ANALYSIS OF SUSTAINABILITY IMPACTS OF Alameda County Supply Chain Expenditures

2019 Addendum

Alameda County SUSTAINABILITY
Local Action, Global Impact.

Prepared by GSA Office of Sustainability

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With technical assistance provided by good COMPANY®

Introduction

In 2019, the Office of Sustainability published an analysis of the sustainability impacts of the County's supply chain expenditures for the fiscal year 2015. This addendum updates that analysis to consider the sustainability impacts of County expenditures in calendar year 2019. It is not meant to be a stand-alone document. Unless otherwise stated, all findings in the original report are relevant to the calendar year 2019 addendum findings.

The addendum does the following:

- Identifies the changes to methodology used in the 2019 update.
- Highlights changes in the spend analysis between 2015 and 2019, particularly in the scale and sources of impact across all purchasing categories included in the original analysis.
- Provides new analysis on the high-impact category of goods, including detailed analysis of one high-impact category: Furniture.

Methodology

With the exception of purchased fuels and energy, the 2019 analysis was completed using the same methodology as the original report, using the original data analysis spreadsheet created by Good Company as a template. Calendar year 2019 expenditure data was imported into the template, and County specific purchasing codes were matched to the appropriate Bureau of Economic Analysis (BEA) code utilized in the Environmental Protection Agency's United States Environmentally-Extended Input-Output (USEEIO) data model. Emissions factors were updated with a 2019 Consumer Price Index (CPI) correction factor[1] to make them relevant for calculating impacts from 2019 expenditure.

Calculating emissions from purchased fuels and energy for 2019 required development of a novel emissions calculation methodology. This was due to the County's use of biogenic fuel sources, specifically renewable diesel, ethanol, and biofuels. These fuel sources have lower lifecycle emissions compared to the national average fuel sources used in the USEEIO emissions factor models.

To calculate emissions from purchased fuel and energy, we multiplied the total units of activity data (e.g., gallons of fuel) times lifecycle emissions factors per unit of energy published in the State of California's low-carbon fuel source program, then incorporated the Scope 3 portion of these emissions into the data set.

[1] Directions on correcting for CPI can be found in the West Coast Climate and Materials Management Forum's How To Guide at https://westcoastclimateforum.com/sites/westcoastclimateforum/files/related_documents/A%20How%20To%20Guide.pdf#page=13.

Results Overview

This section of the report details the results of the Spend Analysis. The section begins with an overview of the County's 2019 spend (in U.S. dollars) and continues with a description of Countywide impacts and details of impacts by purchasing category.

County Expenditures

In 2019, the County spent $1.1 billion[2] – 37% more than in 2015 – to procure goods and services to serve the community.

Figure A.1 and Figure A.2 show Alameda County's calendar year 2019 financial expenditures grouped by purchasing category and by department, respectively. Below is a summary of the significant findings when comparing the 2019 results to the 2015 results[3].

- The proportion of total spend on Professional Services grew from 71% to 79% of all spend, with an absolute increase of about $281 million dollars.
- The proportion of total spend on Construction and Maintenance shrank from 18% to 11% of all spend, with an absolute reduction of about $35 million dollars.
- The proportion of total spend by departments shifted in tandem with this realignment of expenditures. We see increased spending by departments providing social safety net services, such as Health Care Services Agency (HCSVC) and decreased spending by agencies who manage construction and maintenance activities, such as the General Services Agency (GENSA).

