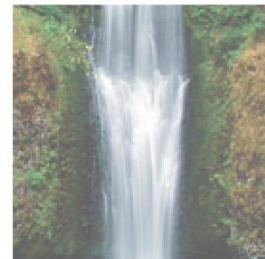
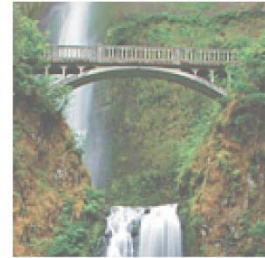
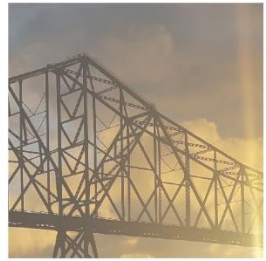




# Secretary of State Oregon Audits Division



Department of Administrative Services  
Office of the State Chief Information Officer

## Significant Cost Savings Can Be Achieved by Modernizing Oregon's Procurement Systems and Practices

December 2018  
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Secretary of State Dennis Richardson  
Audits Division Director Kip Memmott

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# Secretary of State Audit Highlights

December 2018

## Department of Administrative Services, Office of the State Chief Information Officer **Significant Cost Savings Can Be Achieved by Modernizing Oregon's Procurement Systems and Practices**

### Report Highlights

The Department of Administrative Services (DAS) has taken steps to develop a strategic approach for procuring goods and services more efficiently and at lower costs. However, a lack of detailed purchase data inhibits the agency's ability to analyze its spending, resulting in missed opportunities for potentially millions of dollars in cost savings. Additionally, although the Office of the State Chief Information Officer (OSCIO) has made some improvements in project oversight processes for major information technology (IT) procurements, those processes remain immature, resulting in inefficiencies and confusion for state agencies.

### Background

DAS has the authority and responsibility to oversee procurements for state agencies. The OSCIO, a component of DAS, is responsible for overseeing major IT procurements conducted by the state. The OSCIO also has authority to require agencies to obtain independent quality assurance (QA) for IT projects.

### Purpose

The purpose of this audit was to determine whether DAS has implemented effective processes to reduce risk and minimize costs associated with IT procurements. Furthermore, we sought to determine whether costs for QA services for major IT investments align with best practices and are appropriately independent.

### Key Findings

1. Due to a reliance on legacy systems and outdated procurement processes, DAS Procurement Services does not adequately analyze state spending data. As a result, during the 2015-17 biennium, the state missed the opportunity to potentially reduce costs between \$400 million and \$1.6 billion, based on DAS Procurement Services' estimate of \$8 billion in procurements during that time.
2. Although efforts to improve procurement efficiencies and reduce costs through Oregon's new Basecamp program generally align with best practices, the effectiveness of these efforts is limited due to a lack of detailed purchase data.
3. The OSCIO has made progress in establishing oversight processes to mitigate significant procurement risks associated with major IT projects. However, some processes remain immature, and lack of training and guidance have contributed to confusion and frustration for agencies with projects subject to OSCIO oversight.
4. The cost for QA services is below industry norms, averaging 3.5% of total project costs, with a median of 5.1%. Additionally, controls are appropriate to ensure QA remains independent, but report tracking should be strengthened.

### Recommendations

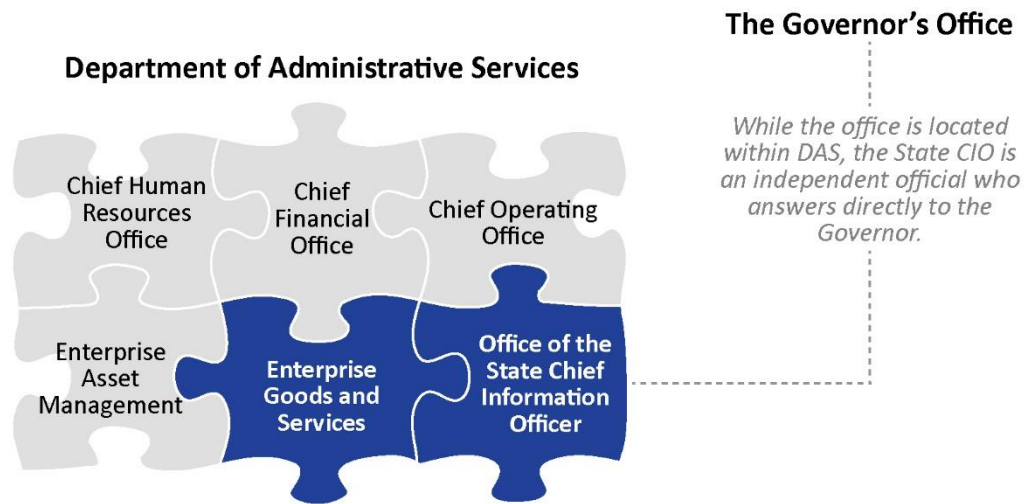
Our report includes one recommendation to DAS to modernize strategic sourcing efforts and four recommendations to the OSCIO to strengthen IT investment oversight processes. DAS and the OSCIO agreed with all of our recommendations. The agency's response can be found at the end of the report.

# Introduction

The Department of Administrative Services (DAS) is the state’s central administrative agency. DAS supports state agencies in the executive department by providing management frameworks and infrastructure for information systems and services, procurement, and other functions. Within DAS, Enterprise Goods and Services provides centralized services to state government, including procurement services. The Office of the State Chief Information Officer (OSCIO), an organizational component of DAS, provides statewide IT leadership for state agencies. The OSCIO includes the Enterprise Security Office, Enterprise Shared Services, Enterprise Technology Services, and the Enterprise IT Governance Office.

DAS’s stated vision is to set the standard for good government and lead state agencies in furtherance of the Governor’s vision by providing reliable service, accurate information, and creative solutions. To this end, DAS has established several key goals related to the public workforce and availability and use of agency resources, including the goal that agencies use technology and innovative tools to drive success. These key goals include the following:

- IT projects are on time, on budget, and delivered as promised;
- agencies understand Oregon’s IT governance model and their role within it;
- external stakeholders understand Oregon’s IT environment, their role within it, and how to navigate it;
- enterprise IT systems are secure and reliable; and
- agencies use enterprise-wide data to identify trends and make informed decisions or recommendations.



## DAS Procurement Services has central procurement authority and responsibility for the state

Public procurement is the act of purchasing goods, services, and construction in support of essential government functions. Oregon’s Public Contracting Code states that procurement should promote the efficient use of state resources, promote open competition, and instill public confidence through ethical and fair dealing by government officials.<sup>1</sup> Ultimately, procurement is the act of putting the people’s money to work in a way that upholds their trust.

<sup>1</sup> [ORS 279A.015](#)

DAS has the authority and responsibility to conduct and oversee all procurements for goods and services for state agencies, unless otherwise noted in statute.<sup>2</sup> The director of DAS has delegated procurement authority to the State Chief Procurement Officer, who oversees statewide Procurement Services. Procurement Services has further delegated authority to individual state agencies to conduct procurements under \$150,000.<sup>3</sup> The Department of Justice also has legal sufficiency oversight authority over procurements exceeding \$150,000.

The state procurement manual stipulates that agencies must adhere to the buy decision priority sequence when determining an appropriate source for a procurement need. Procurement sources are prioritized as follows: (1) surplus state property, (2) a Qualified Rehabilitation Facility, (3) inmate labor, (4) DAS statewide price agreements, and (5) the open market. DAS maintains price agreements with multiple vendors to reduce the administrative burdens associated with individual procurements. Price agreement suppliers are obligated to provide specific products or services at or below contracted prices, and DAS encourages agencies to negotiate to receive lower prices.

The Governing Institute ranked state procurement practices across 10 categories. Oregon ranked in the top five in workforce, training and certification, vendor selection methods, and procurement planning. Overall, Oregon ranked 11<sup>th</sup> among the states in procurement practices.<sup>4</sup>

#### Oregon ranks 11<sup>th</sup> for procurement practices

1. Georgia
2. Virginia
3. Minnesota
4. Utah
5. Massachusetts
5. Ohio
7. Missouri
8. Washington
9. Michigan
10. Montana
- 11. Oregon**
12. Pennsylvania
13. Delaware
14. West Virginia
15. Maine

Source: *The Governing Institute*

### ***The Basecamp Program provides an online catalog for state agencies and local jurisdictions to contract for IT goods and services***

The OSCIO, in partnership with DAS Procurement Services, developed the Basecamp Program in 2016. According to the OSCIO, Basecamp was established with the understanding that IT price agreements the state previously offered did not meet the needs of state and local government entities. This resulted in missed opportunities to leverage statewide purchasing power and unnecessary fragmentation and duplication of sourcing efforts. The OSCIO stated the process:

- lacked an enterprise focus on shared services;
- was highly decentralized;
- lacked consistency;
- limited leverage within vendor negotiations;
- failed to mitigate risk at the enterprise level; and
- dissociated the procurement function from project management, IT governance, and quality assurance.

The goal of Basecamp is to provide greater access to IT solutions for both state agencies and local jurisdictions, and to improve the quality and delivery of those solutions. In order to achieve this goal, Basecamp provides an online catalog that allows participants to efficiently contract for

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<sup>2</sup> ORS 279A.140 states that DAS shall conduct all procurements for state agencies, except those agencies specifically granted procurement authority under ORS 279A.050 or other provisions of law.

<sup>3</sup> Three agencies have been given delegated authority by DAS Procurement Services at levels higher than this: the Department of Human Services, Oregon Department of Transportation, and Oregon Department of Forestry.

<sup>4</sup> Out of 39 states ranked in a 2016 survey.

IT goods and services. According to the project charter, the overall expected outcomes of Basecamp include reducing agency-specific procurements, and optimizing the utilization and effectiveness of statewide IT price agreements by state agencies, local governments, and school districts.

Basecamp Strategic Sourcing Specialists perform market research, engage stakeholders, and provide vendor management services. The program's IT Procurement Strategists provide public procurement expertise through leadership, procurement, and contract administration.

### ***Some agencies plan to use OregonBuys as their eProcurement system***

In 2015, DAS collaborated with eight other state agencies to address the state's outdated and fragmented procurement process. The collaborating agencies recognized that the state's reliance on inconsistent, manual, paper-based processes is time consuming, error prone, difficult to track and measure, and not easy to integrate with other systems. To address these problems, the collaborating agencies began work to obtain an electronic procurement (eProcurement) system called OregonBuys. This system will enable paperless workflows for proposals and quotations as well as tracking of purchases from catalog to invoice.

OregonBuys was initiated in 2017 as a pilot program. As of this report, there are 10 agencies participating, including the Secretary of State. Because this program has not been fully adopted at an enterprise level, we did not include it as part of our evaluation.

## **The OSCIO oversees statewide information resources and technology**

The OSCIO plays a pivotal role in shaping the way Oregon state government uses information technology. The OSCIO was established within DAS in 2013 and the State Chief Information Officer (CIO) reported to the DAS Director until the passage of House Bill 3099 in the 2015 legislative session. The law established that the State CIO serves the Governor directly as the chief advisor concerning information resources, technology, and systems. It further required that the State CIO ensure that resources fit together in a statewide system capable of providing ready access to information, computing, and telecommunication resources. The statute directs the State CIO to develop and adopt statewide rules, policies, and standards to plan, develop architecture for, and standardize the state's information resources and technologies.

### ***The OSCIO Enterprise IT Governance Office provides oversight for major state agency IT investments***

Successfully managing large-scale IT projects requires a concerted effort from senior management, project sponsors, users, technical staff, and contractors. In Oregon state government, responsibility for governing, managing, and funding major IT projects is divided among individual state agencies, the OSCIO, the Legislative Fiscal Office (LFO), and the state Legislature. Within this structure, individual state agencies bear the majority of the burden for determining their individual business needs, identifying technology solutions to meet those needs, obtaining necessary funding, and managing the processes for implementing chosen solutions. The Enterprise IT Governance Office at the OSCIO provides governance and guidance and ultimately approves major IT projects.

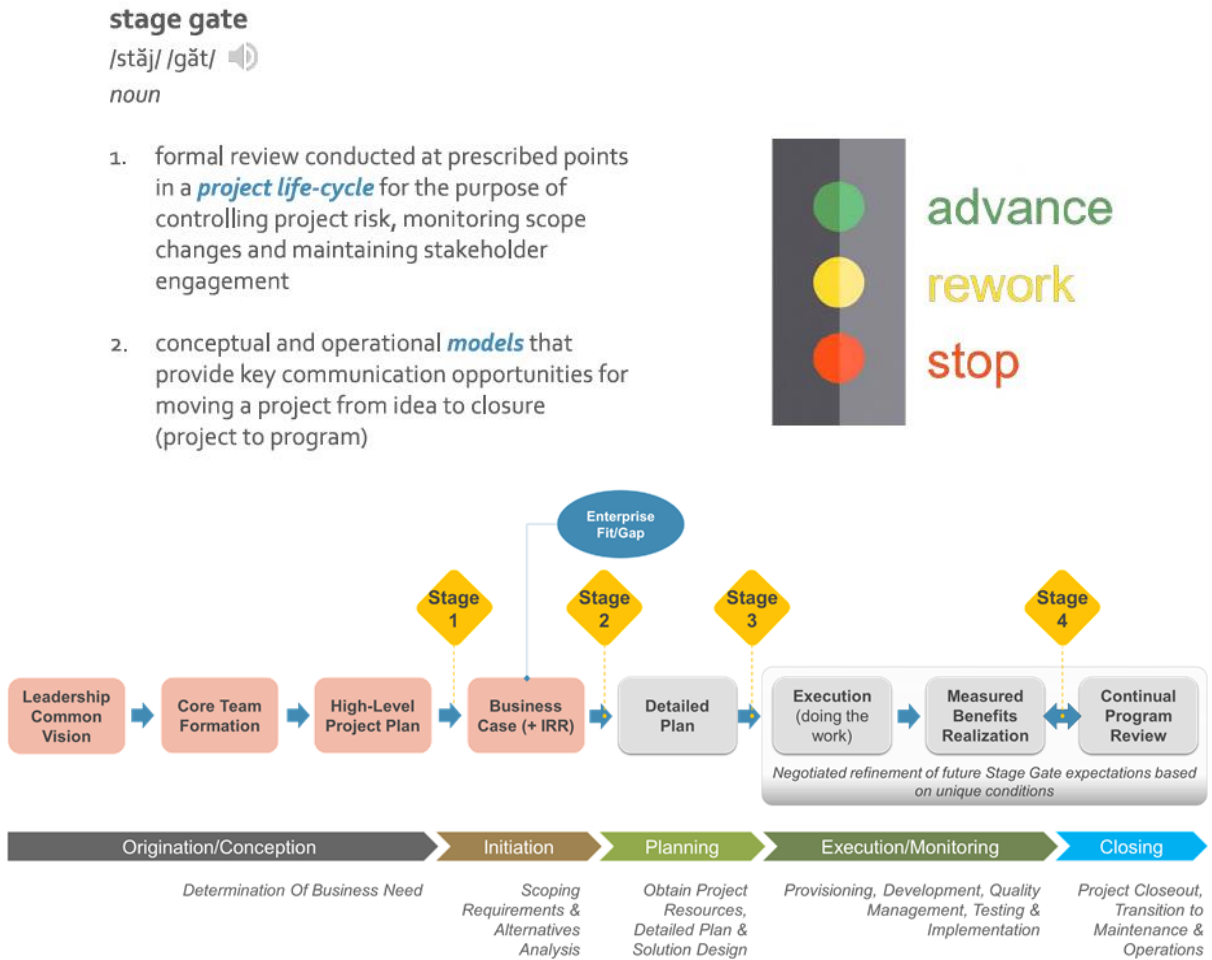
Oregon executive branch agencies that engage in IT projects with an estimated total budget of \$150,000 or greater must notify the OSCIO. Based on the OSCIO's assessment, the project may be subject to Stage Gate Oversight (stage gate), a joint process between the OSCIO and the LFO. Agencies with projects subject to stage gate are required to deliver project documents at certain key points, known as gates, for OSCIO review and approval. The LFO also reviews project

documents at each gate, provides recommendations regarding funding, and updates the Legislature on project status.

Once a project is underway, agencies are required to report project status to the OSCIO for inclusion in a Quarterly Project Portfolio Report provided to the Legislature. This high-level report provides narrative about the project, communicates major risks, and provides the general status for the project business case, schedule, budget, and overall project risk.

This audit focused on the oversight of procurement processes taking place throughout the origination, initiation, and planning phases. In addition, we reviewed the process for obtaining Quality Assurance services, which may take place throughout all phases of stage gate.

