concurred with our findings and recommendation. In 2011, TSA officials provided an update on progress in addressing these limitations. In our March 2011 report that assessed TSA's actions, we found that TSA had taken steps—such as adjusting its cost estimates to account for overlapping contractor management and support staff at SPP airports—to generally address several of the methodological limitations related to costs, but needed to take additional steps to address the remaining limitations.¹⁷

In 2013, in response to the Federal Aviation Administration (FAA) Modernization and Reform Act of 2012 (FAA Modernization Act), which, among other things, required TSA to modify its process for evaluating SPP applications, TSA developed a revised cost estimating methodology to compare private and federal costs.¹⁸ The revised methodology is intended to produce a consistent basis of comparison and to provide a cost estimate that is used in annual internal reports to TSA leadership comparing federal and private costs, in making decisions on whether to transition from federal to private or private to federal screening, and to inform the procurement process for private screening services.¹⁹ In a

¹⁵ [GAO-09-27R](#).

¹⁶Specifically, we identified seven limitations in TSA's methodology related to estimating costs, such as underestimating costs to the government for non-SPP airports by not including all costs associated with providing passenger and baggage screening services and not accounting explicitly for uncertainty.

¹⁷ [GAO-11-375R](#).

¹⁸See generally Pub. L. No. 112-95, § 803, 126 Stat. 11, 135-36 (2012). Although the law does not specifically require that TSA develop a cost estimation methodology, TSA developed its methodology consistent with the statutory provision requiring that TSA approve an application unless doing so would compromise security or be detrimental to the cost efficiency or effectiveness of screening operations at the airport. See 49 U.S.C. § 44920(b)(2).

¹⁹TSA's *Methodology and Standards for Estimating and Comparing TSA Screening Costs* (June 30, 2014) outlines the methodology, standards, procedures, and reporting mechanisms TSA uses for estimating the cost of security screening by federal screeners.

2014 testimony, we found that TSA had taken steps to address certain past limitations but was continuing to work on others, adjusting the methodology as needed.²⁰ In addition to using the single year estimates for comparison purposes, TSA uses the estimates to develop a cost efficiency number for use in SPP contract solicitations. In general, the cost efficiency number is calculated based on the one year estimate of what it would cost TSA to operate at an SPP airport adjusted for the contract's five year period of performance, with certain additional adjustments for transition costs, inflation, and other variables.²¹

SPP Procurement Process TSA has a dedicated Office of Acquisitions for contracting screening services at SPP airports and has established a policy that contracts will be awarded within 12 months of a new airport's application.²² TSA's procurement process follows the Federal Acquisition Regulation (FAR), which provides uniform policies and procedures for acquisitions that include guidelines for developing acquisition plans.

Contract type: TSA has generally used firm-fixed price contracts in its most recent SPP procurements. According to the FAR, a firm-fixed-price contract is suitable for acquiring services when the specifications or requirements are well-defined and the contracting officer can establish a fair and reasonable price at the outset.²³ Firm-fixed price contracts establish the value of the contract for the entire term of the contract at award, placing the risk of cost overruns upon the contractor and

²⁰GAO, *Screening Partnership Program: TSA has Improved Application Guidance and Monitoring of Screener Performance, and Continues to Improve Cost Comparison Methods*, [GAO-14-787T](#) (Washington, D.C.: July 29, 2014).

²¹TSA refers to its one year estimate as a cost estimate or a federal cost estimate. TSA also refers to the adjusted estimate used for procurement as a cost efficiency number or a federal cost estimate. For purposes of this report, we refer to the one year estimate as a *cost estimate* and the adjusted estimate used for procurement purposes as a *cost efficiency number*.

²²The explanatory statement accompanying the fiscal year 2015 Department of Homeland Security (DHS) appropriations act establishes an expectation that TSA plan and manage toward a 12-month timeline for awarding applicable contracts for each new airport. See 161 Cong. Rec. H281 (daily ed. Jan. 13, 2015) (accompanying Pub. L. No. 114-4, 129 Stat. 39 (2015)). See also H.R. Rpt. No. 113-481, 113th Cong. (2d Sess. 2013) (accompanying H.R. 4903 and directing TSA to award applicable SPP contracts not later than 12 months from the date of receipt of an airport's application).

²³48 C.F.R. § 16.202-2.

incentivizing the contractor to control costs.²⁴ If contractor costs exceed the contract award price, the contractor is generally not reimbursed for the difference, although contract values can be increased or decreased in certain situations, such as when there is a modification of the agreed upon statement of work. Past SPP procurements have also used cost-reimbursable contracts, which, according to the FAR, are suitable when circumstances do not allow the agency to define its requirements sufficiently to allow for a fixed-price type contract or uncertainties involved in contract performance do not allow for an accurate estimate to use in a fixed-price contract.²⁵ Cost-reimbursable contracts allow for payment of allowable incurred costs to the extent prescribed in the contract and generally place the risks of cost overruns on the government. TSA officials from the Office of Acquisition have stated that the agency currently uses firm-fixed price contracts because the scope of work is clearly defined but that other contract vehicles could be considered in the future.

Contractor evaluation and selection: When a new airport is accepted into the SPP or an existing contract is renewed, TSA issues requests for proposals to solicit competition from interested vendors. For SPP contracts entered into prior to September 2015, TSA solicited and awarded a separate contract every time a new airport was accepted into the SPP. According to TSA officials, the agency plans to establish indefinite delivery/indefinite quantity (ID/IQ) contracts with multiple vendors who would subsequently compete for task orders to provide services at individual airports. This change is described in more detail later in the report. In the prior approach, TSA awarded the final contract to the contractor whose proposal represented the best value based on a trade-off analysis; according to TSA officials, they plan to award task orders under the new approach using the same method.²⁶ For current SPP contracts, TSA determined the best value proposal based on the

²⁴48 C.F.R. § 16.202-1.

²⁵48 C.F.R. § 16.302-2.

²⁶Best value is defined as the expected outcome of an acquisition that, in the Government's estimation, provides the greatest overall benefit in response to the requirement. 48 C.F.R. § 2.101. A trade-off analysis considers, in addition to cost, other factors related to technical capability, and is appropriate when it may be in the best interest of the government to consider an award to other than the lowest priced proposal or highest technically rated proposal. See 48 C.F.R. § 15.101-1.

evaluation factors described in the request for proposal relating to factors such as cost and technical capability. TSA has included the following cost and technical evaluation factors in previous SPP request for proposals: (1) Cost Efficiency, (2) Operational Screening Management, (3) Program Management, (4) Logistics and Training, (5) Transition, (6) Past Performance, and (7) Price.²⁷

In evaluating contractor proposals, TSA conducted a trade-off analysis based on the evaluation criteria and their relative order of importance included in the request for proposal.²⁸ As part of the trade-off analysis, TSA evaluated the contractors' proposed prices to determine if they were fair, reasonable, balanced, and in compliance with laws and regulations regarding wages. For example, TSA may determine that a proposal price is not fair and reasonable if the cost or price analysis indicates that it is significantly over or understated. Contracting officers also determine whether a contractor's total proposed price complies with applicable wage requirements established in ATSA—specifically, that the private screening company provides compensation and other benefits to their private screeners that are not less than the level of compensation and other benefits provided to federal screeners.²⁹ Using this trade-off process, TSA may award a SPP contract based on a proposal that is not the lowest priced option or the highest rated technical proposal.

²⁷According to the FAR, agencies are responsible for defining evaluation factors for awarding negotiated contracts. See 48 C.F.R. § 15.304. The evaluation factors must be tailored to the acquisition to represent key areas of importance and support meaningful comparison among competing proposals. *Id.* All factors and significant sub factors are to be included in the request for proposal with their relative importance, and the solicitation must state whether all factors other than cost or price, when combined, are of more, less or equal importance to cost or price. *Id.*

²⁸For past SPP contract selections, TSA has considered factor 1 as more important than factor 2; factor 2 as more important than factor 3; factor 3 as more important than factor 4 and factor 5, individually; factor 4 and factor 5 as being of equal importance and more important than factor 6; factor 7 as approximately equal to the combined technical factors (2-6).

²⁹See 49 U.S.C. § 44920(c).

TSA's Cost Estimating Practices have Some Strengths, but Estimates are Not Reliable and Cost Comparisons are Not Reported to Policy Makers

TSA's Cost Estimating Practices have Some Strengths, but Limitations Prevent the Cost Estimates from Being Reliable

Based on an analysis of TSA's cost estimating practices and methodology developed in 2013 against best practices, TSA's cost estimates have some strengths, but also have limitations in four general characteristics needed to reflect a high-quality and reliable cost estimate. According to TSA's documented methodology, TSA developed its cost methodology approach to form the basis for comparing costs between federal and private screening at commercial airports and to create accurate, reasonable, and defensible cost estimates.³⁰ The TSA methodology document states that these estimates are used in annual internal reports comparing federal and private costs and in making decisions on whether to transition from federal to private or private to federal screening.³¹ According to GAO's Cost Estimating and Assessment Guide, a cost estimate created using best practices exhibits four characteristics—comprehensive, well documented, accurate, and credible.³² If any of these characteristics are not substantially or fully met, then the cost estimate does not reflect the characteristics of a high-quality

³⁰TSA's *Methodology and Standards for Estimating and Comparing TSA Screening Costs* (July 31, 2013).

³¹While the estimates are also used to generate numbers used in the procurement process (the cost efficiency number), our analysis discusses the strengths and limitations of the process used to develop the one year estimate.

³²GAO's *Cost Estimating and Assessment Guide* ([GAO-09-3SP](#)) identifies four characteristics of a high-quality, reliable cost estimate. Each characteristic is associated with a specific set of best practices. See appendix II for additional details.

estimate and cannot be considered reliable.³³ Our analysis found that TSA's cost estimating practices substantially met the criteria for two of the four characteristics—comprehensive and well documented. Although most of the best practices related to these characteristics were addressed, which led to the overall assessment that the characteristic was substantially met, key best practices, such as including all costs in the estimate, remained incomplete. Also, for the two remaining characteristics—accuracy and credibility—TSA's cost estimating practices partially met the criteria. Thus, limitations existed in all four characteristics preventing the costs estimates from being reliable for, among other purposes, comparing the costs of private and federal screeners. Appendix II provides greater detail on the four characteristics and our comparison of the TSA cost estimates with specific best practices that constitute the four GAO cost estimating characteristics.

In general, TSA's cost estimating practices reflect certain strengths, including a cost estimating methodology that provides sufficient details for TSA staff to develop and document cost estimates. Our analysis of TSA's methodology and cost estimating documents found strengths such as including a step by step description of how the estimates were developed and providing evidence that the cost estimates were reviewed and accepted by management. Specifically, the methodology includes a description of the various factors included in the cost estimates, the assumptions related to each factor, and the reasoning behind each factor's inclusion in the cost estimate. Also, the methodology includes the same information for factors that are excluded from the cost estimate. These strengths provide a basis on which TSA can develop its cost estimates.