Figure A.1: 2019 spend by category, excluding purchased fuel and energy

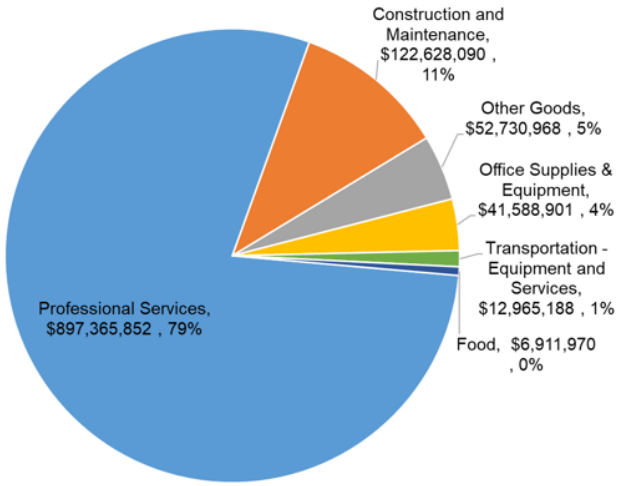
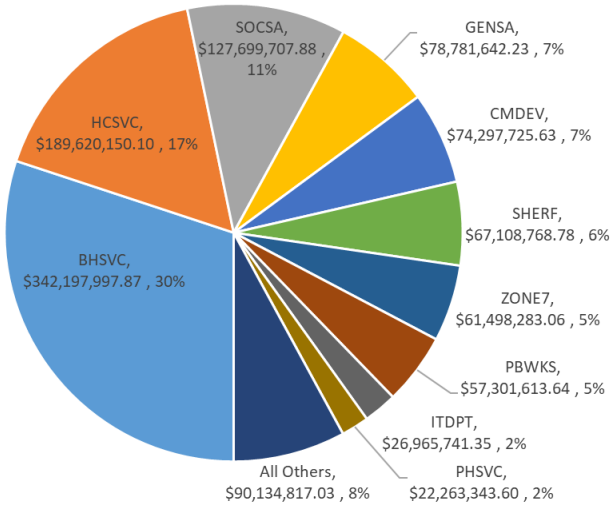


Figure A.2: 2019 spend by department, excluding purchased fuel and energy



[2] Excludes expenditures on purchased fuel and energy, as these emissions were calculated using activity data rather than spend data in 2019.
[3] 2015 County Expenditures can be found in Figure 1 and Figure 2 located on page 7 of the technical report for comparison.

Countywide Impacts

In 2019, greenhouse gas emissions generated in the supply chain as a result of County expenditures resulted in 191,000 MT CO_2e, representing a 9% increase in emissions over 2015.

Comparing Supply Chain GHG Emissions Year Over Year

It is important to note that supply chain emissions were calculated based on national average emissions for goods and services categories. Therefore, changes between our 2015 and 2019 analyses reflect only changes in County spend and do not capture potential reductions from expansion of sustainable purchasing practices.

Comparison to Direct Emissions

During this same period, emissions generated by county operations and commutes, as calculated in the Government Operations and Services inventory for 2019[4], were 43,000 MT CO_2e[5]. The emissions footprint measured in 2019 from the County's supply chain was **four times greater** than that of government operations. While the County has less direct control over emissions occurring in the supply chain than it does its own operations, the scale of opportunity to create positive change is significant.

Impacts by Purchasing Category

Figure A.3 shows the total greenhouse gas emissions by purchasing category for the 2019 and 2015 inventory years. Professional Services and Construction and Maintenance remain the largest two sources of emissions from County expenditures. Professional Services increased from 42% to 53% of total emissions. Construction and Maintenance decreased from 42% to 25% of total emissions. Because Professional Services have a smaller emissions intensity per dollar spent than Construction and Maintenance, the resulting total supply chain emissions measured in this inventory increased at a slower pace between 2015 and 2019 (9%) than the increase in total County spend (37%).[6]

Table A.1 provides detailed impact metrics by purchasing sub-categories for all six impact metrics included in the original supply chain report, updated for 2019, excluding purchased fuel and energy for impact categories other than global climate change[7].

[4] The 2019 Inventory for Government Operations and Service can be found at https://www.acgov.org/sustain/what/climate/footprint.htm.
[5] Calculated emissions in the 2015 Government Operations and Services inventory were 49,000 MT CO_2e, about 8% more than in 2019.
[6] Unit emissions for Professional Services and Construction and Maintenance can be found in Figure 7 on page 17 and Figure 13 on page 23 of the full report, respectively.
[7] Purchased fuel and energy is excluded due to the new methodology used in the 2019 analysis that utilized activity data rather than spend data to calculate Scope 3 GHG emissions for these categories. In 2015, purchased fuels and energy contributed between 4% (for global climate change) and 20% (for water use) of total impact. It is likely that these proportions would be much lower with the County's switch to renewable fuels and to carbon-free electricity.