**Figure 1: Stage Gate includes key points, known as gates, at which project documents are submitted for OSCIO review and approval**



Source: 2017-2022 Enterprise Information Resource Management Strategy presented by the Office of the State CIO at the Joint Legislative Committee on Information Management and Technology in February 2018.

**Major IT projects that meet certain criteria are required to contract for independent quality assurance services**

Agencies are required to contract for independent quality assurance (QA) services for IT projects with a total budget exceeding \$5 million, or if they meet certain other criteria, at the discretion of the OSCIO. QA contractors provide objectivity in quality and risk assessment and transparency about potential quality problems. This allows for a timely response to quality concerns identified during IT project planning and execution.

Typically, agencies use a contractor that holds a statewide QA price and services agreement. Currently, there are 11 contractors that hold these agreements. The scope of professional services that may be authorized is based on the QA statement of work. The statement of work typically has five tasks:

- Task 1 – Independent quality planning
- Task 2 – Independent quality control
- Task 3 – Independent quality assurance
- Task 4 – Independent testing
- Task 5 – Independent risk assessment

For most projects, contractors providing QA services first engage with the project during detailed planning, early in stage 3, after the project has a completed business case, charter, and risk assessment.

**Figure 2: Independent QA Contractors – Typical Engagement**

<b>Initiation and planning phase (Stage 1 and 2)</b>	During these early stages of a major IT project, the OSCIO works with agency management to determine the QA requirements for the project. Management then presents the independent QA contractors with active price and services agreements which they may submit proposals against.
<b>Planning phase (Stage 2 and 3)</b>	The agency procures an independent QA contractor so its services are available at a time deemed appropriate by project management and the assigned IT oversight analyst within the OSCIO.
<b>Execution, monitoring, and closing phase (Stage 4)</b>	Stage 4 is where most project work and expenditures occur. It is also where the scope of independent QA contractor activities is the most comprehensive.

Source: Independent Quality and Risk Assessment in Major IT Projects of Large Enterprises.

After a project has procured its prime implementation contractor, an initial risk assessment is performed by the independent QA contractor.<sup>5</sup> This risk assessment is a comprehensive review of risks associated with the prime contractor’s proposed technical development approach and the state’s detailed planning.

After the agency and the OSCIO review and accept the risk assessment, the independent QA contractor prepares a formal independent quality management plan, which includes quality standards, quality checklists, and reporting templates for all included tasks. Throughout the project, the contractor prepares quarterly reports according to the details in the quality management plan.

Additionally, if required for federally funded projects or authorized by the agency, the OSCIO, or the LFO, the independent QA contractor may be asked to prepare a master test plan for independent testing. During project closing, the contractor then prepares the lessons learned and the final post-project evaluation report.

<sup>5</sup> The prime implementation contractor is the contractor that is providing the primary service, such as software development.



# Objectives, Scope, and Methodology

## Objectives

Our specific audit objectives were to determine:

- The status of strategic sourcing efforts for IT procurement and identify challenges, leading practices, and potential improvements to increase savings;
- Whether DAS provides appropriate oversight to mitigate significant risks associated with planning, staffing, and procuring resources and expertise for major IT projects; and
- Whether the cost of independent QA aligns with industry best practices and is commensurate with project risk, and whether sufficient controls exist to mitigate the conflict of interest for agencies managing their own QA contracts.

## Scope

The scope of our audit included statewide IT procurement and oversight practices from 2015 to present. However, while conducting fieldwork for our first objective, we found that it was not possible to segregate IT procurement spending from non-IT procurement spending. As such, work performed for our first objective relates to all procurement practices.

## Methodology

This audit was conducted as an integrated audit, which may blend the attributes of financial, performance, and IT audit work. This approach allowed the audit team to expand and enhance audit coverage and impact.

To gain an understanding of statewide processes and how agencies interact with central authority entities, we conducted interviews with personnel from multiple agencies, including DAS, executive department agencies under DAS authority, and the Department of Justice. We also developed a survey that we sent to selected executive department agencies under DAS authority and reviewed survey responses and supporting documentation provided by the agencies.

To determine whether DAS provides appropriate project oversight during procurement, we reviewed project documents and supporting email correspondence for selected projects. We selected a sample of major IT investment projects that were active during our audit scope period. Out of a sample population of 224 projects, we selected 26 projects that varied in project budget, current project phase, assigned project oversight analyst, assigned Senior IT Portfolio Manager, and stage gate versus non-stage gate oversight.

The project sample was selected from IT investments within 10 executive department agencies under DAS oversight authority. We selected agencies based on size (number of full-time equivalent personnel), delegated procurement authority, number of stage gate projects, and policy area. We selected the following agencies:

- Department of Human Services<sup>6</sup>
- Oregon Health Authority
- Oregon State Police
- Department of Revenue

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<sup>6</sup> The Department of Human Services and Oregon Health Authority share a Procurement Office and IT Division. Therefore, for survey responses and other conclusions drawn from agency experiences, these agencies are considered to be one combined entity.

- Department of Corrections
- Oregon Employment Department
- Department of Education
- Oregon Department of Forestry
- Oregon Department of Fish and Wildlife
- Oregon Department of Transportation

To understand strategic sourcing efforts, we interviewed OSCIO strategic sourcing analysts and procurement staff at selected agencies and DAS Procurement Services; and compared statewide practices to leading practices in other states. To assess how these processes impact procurement spending in Oregon, we analyzed vendor-supplied purchase-level data for all IT price agreements from 2016 and 2017.

To assess whether the cost of QA aligned with industry standards, we reviewed major IT project contracts for QA services. We compared ratios of total QA costs to total project costs with industry standards and OSCIO's general budget recommendations. To assess whether sufficient controls exist to mitigate conflicts of interest, we evaluated whether vendors were providing draft and final reports to key stakeholders.

To identify generally accepted control objectives and practices for information systems, we used ISACA's "COBIT" publications. We also reviewed Oregon Revised Statutes and Administrative Rules and DAS policies and procedures to determine procurement authority, responsibilities, and compliance requirements.

The audit team reviewed guidance on best practices from industry standard setting bodies and professional communities, including the National Association of State Procurement Officials, the National Institute of Government Purchasing, the Project Management Institute, and the Government Accountability Office. We also reviewed IT procurement practices in other states to identify leading practices related to IT project management, strategic sourcing, and QA.

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

We sincerely appreciate the courtesies and cooperation extended by officials and employees of DAS, the OSCIO, and cooperating agencies during the course of this audit.

# Audit Results

DAS and the Enterprise Shared Services Division at the OSCIO have taken positive steps to develop a strategic approach for procuring IT goods and services more efficiently and at lower costs through the Basecamp program. However, a lack of detailed purchase data inhibits the agency's ability to analyze spending data, resulting in potentially missed opportunities for millions of dollars in potential cost savings.

Additionally, although the Enterprise IT Governance Office at the OSCIO has made improvements in project oversight processes during procurement for major IT investments, those processes remain immature, resulting in inefficiencies and confusion for state agencies. For those investments that require independent QA services, the cost of those services is below industry standards. We also found controls are in place to maintain an appropriate level of independence, although QA report tracking processes should be strengthened.

## **Poor data quality from legacy procurement systems and burdensome manual processes likely cost the state millions of dollars per year**

Oregon currently relies on manual processes and legacy systems with limited functionality to process and track state and agency procurements. We found a significant reduction in costs and other benefits could be realized by modernizing Oregon's procurement systems and practices. The Aberdeen Group estimates potential savings of 5% to 20% of the cost of procurements through improving processes, including increasing automation and improving spend analysis.<sup>7</sup> Had these improvements been in place during the 2015-17 biennium, and Oregon realized similar benefits, the state could have potentially reduced spending by \$400 million to \$1.6 billion.<sup>8</sup>

### ***DAS Procurement Services lacks quality data needed to effectively analyze statewide purchasing***

Spend analysis is a critical best practice used by procurement organizations to create an informed procurement strategy resulting in reduced costs and effective oversight of suppliers. Due to a lack of sufficient spending data, DAS Procurement Services is unable to conduct this analysis. As a result, Oregon is likely missing out on millions of dollars in potential cost savings.

A key step in improving procurement practices is performing a detailed analysis of prior spending on goods and services. National Institute of Government Purchasing (NIGP) identifies spend analysis as a critical best practice that procurement organizations should use to leverage buying power, reduce costs, provide management and oversight of suppliers, and support the development of an informed procurement strategy.<sup>9</sup> Specifically, spend analysis allows an organization to know what was bought, when it was bought, who it was bought from, and how much was spent. According to NIGP, there are four key steps for conducting an effective spend analysis:

1. Identify and collect spend data: All spend data should be identified and collected.

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<sup>7</sup>Aberdeen is a Market Intelligence company that analyzes buyer behavior across hundreds of Business-to-Business sectors and provides research, benchmarking, and analysis services.

<sup>8</sup>Based on DAS-Procurement Services' estimate of \$8 billion in procurements per biennium during 2015-17 biennium. Savings estimate across all funds, including the General Fund and federal funds.

<sup>9</sup>NIGP is a not-for-profit organization that focuses on developing, supporting, and promoting the public procurement profession.

2. Cleanse, group and categorize spend data: Collected data should be reviewed for errors and grouped by the type of good or service to allow for an effective analysis. Item-level details enable a precise view of spending.
3. Create a repeatable process: Collection, cleaning, and categorization of spend data should be automated so that it can be made into a repeatable process.
4. Analyzing spend data: Spend data should be analyzed and used to support management decisions, identify opportunities for cost savings, and to inform other strategic efforts.

In addition to being a best practice, DAS and state agencies subject to DAS rules are required to monitor spend information and use the results to identify opportunities to optimize cost savings.<sup>10</sup> Using a spend analysis methodology would help DAS and state agencies to better fulfill this requirement.

However, DAS Procurement Services does not conduct a detailed spend analysis to inform its procurement strategy. This is primarily due to the state’s lack of a standardized procurement processing and tracking system to supply the detailed data necessary to conduct the analysis.

According to DAS Procurement Services, purchase-level data is only available for approximately 12.5% of procurement expenditures. DAS estimates that the state administers approximately \$8 billion in procurements each biennium. Purchase-level data is available only for the roughly \$1 billion in goods and services purchased through statewide price agreements, and that data suffers from significant quality and reliability issues.<sup>11</sup> Without the ability to analyze detailed purchase data for all procurements, Oregon is unable to identify opportunities for potentially millions of dollars in cost savings.



According to DAS Procurement Services, the state has purchase-level data on only approximately \$1 billion of the \$8 billion in procurements each biennium. Source: Presentation to the Joint Legislative Committee on Information Management and Technology



The state of Georgia’s central procurement office reported an 11%, or \$61 million, reduction in procurement expenses per year due to spend analysis performed across 38 contracts by a team of business analysts.<sup>12</sup> Georgia’s central procurement office also emphasizes the importance of quality procurement data by requiring state agencies to classify purchases using a statewide classification system.

***Oregon’s fragmented legacy procurement systems lack functionality necessary to perform meaningful spend analysis***

Current state agency procurement processes rely on legacy systems and manual processes that are inefficient and redundant. Some of these processes and systems date back to the 1990s and have received limited enhancements over time. As a result, many business solutions have been developed from a programmatic or agency-specific perspective, rather than a statewide

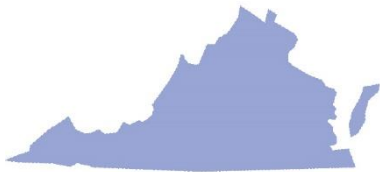
<sup>10</sup> DAS requirements outlined in [OAR 125-246-0170](#) (3)(b)(H) & OAR 125-246-0170 (3)(b)(I); agency requirements outlined in OAR 125-246-0170 (2)(b)(H) & OAR 125-246-0170 (2)(b)(I)

<sup>11</sup> Estimate based on not-to-exceed amounts on new contracts from the 2015-17 biennium.

<sup>12</sup> According to Governing’s survey, Georgia reported savings of \$61 million.

enterprise perspective. This not only causes significant duplication of efforts by agencies, but creates an inability to leverage institutional knowledge, analyze detailed purchase-level data, and make important strategic procurement decisions. Additionally, it can limit the availability of information required to support decision making by the state Legislature.

One way for states to provide higher quality spending data, and to streamline and standardize their procurement processes, is to implement an enterprise-wide eProcurement system. These systems allow for procurement functions to be conducted electronically, replacing traditional paper-based procurement processes and allowing for enhanced data collection and reporting capabilities.



In 2001, the state of Virginia implemented an enterprise eProcurement system that allowed the state to use spending data to reduce costs, increase administrative efficiencies, enhance transparency, and increase competition. Prior to the implementation of this system, Virginia's procurement processes were inefficient and fragmented across state agencies, similar to the current situation in Oregon.

Virginia's Department of General Services estimates that the state has saved \$30 million per year by better leveraging its buying power through analysis of its spending data. It also estimates an additional savings of \$11 million a year from replacing manual purchasing processes with electronic processing through its enterprise eProcurement system.

In Oregon, statewide spending is captured in several legacy systems, each of which has significant limitations that prevent DAS from conducting statewide spend analysis:

- Oregon Procurement Information Network (ORPIN) is the state's primary procurement system. It houses statewide contract information, solicitations, and other procurement information. ORPIN only holds contract information, not the actual amount spent under a contract.
- Statewide Financial Management Application (SFMA) is the state's financial reporting system. While this system tracks the actual amounts spent by state agencies, it generally lacks the detailed purchase information necessary to effectively analyze spending.
- State Purchase-Card of Oregon Transaction System tracks statewide spending on purchase cards. Similar to SFMA, this system tracks actual spending but lacks the level of detail necessary to effectively analyze spending data.
- Vendor Supplied Price Agreement Data is supplied to DAS for purchases made through statewide price agreements. This data source has the most purchase detail, but only accounts for a fraction of statewide spending and suffers from significant data quality issues.

In addition to these systems, state agencies use their own disparate procurement processing and tracking systems. We identified at least six different data systems used for purchase tracking, ranging from Excel to agency-developed internal

#### Burdensome manual procurement processes waste state resources



These pictures represent three carts that held responses to a Request for Proposals to establish a pool of IT Service providers. DAS requested one official hard copy, and 10 copies on electronic media. The electronic files were too large to email. The documents then had to be copied and distributed to the 24 proposal evaluators.

*Source: State Chief Procurement Officer*

systems. Furthermore, only two agencies have a documented methodology for regularly conducting a limited spend analysis, with agencies citing a lack of detailed purchase data and time-consuming manual processes as primary barriers.

To assess how these fragmented processes and the limited visibility into statewide purchasing impact procurement spending in Oregon, we analyzed vendor-supplied purchase-level data for all IT price agreements from 2016 and 2017 and identified 3,193 products and services that were purchased multiple times at varying prices.<sup>13</sup> If these purchases would have been made at the lowest price paid, the state could have potentially saved as much as \$7 million, a 5% cost reduction, of the purchases we analyzed. See Figure 3 for selected examples.<sup>14</sup>

**Figure 3: Examples of IT commodities purchased by state agencies at varying prices for same item illustrates a portion of the potential savings of better data visibility and analysis**

	Quantity Purchased	Lowest Unit Price	Highest Unit Price	No. of Different Prices Paid	Total Paid by State	Savings if Purchased at Lowest Price	Percent of Savings out of Total Paid
<b>Dell 24" monitor</b>	1,308	\$ 176.40	\$ 241.15	10	\$ 247,316.69	\$16,585.49	7%
<b>RICOH multi-function printer</b>	91	3,176.74	4,896.82	17	360,569.74	71,486.40	20%
<b>Lenovo ThinkCentre M900 Desktop</b>	1,619	696.59	789.91	12	1,194,561.87	66,782.66	6%
<b>HP Enterprise 32GB RAM module</b>	750	474.92	543.58	3	406,298.40	50,108.40	12%
<b>Microsoft Surface Pro</b>	303	1,200.18	1,223.76	7	369,827.85	6,173.31	2%
<b>RICOH surge protector</b>	223	65.90	173.98	131	26,152.56	11,456.86	44%

Source: Auditor prepared from DAS statewide IT price agreement data.

While IT price agreement spending only represents roughly 3% of the state’s overall procurement spending, this analysis illustrates the potential for significant savings if purchases were made strategically at a statewide level. Significant cost reductions ranging from 5% to 20% of overall procurement spending and other benefits could be realized by modernizing procurement systems and practices.

<sup>13</sup> Based on matching product numbers and descriptions of purchased item. Only 62% of the data had enough information to perform the analysis.

<sup>14</sup> Additional examples are located in Appendix A.