However, as noted above, our analysis also found limitations in all four of the characteristics which prevent the cost estimates from being considered high-quality and reliable. Among these limitations, we identified four practices that may specifically affect the estimates'

³³Characteristics were assessed using the following scale: Fully meets: TSA provided complete evidence that satisfies the entire criterion; Substantially meets: TSA provided evidence that satisfies a large portion of the criterion; Partially meets: TSA provided evidence that satisfies about half of the criterion; Minimally meets: TSA provided evidence that satisfies a small portion of the criterion; Does not meet: TSA provided no evidence that satisfies any of the criterion. See appendix II for more detail on our assessment.

comprehensiveness, documentation, accuracy, and credibility. Specifically, our comparison showed that:

- TSA cost estimates are not fully comprehensive. TSA’s cost estimates include only TSA’s costs and not costs incurred by other federal agencies. The resulting effect is that the cost estimating methodology compares full private screening costs to costs incurred by TSA, and not the total cost to the federal government. TSA refers to its costs as “federal costs,” which reflect costs that are lower than the total expected cost to the federal government. TSA’s cost methodology document states that imputed costs such as retirement, corporate tax adjustment and general liability insurance are to be calculated, but not included in the final cost estimates since these costs do not impact TSA’s budget.³⁴ Office of Management and Budget (OMB) guidance in Circular A-76 provides that when developing a cost comparison, government costs should account for the fully burdened cost to the government.³⁵ We found that by including TSA’s estimates of these other federal costs (i.e. costs not borne by TSA) for the 13 SPP airports for which TSA provided official cost estimates, TSA’s cost estimates are, on average, 91 percent of the total federal costs.³⁶ Other federal costs are, on average, 9 percent of the total federal costs (see figure 2). In addition, the percentage difference between the estimates of TSA’s costs and all federal costs (other federal costs

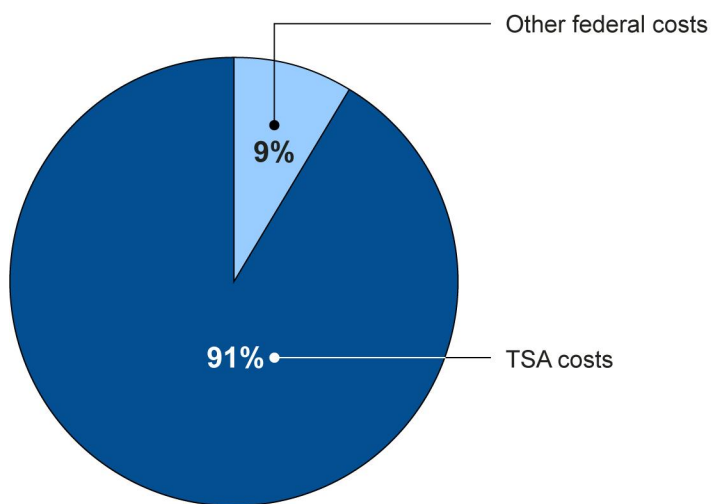
³⁴Our analysis examined the reliability of the TSA cost estimates without the imputed costs (other federal costs) since TSA does not include these costs in its official estimates.

³⁵For example, Office of Management and Budget (OMB) Circular A-76 (May 29, 2003, revised) provides that when developing a cost comparison, government costs should include, among other things the standard retirement cost factor to represent the government’s complete share of the weighted retirement cost. Circular A-76, however, is specific to conducting competitions between public agencies and the private sector, which does not directly pertain to SPP contracts, and the moratorium on executive agencies conducting public private competitions under Circular A-76 or any other provision of law or regulation, enacted through the Omnibus Appropriations Act, 2009, remains in effect. See Pub. L. No. 111-8, div. D, tit. VII, § 736, 123 Stat. 524, 689-90 (2009). TSA officials nonetheless stated that it follows the guidance contained within Circular A-76 in its cost estimation methodology.

³⁶According to TSA officials, official cost estimates were developed for use in the procurement process after implementation of the FAA Modernization Act’s SPP provisions. While TSA provided examples of cost estimates for 21 SPP airports, we based our analysis on the 6 cost estimates, representing 13 airports, identified by TSA as official cost estimates. TSA also provided unofficial cost estimates for eight airports that were awarded contracts prior to the development of the current cost estimation methodology. We reviewed these for context but did not include them in our analysis.

added to TSA costs) ranges from 7 to 17 percent for each of the 13 SPP airports. Officials in TSA's Office of the Chief Financial Officer stated that they do not include the non-TSA costs in the estimates because TSA is not appropriated funds for these costs and cannot reprogram or transfer funds to compensate for such costs without detrimentally affecting other critical security programs. Including other federal costs in the estimates for informational purposes when comparing costs in internal or external reporting can eliminate bias in cost comparisons by ensuring that estimated government costs for providing passenger and baggage screening services at SPP and non-SPP airports are accurately represented, rather than understated.³⁷

Figure 2: Total Federal Costs for 13 Transportation Security Administration (TSA) Screening Partnership Program Airports



Source: GAO analysis of TSA data. | GAO-16-19

- TSA cost estimates include incomplete documentation. TSA's cost estimate documentation does not always capture the source of the data used to develop the estimate, the reliability of the data, and how

³⁷The scope of this review did not evaluate whether other federal costs should be absorbed by TSA. Our work emphasizes the effect of TSA reporting those costs when evaluating the impact of the total cost to the federal government of screening services.

the data were normalized.³⁸ According to best practices, data are the foundation of every cost estimate and how good the data are affects the cost estimate's overall credibility. Depending on the data quality, an estimate can range anywhere from a mere guess to a highly defensible cost position. However, without appropriate background knowledge about the source and reliability of the data, it cannot be known with sufficient confidence whether the data collected can be used directly or need to be modified. While total labor costs are the largest driver in the cost estimate at, on average, 76 percent of the estimated cost to the federal government, for the 13 SPP airports reviewed, we found that not all of the TSA cost estimate documentation included the source of the data, such as where the labor rates used to develop the estimate came from. Since data can be gathered from a variety of sources, such as actual private contractor data or actual TSA payroll data, they are often in many different forms and need to be adjusted before being used. As a result, data normalization is often necessary so that the data are consistent with other cost information. We found that neither the TSA cost methodology document nor the cost estimate documentation describe the process used to normalize the labor rates. TSA officials stated that revising the methodology is an iterative process and it modifies its approach, including potentially adding documentation, as its process matures. By documenting the sources of all cost data used to develop the cost estimates, TSA could better ensure the data are reliable and consistent.

- TSA cost estimates are not regularly updated. TSA cost estimates are not fully accurate because they are not regularly updated to reflect significant changes in the program as called for by best practices. For example, we found that TSA does not modify the cost estimates to account for changes in the program that can affect screening costs, such as the introduction of new screening equipment or the construction of a new terminal at an airport. Although the TSA cost methodology documentation is updated on an annual basis to reflect changes to the methodology based on TSA and external assessments, the cost estimates for existing contracts are not updated. TSA officials stated that the estimates are developed once an airport has applied to the program and are generally not revisited

³⁸The purpose of data normalization (or cleansing) is to make a given data set consistent with and comparable to other data used in the estimate.

once contractors are selected. If the estimate is not updated when changes affecting the program costs occur, it will be difficult to analyze how changes such as introducing new processes or equipment affect TSA's estimated cost for screening operations at an airport. Furthermore, unless properly updated on a regular basis, the cost estimate cannot provide accurate, ongoing information as a basis for comparison with SPP contractor costs.

- TSA cost estimates do not sufficiently address the degree of uncertainty inherent in the estimate. The cost estimates are partially credible because they do not include a sensitivity analysis and the risk and uncertainty analysis conducted skips important steps in the process identified by best practices, such as not considering the possible effect of risk factors unique to each airport.³⁹ Best practices call for a sensitivity analysis that examines the effects of changing one assumption or variable at a time and a risk and uncertainty analysis that provides a range of possible costs, based on changes to multiple assumptions and variables at the same time.⁴⁰ Our analysis of TSA's cost estimates found that TSA did not conduct a formal sensitivity analysis for each airport's cost estimate. Without a sensitivity analysis, TSA's estimates do not incorporate an understanding of which variables have the greatest effect on the cost estimate. This is important because, without this information, TSA does not have sufficient information on how the estimate may change as a result of changes in key assumptions. Further, we found that TSA's approach to risk and uncertainty analysis skips critical steps identified as best practices and therefore the level of confidence for TSA's cost estimates is unclear. For TSA management to make good decisions, best practices state that the cost estimate must reflect the degree of uncertainty, so that a level of confidence can be given about the estimate. Since uncertainty cannot be avoided, best practices also state that it is necessary to identify the cost elements that represent the most risk and, if possible, cost estimators should quantify the risk, including an assessment of how change in one cost element may

³⁹According to GAO's Cost Guide, risk is the chance of loss or injury. In a situation that includes favorable and unfavorable events, risk is the probability that an unfavorable event will occur. Uncertainty is the indefiniteness about the outcome of a situation. It is assessed in cost estimate models to estimate the risk (or probability) that a specific funding level will be exceeded.

⁴⁰Assumptions represent a set of judgments about past, present, or future conditions postulated as true in the absence of positive proof.

affect others. TSA officials stated that the DHS Cost Analysis Division under the Office of the Chief Financial Officer performs a risk and uncertainty analysis on one element—fulltime equivalents—because it makes up the largest proportion of costs in the SPP program. We found that TSA’s risk analysis does not follow best practices because it does not account for statistical relationships between cost elements nor does TSA’s risk process provide decision makers with information about the likelihood, or probability, that the point cost estimate is achievable. A point estimate, by itself, provides no information about the underlying uncertainty associated with the estimate.

To further illustrate the importance of a risk and uncertainty analysis and how this analysis can be incorporated into TSA’s estimates, we conducted a limited cost risk and uncertainty analysis for one SPP airport which accounts for variability in wages, staffing, and attrition. We found that TSA’s cost estimate for the example airport, when considering the limited risk and uncertainty factors, resulted in a 94.5 percent probability that the actual costs for this example will be less than or equal to the cost estimate and a 5.5 percent chance that the actual costs will be greater than the cost estimate. Our analysis illustrates how a risk and uncertainty analysis that follows best practices can better inform TSA and other decision makers as they use the cost estimates. See appendix III for the results of this analysis.

TSA Does Not Report Cost Comparisons between Federal and Private Screening at SPP Airports to Policy Makers

While the cost effectiveness of the SPP has been a key issue for policy makers in overseeing the SPP, TSA does not report cost comparisons between federal and private screening at SPP airports to policy makers. Multiple congressional committees have sought this information as demonstrated by their requests for evaluations of TSA’s cost comparisons and methodology.⁴¹ TSA is currently directed to provide semiannual reports to the Committees on Appropriations of the Senate and House of Representatives that discuss the current status of the SPP, including the

⁴¹Since 2009, multiple congressional committees have requested evaluations of TSA’s SPP cost comparisons or use of its estimates from GAO, the DHS Inspector General, and independent studies.

processing of applications for participation in the SPP.⁴² However, our assessment of these semiannual reports found that they do not include a comparison of costs between federal and private screening at SPP airports.⁴³ Although TSA does not report to policy makers on cost comparisons between federal and private screening at SPP airports and has no standing requirement to do so, by reporting such information (such as on an annual basis), policy makers may be better positioned to assess and understand the effectiveness of the SPP program. Reporting such cost comparisons would not require new data collection efforts, since TSA currently collects and reports this information internally. Since 2007, TSA has estimated the cost the federal government would incur at SPP airports using a federal workforce. Since 2013, the SPP Program Management Office (PMO) has prepared comprehensive annual internal reports that include SPP cost and performance analyses, along with SPP accomplishments and plans, and a comparison of actual private costs with estimated federal costs.⁴⁴ TSA uses these cost comparisons to ensure its compliance during the procurement process with all statutes governing the SPP, and to satisfy an internal reporting requirement, but

⁴²TSA began submitting these reports pursuant to the explanatory statement accompanying the DHS's fiscal year 2014 appropriations act and continues to submit them in accordance with the explanatory statement accompanying its fiscal year 2015 appropriations act. See 161 Cong. Rec. H281 (daily ed. Jan. 13, 2015) (accompanying Pub. L. No. 114-4, 129 Stat. 39 (2015)); 160 Cong. Rec. H931 (daily ed. Jan 15, 2014) (accompanying Pub. L. No. 113-76, 128 Stat. 5 (2014)). Specifically, TSA is to report semiannually on its execution of the SPP and processing of applications for participation. The explanatory statement of the Senate accompanying the Department's fiscal year 2013 appropriations act had directed TSA to submit such reports on a quarterly basis. See 159 Cong. Rec. S1552 (daily ed. Mar. 11, 2013) (accompanying Pub. L. No. 113-6, 127 Stat. 198 (2013)).