Figure A.3: Comparison of 2019 and 2015 GHG emissions by purchasing category

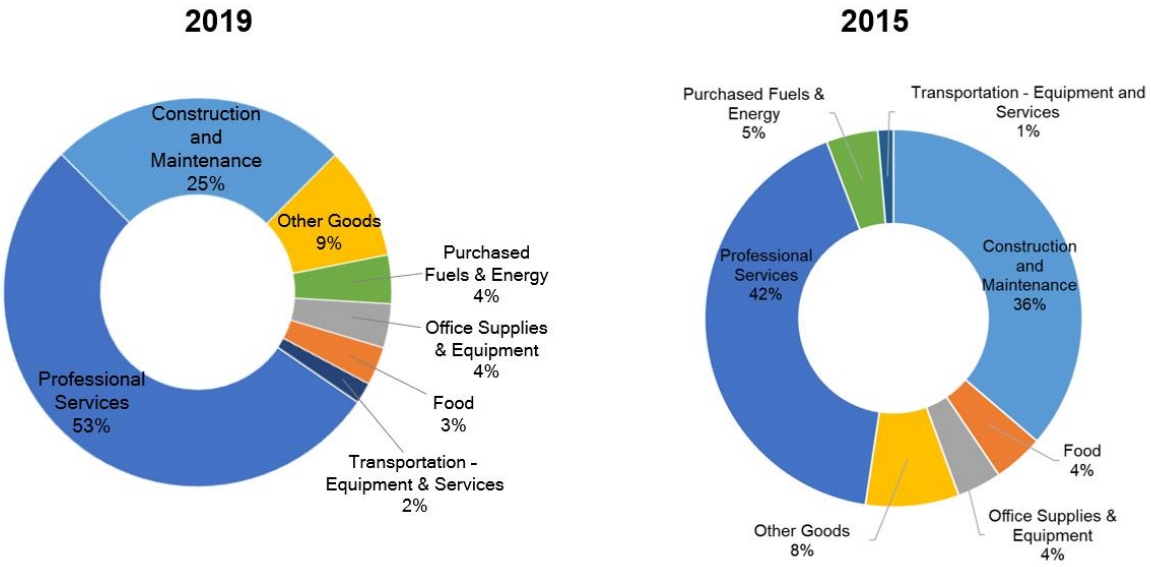


Table A.1: Details for purchasing sub-categories for impacts. Red equals greater impact and Green means less impact.

Results Groupings - Subgroupings	Global Climate Change		Human Respiratory		Water Use		Human Toxicity		Smog Formation		Acid Rain	
	kg CO2e	%	kg PM2.5e	%	m3	%	CTUh	%	kg O3e	%	kg SO2e	%
Construction and Maintenance - Capital Construction	38,353,245	20%	40,862	32%	865,178	8%	0.0627	21%	2,864,538	27%	102,829	17%
Construction and Maintenance - Maintenance	9,511,829	5%	9,739	8%	276,924	3%	0.0144	5%	475,917	4%	22,146	4%
Food	6,130,635	3%	9,005	7%	1,036,298	10%	0.0077	3%	260,706	2%	39,217	7%
Office Supplies & Equipment - Furniture	1,690,190	1%	1,129	1%	99,131	1%	0.0057	2%	134,662	1%	5,086	1%
Office Supplies & Equipment - IT Equipment	2,922,345	2%	1,217	1%	144,985	1%	0.0040	1%	152,557	1%	8,406	1%
Office Supplies & Equipment - Supplies & Printing	2,413,016	1%	1,223	1%	110,794	1%	0.0048	2%	152,102	1%	7,834	1%
Other Goods - Administrative (water purchased included)	17,498,018	9%	6,533	5%	373,765	4%	0.0205	7%	636,972	6%	47,064	8%
Other Goods - Health Care	509,164	0%	491	0%	43,260	0%	0.0008	0%	29,426	0%	1,947	0%
Professional Services - Business Services	12,082,217	6%	4,903	4%	538,513	5%	0.0205	7%	842,113	8%	38,558	6%
Professional Services - Community-Directed Services	89,664,315	47%	48,507	39%	6,754,523	65%	0.1336	45%	4,680,699	43%	303,760	51%
Purchased Fuels Energy - Electricity	1,598,467	1%		0%		0%		0%		0%		0%
Purchased Fuels Energy - Natural Gas	3,699,699	2%		0%		0%		0%		0%		0%
Purchased Fuels Energy - Transport Fuels	2,477,205	1%	642	1%	43,875	0%	0.0145	5%	333,775	3%	8,514	1%
Transportation - Business Travel	21,076	0%	9	0%	2,258	0%	0.0001	0%	2,010	0%	69	0%
Transportation - Vehicles and Equipment	3,332,596	2%	1,620	1%	160,247	2%	0.0049	2%	215,381	2%	9,502	2%
Grand Total	**191,904,016**	**100%**	**125,880**	**100%**	**10,449,751**	**100%**	**0.2942**	**100%**	**10,780,857**	**100%**	**594,933**	**100%**