## Oregon's new strategic sourcing program is promising, but lacks data

Basecamp, the state's new IT strategic sourcing program, generally meets guidelines and best practices for setting up a program of this type. However, critical opportunities for cost-savings and other efficiencies may be missed due to the lack of detailed purchase data.

Strategic sourcing is a procurement process in which an organization's spending is critically analyzed in order to identify goods and services that could be acquired more efficiently and at lower costs. Acquisition is typically done by creating enterprise contracts that replace numerous individual procurements. The U.S. Government Accountability Office and National Association of State Procurement Officers identify four keys steps for strategic sourcing processes:

1. **Opportunity Analysis**: Strategic sourcing begins with a comprehensive spend analysis in order to identify and prioritize products and services to include in the program.
2. **Strategy Development**: A procurement strategy is developed that is informed by market research and input from key stakeholders.
3. **Strategy Implementation**: The developed strategy is implemented, typically by developing a request for proposal or other solicitation document. Vendor submissions are evaluated by a committee and contracts are awarded.
4. **Performance and Vendor Management**: Vendor performance is tracked and used to improve services for specific contracts and the overall performance of the strategic sourcing program, including cost-savings.

Based on our review, Basecamp's strategic sourcing process includes these steps, except for using a comprehensive spend analysis to guide its opportunity identification and prioritization efforts. Not completing the first step in the recommended strategic sourcing process affects the program's ability to evaluate cost savings in step four. Basecamp personnel plan to address the lack of comprehensive spend analysis by requiring vendors to regularly submit comprehensive performance data to prevent the lack of statewide spend data from affecting performance and vendor management functions.

Basecamp personnel try to compensate for the lack of data by relying on stakeholder feedback to guide these efforts. This feedback is gathered in multiple ways. Suggestions are initially gathered through an online form available on the program's website. These can be submitted by staff from agencies, local governments, and other stakeholders. Basecamp personnel also provide online surveys for users to gauge potential use, spending, and purchase volume for identified products and services. They also use feedback from key OSCIO groups and DAS Procurement Services to guide opportunity identification and prioritization efforts. Final product and service selections are made by a steering committee made up of management and staff from both the OSCIO and DAS Procurement services, as well as representatives from several state agencies.

While this stakeholder feedback is an important source of information, a more comprehensive spend analysis would likely identify additional opportunities for significant savings in categories of goods and services. Without the use of spend data, assumptions may be made that can negatively impact the level of success of these strategic sourcing efforts.

## **Additional work remains to ensure appropriate oversight for major IT project procurements**

The Enterprise IT Governance Office at the OSCIO has made improvements in their oversight processes to mitigate significant procurement risks associated with major IT projects. However, we determined that some processes are still immature, and a lack of training and guidance have contributed to confusion and frustration by agencies with projects subject to oversight.

Weaknesses we identified include:

- insufficient oversight scalability for projects of different sizes, risks, complexities, and criticalities;
- unclear requirements for the level of effort and detail needed for project documents and review; and
- undefined requirements for qualifications and experience needed by agency Project Managers to manage projects of different sizes, risks, and complexities.

Additionally, the OSCIO has not established meaningful measures to determine how well the oversight program is performing. Without this information, the OSCIO cannot assess whether it is meeting business objectives and customer needs.

### ***Although the OSCIO has addressed some weaknesses, more work needs to be done to address prior findings***

In 2015, the Secretary of State conducted an audit that evaluated the state's system development and implementation oversight, including the then newly developed stage gate model.<sup>15</sup> Our recommendations to the OSCIO included ensuring appropriate and sufficient staff are assigned to project oversight, providing guidance and direction to agencies that lack appropriate resources, and fully developing and implementing stage gate processes.

Since that report was released, the OSCIO has worked to improve the IT investment oversight process. The OSCIO has increased staffing to six full time analysts and six full time Senior IT Portfolio Managers, roughly doubling their capacity. These roles have recently been assigned based on policy area to enhance familiarity with business needs and oversight consistency.<sup>16</sup> The office has also implemented an online tool that agencies and the OSCIO use to exchange project documents, communicate progress, and track project status. Additionally, some agencies subject to IT project oversight have indicated improvement in communication of expectations. However, the lack of clear requirements is still a prevalent concern among agencies overall.

While the OSCIO has made some progress in implementing prior audit recommendations, some findings remain unresolved. Further work needs to be done to fully develop stage gate processes and provide agency appropriate guidance and direction.

### ***Oversight review lacks scalability for projects of different sizes, risks, and complexities, which may cause inefficiencies and frustration***

As reported in our prior audit, the OSCIO still does not have a robust process to adjust the level of oversight based on project size, risk, and complexity. Without a framework in place to scale the level of oversight, there is an increased risk that some projects may receive overly

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<sup>15</sup> [Report 2015-06: "Major IT Projects: Continue Expanding Oversight and Strengthen Accountability"](#)

<sup>16</sup> Policy areas include Healthy People, Public Safety, Natural Resources, Administration and Business Services, Transportation and Economic Development, and Education.



burdensome scrutiny, while others may not receive enough. This lack of defined scalability has also resulted in frustration experienced by some agencies during the oversight process.

The Project Management Institute Governance Guide states that governance and resources applied to a project should be based on a balance of risk and efficiency, and should be implemented to a degree that consumes the least amount of resources necessary to reduce risk to an acceptable level.

The OSCIO defines major IT projects as those exceeding \$150,000. These projects are subject to one of two oversight frameworks, stage gate or non-stage gate, as determined by oversight analysts. In general, projects between \$150,000 and \$1 million will go through a non-stage gate review, while projects over \$1 million are typically subject to stage gate oversight. When deemed to be high risk, projects under \$1 million may also be subject to stage gate, at the discretion of the State CIO. Conversely, projects \$1 million and over may be subject to non-stage gate oversight if considered low risk.

While this allows flexibility in the level of scrutiny applied to each project, the scalability within the two frameworks is primarily based on the professional judgment of oversight analysts. Projects may vary greatly in project size, risk, and complexity, but there is no methodology to define risk or appropriately scale oversight within the two frameworks. For example, there is no clearly defined distinction in how a \$2 million stage gate project with low risk and complexity will be evaluated — and with what level of scrutiny — compared to a \$300 million stage gate project with high risk and complexity.

Without a methodology to scale the rigor of oversight, there is an increased risk that some projects will receive an insufficient level of scrutiny and critical issues will not be identified. However, if too much scrutiny is applied, unnecessary resources will be consumed. Additionally, without assessing risk based on defined risk factors, project risk is not comparable between projects and could lead to inconsistent levels of oversight for similar projects.

***Unclear requirements for the level of effort and detail needed for project documents subject to oversight may lead to repetitive, inefficient work or insufficient planning***

The OSCIO has not clearly defined documentation requirements for major IT projects, which was also reported in our 2015 audit. According to the OSCIO, this is largely intentional to avoid being overly prescriptive; however, IT procurement best practices recommend clearly defining reviews of stage gate and other significant investments. Without clearly defined requirements, time and resources may be wasted by repeated document resubmissions. Additionally, without clear criteria for review, analysts may approve documentation that lacks critical planning considerations.

Oregon's OSCIO has not clearly defined what should be included in required project documents. Rather, analysts make this determination on a project-by-project basis using their professional judgment. Although there are several ad hoc processes in place, there are no established criteria to guide analysts' review of project documents. Although some templates are available, OSCIO oversight staff generally consider them inadequate and do not consider them to be a good basis for document submission.

Additionally, there is no formal training for oversight analysts. Although training and guidance used to be provided to new analysts during onboarding, currently there is no program to ensure analysts are trained in the stage gate framework or project oversight. While analysts are required to have appropriate education and experience for their role, and analysts are expected to have professional certifications, which impose some continuing education requirements, a lack of training in the applied oversight model leads to inconsistent application.

Without clearly defined requirements and consistent feedback from oversight staff, some agencies lack an understanding of what is required to progress through stage gate and non-stage gate oversight. Over half of the agencies within our scope indicated that expectations regarding the substance of required documents were not clearly communicated or that communicated requirements were inconsistent over time. This lack of understanding and consistency leads to process inefficiencies, as well as inadequate document submissions that cause rework and resubmissions, which increases project time and cost.

Moreover, undefined oversight processes may result in approval of project documentation that lacks critical planning considerations. For example, we identified several projects with approved staffing plans that did not include an assessment of the experience and skills necessary for project staff to successfully execute the project. Without such an assessment, project risks may not be appropriately identified and remediated prior to approval.



California demonstrates best practices by providing clear guidance on their website as to which documents should be submitted for projects based on project size. The state also provides document templates and has an online sample library that provides links to sample documents.

### ***Lack of defined requirements for qualifications and experience needed to manage projects of different sizes, risks, and complexities***

The OSCIO has not developed guidelines, rules, or policies outlining minimum education and experience requirements for IT project managers in Oregon. Without minimum qualification requirements, project managers assigned to major IT investment projects may lack the knowledge and skills necessary to effectively manage project time, cost, and quality.

The OSCIO is statutorily responsible for developing and promoting IT training and overseeing state agency planning, budgeting, and acquisition of IT resources to ensure an efficient use of state resources that meets the needs of the state and agencies within the executive department. However, the OSCIO has not established rules or policies that require agencies to ensure project management staff have the qualifications necessary to successfully manage major IT projects.

Agencies generally fill IT project management positions with either Information Systems Specialist or Project Manager classifications. While each classification includes qualifications that are relevant to managing IT projects, neither fully encompasses both information system and project management knowledge and skills. Agencies that do not have the capacity to manage major IT projects can contract out for project management services, but there are no requirements for contracted service provider knowledge and skills. Although contracted organizations are required to have three years of experience in the service they provide, there are no minimum training or experience requirements for the contracted project manager.

Furthermore, the OSCIO has not developed training requirements for agency project managers. The only required training is on how to use the statewide project and portfolio management system.<sup>17</sup> Although DAS provides agencies with access to introductory business analysis and project management classes, including Oregon's project management certification program, these are not required.

Without minimum qualification and training requirements that address the intricacies of IT project management, major IT projects may be inadequately planned, resulting in project delays and budget overruns. For example, the OSCIO referred to one project that should have taken two

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<sup>17</sup> The project and portfolio management system is a web-based tool for agencies and the OSCIO to share project documents and high-level project information (such as project budget), as well as provide comments on document submissions and project progress.

years to complete, but ended up taking eight years. This project went through four project managers due, in part, to lack of project management knowledge and ability.

To ensure IT investment activities are performed in an efficient, low cost manner, the governing body should ensure appropriate resources are available to provide expertise necessary to support project execution. For example, Virginia's project management oversight entity ensures appropriate expertise by requiring project managers to have experience and training commensurate with the risk and complexity of the project.



### ***The OSCIO has not established meaningful measures to determine and measure the oversight program's effectiveness***

The Enterprise IT Governance Office at the OSCIO has not established Key Performance Indicators (KPIs) to assess the effectiveness of the project oversight process. Without clearly defined KPIs, the OSCIO does not have the information necessary to determine if they are meeting business objectives.

Entities should work with stakeholders to define, approve, and maintain up to date performance targets. Once performance targets are defined, entities should collect and process performance data in order to analyze and report upon performance against defined targets.

The OSCIO Interim Director of the Enterprise IT Governance Office indicated that this is something they intend to develop, but other endeavors have taken priority. For example, the OSCIO has been working with other stakeholders to better define the current Enterprise IT Governance Structure and implement a statewide project prioritization program.

Without defined performance measures, the OSCIO does not have the information it needs to assess whether they are meeting their business objectives related to IT investment oversight.

### **The overall cost of independent Quality Assurance services for major IT projects is aligned with industry norms**

We found that Independent QA costs, as a percent of total project costs, are within reasonable limits on individual projects. Furthermore, we determined that controls to ensure independence of QA reports are appropriate, but more should be done to ensure QA reports are delivered to the appropriate stakeholders.

### ***The cost of independent Quality Assurance services is at or below industry norms***

Multiple state agencies expressed concern to auditors about excessive QA costs. However, when we compared the cost of QA services for a selection of major IT projects to industry trends and benchmarks, we found that QA costs were reasonable, averaging 3.5% of total project cost.

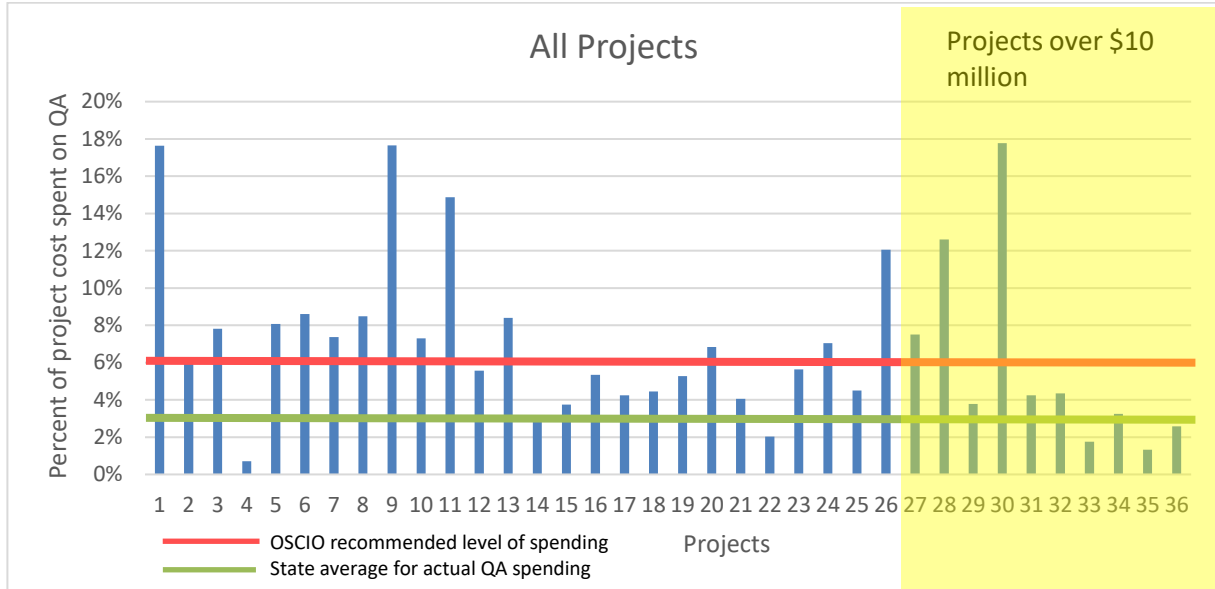
The requirement for QA is predominantly determined by statute and the State CIO, although agencies may choose to hire QA services beyond these requirements if significant risks are identified. Agencies hire QA contractors through a pre-approved DAS price agreement.

Currently, the OSCIO recommends that 5% to 6% of the overall budget of a major IT project be reserved for QA services. Additionally, those projects that contract for independent testing may have additional costs of up to 6% of the project budget.

We reviewed 36 agency IT projects with a QA component that were in process or started since 2015. We found the cost of QA, including testing, ranged from less than 1% to almost 18% of the total budget on individual projects. Projects with a higher percentage of QA costs were typically

those that had smaller budgets, where even limited QA services would naturally show a high QA percentage due to baseline cost of services. Projects with a low percentage of QA spending were lower risk and required limited QA services.

**Figure 4: Projects averaged 3.5% of total project cost for projects with QA**



Overall, the total project cost of all 36 projects was roughly \$1.06 billion, while the total cost of QA for those projects was approximately \$37 million. This amounts to an overall average of 3.5%, with a median of 5.1%, of total project cost devoted to QA. This is just below OSCIO guidance of 5% to 6%, and well below overall industry trends.

***Better tracking of independent quality assurance reports needed to ensure independence***

We determined that controls put in place to ensure the independence of quality assurance reporting are appropriate, but better tracking is needed to ensure QA reports are delivered to the appropriate stakeholders.

After the failed implementation of the Cover Oregon system, a state law was put in place to help ensure that independent quality assurance contractors remain independent and free from undue influence by the agencies who hire them.<sup>18</sup> This law requires that preliminary and final reports submitted by independent QA contractors must be provided to agency contract administrators, DAS, the OSCIO, the LFO, and other key stakeholders at the same time. This applies to contracts executed on or after July 1, 2014.

We identified 25 contracts subject to this law. We requested documentation from the OSCIO to demonstrate that reports were sent to appropriate stakeholders. However, the OSCIO does not consistently track this information; it was able to provide reporting documentation for only 18 of those contracts. While the OSCIO indicated the stakeholders of the remaining eight projects most likely received the reports, the OSCIO could not provide supporting evidence.