⁴³The three semiannual reports TSA submitted pursuant to the explanatory statements, include: (1) *Screening Partnership Program, Semi-Annual Report to Congress, FY 2014*, prepared by TSA (May 16, 2014); (2) *Screening Partnership Program, Second Half, Fiscal Year 2014*, prepared by TSA (November 19, 2014); and (3) *Screening Partnership Program, First Half, Fiscal Year 2015*, prepared by TSA (June 19, 2015). The explanatory statements do not specifically direct TSA to include a comparison of costs between federal and private screening at SPP airports in its semiannual reports.

⁴⁴The SPP Annual Report is provided to the TSA Office of Security Operations (OSO) Assistant Administrator on an annual basis to ensure that the program is meeting all statutory requirements and provides the costs and performance measurements for each of the participating airports). This provides the Assistant Administrator with a detailed overview of what the program has accomplished and how it is doing for a particular fiscal year.

does not use them for external reporting purposes.⁴⁵ According to TSA officials, none of the three SPP Annual Reports have been provided to Congress because they are developed for internal use. Standards for Internal Controls in the Federal Government states that, in addition to internal communications, management should ensure there are adequate means of communicating with, and obtaining information from, external stakeholders that may have a significant impact on the agency achieving its goals.⁴⁶ Without such information, it will be difficult for Congress to determine how screening costs compare at private and federal airports. Providing cost comparison information to policy makers on a periodic basis would better position policy makers to make informed decisions about the SPP program.

TSA Has Determined that Contractor's Proposed Costs Should Not Exceed TSA's Estimated Costs, But Does Not Compare These Costs throughout the Contract

TSA Has Determined that a SPP Contractor's Proposed Costs Should Not Exceed TSA's Estimated Costs

To implement the SPP program, in accordance with the FAA Modernization Act, TSA has determined that it will not consider a contractor's proposal if the proposed cost exceeds TSA's estimated costs to perform screening services at an airport. Specifically, the statute under which TSA implements the SPP, as amended by the FAA Modernization Act, provides that TSA must approve an airport operator's SPP application if TSA determines that approval would not compromise

⁴⁵TSA, Operations Directive (OD), OD-400-24.2: Annual Program Reporting for the Screening Partnership Program (September 9, 2013).

⁴⁶[GAO/AIMD-00-21.3.1](#).

security or detrimentally affect the cost-efficiency or the effectiveness of the screening of passengers or property at the airport.⁴⁷ In accordance with this provision, TSA’s policy for awarding SPP contracts states that a contract will only be awarded if the procurement process identifies a qualified company at a price that does not exceed the estimated cost to TSA for performing screening operations.⁴⁸ In addition, TSA’s policy states that if the agency were to award contracts for above its estimated costs, “TSA would be required to reduce funds for other security programs, which may have a detrimental impact on the performance of other programs.” For example, TSA officials stated that in the event TSA awarded a contract for a SPP airport above its estimated costs, TSA would need to take actions such as reducing federal screener staff and administrative support at other federal airports to account for the cost differential.

TSA implements this policy in its procurement process when evaluating proposals for SPP contracts by only considering contract proposals that do not exceed TSA’s estimate of what it would cost TSA to perform screening services at the airport and, according to TSA officials, expects to do so under its revised acquisition strategy.⁴⁹ Under the process used as of September 2015, once TSA identifies a need for a contract—meaning TSA has approved an application for a new airport to “opt out” or

⁴⁷See 49 U.S.C. § 44920(b)(2).

⁴⁸The conference report accompanying the FAA Modernization Act provides that in determining the cost efficiency and effectiveness of an applicant’s screening services, TSA shall compare the annual costs to the federal government and related effectiveness measures associated with screening services at SPP and non-SPP airports, applying the relevant cost and performance metrics equally to the private and Federal screening programs. See H.R. Rpt. No. 112-381, 158 Cong. Rec. H294 (daily ed. Feb. 1, 2012). Subsequent reports of the appropriations committees, however, establish an expectation that TSA disapprove any new contract application where privatized screening does not currently exist if the annual cost of the contract exceeds the annual cost to TSA of providing Federal screening services. See, e.g., Explanatory Statement of the Senate accompanying the DHS Appropriations Act, 2013, 159 Cong. Rec. S1552 (daily ed. Mar. 11, 2013), but see, e.g., H.R. Rpt. No. 113-91, at 50 (May 29, 2013) (accompanying H.R. 2217) (directing TSA to cease disapproving any new SPP contract applications, awards or renewals, based solely on their own determination that the annual cost of the SPP contract exceeds the annual cost to TSA of providing Federal screening services).

⁴⁹If the total proposed price for the airport is not equal to or lower than the cost efficiency number, the proposal is to be rated “unacceptable.” A final “unacceptable” rating for cost efficiency is to render the entire proposal for that airport unacceptable and the proposal should not be considered by TSA for award.

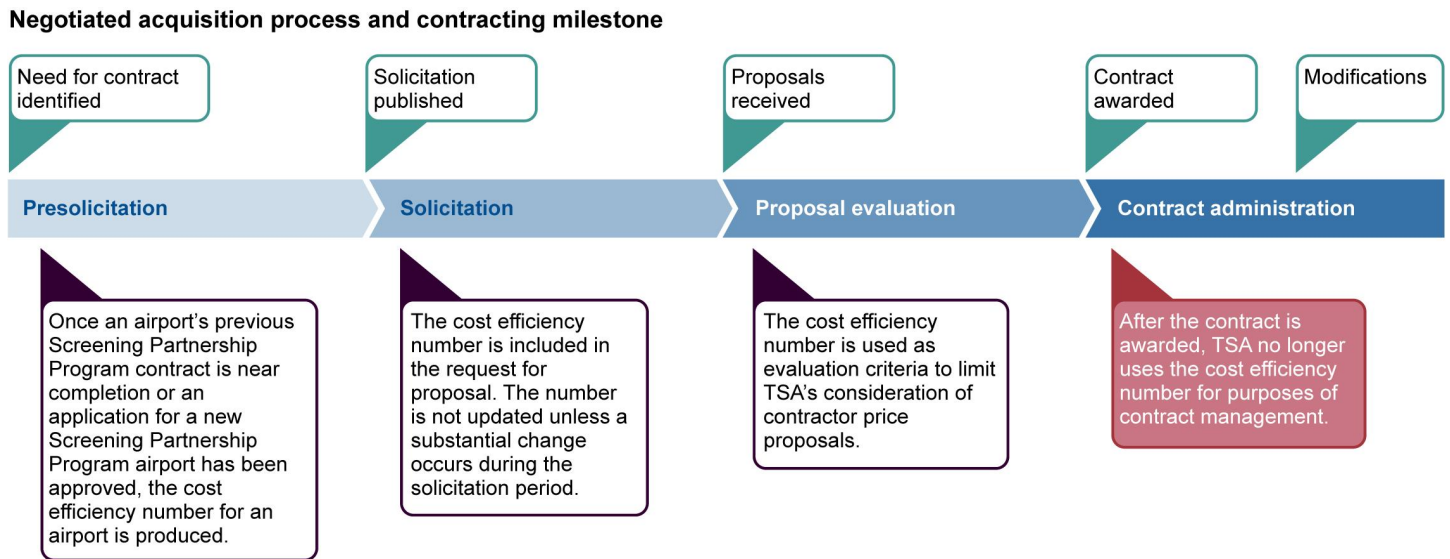
a current SPP contract's period of performance is concluding—the Office of the Chief Financial Officer (CFO) calculates a cost efficiency number for the airport.⁵⁰ The cost efficiency number reflects the estimated costs if TSA, itself, were to provide screening services throughout the duration of the contract—most commonly the base year and four option years. TSA calculates this cost efficiency number based on the one year cost estimate derived from TSA's cost estimation methodology, which is adjusted for inflation and to account for the period of performance of the contract.⁵¹ In addition, the cost efficiency number incorporates costs associated with transitioning screening services based on guidance from OMB Circular A-76.⁵² As shown in figure 3, the cost efficiency number is used throughout the beginning of the procurement process but not after contract award.

⁵⁰TSA produces a cost efficiency number for an individual airport based on its cost estimation methodology to estimate TSA's cost of performing screening operations. As previously explained, this estimate does not include other federal costs including retirement benefits, forgone corporate tax, and general liability insurance.

⁵¹For the SPP contracts we reviewed, the period of performance consists of a base year that includes a 3 or 4 month transition period, with 4 option years, consisting of 12 months each. According to TSA officials, adjustments for inflation over the contract period of performance are based on relevant OMB guidance.

⁵²Transition, as it occurs for the SPP program, is when "transition phase requirements have been satisfied and the contractor begins security screening operations." Transition can occur moving from TSA to contractor screeners, or moving from an incumbent contractor to a new contractor. Transition cost considerations are calculated by TSA in accordance with OMB Circular A-76, which establishes federal policy for the competition of commercial activities. Based on the circular, TSA calculates 10 percent of the personnel cost in a single year as consideration for transition costs.