Analysis of High-Impact Purchasing Categories

Goods

As a County purchasing category, Goods represents 13% of Countywide climate change impacts. This report categorizes Goods into five sub-categories:

- **Administrative Goods** includes water related supply contracts, water treatment chemicals, law enforcement equipment, and other miscellaneous items.
- **IT Equipment** includes computer software, hardware, and services.
- **Office Supplies** includes office related supplies such as paper, toner and printing services.
- **Furniture** includes furniture, including ergonomic equipment, used by employees and clients in County facilities, as well as furniture installation and design services.
- **Health Care Goods** includes medical and dental equipment and supplies.

Figure A.4 shows the total emissions for each of the five sub-categories of goods as represented by the total length of each bar in the chart. Administrative Goods represent 70% of impact, IT Equipment represents 12% of impact, Furniture represents 10% of impact, Office Supplies represent 7% of impact, and Health Care Goods represent 2% of impact.

The colored sections within the bars represents the proportion of total emissions from individual product categories as calculated across all sub-categories in chart. The legend lists product categories from highest impact to lowest impact.

- **Water** is primarily purchased by Zone 7 in order to provide drinking and irrigation water to the East County.
- **Chemicals** are primarily water treatment chemicals purchased by Zone 7, as well as herbicides and pesticides purchased by the Public Works Agency and Community Development Agency.
- **Furniture** is primarily furniture services and equipment, including design and installation, purchased by General Services Agency to furnish County facilities, as well as correctional furniture purchased by the Sheriff's Office and ergonomic services purchased by the County Administrator's Office for all agencies.
- **Ammunition** is primarily law enforcement equipment purchased by the Sheriff's Office.
- **Software Publishers** is primarily software license agreements purchased by the Information Technology Department.
- **Computer System and Design Services** are services to support information technology, primarily procured by the Information Technology Department.
- **Other plastic products** is primarily kitchen equipment purchased by the Sheriff's Office for inmate food service, as well as kitchen equipment purchased by General Services Agency.
- **Paper Mills** is primarily copy paper and printing services purchased by all County departments.[8]

[8] In 2019, Countywide copy paper use had decreased by 34% since the baseline year of 2010. The paper the County does buy is 100% post-consumer recycled content, which has a much lower carbon intensity than the national average emissions factor used for this study. This is a good example of why this type of study is not a good tool for measuring sustainable procurement progress. Instead, it is best used to identify significant sources of impact, and where in the supply chain it would be effective to take actions to reduce those impacts.

Figure A.4: Comparison of total GHG impacts (kg CO_2e) by goods sub-category (bar length) and by product category (color) with top eight product categories across all sub-categories listed.