Overall, we found controls ensuring independence are appropriate; however, the OSCIO does not have a process in place to ensure QA reports are sent to all recipients as established by statute. Without tracking, there is an increased risk that lawmakers and other key decision makers may not receive timely information when an IT project is facing significant issues.

<sup>18</sup> [ORS 276A.223\(5\)\(a\)](#)

## Recommendations

We recommend DAS:

1. Identify options, and seek funding, for the acquisition and implementation of an enterprise eProcurement system that would provide purchase data of sufficient detail to allow for robust spending analysis and identification of opportunities for strategic sourcing and cost reductions. Additionally, develop processes to ensure the results of this analysis are available to agencies, legislators, and the public.

We recommend the OSCIO:

2. Fully develop and implement stage gate processes to ensure they are effective and repeatable. Specific processes that should be developed include:
  - a. Specifying how projects of different sizes and complexity will be evaluated to ensure each project receives the appropriate amount of oversight;
  - b. Establishing more robust criteria and guidance regarding required elements for stage gate deliverables, including templates and examples, and a training program for oversight staff to promote consistent application of the project oversight framework.
3. Establish minimum knowledge (i.e. education or training) and experience requirements for project managers who manage major IT investment projects. Knowledge and experience requirements should be scaled to be commensurate with project risk determined by the OSCIO.
4. Work with stakeholders to define, periodically review, update, and approve key performance indicators for the oversight process. Once KPIs are defined, the agency should develop processes to collect and periodically review performance data, and report progress compared to performance targets to key stakeholders.
5. Establish a method to track QA report distributions to ensure that reports are sent to all appropriate stakeholders as required by state law.

## Appendix A: Additional Products with Unit Price Variations

This appendix lists a random sample of 521 of the 3,193 products and services with unit price variations that we identified in our review of purchase-level data from statewide IT price agreements for purchases made in 2016 and 2017. Our purpose in analyzing this data was to show that enhanced analysis of statewide purchase data could identify opportunities for procurement cost savings.<sup>19</sup> While we used data provided to us by DAS Procurement Services, the raw, purchase-level data that this analysis is based on is publicly available on DAS's website.<sup>20</sup>

Year	Product Number	Narrative Product Description <sup>21</sup>	Quantity Purchased	Total Paid by State	Lowest Unit Price	Highest Unit Price	Savings if Purchased at Lowest Price	Percent of Savings out of Total Paid
2017	F5-SVC-BIG-PRE-L1-3	F5 PREMIUM SVC F/ BIG-IP	12	42,986.83	2,004.08	6,058.04	18,937.87	44%
2017	54323	C2G 8IN DISPLAYPORT M TO VGA F BLK	13	234.23	17.77	18.07	3.22	1%
2017	60-604-003	ERGOTRON WALL MOUNT LOW PROFL 32-65	13	1,115.76	85.81	86.04	0.23	0%
2017	S27E450D	SAMSUNG 27" LED	7	1,431.11	188.18	236.42	113.85	8%
2017	LYD54293	IRADV C2225	23	1,331.22	26.54	102.61	720.80	54%
2017	2354457	MSH WRLS 2000 DT USB KB/MOU	12	430.84	31.89	37.81	48.16	11%
2016	G3FAXBD AL1	CUSTOMER PERIOD CHARGE	36	301.44	7.96	9.20	14.88	5%
2016	V11H478120	EPSON PL 1761W WXGA 2600 LUM	5	3,083.44	616.04	617.12	3.24	0%
2017	64339-31	PLANTRONICS HW261N NOISE CANCELLING	10	757.08	75.69	75.75	0.18	0%
2016	1752265	DYMO LABELWRITER 450 TURBO	7	669.25	78.91	110.58	116.88	17%
2017	3559206	ERGOTRON WORKFIT-T WORKSTATION BLACK	54	20,160.76	373.28	374.19	3.64	0%
2017	3207153	HP SB 65W SLIM AC ADPT G2	4	263.97	63.64	66.83	9.41	4%
2016	3224316	C2G 1FT USB A MALE TO MICRO B CABLE	16	49.16	3.05	3.11	0.36	1%
2017	910-001935	LOGI WRLS M705 MARATHON MOU	7	229.03	31.10	38.83	11.33	5%
2016	MX1183934	W7830PT	6	2,904.21	408.34	538.29	454.17	16%
2017	S-STDSV3PSSS-C-R	Shavlik Production Support and Subscription -	70	3,142.70	43.55	45.12	94.20	3%
2017	AF630A	HP LCD 8500 1U CONSOLE US KIT	4	3,769.90	915.61	982.84	107.46	3%
2016	3514700	SAMSUNG 850 EVO 500GB SATA SSD	8	1,335.62	161.12	179.22	46.66	3%
2016	1037697	HP 6FT 1.83M 10A C13-UL US PWR CORD	8	79.12	8.00	10.52	15.12	19%
2017	37791748	Site Kiosk License	2	297.94	144.33	153.61	9.28	3%
2016	PWR-C1-350WAC/2	350W AC Config 1 SecondaryPower Supply	22	5,469.50	238.70	347.75	218.10	4%
2017	4818154	DELL CTO 7050 I7-7700 512/16 W10P	9	10,807.63	1,193.46	1,259.95	66.49	1%
2017	4038625	DELL DISPLAYPORT TO DVI SINGLE-LINK	52	1,142.67	19.23	22.03	142.71	12%
2016	DLS-1000L	DatAlert Suite for 1000 Users	2	42,853.47	20,406.17	22,447.30	2,041.13	5%
2016	N201-015-BL	TRIPP 15FT CAT6 SNAGLESS RJ45 BLUE	638	2,973.88	4.66	4.68	0.80	0%
2017	3623331	HP 24UH 24IN LED BACKLIT MONITOR	9	968.85	107.56	107.83	0.81	0%
2017	3053948	HP 2U SFF BB Gen8 Rail Kit	9	740.39	81.59	82.35	6.08	1%
2017	7NQ-00301	Microsoft SQL Server Standard Core Edition -	19	18,176.23	586.33	1,758.99	7,035.96	39%
2017	4153219	LVO TC 24IN TINY-IN-ONE MONITOR	8	1,532.54	190.76	193.99	6.46	0%
2016	A2T198011	WC3615DN	3	137.07	42.91	49.09	8.34	6%
2016	734790-S01	HP DL380P GEN8 IB E5-2620V2 US SVR/S	4	3,536.58	803.77	964.52	321.50	9%
2016	1729030	DYMO LABELWRITER 450 TURBO	4	289.88	71.46	73.48	4.04	1%
2016	2388123	PLANAR PL2210W 22" WIDE LED DVI	7	687.71	96.93	98.77	9.20	1%
2017	MX395B/O	SHURE BLACK BUTTON MIC 3PIN XLR	28	4,200.12	143.17	167.09	191.36	5%
2017	CRU00Z02-4PB	[OOD ]NUANCE PCC CARD READER -	8	3,535.98	191.49	698.00	2,004.06	57%
2016	MX4358140	W7845PT	6	1,861.49	234.75	366.81	452.99	24%
2016	312-1325	DELL 97WHR 9 CELL LIT ION BATTERY	4	487.05	77.12	137.71	178.57	37%

<sup>19</sup> To analyze price differences we aggregated purchase-level data by product number and description and identified the minimum and maximum price paid. The potential savings estimates illustrate the costs that could have been avoided if the minimum price would have been paid for all purchased items. We assumed that all purchases with like product numbers and descriptions were equivalent. There are instances where this assumption may not hold true, based on large differences between the maximum and minimum unit prices. We did not exclude these from our analysis because there was not a way to identify the additional factors that affected their price within the source data.

<sup>20</sup> Statewide Price Agreement Data available at: <https://www.oregon.gov/das/Procurement/Pages/pa-reports.aspx>

<sup>21</sup> Product description truncated for space.

Year	Product Number	Narrative Product Description <sup>21</sup>	Quantity Purchased	Total Paid by State	Lowest Unit Price	Highest Unit Price	Savings if Purchased at Lowest Price	Percent of Savings out of Total Paid
2016	3088039	HP SB Z24i 24" LED BACK IPS MON PROM	72	24,859.62	345.19	345.30	5.94	0%
2016	AP9631	APC UPS NETWORK MANAGEMENT CARD 2	19	7,551.86	396.08	422.42	26.34	0%
2017	4647980	APPLE MBP 13.3 SG 2.3 16GB 256GB	3	4,966.34	1,629.00	1,668.67	79.34	2%
2016	E09PVL	IBM SPSS Advanced Statistics - Software	58	12,694.42	114.05	285.11	6,079.52	48%
2017	MTIP2152-DUP	CTL 22IN 1920X1080 LED MON 2152	5	654.98	122.70	143.44	41.48	6%
2017	2878037	STARTECH HDMI TO DVI-D ADAPTER - F/M	14	100.67	7.19	7.20	0.01	0%
2016	86507-01	PLANTRONICS SAVI W745	2	526.94	262.33	264.61	2.28	0%
2016	407226	MP 401SPF 115 VOLT VERSION	4	5,890.59	1,369.01	1,511.98	414.55	7%
2016	Y77R2	DELL OPTI 5040 I7-6700 500GB 8GB W7	53	42,046.64	791.81	796.72	80.71	0%
2017	4402HX-PTM-1Y	FIREEYE 1YR PLAT SUP 4402 HX	2	6,333.74	3,035.24	3,298.50	263.26	4%
2017	910-004425	LOGITECH M170 WRLS MOU GRY	40	425.00	9.98	11.27	25.80	6%
2017	AV09A-K00-2.0	Nuance Power PDF Advanced - ( v. 2.0 ) - box	5	608.64	121.48	122.10	1.24	0%
2017	F2B56UT	HP SB USB EXTERNAL DVDRW DRIVE	4	243.92	59.89	62.37	4.36	2%
2016	DVIDDM10	STARTECH 10FT DVI DUAL-LINK	22	179.26	8.05	8.41	2.16	1%
2017	3249798	ADESSO 2.4GHZ RF WRLS VERTICAL ERGO	6	189.88	31.43	31.69	1.30	1%
2017	CON-ECMU-	CIS DIR 1YR ESS SW SUPP UPGR	57	243.27	4.01	4.36	14.70	6%
2016	997-6897-00	PLANAR PLL2210W 22" LED BLK	51	4,838.28	91.42	107.18	175.86	4%
2017	U7AH5E	HP 5Y NBD DL380 GEN9 FC SVC	9	10,518.20	1,150.40	1,315.00	164.60	2%
2017	CF064A-DUP	HP 110V MNT KIT FOR M601/602/603	3	831.67	266.81	298.05	31.24	4%
2016	97-620-060	ERGOTRON WORKFIT FLOOR MAT	30	5,191.41	164.49	174.32	256.71	5%
2017	1390554	BELKIN 15FT HDMI CABLE M/M	5	44.77	8.95	8.97	0.02	0%
2017	417865	FAX OPTION TYPE M29	153	74,008.02	455.80	593.32	4,270.62	6%
2017	3YR-00001	MICROSOFT SURFACE MOUSE COMMER SC	22	965.78	43.88	43.90	0.42	0%
2017	BE112234-10-	BELKIN SURGEPRO 4120J 12 OUTLET 10FT	1,130	24,773.90	21.26	27.03	750.10	3%
2017	416612	PUNCH UNIT PU3060 NA	17	6,287.32	240.20	412.66	2,203.92	35%
2017	4422935	EPSON POWERLITE 1780W WXGA PROJ 3000	6	3,831.32	635.01	656.27	21.26	1%
2016	BE108230-12	BELKIN SURGEPRO 3550J 8 OUTLET 12FT	55	1,046.45	18.54	23.89	26.75	3%
2017	4300266	HP OFFICEJET PRO 7740 WF AIO PRINTER	2	507.89	249.99	257.90	7.91	2%
2016	417609	MP 6503SP (120V)	3	24,848.02	8,022.03	8,803.86	781.93	3%
2016	3519195	APPLE IPAD AIR 2 64GB SPACE GRAY WIF	2	1,040.39	484.75	555.64	70.89	7%
2017	SW5-00001	MS SURFACE BOOK I7 256GB 8GB GPU	2	3,992.28	1,993.11	1,999.17	6.06	0%
2016	3787652	TRIPP 200W CAR INVERTER USB 2 OUTLET	55	1,746.85	31.56	33.46	11.05	1%
2017	CT8G4DFS8213	CRUCIAL 8GB DDR4-2133 UDIMM NON-ECC	301	17,774.79	56.79	59.06	681.00	4%
2016	F4U085TT	BELKIN THUNDERBOLT DOCK V2 + CABLE	3	805.12	255.56	294.00	38.44	5%
2017	G3Q35A#BGJ	HP LASERJET PRO M102W MONO LASER	5	637.80	102.98	159.00	122.90	19%
2017	M1P02A8#ABA	HP SB ELITE E242 DISPLAY 24IN	213	51,653.84	237.04	244.85	1,164.32	2%
2017	3854334	HP 3Y NBD EXCH LJ M402 SVC	36	1,909.05	52.88	54.67	5.37	0%
2016	0B46994	LVO THINKPAD 90W AC ADAPTER FOR X1	44	2,902.95	61.95	66.07	177.15	6%
2016	npn-prag-DOCpro	DOC xPress (PRO Edition)	3	2,052.60	639.18	774.24	135.06	7%
2016	3567112	SEAGATE 8TB BACKUP PLUS USB 3.0	3	679.38	218.49	231.10	23.91	4%
2017	A3L980-10-5	BELKIN 10FT CAT6 UTP SNAGLESS GRY	10	41.00	3.28	4.10	8.20	20%
2017	4361338	ARUBA 2920 48G POE+-	3	8,039.46	2,120.42	2,959.52	1,678.20	21%
2017	2310869	STARTECH 4PT USB 3.0 HUB BLK	7	209.58	29.91	29.98	0.21	0%
2017	77-52829	Apple Otterbox Defender Rugged Interactive	36	1,083.84	29.21	33.14	32.28	3%
2017	65270819BC01A12	Adobe Photoshop CC - Team Licensing	9	1,946.11	114.48	314.81	915.79	47%
2016	2916152	CRUCIAL 8GB DDR3 1600 MT UDIMM	57	1,757.84	30.11	32.94	41.57	2%
2017	417036	MP 4054SP (120V)	12	46,686.38	3,726.59	4,650.21	1,967.30	4%
2016	CT102464BD160B	CRUCIAL 8GB DDR3 CL11 UDIMM	28	924.04	27.96	36.43	141.16	15%
2017	SE-T-LIC-ESUP	Splunk Enterprise - Term License with	4	119,649.11	3,157.90	78,596.49	107,017.51	89%
2016	3102992	HP 2920-48G POE+ 740 SWITCH	2	6,706.11	3,291.39	3,414.72	123.33	2%
2016	CA-SOFTVAL-2	INFOCUS CARRY CASE SOFT	10	306.52	30.61	30.76	0.42	0%
2017	3865540	HP 27SV LED BACKLIT 27IN	5	905.56	180.24	182.42	4.36	0%
2017	AC820-BLK	KINESIS FREESTYLE VIP3 ACCESSORY	2	80.13	39.40	40.73	1.33	2%
2016	6VC-01254	Microsoft Windows Remote Desktop Services	5,536	118,141.16	19.13	21.56	12,237.48	10%
2016	1020-3195	QUEST ONE IDENTITY SOLUTION FOR	16,400	139,635.30	3.48	14.98	82,563.30	59%
2016	A2T202963	WC3615DN	6	185.92	27.77	34.05	19.30	10%
2017	4457502	DELL 5580 I5-7200 256GB 8GB W10P	60	54,917.57	908.77	995.98	391.37	1%
2017	65234080BC04A12	Adobe Acrobat Pro - Team Licensing	3	353.60	109.74	121.93	24.38	7%