Figure 3: Use of the Transportation Security Administration (TSA) Cost Efficiency Number in the Procurement Process as of September 2015



Use of the cost efficiency number

Source: GAO analysis of TSA data. | GAO-16-19

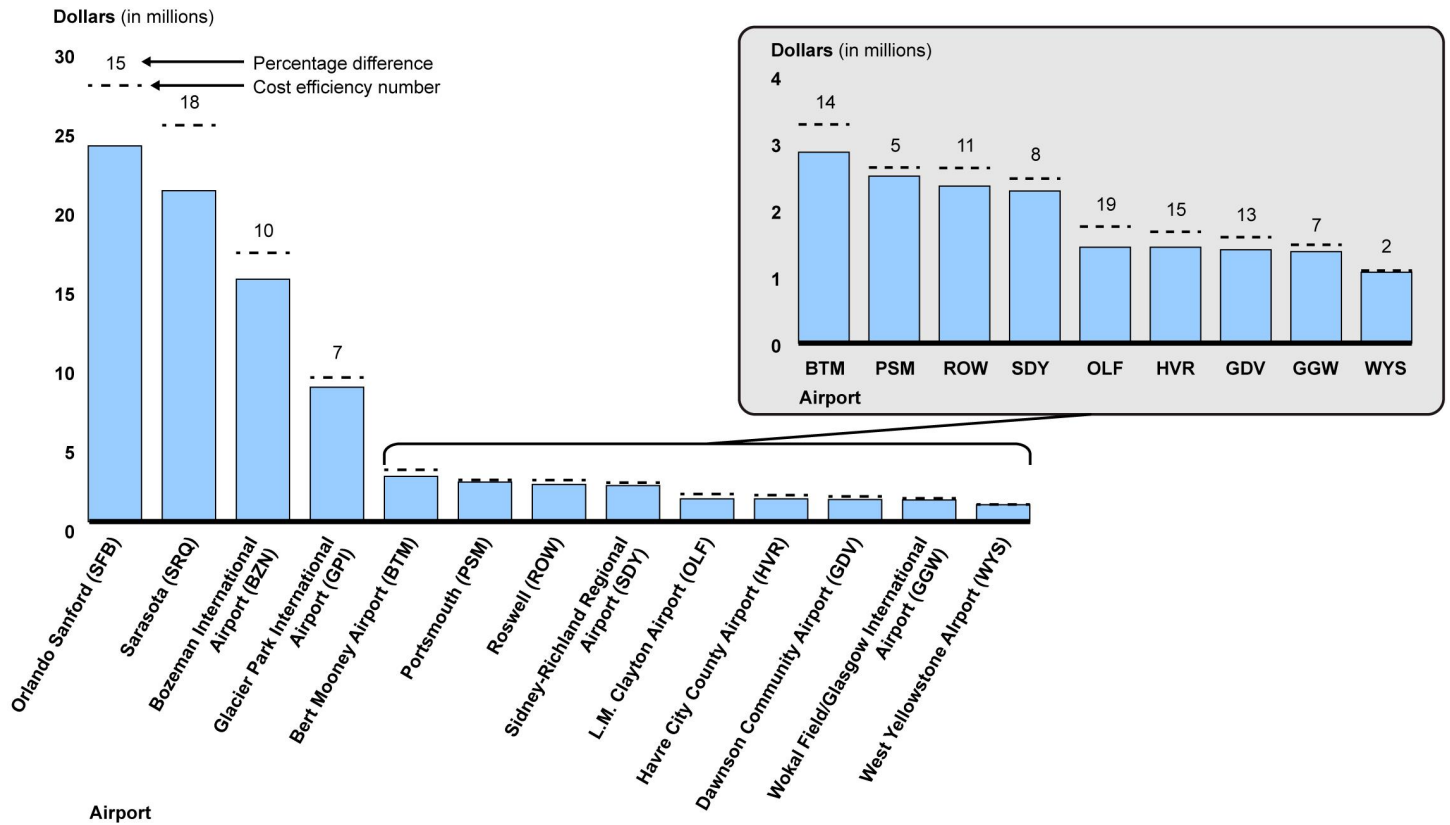
TSA has included cost efficiency as an evaluation factor in its request for proposals during the solicitation process and noted that contractor proposal prices that exceeded the cost efficiency number would not have undergone additional consideration for award.⁵³ Contractors were required to provide price proposals for the base year of the contract that includes a transition period, as well as four subsequent option years. For purposes of comparing contractor price proposals with the cost efficiency number, TSA considered the total period of performance—generally five

⁵³During the evaluation process, TSA compares the contractor's proposed price excluding optional contract line items to the cost efficiency number. Optional contract line items are included to provide for additional operational requirements such as a short-term airport pilot or surge tasks that relate to increased threat levels. According to TSA officials, optional contract line items are incorporated into SPP contracts in case of an emergency situation, but are cost reimbursable and not funded at the time of award. In addition, TSA officials stated that as of August 2015, there has not been an emergency situation requiring use of the optional contract line items. TSA officials noted that contractors are not required to maintain their costs under the cost efficiency number established in the request for proposal and contractors can ultimately be paid more than the original cost estimate depending on circumstances.

years—assuming all options will be exercised. TSA has awarded 7 SPP contracts covering 14 airports using the cost efficiency number as an evaluation factor (see figure 4).⁵⁴ As shown in figure 4, contract award prices for 13 of these airports ranged from 2 percent to 19 percent less than TSA’s estimated costs for conducting screening, as reflected in the cost efficiency number, with an average of 11 percent savings at award compared to TSA’s estimated costs.

⁵⁴In February 2014, TSA had also awarded the SPP contract for Kansas City International Airport to a new, non-incumbent screening company using the cost efficiency number as an evaluation factor. This contract award, already the subject of an ongoing dispute between TSA and the incumbent contractor, remained the subject of litigation at the time of our review. See *Firstline Transportation Security, Inc. v. United States*, 119 Fed. Cl. 116 (2014) (filed under seal November 13, 2014, and reissued for publication November 25, 2014). The Court of Federal Claims ultimately upheld TSA’s award of the contract to a new screening company on November 13, 2014, after which TSA began negotiations with the new and incumbent contractors to transition screening services and restructure the contract which would have an impact on the total contract award amount. Due to these circumstances, we excluded Kansas City International Airport from our comparison of the cost efficiency number and the contract award price.

Figure 4: Transportation Security Administration’s Cost Efficiency Number as Compared to Screening Partnership Program Contract Award Prices



Source: GAO analysis of TSA data. | GAO-16-19

Note: Kansas City International Airport (MCI) is not included in our analysis because the contract award was the subject of ongoing litigation and subsequent negotiations at the time of our review.

This pattern raises the possibility of TSA realizing additional cost savings should more airports decide to participate in the SPP. The difference between contractor proposals relative to TSA estimated costs would likely vary from airport to airport, but if the pattern of awarding contracts at a value at or below TSA’s estimated costs were to continue, the federal government could potentially realize increased savings as a result of more airports transitioning to the SPP. However, as we explain later in this report, TSA does not collect the information necessary to determine the relative cost of SPP screening and federal screening past the point of contract award. Furthermore, even if TSA collected this type of information for airports currently participating in the SPP, additional

analysis would be important to adequately address the full extent of potential savings that could be achieved through the SPP.

While TSA used the cost efficiency number as the first factor in selecting which contractor proposals were acceptable for further evaluation, the number was not used, nor intended to be used, to set the price of the contract or to determine whether the proposed price of the contract was fair and reasonable. Further, proposing the lowest price did not ensure that a contractor's proposal was selected. The cost efficiency number limited the amount a contractor could propose to be further considered for award, but TSA awarded contracts on a best value basis using a trade-off analysis.⁵⁵ Using a tradeoff process allowed TSA to award contracts to the offeror that represented the best value—which was not necessarily the offeror that proposed the lowest price or the highest rated technical proposal. The other factors that were considered in evaluating proposals and were directly related to a contractor's costs and technical abilities were: Operational Screening Management, Program Management, Logistics and Training, Transition, Past Performance, and Price.⁵⁶

TSA Does Not Monitor Contract Values Relative to its Estimated Costs, or Update the Estimated Costs, Throughout the Contract Period

According to TSA officials, TSA does not monitor contract values relative to TSA's cost efficiency number throughout the period of performance. TSA officials also stated that TSA does not routinely update the estimate of what it would cost TSA to perform the work throughout the life of an SPP contract to account for potential changes that may occur. Generally, TSA's requests for proposals for SPP contracts discussed that as a guiding principle of the program, costs must be competitive and TSA required contractors seeking to participate in the SPP to provide screening services at a cost to TSA that is less than, or equal to the cost

⁵⁵Best value is defined as the expected outcome of an acquisition that, in the Government's estimation, provides the greatest overall benefit in response to the requirement. 48 C.F.R. § 2.101. A trade-off analysis is appropriate when it may be in the best interest of the Government to consider an award to other than the lowest priced proposal or highest technically rated proposal. See 48 C.F.R. § 15.101-1.

⁵⁶According to the FAR, agencies are responsible for defining evaluation factors for awarding negotiated contracts. See 48 C.F.R. § 15.304. The evaluation factors must be tailored to the acquisition to represent key areas of importance and support meaningful comparison among competing proposals. *Id.* All factors and significant subfactors are to be included in the request for proposal with their relative importance, and the solicitation must state whether all factors other than costs or price, when combined are of more, less, or equal importance to cost or price. *Id.*

of TSA's screening operations at the airport. According to best practices, cost estimates should be updated to reflect changes in requirements.⁵⁷ While TSA limited its further consideration of contractor proposals to those that proposed prices equal to or less than TSA's estimated cost efficiency numbers during the evaluation process, TSA officials told us they do not routinely compare SPP contract values to TSA's current estimated costs throughout the life of the contract.

Additionally, TSA officials told us that estimated costs are not routinely updated throughout the life of SPP contracts. TSA officials stated that without updates, the cost estimate has limitations for estimating TSA's expected costs over the five year period of performance because it is based on data available prior to the issuance of the request for proposal. According to TSA officials, the cost estimate and resulting cost efficiency number do not take into consideration potential changes that may occur over the contract period of performance. For example, TSA officials stated that the estimate does not account for changes in staffing that may occur because the estimate's methodology uses staffing data available at the time of the request for proposal and assumes the same levels over a five year period of performance. TSA officials noted that the cost estimate also does not take into consideration changes that may occur at an individual airport, such as frequent changes to flight schedules or the opening of new terminals. TSA officials stated that they may update the cost estimation methodology to account for these and other potential changes, but they do not update the individual airport cost estimates accordingly. As a result, over the period of performance for a five year contract, the cost efficiency number used during the evaluation process may be higher or lower than a more recent estimate of what TSA's estimated costs would be. Updating the cost estimate, especially when major changes to the program affect the contract value, can allow TSA to validate their initial estimate and accurately determine how SPP contract values have changed relative to TSA's cost estimates.

TSA officials stated they currently have a process for issuing contract modifications for changes at an airport that affect the contract value, such as adding staff to operate new equipment. These modifications reflect changes in the contract value, but TSA does not make corresponding adjustments to its cost estimates to account for these modifications when

⁵⁷[GAO-09-3SP](#).

there are major changes to the contract value. During the period of performance, contract modifications may occur based on unanticipated changes to requirements, some of which affect the value of the contract.⁵⁸ Contract modifications may occur, for example, when the contractor and TSA's contracting officer have agreed that the requested change is not within the original contract requirements.⁵⁹ The following are examples of recent contract modifications that resulted in increases or decreases to the contract value:

- to include additional training requirements;
- to include technology changes, such as Advanced Imaging Technology implementation that required additional staff⁶⁰;
- to eliminate requirements, such as the removal of behavior detection officers⁶¹;
- to make adjustments to screener compensation rates; and
- to accommodate the need for increased or decreased screening services due to changes at the airport, such as the opening of a new terminal or increase in flights scheduled.

Contract modifications have varied in scope and cost. Some modifications have been for relatively small amounts, such as additional training requirements resulting in an increase of about \$1,500. Other modifications have led to major changes in the contract value such as additional staff to operate Advanced Imaging Technology machines, which increased an award amount by about \$2.1 million. Although these

⁵⁸See 48 C.F.R. § 43.103 (describing the types of contract modifications).