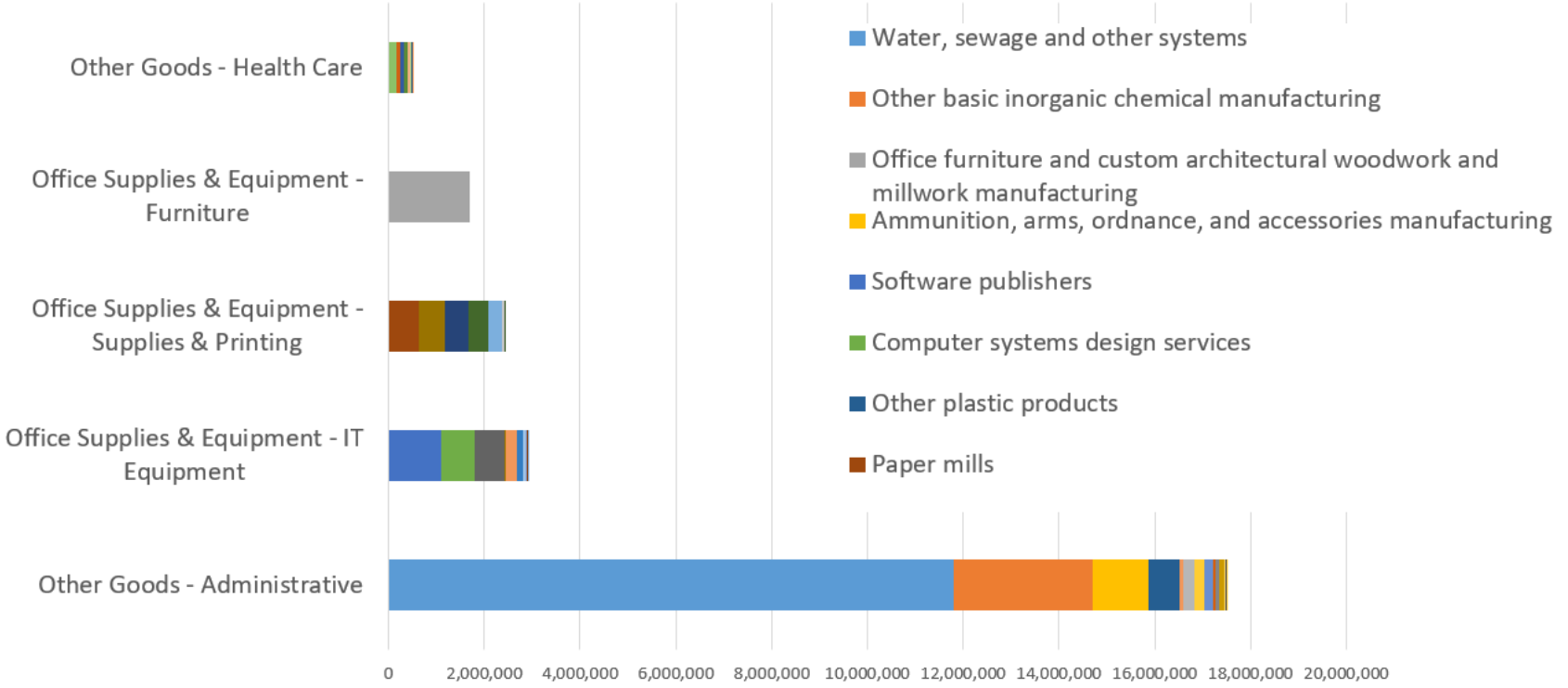