Year	Product Number	Narrative Product Description <sup>21</sup>	Quantity Purchased	Total Paid by State	Lowest Unit Price	Highest Unit Price	Savings if Purchased at Lowest Price	Percent of Savings out of Total Paid
2017	SDCZ48-064G-A46	SANDISK ULTRA 64GB USB FLASH DRV	8	157.63	19.01	20.12	5.55	4%
2017	F8B04A#B1H	HP ENVY 5660 AIO PRINTER	8	1,206.22	149.99	152.09	6.30	1%
2016	J4858C-CDW	PROLINE 1000BSX SFP F/HP	19	1,477.27	71.48	95.31	119.15	8%
2017	4618333	4Y LAP OSNBD 1500-1599.99	52	14,104.92	270.63	271.30	32.16	0%
2017	MC-1800-0110	Kofax Support Standard - technical support - 1	2	82,733.10	24,241.30	58,491.80	34,250.50	41%
2017	3601016	ACER C910 15 3205U 32GB 4GB CHROME	2	541.71	266.08	275.63	9.55	2%
2017	12273-NZ	Eco Universal 3.1 Amp Dual USB Wall Charger	14	119.64	8.47	9.00	1.06	1%
2017	CT1050MX300SSD1	CRUCIAL MX300 2.5IN 1TB SATA SSD	9	2,426.52	268.42	270.94	10.74	0%
2017	H2W17UT	HP SB ESSENTIAL TOP LOAD CASE	11	201.88	15.54	18.64	30.94	15%
2016	MAINT	One year Maintenance Agreement	730	2,384.30	1.48	5.13	1,303.90	55%
2016	B4A22A#BGJ	HP COLOR LASERJET PRO M252DW	4	972.57	219.57	299.00	94.29	10%
2016	MRSF-095-GRY	INCIPIO TRUMAN SLEEVE F/SURFACE PRO4	21	477.33	19.61	23.25	65.52	14%
2017	KV3-00381	Windows Enterprise - upgrade & software	43	6,122.95	127.47	156.64	641.74	10%
2017	2462518	JABRA PRO 9450 MONO NC MIDI-BOOM	6	1,150.32	184.36	195.40	44.16	4%
2016	N201-010-BL	TRIPP 10FT CAT6 SNAGLESS RJ45 BLUE	49	184.35	3.75	3.87	0.60	0%
2017	HZC35395	INNER FIN-D1	4	94.89	21.33	24.52	9.57	10%
2017	BG1000836	D110PRT	12	3,334.59	244.18	356.60	404.43	12%
2016	J9727A#ABA	HP 2920-24G-POE+ Switch	12	17,002.79	1,351.71	1,639.13	782.27	5%
2017	MMX62AM/A	APPLE LIGHTNING TO 3.5MM HEADPHONE	5	42.72	8.52	8.60	0.12	0%
2017	F5M010QBLK	BELKIN WIRED ERGO USB MOUSE	71	457.74	6.24	6.73	14.70	3%
2016	J9729A#ABA	HP 2920-48G POE+SWITCH	18	42,600.30	2,120.42	2,461.40	4,432.74	10%
2016	SMC1500	APC SMARTUPS C 1500VA LCD 120V	3	1,058.85	337.85	360.50	45.30	4%
2017	SFL646	PEERLESS FLAT SMARTMOUNT 32-50" BLK	48	1,004.47	20.92	21.23	0.31	0%
2016	MX4761995	W7855PT	3	1,400.38	409.51	512.75	171.85	12%
2017	3393496	STARTECH 7 PORT USB 3.0 DESKTOP HUB	2	83.85	41.88	41.97	0.09	0%
2017	CON-SNT-WSC296XT	Cisco SMARTnet 8x5xNBD	3	386.90	126.72	133.46	6.74	2%
2016	3417029	SAMSUNG 850 PRO SERIES 256GB SSD	33	4,189.43	120.96	137.63	197.75	5%
2017	3747016	EPSON T410 CLARIA MULTI-PACK INK	4	179.03	43.49	46.06	5.07	3%
2017	CON-SNT-1	SMARTnet Maintenance, 8x5xNBD	3	26,194.28	6,588.06	9,803.11	6,430.10	25%
2017	MX1062102	W7830PT	7	1,461.78	18.40	254.36	1,332.98	91%
2016	9706B002	CANON DR-C225 DOCUMENT SCANNER	6	2,572.22	428.32	429.47	2.30	0%
2016	A2T387888	WC3615DN	2	110.03	52.22	57.81	5.59	5%
2016	M3J-00102	Microsoft System Center Endpoint Protection	5	53.04	10.08	10.96	2.64	5%
2016	2863068	Lexmark Ms810Dn 55Ppm	3	2,444.84	722.85	875.33	276.29	11%
2016	FM140612LL	FileMaker Server - Maintenance ( 1 year ) - 1	5	7,306.78	1,407.74	1,474.76	268.08	4%
2017	H7J36A4#R2M	HPE ILO ADVANCED NON BLADE - 3YR SUP	15	408.00	23.90	40.40	49.50	12%
2017	77-32651	Apple Compatible Otterbox Defender Rugged	2	66.31	33.14	33.17	0.03	0%
2017	2258052	BTI COMPATIBLE BATTERY FOR RBC43	4	1,028.80	248.33	262.01	35.48	3%
2017	4057241	STARTECH DUAL MONITOR SIT-TO-STAND	1	363.48	362.59	363.48	0.89	0%
2017	PP-B-EPT-A-D-105	Proofpoint Enterprise Protection Appliance	2,560	43,276.80	13.98	20.22	7,488.00	17%
2016	VE228H	ASUS VE228H 21.5" WIDE DVI HDMI SPK	7	730.72	104.31	104.42	0.55	0%
2017	910-002696	LOGITECH WRLS MOUSE M525-BLK	15	337.88	21.32	29.83	18.08	5%
2017	934322	TRIPP 10FT CAT6 SNAGLESS BLK M/M	107	370.17	3.45	3.46	1.02	0%
2016	MR-1800-0110-PS1	Kofax Support Renewal - 1 Year	23	4,268.69	87.91	436.36	2,246.76	53%
2016	2714071	LOG WRLS M325 MOUSE-BLK	7	162.84	23.08	23.42	1.28	1%
2017	VX2252MH	VIEWSONIC VX2252MH 22" FULL HD	13	1,489.60	114.45	114.80	1.75	0%
2016	MX4358140	W7845PT	3	967.45	293.10	341.12	88.15	9%
2017	CA-SOFTVAL-2	INFOCUS CARRY CASE SOFT	13	396.42	30.46	30.68	0.44	0%
2017	4610932	MS SURFACE LAPTOP I5 256GB 8GB	5	6,339.65	1,267.84	1,267.99	0.45	0%
2017	805351-B21	HP 32GB 2RX4 PC4-2400T-R KIT	750	406,298.40	474.92	543.58	50,108.40	12%
2017	NPN-QSRIN-NVIVO-	NVivo 11 Pro Full License	5	5,761.85	1,088.35	1,280.41	320.10	6%
2016	3510325	Oracle Database Enterprise Edition Processor	2	30,605.84	13,173.48	17,432.36	4,258.88	14%
2016	6VC-01252	Microsoft Windows Remote Desktop Services	264	13,978.64	50.36	118.72	683.60	5%
2017	NPN-TABLE-MAINT-A	Desktop - Professional Maintenance	5	1,823.67	209.62	620.93	775.57	43%
2017	4320878	SANDISK 8GB CLIP JAM MP3 PLAYER BLK	12	408.48	33.78	34.17	3.12	1%
2016	MX4761995	W7855PT	6	2,730.32	389.69	538.29	392.18	14%
2016	3588381	LVO TP X1C3 I7-5600U 256GB 8GB W8P	6	11,588.37	1,923.16	1,948.04	49.41	0%
2017	MIMIAP000016	Apple Compatible Gadget Guard Black Ice	104	1,176.18	11.29	13.31	2.02	0%



Year	Product Number	Narrative Product Description <sup>21</sup>	Quantity Purchased	Total Paid by State	Lowest Unit Price	Highest Unit Price	Savings if Purchased at Lowest Price	Percent of Savings out of Total Paid
2016	KCP421SD8/8	KINGSTON 8GB D4-2133C15 2RX8 SODIMM	20	617.00	28.43	38.37	48.40	8%
2017	4212018	TARGUS UNIVERSAL DV1K-4K DOCK BLACK	2	353.69	176.44	177.25	0.81	0%
2016	S7160-AEMYNBD-3	FUJITSU 3YR ADVANCE EXCHANGE 8X5X24	16	2,754.17	170.00	181.39	34.17	1%
2017	0C52864	LVO BATT BO THINKPAD 57++	9	1,356.84	143.36	154.46	66.60	5%
2017	A2T387733	WC3615DN	2	94.91	33.91	61.00	27.09	29%
2017	C1FPCAT38504K9	Cisco One Foundation Perpetual Catalyst 3850	3	375.60	117.80	140.00	22.20	6%
2017	CX2-00094	Windows Enterprise for SA - upgrade &	280	20,840.00	49.05	84.58	7,106.00	34%
2017	P-FD16GATT03-GE	PNY ATTACHE USB FLASH DRV 16GB	40	223.45	4.18	6.43	56.25	25%
2017	65234080BC01A12	Adobe Acrobat Pro - subscription license ( 1	19	1,409.48	41.00	148.97	630.48	45%
2017	0281C005	CANON IMAGECLASS LBP253DW MONO	14	4,383.80	307.48	320.66	79.08	2%
2017	NPN-ORACL-	TRANSPARENT GATEWAY FOR DB2/400 V4.0	2	15,309.95	7,654.88	7,655.07	0.19	0%
2017	3948013	LVO TP ONELINK+ DOCK-US	102	16,443.63	159.22	161.92	203.19	1%
2017	ZOQM-2102433843	APPLE MBP 13" 2.7GHZ I5 256GB 16GB	8	13,050.35	1,559.00	1,668.67	578.35	4%
2016	4X40E77328	LENOVO THINKPAD ESSENTIAL TOPLD CASE	250	6,555.63	23.99	26.28	558.13	9%
2016	7N5-00001	MSH DESIGNER MOUSE BT	3	67.93	22.56	22.65	0.25	0%
2017	4698416	LOGITECH K400 PLUS WIRELESS TOUCH KB	3	78.87	22.79	28.04	10.50	13%
2016	ASA-RAILS	ASA 5512-X -- ASA 5555-X Rail Kit	4	1,015.00	240.00	267.50	55.00	5%
2016	3618285	BROTHER PT-D400AD LABEL PRINT W/AC	4	231.05	57.70	57.95	0.25	0%
2017	1667719	DYMO LABELWRITER 400 SERVER USB/ENET	7	753.57	106.67	107.90	6.88	1%
2016	CON-SNT-ASR90061	CISCO MGD--SMARTNET 8X5XNBD ASR 9006	3	5,426.36	1,808.78	1,808.79	0.02	0%
2016	3520390	MSH WIRELESS DISPLAY ADAPTER	5	281.43	56.23	56.51	0.28	0%
2017	MZ-7KE512BW	SAMSUNG 850 PRO 512GB SATA 2.5IN SSD	63	15,238.76	241.09	263.15	50.09	0%
2017	4505308	HP SB 250 G5 I3-6006U 500GB 4GB W10P	2	933.81	465.86	467.95	2.09	0%
2017	SNAGG01MAINT	TechSmith Maintenance Agreement Program	4	34.21	8.55	8.56	0.01	0%
2017	4679452	DELL CTO 24IN MONITOR - U2412M	24	7,281.36	288.59	318.19	355.20	5%
2017	1565273	LVO DISPLAYPORT SGL LINK DVI-D CABLE	16	421.56	26.28	26.55	1.08	0%
2017	2154459	LOGI WRLS MK520 COMBO	216	7,524.40	33.00	45.33	396.40	5%
2017	PVDM4-32U64	CISCO DIRECT PVDM4-32U64	5	4,810.80	960.00	965.40	10.80	0%
2016	WDBBKD0030BBK-	WD 3TB MY PASSPORT USB3 BLK	2	296.69	121.02	175.67	54.65	18%
2016	P2213	DELL 22" 16:10 1050 60HZ MONITOR TN	22	3,579.18	161.83	171.39	18.92	1%
2017	J9727A#ABA	ARUBA 2920 24G POE+	21	30,693.67	1,351.71	1,681.39	2,307.76	8%
2017	3664069	PNY NVIDIA QUADRO K1200 DP LP 4GB	6	1,682.60	254.80	307.86	153.80	9%
2017	4122702	DELL 3YR HW SVC W/IN-HOME/OS SVC	70	12,939.45	180.99	199.00	270.15	2%
2016	C2993A#B1H	HP OFFICEJET 200 MOBILE PRINTER	10	2,766.41	272.72	279.99	39.21	1%
2017	1975078	STARTECH MINI DISPLAY PORT DVI	34	370.34	10.89	10.93	0.08	0%
2017	3705616	PLANAR 22" PXL2270MW LED LCD	11	1,620.34	146.30	147.68	11.04	1%
2017	3269167	MSH WIRELESS MOUSE 1850 BLACK	58	571.33	9.82	11.59	1.77	0%
2017	WD10EZEX	WD BLUE 1TB 7.2K SATA 6G 3.5IN 64MB	37	1,804.81	46.77	49.33	74.32	4%
2017	GB42313-2	Apple Griffin Survivor Clear Case - Rose Gold	6	74.56	12.08	14.16	2.08	3%
2017	MA140MB	3M MA140MB DUAL SWIVEL ARM MOUNT	7	706.00	95.20	101.80	39.60	6%
2016	D1AJXLL	IBM MaaS360 Advanced Mobile Management	45	234.10	2.79	44.54	108.55	46%
2016	1961483	SONY AVTEQ CART F/37"-70" LCD/PLASMA	2	1,868.24	799.21	1,069.03	269.82	14%
2017	BUG-TOD-PS	Toad For Oracle Professional Add-On	3	445.80	144.09	150.86	13.53	3%
2017	12212NZ	Eco Universal Vehicle Dual USB Charger 2.1A -	12	89.46	7.23	7.68	2.70	3%
2016	4X90F33442	LVO THINKPAD MINI-HDMI TO VGA ADPT	42	1,469.40	34.75	35.01	9.90	1%
2016	B.1	0-75 MILES FROM STORAGE	312	4,710.00	15.00	25.00	30.00	1%
2017	V2W10UT#ABA	HP SB ZBOOK 15 G3 I7-6700HQ 512GB W7	16	30,460.06	1,829.03	2,015.05	1,195.58	4%
2017	L9K23UT#ABA	HP SB Z240 I7-6700 1TB 8GB W10P	44	39,695.29	891.58	1,017.97	465.77	1%
2017	0B46994	LVO THINKPAD 90W AC ADAPTER FOR X1	19	1,247.09	61.95	66.07	70.04	6%
2017	3514699	SAMSUNG 850 EVO 250GB SATA 2.5IN SSD	39	3,820.72	87.86	109.87	394.18	10%
2017	NPN-AUTOM-	AS-Wintel-2cores CPU, Qty 1	2	610.91	261.81	349.10	87.29	14%
2017	84691-11	PLANTRONICS CS510 HL10 W/LIFTER	69	15,076.19	218.17	240.63	22.46	0%
2016	D9P29A	HP LJ PRO SHEET FEEDER 550 PAGE	8	1,197.64	149.65	150.09	0.44	0%
2017	NPN-DUO-ENTED	Enterprise Edition	1,400	32,624.00	0.46	80.41	31,980.00	98%
2016	BG1000765	D110PRT	6	1,773.70	292.44	299.25	19.06	1%
2017	SKU-00000004-RC	Premier Success Package - Recurring	1,450	5,219.50	0.08	12.06	5,103.50	98%
2016	C3850-NM-4-1G	Cisco Catalyst 3850 4 x 1GE Network Module	22	5,354.00	238.70	290.00	102.60	2%
2017	WDBYFT0020BRD-	WD 2TB MY PASSPORT PORTABLE RED	2	153.20	76.59	76.61	0.02	0%