⁵⁹According to the FAR, only contracting officers acting within the scope of their authority are empowered to execute contract modifications on behalf of the Government. 48 C.F.R. § 43.102(a). Contract modifications should be negotiated prior to execution, but if a significant cost increase could result from a contract modification and time does not permit negotiation of a price, at least a ceiling price shall be negotiated unless impractical. 48 C.F.R. § 43.102(b). The FAR also authorizes unilateral modifications, signed only by the agency's contracting officer, which may be used, for example, to make administrative changes, such as a change in the paying office. See 48 C.F.R. § 43.103(b).

⁶⁰Advanced Imaging Technology is a full body scanner used to screen passengers in the nation's airports.

⁶¹As part of TSA's Behavior Detection and Analysis program, designated officers carry out their mission to identify persons who pose a risk to aviation security. In general, behavior detection officers are to identify passenger behaviors indicative of stress, fear, or deception and refer passengers meeting certain criteria for additional screening of their persons and carry-on baggage.

contract modifications have an effect on the value of the contract, TSA officials stated that they do not make corresponding updates to TSA's estimated costs to reflect these contract modifications. An updated cost estimate reflecting major changes in costs as well as the current requirements at an airport can better position TSA to develop a more reliable cost efficiency number when the contract is re-competed and can provide information to determine the extent to which cost savings may have been achieved over the life of the contract.

TSA has an internal reporting requirement for the SPP program that requires the Program Office to produce an annual report that compares private costs to federal costs for the preceding fiscal year, which could offer an opportunity for TSA to monitor current private and federal costs at each airport with a contract in place. However, based on our review of the most recent annual report in 2015, the report is not designed for this type of monitoring because it uses a methodology for estimating TSA's cost that is different from the one TSA uses to calculate cost efficiency numbers. Specifically, TSA officials stated that, for comparison purposes, the estimates in the annual report assume that federal screeners are paid the average federal rate with appropriate locality adjustments. In contrast, the cost efficiency number used in the procurement process assumes that TSA screeners are being paid salaries similar to the contractor rate. In addition, TSA officials stated that the estimates in its annual report include other federal costs for retirement benefits, forgone corporate tax, and general liability insurance which are not included in the cost efficiency number. Further, according to SPP officials, the contractor costs in the annual report reflect contract modifications, but the estimated TSA costs do not because TSA does not have a process in place for updating the estimates to include cost-related modifications. As described earlier, TSA uses the cost efficiency number, in part, to ensure that proposed contractor costs do not exceed TSA's estimated costs. Continually comparing contractor costs relative to TSA's estimated costs, and ensuring the cost estimates are updated to correspond to major changes in the program or contract value, would provide program officials and policymakers with more accurate information about the relative costs of operating airports with federal and private screeners.

TSA Continues to Make and Implement Policy Changes that Affect the SPP

Since the beginning of fiscal year 2014, TSA has made and continues to make changes to the SPP. For example, TSA is in the process of changing its contracting approach to awarding SPP contracts and is changing how wage rate determinations are made for employees of SPP contractors that perform screening services. In addition, TSA also extended the time for a new contractor to complete the transition from federal screeners to private screeners from 90 to 120 days.

Change in contracting approach: TSA is in the process of changing its SPP contracting approach from awarding individual contracts for SPP airports, to awarding indefinite delivery/ indefinite quantity (ID/IQ) contracts.⁶² Contractors awarded ID/IQ contracts will be allowed to compete for the award of task orders to perform screening at specific airports. According to TSA procurement officials, the contracting approach involves two steps to determine the contractor for a new SPP airport and for existing SPP airports as current SPP contracts expire. The first step is to consist of TSA awarding ID/IQ contracts to contractors based on several evaluation factors.⁶³ The second step is to compete individual task orders among the ID/IQ holders and award individual task orders for performing screening services at individual SPP airports to the contractor whose proposal represents the best value to the government for that airport.⁶⁴ TSA officials noted that the contracting strategy will shorten the evaluation period for awarding task orders because, once TSA has awarded the ID/IQ contracts, TSA will not have to continually evaluate each aspect of a contractor's capabilities at the task order level. At the time of our review, TSA issued requests for proposals for the most qualified contractors through the ID/IQ solicitation and concurrently solicited offers for task orders for two SPP airports—Charles M. Schulz—Sonoma County Airport and San Francisco International Airport—

⁶²This type of contracting approach, called indefinite delivery/indefinite quantity (ID/IQ) contracts, provides for an indefinite quantity of services, within stated limits, for a fixed period and are usually awarded for a base year and subsequent option years See 48 C.F.R. § 16.50. Under an ID/IQ contract, the government places task orders for services or requirements established in the contract.

⁶³Evaluation factors for the ID/IQ are: Transition and Workforce Management Approach; Program Management and Team Organizational Approach; Logistics Management Approach; Past Performance; and Price/Cost.

⁶⁴In accordance with the FAR, TSA is to provide each ID/IQ contract awardee fair opportunity to compete for task orders, unless one of several enumerated exceptions applies. See 48 C.F.R. § 16.505(b).

concurrently in September 2015. As part of the concurrent solicitations, TSA required contractors to submit pricing and performance information to determine the best qualified contractors for the ID/IQ contracts. Contractors also had the option of submitting a proposal for one, both, or neither of the airport task orders.

Wage requirement change in SPP contracts: TSA is changing its policy for how wage determinations are made for employees of SPP contractors that perform screening services. TSA officials told us the SPP program office is working with the Department of Labor to develop a wage determination under the Service Contract Act (SCA) for private screeners at SPP airports.⁶⁵ Once the wage rate is finalized, TSA plans to incorporate the wage determination into future SPP contracts. SCA wage rate requirements in contracts act as a minimum wage and benefit threshold that a contractor pays its employees. In September 2014, TSA decided to incorporate two wage determination requirements for private screeners in SPP contracts—rate requirements under the SCA and in accordance with ATSA—and plans to require SPP contractors to pay the higher applicable wage rate.⁶⁶ According to TSA officials, SPP contractor employees at San Francisco International Airport, the sole SPP airport operating under a collective bargaining agreement, will have their wage and benefits governed by the collective bargaining agreement. In the event of a future task order awarded to a new contractor that is not party to the current collective bargaining agreement, TSA officials stated that the contractor would be obligated to honor the wage terms of the collective bargaining agreement for one year. In subsequent years, absent the negotiation of a new collective bargaining agreement, TSA plans for the contract's minimum wage rate to be revised to reflect the minimum wage rate under either ATSA or the Department of Labor's wage determination.

⁶⁵Recipients of federal government contracts for services are subject to wage, hour, benefits, and safety and health standards under the McNamara-O'Hara Service Contract Act (SCA) of 1965, as amended, which specifies wage rate and other labor standards for employees of contractors. See generally 29 C.F.R. pt. 4.

⁶⁶Prior to September 2014, TSA did not include the terms of the SCA in SPP contracts for private screener wage and benefit compensation because, according to TSA, it viewed the SCA as being in conflict with the subsequently enacted ATSA, which established a baseline for determining compensation levels for private sector security screeners. See 49 U.S.C. § 44920(c).

Extension of the transition period: TSA has extended the time for a new contractor to complete the transition from federal to private screeners from 90 days to 120 days. TSA officials stated the transition period was extended as the result of lessons learned from the transition of four western Montana airports. According to TSA officials, the contractor at these four airports experienced a low acceptance rate to its offer of employment to screeners. During the transition period, TSA offered screeners at these airports the ability to transfer to a non-SPP airport and a \$10,000 fixed relocation payment to facilitate the transfer. While TSA and the contractor initially anticipated 90 percent of the screeners employed at the airports to accept employment offered by the contractor at the transitioning airport, only 50 percent did so. Contractor officials stated that they were unaware of the full extent of transfer opportunities and relocation payments available to the federal screeners and attributed the lower acceptance of offers to TSA's transfer option. As a result, the contractor had to hire additional employees during the transition period which delayed the completion of other necessary tasks. TSA provided personnel to assist the contractor during the transition period to ensure screening operations continued during the transition period. The contractor providing screening services at the Montana airports told us that it experienced a delay in obtaining the names and other human resource information—such as background check information—of screeners that planned to accept its offer of employment from TSA. The contractor stated that this delay affected the contractor's ability to hire and train additional employees needed to provide screening services at the airport.

TSA included a 120 day transition period for each of the three contracts awarded that followed the western Montana airport contract. According to TSA officials, based on the experiences at the western Montana airports, TSA anticipates fewer screeners accepting an SPP contractor's offer of employment in the future. Accordingly, TSA included a 120 day transition period for subsequent airports to allow more time for the contractor to complete the necessary requirements to perform screening operations. The contractors that were awarded these contracts told us that 120 days was a more reasonable time-frame and all three airports successfully transitioned from federal screeners within the time specified in the contract. TSA officials noted that while 120 days will be the default time period for future airports transitioning to SPP, other factors such as the size and geographic location of the airport will be taken into consideration when determining the appropriate transition period.

Conclusions

As TSA and policy makers such as Congress assess the cost effectiveness of the SPP, reliable cost estimates are critical when comparing the costs that contractors incur in providing passenger and baggage screening services at SPP airports to the estimated costs to the federal government if it was to provide those services. TSA's 2013 cost estimating methodology has some strengths, but it also has several limitations that are not in line with best practices, preventing the resulting estimates from being reliable. Addressing limitations in its cost estimating methodology can provide better information to predict costs and make informed decisions related to the SPP. Additionally, TSA develops internal reports that compare the costs of contractors to the estimated costs to the federal government, but does not provide similar information to the Congress. Providing the reliable cost comparisons that multiple congressional committees have sought can help ensure that decisions that affect the program are being made with the best information available. Further, TSA has developed a procurement process that prevents the agency from awarding a contract at a proposed price that is more than TSA's estimated cost to do the work. While contractor costs can change based on changes to the contract, TSA does not update its estimates to reflect these changes and does not continually compare contractor costs relative to its estimates. Routinely updating the estimates and comparing them to updated contract values can provide TSA with a basis to determine if contractor costs are remaining at or less than its estimated costs throughout the duration of the contract.

Recommendations

To ensure that TSA is developing reliable cost estimates to inform its internal processes and external policy decisions and to ensure that TSA is better positioned to re-compete and award SPP contracts as existing contracts at an SPP airport near expiration, the TSA Administrator should:

1. ensure that the 2013 cost estimating methodology used to compare screening costs at SPP and non-SPP airports is revised to more fully conform to leading cost estimating best practices;
2. provide cost comparisons that conform to leading cost estimating best practices to Congress on a regular basis; and
3. continually monitor how contract values compare to TSA's estimated costs and, in doing so, update its cost estimates when changes to the program or the contract may result in a major change to contract values to ensure the comparison is current and accurate.

Agency Comments and Our Evaluation

We provided a draft of this report to TSA for review and comment. In written comments provided by TSA through DHS (reproduced in appendix IV) on October 26, 2015, TSA generally agreed with our findings and concurred with each of our three recommendations. TSA also provided technical comments which were incorporated as appropriate.