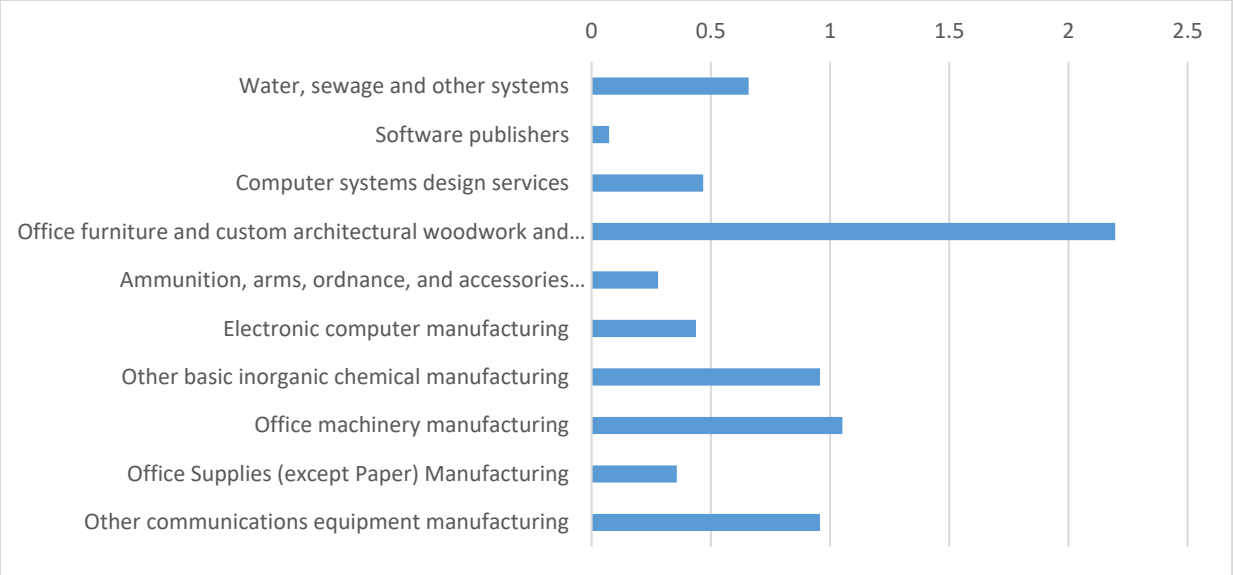