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2017	D86-01175	Microsoft Visio Standard - license & software	18	3,833.53	101.63	281.26	472.75	12%
2017	12272-NZ	Eco Universal 3.1 Amp Dual USB Wall Charger	48	430.16	8.54	9.00	20.24	5%
2017	2715152	APC SMARTUPS C 1500VA LCD 120V	4	1,464.94	360.50	368.45	22.94	2%
2017	MJ1K2AM/A	APPLE USB-C DIG AV MP ADAPTER-AME	15	896.69	49.00	70.15	161.69	18%
2017	4288886	HP SB USB-C DOCKING STATION	2	303.75	149.80	153.95	4.15	1%
2016	3530270	ZAGG INVISSHIELD GLASS CASE IPHONE6	2	30.44	15.18	15.26	0.08	0%
2016	TH5-00001	MS SURFACE PRO 4 I7 256GB 16GB W10	14	23,129.62	1,641.27	1,652.95	151.84	1%
2017	U8TM5E	HP 3Y NBD EXCH LJ M402 SVC	16	847.87	52.88	54.67	1.79	0%
2016	T4N77UT#ABA	HP SB Z240T I7-6700 1TB 16GB W10P	8	12,276.92	1,319.41	1,606.35	1,721.64	14%
2016	416372	RICOH DATA OVERWRITE SECURITY I FOR MFP	129	21,699.53	100.95	232.00	8,676.98	40%
2017	FPY0R	DELL THUNDERBOLT DOCK TB16 - 240W	17	3,354.09	194.90	235.69	40.79	1%
2017	EPAYFM-AA-HI	McAfee Gold Business Support technical	4,607	48,635.68	9.67	10.56	4,085.99	8%
2017	417046	[XXXX] MP 5054SP (120V)	10	45,126.55	3,317.77	4,726.55	11,948.85	26%
2017	A2T384502	WC3615DN	12	597.93	36.00	74.29	165.93	28%
2016	SMX3000LVNC	APC SMART-UPS X 3000VA RACK/TWR LCD	2	3,006.79	1,471.04	1,535.75	64.71	2%
2016	VXX097808	W5150PT	3	851.41	253.38	339.38	91.27	11%
2016	npr-prag-pro	BI xPress v4 (Professional Edition)	2	1,850.13	836.61	1,013.52	176.91	10%
2016	CON-SNT-A25FPK9	SMARTNET 8X5XNBD ASA 5525-X with	3	2,497.67	805.70	886.27	80.57	3%
2017	1304366	LOGI H390 CLEARCHAT USB MIC HEADSET	16	427.28	24.00	27.16	43.28	10%
2017	MDP2VGA	STARTECH.COM MINI DISPLAYPORT TO VGA	32	600.96	16.62	20.46	69.12	12%
2017	TS16GSDHC10	TRANSCEND 16GB SDHC CLASS 10 CARD	67	474.55	6.50	8.26	39.05	8%
2017	4374663	SAMSUNG 55IN 1080P LED SMARTV 120CMR	4	2,242.61	555.62	562.33	20.13	1%
2016	F2A69A#BGJ	HP LASERJET ENT M506DN PRINTER	5	2,838.89	481.98	680.12	428.99	15%
2017	npr-rapid-pro	Pro Plan for Oregon DCBS	2	3,769.07	1,224.74	2,544.33	1,319.59	35%
2017	LA039.0.0.00	BMC Control-M Workload Automation for	3	6,702.25	784.98	3,201.03	4,347.31	65%
2017	7200-64270-001	POLYCOM REALPRESENCE GRP 700-720P	3	28,896.84	9,450.00	9,723.42	546.84	2%
2017	3044406	VIEWSONIC VA2446M-LED 24" MONITOR	6	736.10	122.54	122.97	0.86	0%
2016	40304	C2G 6FT HISPEED HDMI W/ETHERNET	30	165.20	5.20	5.66	9.20	6%
2017	P5Q58UT#ABA	HP SB ZBOOK 150W THUNDERBOLT-3 DOCK	11	2,219.20	201.57	202.15	1.93	0%
2016	3000000748066	STATE AND LOCAL 22IN P2217H	42	8,083.70	171.56	194.67	878.18	11%
2016	7JQ-00355	Microsoft SQL Server Enterprise Core Edition -	34	76,642.90	2,254.05	2,254.25	5.20	0%
2016	FM140541LL	FileMaker Pro - Maintenance ( 1 year ) - 1 seat	59	3,027.23	42.97	54.97	492.00	16%
2017	MX4470101	W7855PT	12	5,674.49	379.78	555.68	1,117.13	20%
2016	SD8SB8U-512G-1122	SANDISK 512GB X400 2.5 SATA SSD	2	274.06	127.74	146.32	18.58	7%
2016	920-002555	LOGI WRLS WAVE MK550 COMBO BLK	36	1,680.35	41.99	59.72	168.71	10%
2017	3610855	C2G 6FT MINI-DP/M-DVI-D/M ADAPT BLK	13	249.18	19.08	19.18	1.14	0%
2016	89434-01	PLANTRONICS ENCORE PRO HW520	8	595.19	73.55	74.52	6.79	1%
2017	A2M739185	5955APT	2	482.55	232.28	250.27	17.99	4%
2017	2153246	LOGI WRLS M310 PEACOCK MOU BLU	3	80.24	26.73	26.78	0.05	0%
2017	2554867	KEYOVATION GLDTCV V2 ADJ USB KB-BLK	4	362.95	85.12	92.80	22.47	6%
2017	4754884	HP SB ELITEDISPLAY E223 MON US 21.5	15	2,231.61	148.33	151.66	6.66	0%
2016	3514699	SAMSUNG 850 EVO 250GB SATA SSD	13	1,202.92	92.48	93.16	0.68	0%
2017	3236639	ASUS 27" VN279QL LED	30	6,704.19	223.29	224.38	5.49	0%
2017	MLL42LL/A	APPLE MBP 13" 2.0GHZ 256GB 8GB	3	4,406.28	1,461.82	1,472.23	20.82	0%
2016	3605214	EPSON PL X27 PROJECTOR XGA 2700 LUME	3	1,267.33	422.22	422.89	0.67	0%
2017	9GA-00313	Microsoft Core Infrastructure Server Suite	2,108	69,058.36	32.57	34.27	400.80	1%
2017	HWINSTALLDTNB	CDW HARDWARE INSTALL FOR DT-NB	216	2,409.40	10.00	11.16	249.40	10%
2017	20FN002JUS	LVO TP T460 I5-6300U 256GB 8GB W10D	840	1,114,546.42	1,313.54	1,337.98	975.22	0%
2017	NML03354	IR-ADV 6265	18	3,264.27	30.73	1,126.92	2,711.13	83%
2016	MX4731936	W7845PT	6	1,948.58	212.73	765.26	672.20	34%
2017	W0S97UT#ABA	HP SB 250 I3-5005U 500GB 4GB W10P	3	1,290.02	396.96	446.68	99.14	8%
2017	AUA-311BLACK	CASE LOGIC 11IN LAPTOP/CHROME CASE	30	524.58	16.73	19.25	22.68	4%
2016	3559206	ERGOTRON WORKFIT-T WORKSTATION BLACK	5	1,853.40	362.44	383.12	41.20	2%
2017	13830-nz	HyperGear MFi Lightning 4 Foot Charge and	60	727.32	12.07	12.85	3.12	0%
2017	1597990	TRIPP 10FT VGA COAX CABLE W/ RGB M/M	3	18.57	6.16	6.21	0.09	0%
2017	3827426	HP COLOR LASERJET MFP M477FDW	4	1,915.63	429.00	628.63	199.63	10%
2017	4430565	STARTECH 4PORT USB 2.0 HUB	13	107.39	8.25	8.27	0.14	0%
2017	QG2-00021	MS SURFACE PRO 3 I5 256GB 8GB W10	2	1,522.46	726.06	796.40	70.34	5%

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2017	3826004	MSH WIRELESS 850 USB KB	2	37.88	18.91	18.97	0.06	0%
2016	C5F94A#BGJ	HP LASERJET PRO M402DN PRINTER COM	82	17,448.40	190.54	299.21	1,824.12	10%
2016	J9836A#ABA	HP 2920-48G POE+ 740 SWITCH	5	15,838.88	2,914.32	3,427.46	1,267.28	8%
2017	MDP2VGDVHD	STARTECH MDP TO VGA/DVI/HDMI ADAPTER	11	405.17	32.23	40.67	50.64	12%
2017	1954534	STARTECH.COM MINI DISPLAYPORT TO VGA	13	266.08	20.46	20.51	0.10	0%
2016	CON-ECMU-P2XLF1H	SWSS UPGRADES PI 2.x - Lifecycle - 100 Device	2	2,680.51	1,259.30	1,421.21	161.91	6%
2017	C5E-01329	Microsoft Visual Studio Professional 2017 -	38	12,376.32	325.67	326.50	0.86	0%
2016	417634	LCIT RT4040	2	1,538.33	769.16	769.17	0.01	0%
2016	CE461A#ABA	HP LJ P2035 30PPM	2	432.32	183.61	248.71	65.10	15%
2016	SG300-10PP-K9-NA	CISCO 10PORT GIG POE+ MGD	6	1,858.62	280.55	338.99	175.32	9%
2016	ASF22WUSZ	TARGUS 22" WIDE LCD FILT TAA	7	520.31	70.58	75.83	26.25	5%
2017	VCQK1200DP-PB	PNY NVIDIA QUADRO K1200 DP LP 4GB	41	10,493.59	254.80	301.59	46.79	0%
2017	1533040	KINGSTON 8GB MICROSDHC CLASS 4 FL CD	8	49.52	6.13	6.25	0.48	1%
2017	3177897	KINGSTON 8GB USB3 DT G4	92	527.24	5.63	6.04	9.28	2%
2017	2354476	MSH FB LIFECHAT LX-6000 HEADSET +MIC	5	218.96	43.72	43.84	0.36	0%
2017	3371043	TRIPP ARM MOUNT 26-55" PANELS	5	351.09	70.11	70.29	0.54	0%
2017	D3100	DELL DOCKING STATION USB3 D3100	20	2,669.20	132.63	133.95	16.60	1%
2016	CF389A#BGJ	HP COLOR LJ PRO M452DN	13	3,905.47	226.17	449.29	965.26	25%
2017	ST2000LM015	SEAGATE 2TB 5.4K SATA 2.5IN HDD	15	1,299.60	84.76	87.11	28.20	2%
2017	IPH7-6S-L-IC	Apple Urban Armor Gear Plasma Case - Ice	2	52.26	23.62	28.64	5.02	10%
2017	VS6-EPL-P-SSS-A	VMware Support and Subscription Production	12	2,959.28	133.30	473.22	1,359.68	46%
2017	E2417H	DELL 24IN MONITOR - E2417H	8	1,207.48	150.61	151.91	2.60	0%
2016	PP4-00001	MSH WRLS DT 5050 USB AES KB MOUSE	8	422.56	52.71	52.92	0.88	0%
2017	VE248H	ASUS VE248H 24" DVI HDMI LED	5	699.21	139.83	139.86	0.06	0%
2017	ASA5506-K9	ASA 5506-X with FirePOWER services, 8GE,	103	54,493.45	527.35	586.15	176.40	0%
2017	417587	BRIDGE UNIT BU3070	300	19,982.98	41.41	147.04	7,559.98	38%
2016	SNAGG1999MAINT	SnagIt - Maintenance - 1 user - volume, GOV -	1,031	2,508.23	1.18	2.44	1,291.65	51%
2017	MX1202076	W7835PT	12	5,235.16	351.93	488.45	1,012.00	19%
2016	785067-B21	HP 300GB 12GB SAS 10K 2.5IN SC HDD	3	629.76	190.16	219.80	59.28	9%
2016	33-322-200	ERGOTRON DUAL LCD STAND <24	29	5,549.49	187.39	191.82	115.18	2%
2016	PF24.0W9	3M PF24.0W9 WIDE UNFRAME FILTER TAA	2	170.51	80.49	90.02	9.53	6%
2016	STDT8000100	SEAGATE 8TB BACKUP PLUS USB 3.0	15	3,341.91	222.17	224.91	9.36	0%
2017	A4T564835	3610DN	2	118.95	49.09	69.86	20.77	17%
2017	980-000012	LOGITECH S-120 SPEAKER SET BLK	18	165.78	9.02	10.07	3.42	2%
2017	494367	EPSON PHOTO PREM GLOSS 100SHT 4X6	5	59.30	11.74	11.89	0.60	1%
2017	9GA-00313	Microsoft Core Infrastructure Server Suite	344	11,788.88	34.26	34.27	3.44	0%
2016	20AN00DEUS	LVO TP T440P I5-4210M 500GB 4GB W8PD	44	34,984.44	794.78	795.51	14.12	0%
2017	PN7-00021	MSH BT MOBILE MOUSE 3600 BLUE	6	136.92	22.56	23.34	1.56	1%
2017	3118456	LVO TP ULTRA DOCK 90W US	47	10,424.85	221.46	224.89	16.23	0%
2016	NPN-SYMAN-COMP-	Symantec Complete Website Security	2	62,327.33	4,312.06	58,015.27	53,703.21	86%
2017	2468326	PLANTRONICS CS540 WIRELESS HEADSET	48	8,861.84	172.50	187.41	581.84	7%
2017	61375PG	Puregear 2.4a Car Charger For Apple Lightning	3	64.59	20.71	23.17	2.46	4%
2016	5RH-00003	MSH FB WRLS MOB MOU 3500 WIN/MAC	25	514.90	20.11	20.71	12.15	2%
2017	24-392-026	ERGOTRON WORKFIT-A W/KB DUAL <24	2	988.09	493.41	494.68	1.27	0%
2016	800017-240	ZEBRACARD I SERIES COLOR RIBBON	10	633.04	62.36	64.72	9.44	1%
2017	STDR1000100	SEAGATE 1TB USB 3.0 BACKUP PLUS SLIM	6	353.37	58.23	59.80	3.99	1%
2017	MZ-7KE1TOBW	SAMSUNG 850 PRO 1TB SATA 2.5IN SSD	38	19,254.48	480.36	510.60	1,000.80	5%
2017	2721109	SANDISK 8GB CRUZER USB FLASH DRIVE	34	162.70	4.75	4.79	1.20	1%
2017	K33972US	KEN USB 3.0 DOCK STAT DVI/HDMI/VGA	10	1,282.81	126.71	131.46	15.71	1%
2016	H3S-00003	MSH SCULPT COMFORT MOUSE WIN7/8	7	199.83	24.39	30.21	29.10	15%
2017	TH5-00001	MS SURFACE PRO 4 I7 256GB 16GB W10	13	20,368.16	1,519.04	1,653.18	620.64	3%
2017	417499	DATA OVERWRITE SECURITY UNIT TYPE M19	68	11,601.33	117.04	262.36	3,642.61	31%
2017	3128526	HP iLO Adv incl 1yr TS U E-LTU	3	679.04	225.86	226.59	1.46	0%
2017	WUPG8HR7X24-UG-	APC 1YR 24X7X8 UPG TO FACT WTY	2	1,822.00	898.00	924.00	26.00	1%
2017	MAINT-BL-ENT	Annual Maintenance for Bomgar License	48	31,205.55	135.52	997.30	24,700.59	79%
2016	3795040	INFOCUS DLP XGA 3200 LM	2	622.08	308.47	313.61	5.14	1%
2017	TSS847	TARGUS 12.1" CHROMEBOOK SLIPCASE BLK	6	197.88	29.12	35.29	23.16	12%
2017	3859859	DELL AX210 COMPUTER SPEAKERS 1.2W	9	141.58	15.70	15.74	0.28	0%