In written comments, DHS and TSA recognized the need for improved documentation and analysis to improve the credibility of existing estimates as well as additional reporting of cost comparisons to Congress and monitoring how contract values compare to estimates over the life of the contract. TSA stated it will revise its 2013 cost estimating methodology to more fully conform to leading best practices. Regarding the recommendation that TSA provide cost comparisons to Congress that conform to leading cost estimating best practices, TSA stated it plans to use the existing SPP Semi-Annual Report for Congress to provide this cost comparison beginning with the June 2016 report. To address the recommendation that TSA continually monitor contract values compared with TSA's estimated costs, including updating its cost estimates as needed, TSA stated it will do this comparison on an annual basis, starting with all new estimates after March 31, 2016. DHS stated that taking these steps will allow DHS and TSA to better inform Congress on the matter of cost efficiency and whether or not the program provides savings over the life of the contract.

DHS' written comments also noted that GAO's risk and uncertainty analysis found a 94.5 percent probability that TSA's cost estimate was less than or equal to actual costs and stated that it is likely that similarly high probabilities exist for all cost estimates that use the same methodology. However, the probabilities we found were based on a limited risk and uncertainty analysis that did not incorporate all risk factors since our analysis was conducted to provide an illustrative example of how a risk and uncertainty analysis can provide better insight into a cost estimate. Therefore, we did not determine what the probabilities would be when the full set of risk factors are considered at our example airport or other SPP airports.

As agreed with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from its issue date. At that time, we will send copies of this report to the Secretary of Homeland Security and other interested parties. This report will also be available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact Jennifer Grover at (202) 512-7141 or GroverJ@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are found in Appendix V.

A handwritten signature in black ink that reads "Jennifer Grover". The signature is written in a cursive style with a large initial "J" and "G".

Jennifer Grover
Director, Homeland Security and Justice

List of Requesters

The Honorable Jason Chaffetz
Chairman
Committee on Oversight and Government Reform
House of Representatives

The Honorable Michael T. McCaul
Chairman
Committee on Homeland Security
House of Representatives

The Honorable John Katko
Chairman
Subcommittee on Transportation Security
Committee on Homeland Security
House of Representatives

The Honorable Scott Perry
Chairman
Subcommittee on Oversight and Management Efficiency
Committee on Homeland Security
House of Representatives

The Honorable Jeff Duncan
House of Representatives

The Honorable Richard Hudson
House of Representatives

Appendix I: Objectives, Scope, and Methodology

This report addresses: (1) the extent to which the Transportation Security Administration (TSA) has developed and reported reliable cost estimates for providing screening services for Screening Partnership Program (SPP) airports; (2) how TSA uses cost estimates in selecting contractors and the extent to which TSA monitors contractor costs relative to its cost estimates; and (3) how the SPP has changed since the beginning of fiscal year 2014.

To determine the extent to which TSA produced reliable cost estimates for providing screening services at SPP airports in a manner that is consistent with best practices, we compared TSA's cost estimates with best practices identified in GAO's Cost Estimating and Assessment Guide.¹ This guide identifies best practices that represent work across the federal government and are the basis for a high-quality, reliable cost estimates that can be used across the federal government for developing, managing, and evaluating cost estimates. First, we reviewed TSA's cost estimating practices, including cost estimating guidance—TSA's Methodology and Standards for Comparing TSA Screening Costs used for developing SPP cost estimates.² Second, we interviewed TSA officials who are responsible for developing and using the cost estimates to gain further insight into the decisions and assumptions made during the development of the cost estimates. We concluded that the data obtained from TSA's cost estimate documentation was sufficiently reliable for the purposes of assessing how TSA's practices and methodology compares to best practices. Third, we reviewed supporting documentation that TSA provided for its cost estimates of 21 SPP identified airports—6 official cost estimates, representing 13 airports, and unofficial cost estimates for 8

¹GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs* (Supersedes [GAO-07-1134SP](#)), [GAO-09-3SP](#) (Washington, D.C.: Mar. 2, 2009). The methodology outlined in this guide is a compilation of best practices that federal cost-estimating organizations and industry use to develop and maintain reliable cost estimates throughout the life of a government acquisition program. The leading practices were developed in conjunction with government and industry experts in the cost-estimating community.

²This document, developed in 2013, outlines the methodology, standards, procedures, and reporting mechanisms TSA uses for estimating the cost of security screening by federal personnel for the purpose of awarding contracts to provide privatized screening at airports participating in the SPP. This document also outlines the roles and responsibilities of those creating and comparing costs.

airports.³ Finally, we evaluated TSA's cost estimating documentation and the 6 official cost estimates on the extent to which they met or did not meet best practices. A cost estimate created using the best practices exhibits four broad characteristics—comprehensive, well documented, accurate, and credible. That is, each characteristic is associated with a specific set of leading best practices. If any of these characteristics are not substantially or fully met, then the cost estimate does not reflect the characteristics of a high-quality estimate and cannot be considered reliable.⁴ Appendix II provides a description of the characteristics of a high-quality reliable cost estimate that served as the foundation of our comparative analysis. We shared our analysis with TSA officials to review and provide additional information, and we adjusted our analysis where appropriate. As part of our comparison of TSA's cost estimates with best practices, we reviewed documentation related to the source and reliability of the data used to develop the cost estimates. To determine the extent to which TSA reports cost comparisons between SPP and non-SPP airports to policy makers, we reviewed TSA communications with Congress and interviewed TSA program officials.⁵ We also assessed TSA internal reporting guidance using GAO's standards for internal control in the federal government.⁶ These standards indicate that management should externally communicate the necessary quality information to achieve the entity's objectives.

To determine how TSA uses its cost estimates in selecting SPP contractors, we reviewed 10 contracts representing 20 of the 22 airports in the SPP at the time of our work. We selected all of the contracts that were active at the time of our review, except two. We did not review the

³TSA also provided unofficial cost estimates for eight airports that were awarded contracts prior to the development of the cost estimation methodology. We reviewed these for context but did not include them in our analysis.

⁴We established five descriptions for our assessments of best practices and cost estimate characteristics: fully meets, substantially meets, partially meets, minimally meets, and does not meet. We consider a characteristic to be fully met when the associated best practices are completely satisfied, substantially met when a large portion of the associated best practices are satisfied, partially met when about half of the best practices are satisfied, minimally met when a small portion of best practices are satisfied, and not met when none of the best practices are satisfied.

⁵We did not assess other TSA communications to Congress, such as briefings.

⁶GAO, *Standards for Internal Control in the Federal Government*, [GAO/AIMD-00-21.3.1](#) (Washington, D.C.: November 1999).

contracts for (1) Kansas City International Airport due to an ongoing dispute over TSA's award of the SPP contract and contract renegotiations during the time of our review and (2) Punta Gorda Airport because the contract award was pending at the time of our review.⁷ For each contract, we reviewed and analyzed contract documents related to source selection and pricing to determine the use of cost estimates during the procurement process. We also interviewed TSA headquarters officials knowledgeable about TSA's use of cost estimates in the procurement process. To determine the extent to which TSA monitors estimated costs relative to contractor costs, we interviewed TSA Officials in the Program Management Office, the Office of Acquisition and the Office of the Chief Financial Officer to determine whether cost estimates are updated based on changes to the contract and whether cost estimates were considered when issuing contract modifications. We also evaluated TSA's current process and practices regarding monitoring of contract costs against best practices for cost estimating that include comparing planned and actual performance against approved program baselines.⁸ We also reviewed contract modifications relating to cost increases or decreases from August 2009 to May 2015.

To determine how the SPP has changed since the beginning of fiscal year 2014, we reviewed SPP policy documentation and other SPP procurement documents, such as SPP contracts and requests for proposals to understand TSA's procurement process. We reviewed TSA and Department of Labor guidance regarding wages and interviewed TSA acquisition and program officials knowledgeable about TSA's procurement process changes to determine what procurement related changes had occurred since the beginning of fiscal year 2014. We visited nine airports that had private screeners or were at various stages of

⁷The ongoing dispute between TSA and the incumbent (now former) screening company at Kansas City International Airport, who had performed screening services at the airport since 2002, originated with TSA's April 2010 solicitation for screening services at the airport and the incumbent's subsequent challenges to TSA's award of the contract to another company. See *Firstline Transportation Security, Inc. v. United States*, 119 Fed. Cl. 116 (2014) (filed under seal November 13, 2014, and reissued for publication November 25, 2014). After the Court of Federal Claims upheld TSA's February 2014 award of the contract to the new (non-incumbent) contractor, TSA began negotiations with the new and incumbent contractors to transition screening services and restructure the contract, which would have an impact on the total contract award amount. Due to these circumstances, we excluded Kansas City International Airport from our analysis.

⁸[GAO-09-3SP](#).

preparing for private screeners and spoke to SPP stakeholders at each airport, including airport directors, contractors, TSA federal security directors and federal screeners who had transitioned—or were preparing for transition—to obtain their perspectives on how SPP changes have impacted airport operations. We selected the SPP airport locations to visit based on their proximity to other SPP airports and to provide a variety of perspectives based on their time in the program. We also met with each of the five SPP contractors with contracts at the time of our review and related industry associations to obtain their perspectives on changes that have occurred in the program and their experiences as participants in the procurement process.

We conducted this performance audit from August 2014 to November 2015 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Best Practices for Developing High-Quality Cost Estimates and Summary Assessment

The GAO Cost Estimating and Assessment Guide was developed to establish a consistent methodology that is based on best practices and that can be used across the federal government for developing, managing, and evaluating capital program cost estimates.¹ In developing the Guide, our cost experts assessed measures consistently applied by cost-estimating organizations throughout the federal government and industry and considered best-practices for the development of reliable cost estimates. We have summarized these best practices into four general characteristics for sound cost estimating, which include: well documented, comprehensive, accurate, and credible. These characteristics, described in table 1, enable management to use the cost estimate for making informed decisions.

Table 1: The Characteristics of a High-Quality Cost Estimate

Characteristic	Best practice
Comprehensive	The cost estimate should include both government and contractor costs of the program over its full life cycle, from inception of the program through design, development, deployment, and operation and maintenance to retirement of the program.
	It should also completely define the program, reflect the current schedule, and be technically reasonable.
	Comprehensive cost estimates should be structured in sufficient detail to ensure that cost elements are neither omitted nor double-counted.
	Specifically, the cost estimate should be based on a product-oriented work breakdown structure that allows a program to track cost and schedule by defined deliverables, such as hardware or software components.
	Where information is limited and judgments must be made, the cost estimate should document all cost-influencing ground rules and assumptions.
Well documented	A good cost estimate—while taking the form of a single number—is supported by detailed documentation that describes how it was derived and how the expected funding will be spent in order to achieve a given objective.
	The documentation should capture in writing such things as the source data used, the calculations performed and their results, and the estimating methodology used to derive each element’s cost.
	The cost estimate information should be captured in such a way that the data used to derive the estimate can be traced back to and verified against their sources so that the estimate can be easily replicated and updated. The documentation should also discuss the technical baseline description and how the data were normalized.
	The documentation should include evidence that the cost estimate was reviewed and accepted by management.
Accurate	An estimate is accurate when it is based on an assessment of most likely costs; adjusted properly for inflation; and contains few, if any, minor mistakes.

¹GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs* (Supersedes [GAO-07-1134SP](#)), [GAO-09-3SP](#) (Washington, D.C.: March 2009).