Figure A.5 compares the range of greenhouse gas emissions intensities (kg CO_2e / $) for ten categories of goods with the highest spend across all five sub-categories of goods, listed sequentially with the highest spend on top. Those with higher emissions intensities require more energy and materials across their lifecycle compared to those with lower emissions intensities. Comparing emissions intensities of high spend goods makes it possible to identify categories where changes in County spend will have the most emissions impact. On a per dollar basis, the top four categories of goods with the highest emissions intensity are office furniture, office machinery, communications equipment and water and landscape chemicals.

Figure A.5: Comparison of GHG impacts per dollar spent (kg CO_2e / $) for the top 10 types of goods by total spend, in order from top to bottom of most spend to least spend.



Based on the analysis of Figure A.4 and A.5, the County selected one high-impact good to analyze in more detail in the following section in order to highlight opportunities to reduce impacts in Alameda County's supply chain: Furniture.

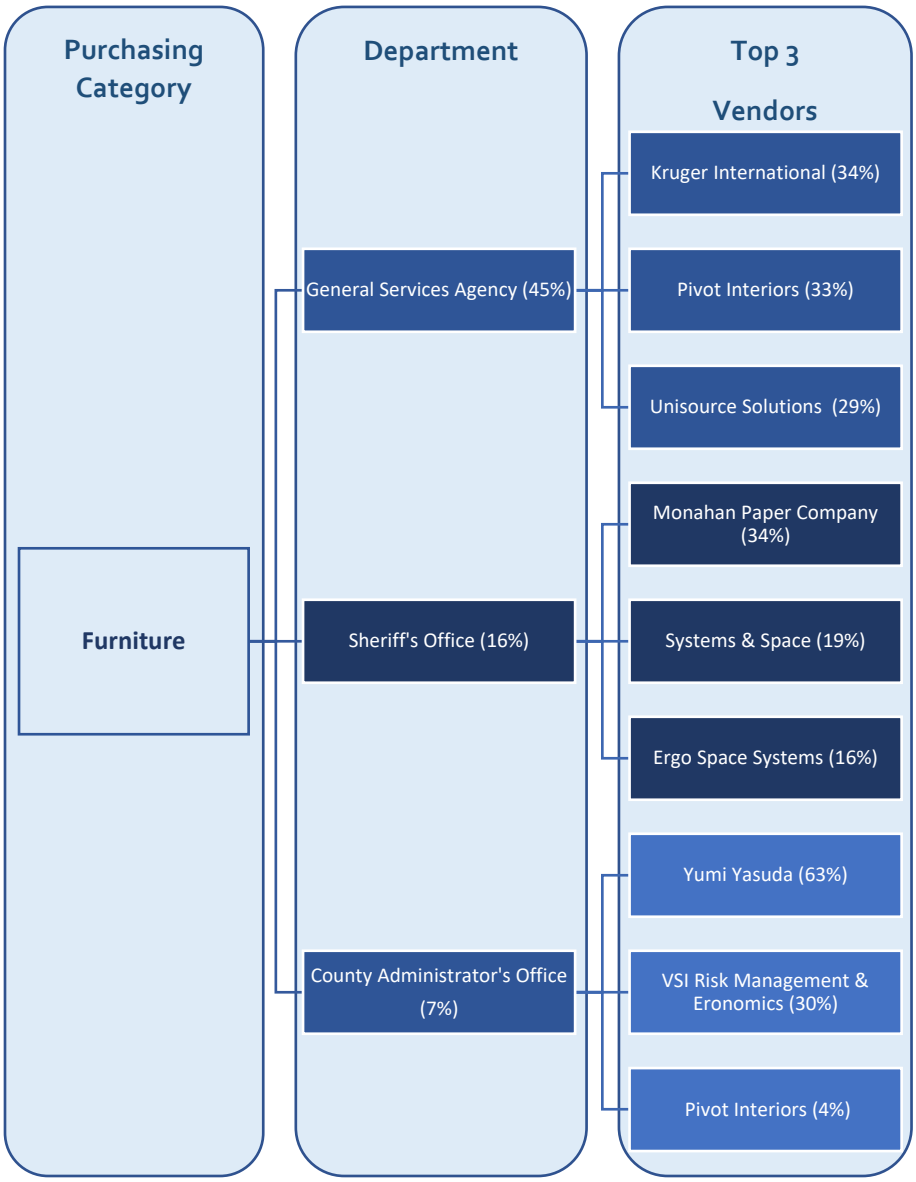
Three County agencies direct 68% of Furniture spending:

- **General Services Agency** procures furniture and design services, including installation, for County facilities on behalf of all departments.
- **Sheriff's Office** purchases furniture for detention facilities and Sheriff's Office facilities.
- **County Administrator's Office** purchases ergonomic services for County employees on behalf of all departments.

The County purchases furniture from 38 vendors. The Top 10 Furniture vendors across all departments are:

- Pivot Interiors
- Krueger International, Inc.
- Monahan Paper Company
- Ergoflex Systems
- Systems & Space, Inc.
- Unisource Solutions, Inc.
- Office Relief, Inc.
- Yumi Yasuda
- KBM Office Equipment, Inc.
- VSI Risk Management & Ergonomics

Figure A.6: Relationship among purchasing category, departments, and top three vendors.
Note that Department percentages indicate percentage of total spend for all departments. Top 3 Vendors indicate percentage of total spend for all vendors within the related department.



Keep in mind:

The factors used to estimate impacts in this analysis are based on U.S. averages. Impact factors are multiplied by expenditures to estimate impacts. Therefore, these estimates do not account for existing County department or vendor actions that may **make actual purchases have a different climate impact than the national average**.