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2017	647594-B21	HP GEN8 ETHERNET 1GB 4PORT 331T ADPT	10	2,636.52	262.07	269.98	15.82	1%
2017	1561876	TRIPP 10FT DISPLAYPORT CABLE 4K M/M	23	252.16	10.88	10.98	1.92	1%
2017	TS128GJDG300K	TRANSCEND 128GB JETDRIVE GO 300 BLK	7	630.01	86.26	94.99	26.19	4%
2016	3707091	MICROSOFT 4YR SURFACE PRO 3 WTY ADH	12	4,526.40	366.85	379.27	124.20	3%
2017	759934-B21	HP 8GB 2Rx8 PC4-2133P-R Kit	24	4,713.96	189.07	203.76	176.28	4%
2016	100478FNG	CABINET TYPE F	63	5,431.87	73.62	122.33	793.81	15%
2016	JUG-00013	MSH L2 LIFECHAT LX-3000 HEADSET	2	41.03	20.23	20.80	0.57	1%
2017	20FQ001VUS	LVO TP X1 YOGA I7-6500U 256GB 8GB	16	29,023.11	1,813.48	1,820.91	7.43	0%
2017	CP-CPSL-CLOUD-3Y	CHECK POINT CAPSULE CLOUD FOR 3Y	200	13,063.00	32.47	98.16	6,569.00	50%
2016	P2217	DELL 22IN MONITOR - P2217	17	2,838.20	162.87	169.18	69.41	2%
2017	3862779	MS SURFACE BOOK I7 512GB 16GB GPU	15	35,947.05	1,981.33	2,510.99	6,227.10	17%
2016	IR ADV C5255	CUSTOMER PERIOD CHARGE	18	3,132.96	157.72	182.22	294.00	9%
2016	97471	VERB WRLS MINI TRAVEL MOU BLU	2	27.15	13.56	13.59	0.03	0%
2017	OEOPAP000213	Apple Gadget Guard Original Edition Hd	11	120.66	10.77	12.96	2.19	2%
2017	DSPIP647	Apple Compatible Decoro Brand Premium	23	97.56	4.24	4.25	0.04	0%
2017	3559210	ERGOTRON WORKFIT-T WORKSTATION WHITE	2	756.46	375.30	381.16	5.86	1%
2017	1191	HAUPPAUGE WINTV HVR 950Q USB	17	1,267.73	73.86	79.85	12.11	1%
2017	006429MIU	XG-PCS 120/20D RIC AMP SURGE PROTECTOR	9	1,040.27	85.52	140.13	270.59	26%
2016	F5-SVC-BIG-PRE-L1-3	F5 PREMIUM SVC F/ BIG-IP	9	100,612.29	84.83	32,080.82	99,848.82	99%
2017	910-004337	LOGI MX MASTER WRLS MOUSE BLACK	4	310.54	77.45	77.82	0.74	0%
2016	F5-SVC-BIG-VE-STD-	F5 STAND SVC F/ BIG-IP VE	10	6,186.89	26.00	5,940.89	5,926.89	96%
2017	C1FPCAT36502K9	Cisco One Foundation Perpetual - Catalyst	60	35,114.23	484.61	860.00	6,037.63	17%
2016	A8P79A#BGJ	HP LASERJET PRO MFP M521DN	8	6,737.75	692.01	882.79	1,201.67	18%
2016	417550	MP C2504 (120V MAINFRAME)	2	6,737.63	3,041.20	3,696.43	655.23	10%
2016	IR-ADV 4235	CUSTOMER PERIOD CHARGE	18	2,075.28	66.58	202.38	876.84	42%
2016	5WS0G14989	LVO 4YR PRODUCT EXCHANGE	3,651	61,773.20	15.20	16.92	6,278.00	10%
2016	MZ-7KE512BW	SAMSUNG 850 PRO 512GB SATA 2.5IN SSD	21	4,749.68	224.80	226.32	28.88	1%
2017	3982950	LVO TP ONELINK+ TO RJ45 ADAPTER	55	1,311.57	23.58	25.15	14.67	1%
2016	2693373	EPSON PL 1761W WXGA 2600 LUM	2	1,192.52	576.92	615.60	38.68	3%
2017	521943	NETGEAR 5PT GIG SWITCH	21	649.11	28.03	31.74	60.48	9%
2017	XY0116211	CABINET G	4	19.23	4.32	4.97	1.95	10%
2017	4734497	SAMSUNG 1TB PORTABLE SSD USB 3.1	4	1,581.06	395.02	396.00	0.98	0%
2016	RCKMNT-19-CMPCT=	19in RackMount for Catalyst 3560,2960,ME-	131	4,699.48	35.81	44.18	8.37	0%
2016	68317	TRIPP SURGE STRIP 7 OUTLET 6FT CORD	51	632.82	12.40	12.82	0.42	0%
2017	3860098	DELL U2415 24" 16:10 IPS 60HZ 1200	10	3,168.34	314.63	318.71	22.04	1%
2017	MDP2DVIS	STARTECH MINI DISPLAYPORT TO DVI	16	454.52	27.83	29.37	9.24	2%
2017	AH-AP-130-AC-FCC	AEROHIVE AP130 INDR 2X2 W/HM CONNECT	70	15,106.90	186.71	237.64	2,037.20	13%
2017	23MB35PM-B	LG 23MB35PM-B 23" WIDE LED	10	1,456.94	143.93	146.87	17.64	1%
2017	MD506LL/A	APPLE 85W MAGSAFE 2 POWER ADAPTER	9	713.93	79.00	80.54	2.93	0%
2017	DTSE9G2/16GB	KINGSTON 16GB USB3 DT SE9G2	18	162.54	8.20	9.19	14.94	9%
2016	K809A-S00-14.0	Dragon Professional Individual	3	585.80	190.93	199.49	13.01	2%
2017	CF378A#BGJ	HP COLOR LASERJET MFP M477FDN	7	2,654.53	374.84	387.53	30.65	1%
2017	3087991	LVO 4YR ONSITE	105	4,566.03	41.05	43.66	255.78	6%
2016	1995678	STARTECH DISPLAY PT DVI ADAPT CNVTR	44	545.26	12.01	13.93	16.82	3%
2016	54301	C2G 6FT MINI-DP TO DP ADAPT M/M BLK	66	446.88	6.68	6.78	6.00	1%
2017	AAA-11894	Microsoft Office 365 (Plan G3)	296	34,516.79	50.10	200.89	19,687.19	57%
2016	86007-01	PLANTRONICS SPARE CABLE PHONE INTERF	3	35.24	11.64	11.80	0.32	1%
2017	2762445	TRIPP 15FT CAT6 SNAGLESS BLK M/M	30	122.45	4.08	4.09	0.05	0%
2017	733664-B21	HP 2U CMA for Easy Install Rail Kit	16	703.15	41.00	48.77	47.15	7%
2017	PP-SUP-PS-12	Proofpoint Platinum Support - Technical	2,601	13,442.00	4.92	650.00	645.08	5%
2017	73684-5085	Apple Speck CandyShell Case - Clear and Clear	3	72.46	24.00	24.46	0.46	1%
2016	SID700-6-60-36-25	RSA SID700 60SEC 3YR 25 PACK	3	3,935.00	1,288.27	1,358.46	70.19	2%
2016	U1H14E	HP SB 4YR RISKFREE 9X5XNBD NB	10	1,773.34	153.69	177.33	94.48	5%
2017	7VX-00001	Microsoft Project Online Premium -	10	4,011.83	117.99	471.98	2,831.93	71%
2016	2992040	CDW DHS CUSTOM PRI CONFIG REQ1413	883	48,712.96	51.00	55.67	3,679.96	8%
2017	3017768	STARTECH HDMI TO VGA ADAPTER	22	560.31	24.72	25.55	16.47	3%
2017	3430420	STARTECH UNIVERSAL USB 3.0 DOCK	9	1,156.30	128.34	128.65	1.24	0%
2017	P2217	DELL 22IN MONITOR - P2217	67	11,588.43	167.95	175.45	335.78	3%

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2016	2468326	PLANTRONICS CS540 WIRELESS HEADSET	8	1,479.07	174.97	186.30	79.31	5%
2016	E0IDZLL	IBM Sametime Complete - Software	112	1,870.44	8.58	17.16	909.48	49%
2017	1106493	C2G 5FT CAT6 SNAGLESS CABLE - YLW	12	29.20	2.36	2.47	0.88	3%
2017	P8B31A	HP OV W/O ILO 3YR 24X7 FIO PHYS 1LTU	23	6,060.28	260.24	335.00	74.76	1%
2016	FAX AH2	CUSTOMER PERIOD CHARGE	18	241.92	12.18	14.07	22.68	9%
2016	102942G	MindManager Multi Gov w/Win 2016 & Mac	7	2,025.93	289.10	291.33	2.23	0%
2016	N201-001-BL	TRIPP 1FT CAT6 SNAGLESS RJ45 BLUE	1,020	1,754.00	1.71	1.72	9.80	1%
2017	2184724	ASUS VE228H 21.5" WIDE DVI HDMI SPK	7	729.68	103.96	104.42	1.96	0%
2017	3740801	SAM SE450 27IN 16:9 VGA DVI DP USB	5	938.76	185.90	189.23	9.26	1%
2016	KM714-BK-US	DELL WL KEYBOARD/MOUSE COMBO KM714	3	198.85	65.36	66.92	2.77	1%
2017	910-002533	LOGITECH WRLS MOUSE M510 BLUE	5	160.15	30.98	35.96	5.25	3%
2017	1111781	STARTECH 6FT HDMI TO DVI-D CABLE	74	577.18	7.79	7.81	0.72	0%
2017	418055	POSTSCRIPT3 UNIT TYPE M33	4	913.35	207.87	284.62	81.87	9%
2017	GSTY200	IOGEAR ACCU-TIP STYLUS F/TABLET	19	91.37	4.79	4.81	0.36	0%
2017	2855474	STARTECH HDMI TO HDMI MINI ADAPTER	5	32.26	6.44	6.46	0.06	0%
2017	18065236	Advanced Security - Processor Perpetual	2	31,316.44	12,352.71	18,963.73	6,611.02	21%
2016	3851769	DELL 22" 16:9 1080P 60HZ IPS MONITOR	21	3,800.60	179.45	181.45	32.15	1%
2017	65197035AC02A24	Adobe Acrobat Standard - upgrade plan	91	5,730.12	62.94	63.00	2.58	0%
2017	4219208	SEAGATE 8TB EXP DESKTOP USB 3.0	8	1,431.57	178.57	179.00	3.01	0%
2017	S24E650BW	SAM SE650 24IN WUXGA 16:10 VGA DVI	16	3,071.90	191.87	192.38	1.98	0%
2017	TLP825	TRIPP SURGE RJ11 8 OUTLET 25' CORD	11	312.64	25.64	28.70	30.60	10%
2017	KB216-BK-US	DELL WIRED KEYBOARD KB216	253	4,220.77	6.48	16.87	2,581.33	61%
2017	3826591	HP LASERJET ENT M506DN PRINTER	10	6,686.42	569.00	749.00	996.42	15%
2017	4XC0L59128	LVO TP EM7455 4G LTE WWAN	12	1,938.66	160.78	161.98	9.30	0%
2016	DADF-AG1	CUSTOMER PERIOD CHARGE	24	305.22	11.19	15.57	36.66	12%
2017	3000014409300	DELL CTO WD15 USB-C 130W DOCK	4	603.48	129.99	157.83	83.52	14%
2016	417451	MP C4504 (120V)	15	92,603.81	5,318.11	6,703.38	12,832.16	14%
2016	SSPDA1-1000L	Varonis Software Subscription - Technical	2	16,055.53	6,413.37	9,642.16	3,228.79	20%
2016	A9W-00005	MICROSOFT SURFACE PRO EXT WARR ADH	44	10,396.06	228.71	236.45	332.82	3%
2017	15808846	Oracle Diagnostics Pack - Processor Perpetual	2	2,762.34	1,253.10	1,509.24	256.14	9%
2017	SNAGG01-13-E	SnagIt (v. 13/4) - license	15	514.75	33.87	39.39	6.70	1%
2016	417046	MP 5054SP (120V)	43	204,921.93	4,417.32	5,583.37	14,977.17	7%
2016	N3H14A8#ABA	HP SB P240VA MONITOR	24	3,244.80	130.52	139.16	112.32	3%
2017	417636	FAX OPTION TYPE M25	7	2,877.80	378.70	459.64	226.90	8%
2017	CP-BEKEM=	CISCO DIRECT CP-BEKEM=	3	732.93	210.00	312.93	102.93	14%
2017	416910	SMART OPERATION PANEL TYPE M3	2	281.79	137.54	144.25	6.71	2%
2017	ST4300PBU3	STARTECH 4PT PORTABLE USB 3.0 HUB	28	580.66	20.34	25.91	11.14	2%
2017	2692392	EVOLUENT WRLS VERTICALMOUSE 4 RIGHT	8	888.04	109.45	115.67	12.44	1%
2017	npn-fdr-org	Maintenance Renewal for FDRREORG	2	9,838.76	4,869.69	4,969.07	99.38	1%
2016	910-002225	LOGI WRLS MOU M185 SWIFT GRY	7	56.53	7.64	8.25	3.05	5%
2017	V-VBRENT-HS-	Veeam Standard Support - technical support	40	3,029.92	23.68	284.02	2,082.72	69%
2017	T4H-00002	MSH FB LIFECAM HD-3000 WEBCAM USB	37	1,020.31	27.02	28.23	20.57	2%
2017	4400CM-PTM1Y	FIREEYE CM 4400 PLAY SUP 1Y	2	3,465.87	1,660.91	1,804.96	144.05	4%
2016	npn-prag-standard	BI xPress v4 (Standard Edition)	2	1,195.06	540.46	654.60	114.14	10%
2017	C5F95A#BGJ	HP LASERJET PRO M402DW PRINTER	3	766.88	248.88	269.00	20.24	3%
2017	417100	FAX OPTION TYPE M12	33	16,088.28	350.00	573.74	4,538.28	28%
2017	920-004536	LOGI KB MOUSE MK270 WIRELESS COMBO	63	1,044.55	15.61	21.74	61.12	6%
2016	IR-ADV 4235	CUSTOMER METER USAGE CHARGE	12	206.18	3.66	41.95	162.26	79%
2017	4540747	LVO TP X1 YOGA G2 I5-7200U 256GB 8GB	2	3,442.57	1,716.10	1,726.47	10.37	0%
2017	4X40E77328	LENOVO THINKPAD ESSENTIAL TOPLD CASE	315	8,242.93	25.86	26.17	97.03	1%
2017	2850951	ERGOTRON WORKFIT-D DESK GREY	3	2,059.39	681.96	695.47	13.51	1%
2017	ODEE	Oracle Database Enterprise Edition -	2	36,831.24	8,227.07	20,123.10	3,414.96	9%
2016	3063408	CISCO CAT 2960-X 48GE POE	7	28,618.62	4,057.46	4,165.66	216.40	1%
2016	1695546	C2G 3FT 3.5MM M/F STEREO EXT CAB	14	23.62	1.64	1.70	0.66	3%
2017	1492465	KENSINGTON 15.4" SP10 CASE	2	32.43	15.57	16.86	1.29	4%
2017	3550961	TARGUS 12.1" CHROMEBOOK SLIPCASE BLK	2	54.13	25.01	29.12	4.11	8%
2017	BP112230-08	BELKIN SURGEPRO 4320J 12 OUTLET 8FT	57	1,957.77	34.09	35.31	14.64	1%
2017	14201-10	JABRA ELECTRONIC HOOK SWITCH CBL	18	407.44	22.51	24.39	2.26	1%