Appendix II: Best Practices for Developing High-Quality Cost Estimates and Summary Assessment

Characteristic	Best practice
	<p>In addition, a cost estimate should be updated regularly to reflect significant changes in the program—such as when schedules or other assumptions change—and actual costs, so that it is always reflecting current status.</p> <p>During the update process, variances between planned and actual costs should be documented, explained, and reviewed.</p> <p>Among other things, the estimate should be grounded in a historical record of cost estimating and actual experiences on other comparable program.</p>
Credible	<p>The cost estimate should discuss any limitations of the analysis because of uncertainty or biases surrounding data or assumptions.</p> <p>Major assumptions should be varied, and other outcomes recomputed to determine how sensitive they are to changes in the assumptions.</p> <p>Risk and uncertainty analysis should be performed to determine the level of risk associated with the estimate.</p> <p>The estimate’s cost drivers should be cross-checked, and an independent cost estimate conducted by a group outside the acquiring organization should be developed to determine whether other estimating methods produce similar results.</p>

Source: GAO. | GAO 16 19

The Department of Homeland Security’s (DHS) Transportation Security Administration (TSA) created federal cost estimates for the purpose of comparing private and federal costs to provide security screening at airports. We assessed the TSA cost estimates using the framework of the four characteristics—comprehensive, well documented, accurate, and credible—associated with high-quality, reliable cost estimates. If any of these characteristics are not substantially or fully met, then the cost estimate does not reflect the characteristics of a high-quality estimate and cannot be considered reliable.² Our analysis of TSA’s cost estimates found that two of the four characteristics were not substantially or fully met and therefore the estimates are not considered reliable. Specifically, we determined that the cost estimates substantially met two and partially

²We established five descriptions for our assessments of best practices and cost estimate characteristics: fully meets, substantially meets, partially meets, minimally meets, and does not meet. We consider a characteristic to be fully met when the associated best practices are completely satisfied, substantially met when a large portion of the associated best practices are satisfied, partially met when about half of the best practices are satisfied, minimally met when a small portion of best practices are satisfied, and not met when none of the best practices are satisfied. We determined the overall assessment rating by assigning each individual rating a number: Not Met = 1, Minimally Met = 2, Partially Met =3, Substantially Met = 4, and Met = 5. Then, we took the average of the individual assessment ratings to determine the overall rating for each of the four characteristics. The resulting average becomes the Overall Assessment as follows: Not Met = 1.0 to 1.4, Minimally Met = 1.5 to 2.4, Partially Met = 2.5 to 3.4, Substantially Met = 3.5 to 4.4 and Met = 4.5 to 5.0. Assessments were conducted by an individual analyst, and then the results were independently traced and verified by a second analyst.

Appendix II: Best Practices for Developing High-Quality Cost Estimates and Summary Assessment

met two of the four characteristics. Table 2 provides greater detail on our comparison of the estimate with best practices that constitute the four cost-estimating characteristics.

Table 2: Summary Assessment of TSA Cost Estimates Compared with Best Practices

Characteristic	Overall assessment	Best practice	Individual assessment
Comprehensive	Substantially meets	The cost estimate includes all life cycle costs.	Minimally meets
		The cost estimate completely defines the program, reflects the current schedule, and is technically reasonable.	Substantially meets
		The cost estimate is product-oriented, traceable to the statement of work/objective, and at an appropriate level of detail to ensure that cost elements are neither omitted nor double-counted.	Substantially meets
		The estimate documents all cost-influencing ground rules and assumptions.	Substantially meets
Well documented	Substantially meets	The documentation should capture the source data used, the reliability of the data, and how the data were normalized.	Partially meets
		The documentation describes in sufficient detail the calculations performed and the estimating methodology used to derive each element's cost.	Fully Meets
		The documentation describes step by step how the estimate was developed so that a cost analyst unfamiliar with the program could understand what was done and replicate it.	Substantially meets
		The documentation discusses the technical baseline description and the data in the baseline is consistent with the estimate.	Partially meets
		The documentation provides evidence that the cost estimate was reviewed and accepted by management.	Substantially meets
Accurate	Partially meets	The cost estimate results are unbiased, not overly conservative or optimistic and based on an assessment of most likely costs.	Partially meets
		The estimate has been adjusted properly for inflation.	Partially meets
		The estimate contains few, if any, minor mistakes.	Substantially meets
		The cost estimate is regularly updated to reflect significant changes in the program so that it is always reflecting current status.	Minimally meets
		Variances between planned and actual costs are documented, explained, and reviewed.	Does not meet
		The estimate is based on a historical record of cost estimating and actual experiences from other comparable programs.	Substantially meets
Credible	Partially meets	The cost estimate includes a sensitivity analysis that identifies a range of possible costs based on varying major assumptions, parameters, and data inputs.	Minimally meets
		A risk and uncertainty analysis was conducted that quantified the imperfectly understood risks and identified the effects of changing key cost driver assumptions and factors.	Minimally meets

**Appendix II: Best Practices for Developing
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Assessment**

Characteristic	Overall assessment	Best practice	Individual assessment
		Major cost elements were crossed checked to see whether results were similar.	Minimally meets
		An independent cost estimate was conducted by a group outside the acquiring organization to determine whether other estimating methods produce similar results.	Substantially meets

- = Fully meets – TSA provided complete evidence that satisfies the entire criterion
- = Substantially meets – TSA provided evidence that satisfies a large portion of the criterion
- ◐ = Partially meets – TSA provided evidence that satisfies about half of the criterion
- ◑ = Minimally meets – TSA provided evidence that satisfies a small portion of the criterion
- = Does not meet – TSA provided no evidence that satisfies any of the criterion

Source: GAO analysis of cost estimating practices used by TSA. | GAO 16 19

Appendix III: Limited Risk and Uncertainty Analysis of the Transportation Security Administration's Cost Estimate

A best practice for producing a credible cost estimate that the Transportation Security Administration (TSA) minimally met is conducting a risk and uncertainty analysis as part of developing cost estimates for the Screening Partnership Program (SPP). Specifically, TSA minimally met this best practice because its process for identifying risk skips certain steps, such as developing a probability distribution curve or the probability associated with the point estimate—the best guess at the cost estimate, given the underlying data. A point estimate, by itself, provides no information about the underlying uncertainty other than that it is the value chosen as most likely. However, a confidence interval provides a range of possible costs based on a specified probability level.¹ A risk and uncertainty analysis is used to determine the level of confidence in a cost estimate by quantifying the risk and uncertainty associated with the estimate. Using this analysis, a cost estimator can model such effects as program changes, providing the cost estimator with a known range of potential costs. Having a range of costs around a point estimate is useful to decision makers because it informs them on cost risks.

In February 2015, we performed our own limited risk and uncertainty analysis for one example SPP airport through which we developed a probability distribution and analyzed the confidence level of the airport's cost estimate. Using information from a probability distribution allows management to quantify the confidence in achieving a program within a certain funding level. In addition, decision makers can use the probability distribution to determine the amount of contingency reserves necessary to mitigate the risk surrounding an estimate. Contingency reserves are used to cover increased costs resulting from uncertainties, such as incomplete requirements or technology uncertainty. To perform the analysis, we used TSA's estimated cost data for one SPP airport and written responses regarding the risk inputs provide by TSA. Our analysis may illustrate how determining the confidence level as part of a risk and uncertainty analysis that follows best practices may better inform TSA and other decisions makers as they use the cost estimates in the SPP procurement process.

¹For example, a program with a point estimate of \$10 million could range in cost from \$5 million to \$15 million at the 95 percent confidence level. In addition, the probability distribution, usually in the form of a cumulative distribution or an S curve—showing alternative cost estimate probabilities and usually derived from a simulation such as Monte Carlo—can provide the decision maker with an estimate of the probability that the program's cost will actually be at some value or lower.

In conducting our analysis, we followed steps identified as best practices.² First, we determined the program's cost drivers and associated risks. We chose to focus the risk inputs for our analysis on labor costs because labor represents the majority of the costs that make up the cost estimate. These costs are for federal screeners, specifically the Expert Transportation Security Officer (TSO), the Master TSO and TSO fulltime equivalent (FTE) labor counts and labor rates.³ We also applied risk around the attrition rate. We then modeled uncertainty with a probability distribution that accounted for all possible cost outcomes according to the probability that they will occur. A probability distribution provides useful information, such as the boundaries of an outcome. We accounted for correlation between cost elements and establish a numerical level associated with the correlation between risk inputs we selected. We established initial correlation factors based on written responses from TSA and our interpretation of these responses.⁴ Based on our analysis and TSA's written responses, we found that labor rates had a positive correlation with each other and FTE counts and the attrition rate had no correlation with the labor rates. The attrition rate had a high, negative correlation with the FTE counts. A nominal correlation of 0.25 was used for the FTE relationship to the other FTE labor categories in order to avoid causing a cancellation of risk when both elements are positively correlated. We then performed an uncertainty analysis using @RISK to

²GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs (Supersedes GAO-07-1134SP)*, GAO-09-3SP (Washington, D.C.: March 2009). The guide establishes seven steps for developing a credible S curve of potential program costs: 1) determine the program cost drivers and associated risks; 2) develop probability distributions to model various types of uncertainty; 3) account for correlation between cost elements to properly capture risk; 4) perform the uncertainty analysis using a Monte Carlo simulation model; 5) identify the probability level associated with the point estimate; 6) recommend sufficient contingency reserves; and 7) allocate, phase, and convert a risk-adjusted cost estimate to then-year dollars and identify high-risk elements to help in risk mitigation efforts.

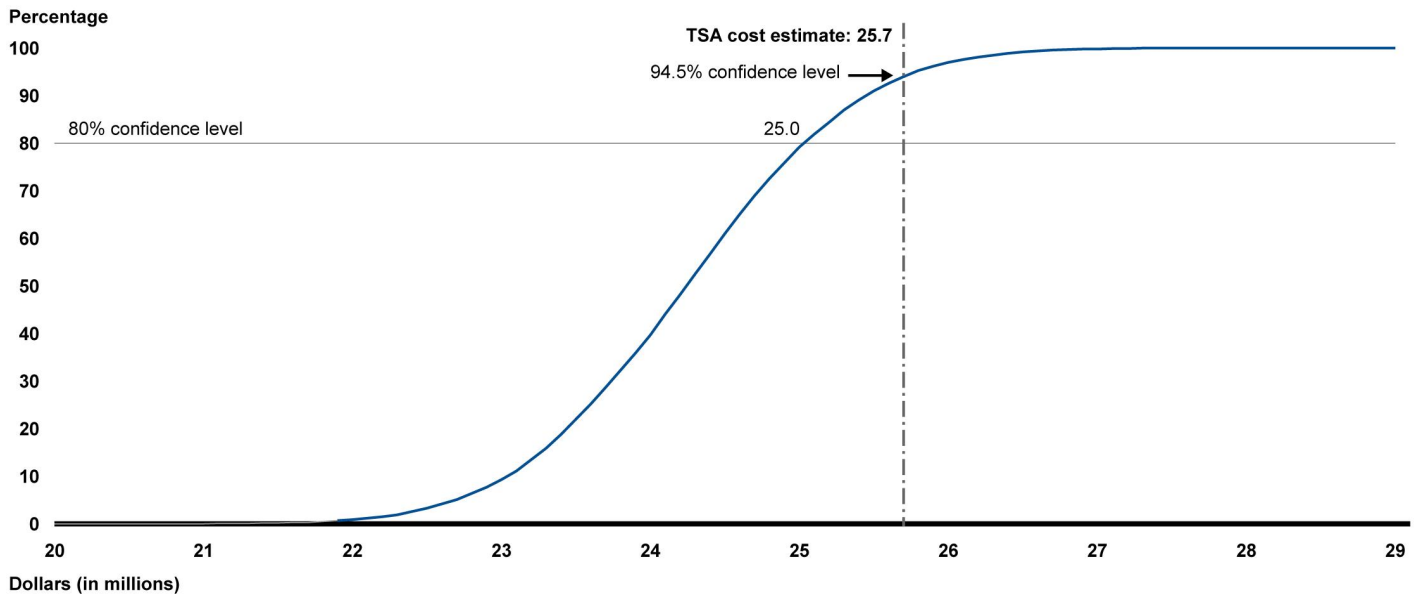
³In the context of these costs, a Transportation Security Officer (TSO) is a TSA-employed (i.e. federal) screener. An Expert or Master TSO is a federal screener with supervisory or management responsibilities.