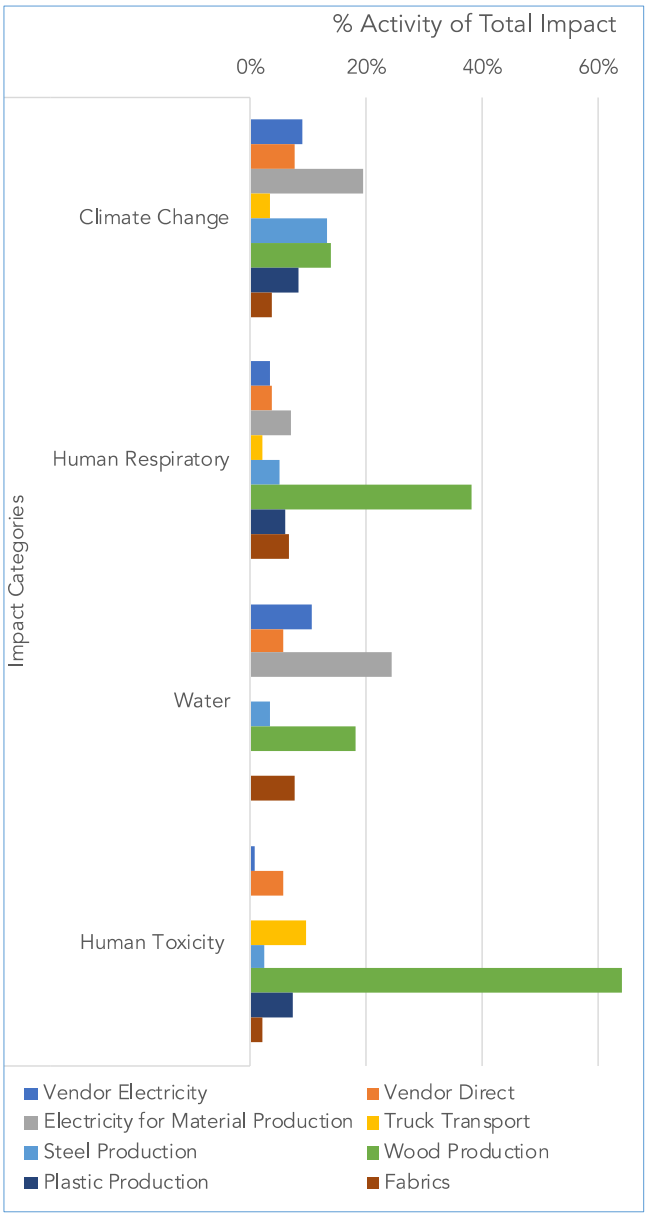
Departments and vendors shown here provide critical support for government operations serving residents of Alameda County. They are listed here because they control a large budget (department), have a large contract (vendors), or operate in a particularly impactful industry (high-impact purchasing categories). This means they have an opportunity to affect positive change for a healthier environment for those living and working in Alameda County.

OFFICE FURNITURE

Alameda County contracts for furniture and ergonomic equipment for use by employees and visitors in County facilities. Figure A.7 compares supply chain activities within Office Furniture production that result in the largest relative impacts. Many of these impacts are controlled or influenced by furniture manufacturer operational practices and the material suppliers' operational practices.

- **Climate Change Impacts**: Electricity use is the dominant source of impact for production of raw materials and final products, followed by direct emissions (fossil fuel combustion and process emissions) for production of materials including steel and wood.
- **Human Respiratory Impacts**: Production of wood products (plywood, lumber, and raw forest product) are the largest source of impact, followed by electricity generation for material production and fabric production.
- **Water Impacts**: Electricity use is the dominant source of water use due to the high volume of water used to produce electricity, followed by wood product and fabric production.
- **Human Toxicity Impacts**: Production of wood products (plywood, veneers, and treated lumber) are the largest sources, followed by truck transport and plastic production.

Figure A.7: Percentage of total lifecycle impact, by supply chain activities for four impact metrics (%).



Opportunities to reduce local impacts:

- √ Adopt a policy for prioritizing use of existing County furniture stock prior to purchasing new.
- √ Purchase from and donate to vendors that support furniture reuse. These actions will avoid emissions from new product production and transport.
- √ When purchasing wood products, specify sustainably harvested solid wood, such as FSC certified, or specify formaldehyde-free or indoor air quality certified products.

Opportunities to reduce local + global impacts:

- √ When buying or leasing new furniture, specify products that carry third-party verified multi-attribute certifications recommended by the U.S. EPA at the highest level feasible.
- √ Work with vendors committed to use of renewable electricity in their operations and supply chain.