Year	Product Number	Narrative Product Description <sup>21</sup>	Quantity Purchased	Total Paid by State	Lowest Unit Price	Highest Unit Price	Savings if Purchased at Lowest Price	Percent of Savings out of Total Paid
2016	0A36258	LVO TP 65W AC ADAPTER SLIM TIP	20	996.96	49.16	51.93	13.76	1%
2017	11478NZ	Naztech Dynamic Dual USB 2.1 Amp Car	65	476.50	7.23	8.54	6.55	1%
2017	4033754	HP SB 650 G2 I5-6200U 256GB 8GB W710	8	8,106.19	999.98	1,021.25	106.35	1%
2017	105999-302	ZEBRACARD ZXP SERIES 2 CLEANING KIT	3	92.85	29.99	31.43	2.88	3%
2017	4169102	SAM GALAXY TAB A 10.1 BLACK WIFI	27	7,609.23	275.68	295.12	165.87	2%
2017	65270768BC01A12	Adobe Creative Cloud for teams - All Apps -	8	4,846.82	201.00	813.90	3,238.82	67%
2016	417499	DATA OVERWRITE SECURITY UNIT TYPE M19	6	981.32	156.85	177.47	40.22	4%
2017	9GS-00135	Microsoft Core Infrastructure Server Suite	224	37,237.76	166.21	166.24	6.72	0%
2017	4439334	LVO TP N23 N3060 16GB 4GB CHROME	3	651.37	215.88	219.45	3.73	1%
2016	G5R50UT#ABA	HP SB 800 I5-4590 500GB 4GB W7P	3	2,246.03	726.59	792.85	66.26	3%
2017	MCT0370	Red Hat Network Satellite - premium	2	12,534.09	4,245.61	8,288.48	4,042.87	32%
2017	4305476	ACER ASPIRE 15 I5-7200U 1TB 8GB W10H	2	1,025.26	503.91	521.35	17.44	2%
2017	910-001675	LOGI WRLS M310 MOU SIL	110	1,791.11	16.00	17.59	31.11	2%
2017	TOD-TOD-PS	TOAD for Oracle - maintenance (renewal)	32	7,949.58	200.00	272.15	1,549.58	19%
2017	1FY84UT#ABA	HP SB 800 G3 I5-7500T 256GB 8GB W10P	64	53,230.51	826.94	836.71	306.35	1%
2016	KCP3L16SS8/4	KINGSTON 4GB 1600MHZ NONECC SODIMM	128	2,075.73	16.19	19.60	3.41	0%
2016	S-PREMIUM	CommVault Premium product info support - 1	2	9,095.59	1,955.57	7,140.02	5,184.45	57%
2016	0B47380	LVO 4GB PC3-12800 DDR3L SODIMM	47	2,891.31	61.39	61.61	5.98	0%
2016	D1000	DELL DUAL VIDEO USB 3 DOCKING D1000	15	1,627.53	107.40	108.98	16.53	1%
2016	13811-M1-23	Veritas Essential Support - Technical support	10	1,981.54	197.95	199.99	2.04	0%
2016	VA2446M-LED	VIEWSONIC VA2446M-LED 24" MONITOR	5	618.49	123.69	123.71	0.04	0%
2017	588564	STARTECH 7 PC. SCREWDRIVER KIT	2	22.57	11.22	11.35	0.13	1%
2017	810-4231	DELL 3Y NBD TO 4Y NBD F/OPTI	4	209.12	48.36	64.04	15.68	7%
2017	452-BCGQ	DELL LATI RUGGED DISP PT DESK DOCK	4	1,188.17	296.31	299.24	2.93	0%
2017	56783	C2G HDMI HS W ETHERNET CAB	24	122.50	5.10	5.15	0.10	0%
2016	3851772	DELL 24" 16:9 IPS 60HZ 1080 8MS	5	1,334.32	261.76	268.14	25.52	2%
2016	910-003922	LOGITECH WIRELESS MOUSE M185 SILVER	16	131.88	8.24	8.25	0.04	0%
2017	nprn-autom-wintel	AS Wintel-8 cores CPU	12	29,445.16	195.93	3,582.68	27,094.00	92%
2017	960-000764	LOGITECH HD PRO WEBCAM C920	89	6,167.30	65.58	84.71	330.68	5%
2016	CF394A#BGJ	HP COLOR LJ PRO M452DW	4	1,177.04	293.45	295.07	3.24	0%
2017	2TX052637	C8035T	3	1,798.12	471.71	853.03	382.99	21%
2016	1151648	CISCO 19IN RACKMOUNT FOR CAT 3560	4	193.56	48.03	48.75	1.44	1%
2017	TOD-TOD-PS	TOAD for Oracle Base Edition - maintenance	7	1,715.91	237.41	250.92	54.04	3%
2016	C5F93A#BGJ	HP LASERJET PRO M402N	9	2,140.53	128.53	269.00	983.76	46%
2016	P2714H	DELL P2714H 27" 16:9 1080 IPS 60HZ	6	1,841.76	281.82	312.90	150.84	8%
2017	F2CD005B	BELKIN DISPLAYPORT TO DVI ADAPTER	19	176.81	9.23	10.39	1.44	1%
2016	PCL KIT-AV1	CUSTOMER PERIOD CHARGE	36	401.40	10.60	12.25	19.80	5%
2016	SDCZ48-256G-A46	SANDISK 256GB ULTRA FLASH DRV USB3.0	16	1,360.61	84.56	85.07	7.65	1%
2017	3465415	HP 500W FS PLAT HT PLG POW SUPP KIT	5	1,171.53	234.18	234.81	0.63	0%
2017	HDSURRENDER	HDSURRENDER - SURRENDER HARD DRIVE TO	6	1,925.00	245.00	350.00	35.00	2%
2017	DP2VGA2	STARTECH VGA MONITOR TO DISPLAYPORT	279	5,683.20	16.86	20.59	979.26	17%
2016	CON-ECMU-1	ECMU MAINTENANCE RENEWAL	5	18,900.72	1.55	12,327.10	18,892.97	100%
2017	86507-21	PLANTRONICS W745-M SAVI 3IN1 CONV	4	1,085.98	271.30	271.56	0.78	0%
2016	VNB-217BLACK	CASE LOGIC 17" BPK	4	103.22	24.18	28.00	6.50	6%
2017	29858	C2G 6IN VELCRO CAB STRAPS BLK 12PK	5	10.38	2.04	2.13	0.18	2%
2017	IPH6-BL-TPU	Apple Compatible Solid Color TPU Case - Blue	15	101.76	6.28	6.82	7.56	7%
2017	VCS6-STD-C-L4	VMware vCenter Server Standard for vSphere	2	9,245.74	4,622.84	4,622.90	0.06	0%
2017	C-S.RSO-Y-40C	JetBrains Business Subscription - New releases	5	386.23	55.83	82.60	107.08	28%
2016	3246784	MS SURFACE ARC TOUCH MOUSE F/SURFACE	2	120.57	59.28	61.29	2.01	2%
2017	3868544	ERGOTRON WORKFIT-TL SIT-STAND DT WS	33	13,170.20	398.80	399.78	9.80	0%
2017	M1N96A8#ABA	HP SB ELITE E222 DISPLAY 21.5IN	78	11,447.96	145.46	148.77	102.08	1%
2017	AIR-AP1562I-B-K9	802.11ac W2 Low-Profile Outdoor AP, Internal	7	6,988.84	998.36	998.52	0.32	0%
2017	10FM001UUS	LVO TS TC M900 I5-6500T 256GB 8GB	1,684	1,314,428.57	711.77	780.58	108,836.13	8%
2017	2636711	PLANTRONICS CABLE F/W745	178	8,855.21	48.47	50.37	227.55	3%
2017	PF-BC-BK-5-17	DELL PROFESSIONAL BRIEFCASE 15IN	18	856.15	46.43	48.00	20.41	2%
2017	CVR400	TARGUS 15" CITYLITE	11	293.32	26.64	26.68	0.28	0%
2016	35H-00006	MSH FB OPT 200 MOU USB BLK	12	76.89	6.38	6.41	0.33	0%
2016	E09NNLL	IBM SPSS Statistics Base - Software	229	96,099.95	205.89	514.73	48,951.14	51%

Year	Product Number	Narrative Product Description <sup>21</sup>	Quantity Purchased	Total Paid by State	Lowest Unit Price	Highest Unit Price	Savings if Purchased at Lowest Price	Percent of Savings out of Total Paid
2016	DISPLPORT10L	STARTECH 10FT DISPLAY PORT CAB LATCH	9	135.33	14.71	15.20	2.94	2%
2016	VM4RW	EVOLUENT WRLS VERTICALMOUSE 4 RIGHT	10	1,131.70	109.59	115.42	35.80	3%
2017	3PN-00001	Microsoft Project Online Essentials -	661	37,457.48	56.25	102.28	276.23	1%
2017	3000014122400	DELL CTO USB-C TO HDMI/VGA/ENET/USB3	23	1,526.03	63.74	67.27	60.01	4%
2017	17209	SolarWinds Maintenance - technical support	3	14,102.95	2,047.73	6,027.61	7,959.76	56%
2017	4217883	DELL LATI RUGGED DISP PT DESK DOCK	5	1,470.23	284.99	296.31	45.28	3%
2016	1992126	ERGOTRON LX DUAL 27" ARM SIDE-X-SIDE	2	557.04	234.00	263.68	89.04	16%
2017	4648173	APPLE MBP 15.4 SG 2.8GHZ RP555 256GB	3	6,787.19	2,249.00	2,289.19	40.19	1%
2017	77D-00111	Microsoft Visual Studio Professional with	23	7,062.29	307.03	307.08	0.60	0%
2017	3881736	LVO TP WORKSTATION DOCK 230W	11	2,963.70	265.60	269.81	42.10	1%
2017	910-001354	LOGITECH R400 WIRELESS PRESENTER	26	920.94	35.12	35.89	7.82	1%
2017	FGG-00001	MS RECERT SURFACE PRO4 I7 512/16G	2	2,697.86	1,347.08	1,350.78	3.70	0%
2017	35S0300	Lexmark Ms510Dn 45Ppm	16	3,968.26	226.36	572.86	346.50	9%
2017	E2B660470	XC60	12	12,215.32	599.77	1,353.53	5,018.08	41%
2017	1706189	CDW HARDWARE INSTALL FOR DT-NB	110	1,226.80	11.00	11.16	16.80	1%
2017	417056	[XXXX] MP 6054SP (120V)	6	36,026.84	3,823.17	7,096.81	13,087.82	36%
2017	WDBU6Y0020BBK-	WD 2TB ELEMENTS PORTABLE HDD USB3	11	877.00	79.01	79.94	7.89	1%
2017	Basic Install and	Consulting/Advisory Services	47	10,639.67	225.00	225.00	0.00	0%
2017	3074503	C2G 4FT CAT6 SNAGLESS PATCH BLK	38	84.96	2.16	2.25	2.88	3%
2016	45-245-026	ERGOTRON LX DUAL 27" ARM SIDE-X-SIDE	7	1,828.38	246.30	263.68	104.28	6%



# Oregon

Kate Brown, Governor

## Department of Administrative Services

Office of the Chief Operating Officer

155 Cottage Street NE

Salem, OR 97301

PHONE: 503-378-3104

FAX: 503-373-7643

December 11, 2018

Kip Memmott, Director  
Secretary of State, Audits Division  
255 Capitol St. NE, Suite 500  
Salem, OR 97310

Dear Mr. Memmott,

This letter provides a written response to the Audits Division's final draft audit report titled **Department of Administrative Services, Office of the State Chief Information Security Officer: Significant Cost Savings Can Be Achieved by Modernizing Oregon's Procurement Systems and Practices.**

Thank you for providing the Department of Administrative Services (DAS) and Office of the State Chief Information Office (OSCIO) the audit report. We appreciate the collaborative approach taken by the Audits Division and value its work.

The report highlights the importance for DAS to modernize its strategic sourcing efforts and for the OSCIO to strengthen the IT investment oversight process. Related to the strategic sourcing efforts, DAS is fully engaged in the process to purchase a new eProcurement system and intends to make a funding request to the legislature early in the 2019 session.

Prior to 2015, the State Chief Information Office (CIO) lacked independence and provided only nominal authority over statewide IT policy, which included a limited role in IT project oversight. In 2015, by executive order of Governor Kate Brown and later confirmed in HB 3099, the State CIO, among other things, was provided with independent procurement authority, project oversight responsibilities and contract enforcement capabilities. As part of a commitment to fulfill the intent of HB 3099, the OSCIO adjusted its organizational structure in part to include effective management of IT vendor relationships, implementation of the IT governance framework and independent quality assurance services.



The State CIO, State Chief Procurement Officer (CPO), Deputy State CIO, Director for Enterprise IT Governance and Director of Enterprise Shared Services have reviewed the audit results and generally agree with the finding and recommendations. We are pleased that the findings recognize the progress.

Below is our detailed response to each recommendation in the audit.

We recommend DAS:

<b>RECOMMENDATION 1</b>		
Identify options, and seek funding, for the acquisition and implementation of an enterprise eProcurement system that would provide purchase data of sufficient detail to allow for robust spending analysis and identification of opportunities for strategic sourcing and cost savings. Additionally, develop processes to ensure the results of this analysis are available to agencies, legislatures, and the public.		
<b>Agree or Disagree with Recommendation</b>	<b>Target date to complete implementation activities (Generally expected within 6 months)</b>	<b>Name and phone number of specific point of contact for implementation</b>
Agree	6/30/21.	Debbie Dennis 503-378-2631

#### **Narrative for Recommendation 1**

The Department of Administrative Services has submitted a policy option package (POP) for consideration by the 2019 Legislative Assembly. If approved, the package would provide resources and funding to transform the current OregonBuys system to an enterprise solution. The implementation project would take 24 months to complete. Once implemented, the data captured by the OregonBuys system will provide state procurement staff enhanced spend analysis and tools for the identification of opportunities for strategic sourcing and cost savings. DAS Procurement Services will develop and provide training to systems users on how to maximize these new resources in order to drive savings and best value in public contracting.

We recommend the OSCIO:

<b>RECOMMENDATION 2</b>
Fully develop and implement stage gate processes to ensure they are effective and repeatable. Specific processes that should be developed include: <ul style="list-style-type: none"><li>a. Specifying how projects of different sizes and complexity will be evaluated to ensure each project receives the appropriate amount of oversight.</li><li>b. Establishing more robust criteria and guidance regarding required elements for stage gate deliverables, including templates and examples, and a training program</li></ul>

for oversight staff to promote consistent application of the project oversight framework.		
<b>Agree or Disagree with Recommendation</b>	<b>Target date to complete implementation activities (Generally expected within 6 months)</b>	<b>Name and phone number of specific point of contact for implementation</b>
Agree	June 2019	Jennifer de Jong 503-378-5996

**Narrative for Recommendation 2**

We agree that the Enterprise Information Technology Governance Committee (EITGC) can further clarify what project management artifacts are required for oversight. Revised requirements have already been drafted and the matrix is currently in review with agency stakeholders, the Legislative Fiscal Office (LFO), and OSCIO leadership. Oversight models in other states will be evaluated to determine the benefits of utilizing different requirements based on project size and complexity. The entire suite of oversight templates is currently under review. PMBOK templates and templates from other states and consulting services will be considered as part of the revision. Once the updated documentation requirements and template package is complete, communication and training will be developed for agency staff.

EITGC work flow processes are currently being documented. This documentation will not only serve as reference for agency and OSCIO staff but will be incorporated into new employee onboarding and training.

<b>RECOMMENDATION 3</b>		
Establish minimum knowledge (i.e. education or training) and experience requirements for project managers who manage major IT investment projects. Knowledge and experience requirements should be scaled to be commensurate with project risk determined by the OSCIO.		
<b>Agree or Disagree with Recommendation</b>	<b>Target date to complete implementation activities (Generally expected within 6 months)</b>	<b>Name and phone number of specific point of contact for implementation</b>
Agree in part	December 2019	Jennifer de Jong 503-378-5996

**Narrative for Recommendation 3**

While OSCIO agrees that oversight processes are the responsibility of EITGC, agencies are ultimately responsible for training, hiring and assigning skilled project managers who

understand the value and importance of sound project management practices. This includes assigning project managers that understand how to facilitate project management processes that support delivery of mature project management artifacts.

OSCIO will develop project manager experience requirements that will take into account demonstrated hours of project management work, technical training, and professional certifications. These requirements will be commensurate with the project complexity, project duration and project budget.

<b>RECOMMENDATION 4</b>		
Work with stakeholders to define, periodically review, update, and approve key performance indicators for the oversight process. Once Key Performance Indicators (KPIs) are defined, the agency should develop processes to collect and periodically review performance data, and report progress compared to performance targets to key stakeholders.		
<b>Agree or Disagree with Recommendation</b>	<b>Target date to complete implementation activities (Generally expected within 6 months)</b>	<b>Name and phone number of specific point of contact for implementation</b>
Agree	June 2019	Jennifer de Jong 503-378-5996

**Narrative for Recommendation 4**

KPIs are currently under development with the assistance of a professional consultant. This will be an iterative development process. Initial KPIs will be developed with the data currently available and more robust, complex KPIs developed as the maturity of portfolio management increases. Progress will be reported in a periodic dashboard to key stakeholders.

<b>RECOMMENDATION 5</b>		
Establish a method to track quality assurance (QA) report distributions to ensure that reports are sent to all appropriate stakeholders as required by state law.		
<b>Agree or Disagree with Recommendation</b>	<b>Target date to complete implementation activities (Generally expected within 6 months)</b>	<b>Name and phone number of specific point of contact for implementation</b>
Agree	May 2019	Dave Scheuch 503-373-2069 Ying Kwong 503-586-8010

**Narrative for Recommendation 5**

The independent QA contractors are contractually required (as described in an exhibit of each independent QA contract) to send independent QA deliverables to a list of required state recipients. The QA program will track to determine that independent QA contractors have sent reports to the appropriate stakeholders.

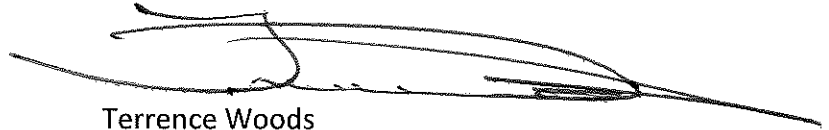
At a regular time (quarterly), determination will be made that contractual requirements for deliverable distributions have been completed. The statewide QA program will work with independent QA contract's authorized representatives and the Basecamp program to confirm contractual compliance, by reviewing records and tracking.

Please contact Lisa Upshaw, DAS Chief Audit Executive at 503-378-3076 with any questions.

Sincerely,



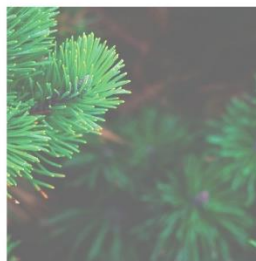
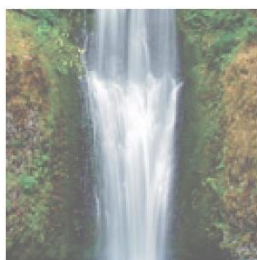
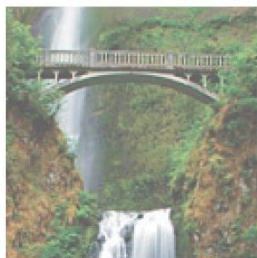
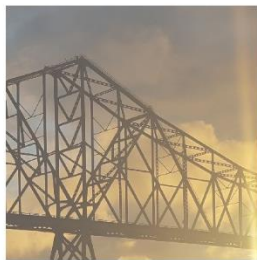
Katy Coba  
Chief Operating Officer / DAS Director



Terrence Woods  
State Chief Information Officer

cc:

Teresa Furnish  
Matthew Owens  
Brian DeForest  
Debbie Dennis  
Jennifer Bjerke



## Audit Team

Will Garber, CGFM, MPA, Deputy Director

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Wendy Kam, MBA, CFE, Staff Auditor

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## About the Secretary of State Audits Division

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