⁴We used the following scale to assess positive and negative correlation between cost variables: Low: +/- 0.25; Medium: +/- 0.5 and High: +/- 0.75. Positive values are used to assess positive correlation and negative values are used to assess negative correlation between variables. We developed a matrix and checked those values with @Risk, a Monte Carlo simulation model, which adjusted the matrix to reflect the relationships inputted for the variables and their relationship with each other.

perform the Monte Carlo simulation. The Monte Carlo simulation conducted a total of 10,000 iterations of the costs.

The results of our analysis are displayed graphically in an S-Curve. We chose to display our results on a cumulative probability distribution, or S-curve, in order to show what is known about the cost estimates' confidence level. When identifying the probability distribution associated with the cost estimate, we chose to present the findings at the 80 percent confidence level.⁵ Figure 5 shows the results from our analysis and indicates where TSA's cost estimate falls on the S-curve.

Figure 5: Confidence Level Results of the Transportation Security Administration's (TSA) Cost Estimate of an Example Airport



Source: GAO analysis of TSA data. | GAO-16-19

Note: Our confidence level analysis was based on selected variables. Imputed costs were not analyzed for risk.

According to our analysis, TSA's \$25.74 million cost estimate for the example airport, when considering the limited risk and uncertainty factors,

⁵We chose the 80 percent confidence level for illustrative purposes only. It is up to decision makers to choose which confidence level they wish to use.

resulted in an estimated 94.5 percent probability that the actual costs for this example will be less than or equal to the cost estimate and a 5.5 percent chance that the actual costs will be greater than the cost estimate.

Appendix IV: Comment from the Department of Homeland Security

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



**Homeland
Security**

October 26, 2015

Jennifer Grover
Director, Homeland Security and Justice
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Re: Draft Report GAO-16-19, "SCREENING PARTNERSHIP PROGRAM: TSA Can Benefit from Improved Cost Estimates"

Dear Ms. Grover:

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

The Department is pleased to note GAO's positive recognition of improvements to the Transportation Security Administration's (TSA's) cost estimating methodology since the previous audits conducted on this subject in 2009 and 2011. GAO recognized the strengths of the methodology and found its comprehensiveness and documentation substantially met two of the four characteristics of a high quality and reliable cost estimate.

Though more work is still needed to demonstrate the credibility and accuracy of the cost estimate, TSA was pleased to see that when applying risk and uncertainty analysis to the existing methodology at a sample airport, GAO found the estimate to have an exceptionally high 94.5 percent confidence interval. Since the same methodology is applied consistently to all airport estimates, it is likely that similarly high confidence intervals exist for all cost estimates that have been used for the purpose of determining cost efficiency.

Overall, this report reflects the continued refinement of TSA's cost estimating methodology for airports participating in or applying to the Screening Partnership Program (SPP). TSA concurs with the need for improved documentation and analysis in

order to improve the credibility of existing estimates, as well as additional reporting on cost comparisons to Congress and monitoring how actual contract values compare with estimates over the life of the contract. Taking these steps will allow TSA, DHS, and GAO to better inform Congress on the matter of cost efficiency and whether or not the program provides savings over the life of the contract.

The draft report contained three recommendations with which the Department concurs. Specifically, GAO recommended that the TSA Administrator:

Recommendation 1: Ensure that the 2013 Cost Estimating Methodology used to compare screening costs at SPP and non-SPP airports is revised to more fully conform to leading cost estimating best practices.

Response: Concur. GAO specifically identified four areas of improvement that will enhance the comprehensiveness, documentation, accuracy, and credibility of the estimate. TSA's Office of Finance and Administration (OFA), which maintains the cost estimating methodology, will implement the necessary changes to more fully conform to leading cost estimating best practices, while maintaining improvements made since the previous GAO audits conducted on the same subject. Estimated Completion Date (ECD): March 31, 2016.

Recommendation 2: Provide cost comparisons that conform to leading cost estimating best practices to Congress on a regular basis.

Response: Concur. TSA will utilize the existing vehicle of the SPP Semi-Annual Report for Congress to provide this cost comparison, which will be updated on an annual basis. TSA's Office of Security Operations (OSO) SPP Division prepares this report; OFA will provide the cost comparison. ECD: April 30, 2016 (for inclusion in the June 1, 2016, report).

Recommendation 3: Continually monitor how contract values compare to TSA's estimated costs and, in doing so, update its cost estimates when changes to the program or the contract may result in a major change to contract values to ensure the comparison is current and accurate.

Response: Concur. Beginning with all new estimates after March 31, 2016, on an annual basis, TSA will compare actual expenditures for a given airport contract to TSA's estimate for screening with Federal Transportation Security Officers, with updates as necessary due to operational changes at the airport that impact the cost estimate. TSA will then use this information to provide a comparison of SPP actual costs and estimated costs with Federal screeners. TSA's OFA, OSO, and Office of Acquisition will work in concert to provide the necessary data and analysis to create this annual update and comparison. ECD: March 31, 2017.

Again, thank you for the opportunity to review and comment on this draft report. Technical comments were previously provided under separate cover. Please feel free to contact me if you have any questions. We look forward to working with you in the future.

Sincerely,



Jim H. Crumpacker, CIA, CFE
Director
Departmental GAO-OIG Liaison Office

Appendix V: GAO Contact and Staff Acknowledgments

GAO Contact

Jennifer Grover at (202) 512-7141 or GroverJ@gao.gov

Staff Acknowledgments

In addition to the contact listed above, key contributors to this report were Glenn Davis (Assistant Director), Charles Bausell, Amanda Goolden, Kevin Heinz, Susan Hsu, Brandon Jones, Tyler Kent, Jason Lee, Jennifer Leotta, Brian J. Lipman, Thomas Lombardi, and Amanda Miller.

Appendix VI: Accessible Data

Agency Comment Letter

Text of Appendix IV:
Comment from the
Department of Homeland
Security

Page 1

October 26, 2015

Jennifer Grover

Director, Homeland Security and Justice

U.S. Government Accountability Office 441 G Street, NW

Washington, DC 20548

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Page 3

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Sincerely,

Jim H. Crumpacker, CIA, CFE

Director

Departmental GAO-OIG Liaison Office

Data Tables

Data table for Figure 2: Total Federal Costs for 13 Transportation Security Administration (TSA) Screening Partnership Program Airports

Transportation Security Agency costs	91%
Other federal costs	9%

Data Table for Figure 4: Transportation Security Administration’s Cost Efficiency Number as Compared to Screening Partnership Program Contract Award Prices

Airport	Contract award price (in millions)	Cost efficiency number	Percentage difference
Orlando Sanford (SFB)	23.7302	27.542	15
Sarasota (SRQ)	20.8947	25.0264	18
Bozeman International Airport (BZN)	15.3024	16.9746	10
Glacier Park International Airport (GPI)	8.48676	9.10206	7
Bert Mooney Airport (BTM)	2.85822	3.27371	14
Portsmouth (PSM)	2.49839	2.62737	5
Roswell (ROW)	2.34951	2.62061	11
Sidney-Richland Regional Airport (SDY)	2.27636	2.46275	8
L.M. Clayton Airport (OLF)	1.43492	1.74366	19
Havre City County Airport (HVR)	1.43486	1.6665	15
Dawson Community Airport (GDV)	1.39754	1.58588	13
Wokal Field/Glasgow International Airport (GGW)	1.36988	1.47184	7
West Yellowstone Airport (WYS)	1.06177	1.08404	2

Figure 5: Confidence Level Results of the Transportation Security Administration’s (TSA) Cost Estimate of an Example Airport

Cost estimate	Confidence Level
20.6	0.0001
20.7	0.0001
20.8	0.0001
20.9	0.0001
21	0.0001
21.1	0.001
21.2	0.001
21.3	0.001

Appendix VI: Accessible Data

Cost estimate	Confidence Level
21.4	0.002
21.5	0.002
21.6	0.003
21.7	0.003
21.8	0.005
21.9	0.007
22	0.009
22.1	0.012
22.2	0.015
22.3	0.019
22.4	0.026
22.5	0.033
22.6	0.042
22.7	0.051
22.8	0.064
22.9	0.077
23	0.093
23.1	0.111
23.2	0.135
23.3	0.159
23.4	0.188
23.5	0.22
23.6	0.252
23.7	0.287
23.8	0.323
23.9	0.359
24	0.397
24.1	0.441
24.2	0.482
24.3	0.525
24.4	0.567
24.5	0.61
24.6	0.651
24.7	0.69
24.8	0.726
24.9	0.759

Appendix VI: Accessible Data

Cost estimate	Confidence Level
25	0.792
25.1	0.819
25.2	0.844
25.3	0.87
25.4	0.891
25.5	0.91
25.6	0.926
25.7	0.94
25.8	0.953
25.9	0.962
26	0.97
26.1	0.976
26.2	0.981
26.3	0.985
26.4	0.989
26.5	0.992
26.6	0.994
26.7	0.996
26.8	0.997
26.9	0.998
27	0.998
27.1	0.999
27.2	0.999
27.3	1
27.4	1
27.5	1
27.6	1
27.7	1
27.8	1
27.9	1
28	1
28.1	1
28.2	1
28.3	1
28.4	1
28.5	1

Appendix VI: Accessible Data

Cost estimate	Confidence Level
28.6	1
28.7	1
28.8	1
28.9	1
29	1

Related GAO Products

Screening Partnership Program: TSA has Improved Application Guidance and Monitoring of Screener Performance, and Continues to Improve Cost Comparison Methods. [GAO-14-787T](#). Washington, D.C.: July 29, 2014.

Screening Partnership Program: TSA Issued Application Guidance and Developed a Mechanism to Monitor Private versus Federal Screener Performance. [GAO-14-269T](#). Washington, D.C.: January 14, 2014.

Screening Partnership Program: TSA Should Issue More Guidance to Airports and Monitor Private versus Federal Screener Performance. [GAO-13-208](#). Washington, D.C.: December 6, 2012.

Aviation Security: TSA's Revised Cost Comparison Provides a More Reasonable Basis for Comparing the Costs of Private-Sector and TSA Screeners. [GAO-11-375R](#). Washington, D.C.: March 4, 2011.

Aviation Security: TSA's Cost and Performance Study of Private-Sector Airport Screening. [GAO-09-27R](#). Washington, D.C.: January 9, 2009.

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