

NASPO's 2022 Educational Case Study: State Challenges in Procuring PPE During the COVID Pandemic

WRITTEN BY:

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NASPO produced this case study scenario internally with general knowledge and anonymized data. This educational scenario is not based on a single state or any group of states, and any resemblance to a true or real-life scenario is entirely coincidental.



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The COVID-19 pandemic brought disruption and new challenges to all sectors from public services to manufacturing. Organizations were forced to reimagine how they do business—state and federal governments were no exception. During the onset of the COVID-19 pandemic, public procurement offices grappled with how to secure adequate supplies of personal protection equipment (PPE) for public employees and their constituents. The outbreak reportedly first occurred in the Wuhan region of China, which further exacerbated the shortage of critical PPE supplies due to China’s role as a major producer. The race to secure PPE was on and this started a bidding war between nation-states, the federal government, and state governments.

States’ public procurement officers played an increasingly critical role in each state’s successful emergency response; however, many state offices, though often because of factors beyond their control, were not fully prepared to confront the challenges presented to them. Though state officials plan a great deal for disaster recovery, very few leaders were prepared for the prolonged uncertainties of a global pandemic, and the securing of PPE became a vital operation.

The numerous and widespread challenges that states faced during the height of the COVID-19 pandemic are reflected below. The supply chain and procurement challenges that states faced during the onset of COVID-19 are agglomerated in the fictitious state of Franklin.

The Governor of Franklin recently presented Veronica Alvarez, the state's Chief Procurement Officer (CPO) and head of the Central Procurement Office, and her team of three directors with the most challenging project of their careers—responding to the COVID pandemic. The Governor asked Veronica and her team to develop Franklin's COVID Emergency Procurement Action Plan to specifically prioritize the purchasing of masks for state agencies, staff, and public institutions including hospitals, schools, and nursing homes. On Saturday, Veronica and her Directors will present their team's Procurement Plan at the state's COVID Task Force meeting.

The noon meeting will consist of the COVID Task Force composed of officials from various agencies, the Governor, and selected community and business leaders. The Governor declared that all PPE purchasing will be made through the Central Procurement Office until announced otherwise, and the team is not responsible for anything in the supply chain that follows the receiving process, such as warehouse operations or distribution to the final customer. Veronica knows that the plan must be transparent and strategic to help ease constituents' anxieties but also to ensure the plan garners full political support and the necessary funding to save as many lives as possible. The team knows that they face an unusually challenging timeline--not only are they planning for the subsequent months, but they are planning for who knows how far in the future.

GLOBAL PROCUREMENT ENVIRONMENT

On March 13, 2020, about a week before Saturday's Covid Taskforce Meeting, the President of the United States declared a national emergency due to the COVID-19 outbreak. Three months prior to this declaration, China warned the World Health Organization of a viral outbreak in the key manufacturing city of Wuhan, China. Since then, countries across the globe have implemented various levels of restrictions on movement and gatherings with the public health goal of limiting the spread of the deadly virus.

The PPE shortage is global. China restricted export of facial masks to first meet the domestic demand. The shortage led to competition among countries, states, and between states and federal government in the U.S. The U.S. imports its PPE from Asian countries, such as masks (China) and gloves (Malaysia and Vietnam). PPE are used in a variety of industries (see Figure 1 & 2). In normal times, PPEs are commodity items and buyers always go through a medical supply distributor such as McKesson. The two largest brands/producers of facial masks are 3M and Honeywell. Invariably, they prioritized the needs of the U.S. federal government when the president enacted the Defense Production Act in late March of 2020.

PRE-PANDEMIC PPE MARKET SHARE

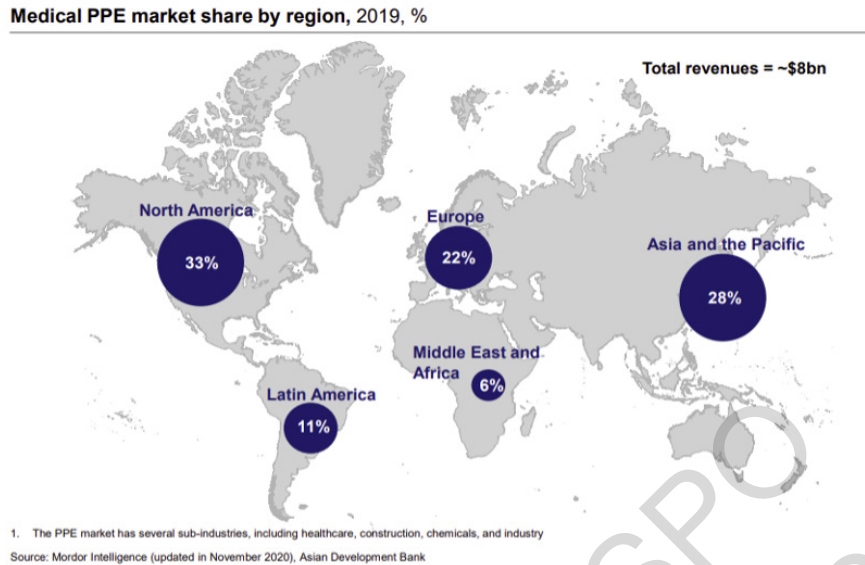


Figure 1: Displays market share of PPE production by continent. In 2019, China, the US, and Germany were the highest producers of PPE. China was the largest worldwide exporter, while the US mainly exported to Latin America and Germany to Europe. Adapted from COVID-19-PPE Demand & Supply Perspectives, UK Aid (2020, December) https://www.ifc.org/wps/wcm/connect/1d32e536-76cc-4023-9430-1333d6b92cc6/210402_FCDO_GlobalPPE_Final+report_v14updated_gja.pdf?MOD=AJPERES&CVID=nyjiUnTU.

In the United States, of which Franklin is a member, there is little to no coordination between the states and the federal government; states are competing against each other, the federal government, and all other private entities for PPE. The Center for Disease Control (CDC) describes the Strategic National Stockpile (SNS) as a repository of potentially life-saving pharmaceuticals and medical supplies for use in a public health emergency in which local supplies have been or may be depleted. The supplies which make up the SNS are known as the “formulary” and include a wide range of medical products, including both pharmaceutical interventions (such as vaccines, antimicrobials, antidotes, and antitoxins) and non-pharmaceutical interventions (such as ventilators and PPE). The SNS is supposed to distribute PPE to state and local agencies. But in reality the SNS is poorly designed to cope with the COVID-19 emergency at such a scale, leaving many states with shortages of badly needed medical supplies. This led to federal and state governments competing for resources against each other. Based on the latest statistics released by the released U.S. Department of Health & Human Services, almost one-third of physicians experienced shortages of PPE during the peak of COVID-19, which resulted in 4 out of 10 physicians turning away patients in need of care.

Many elected officials are unfamiliar with the procurement process and have established a parallel emergency purchasing structure that bypasses the central procurement office at the state level. The Governor of Franklin hasn’t taken this action but the possibility of implementing this strategy is particularly concerning to Veronica and her team. Losing oversight of the procurement process, or creating a parallel system, could jeopardize statutory compliance and increase price while decreasing quality. The parallel structure in other states is already exacerbating the ghost demand. This fictitious demand is

created by the overordering of buyers placing orders with anyone that would accept them hoping that some would be filled. Veronica is watching prices continue to rise and availability rapidly decrease by the minute.

US PPE IMPORT AND EXPORT PARTNERS

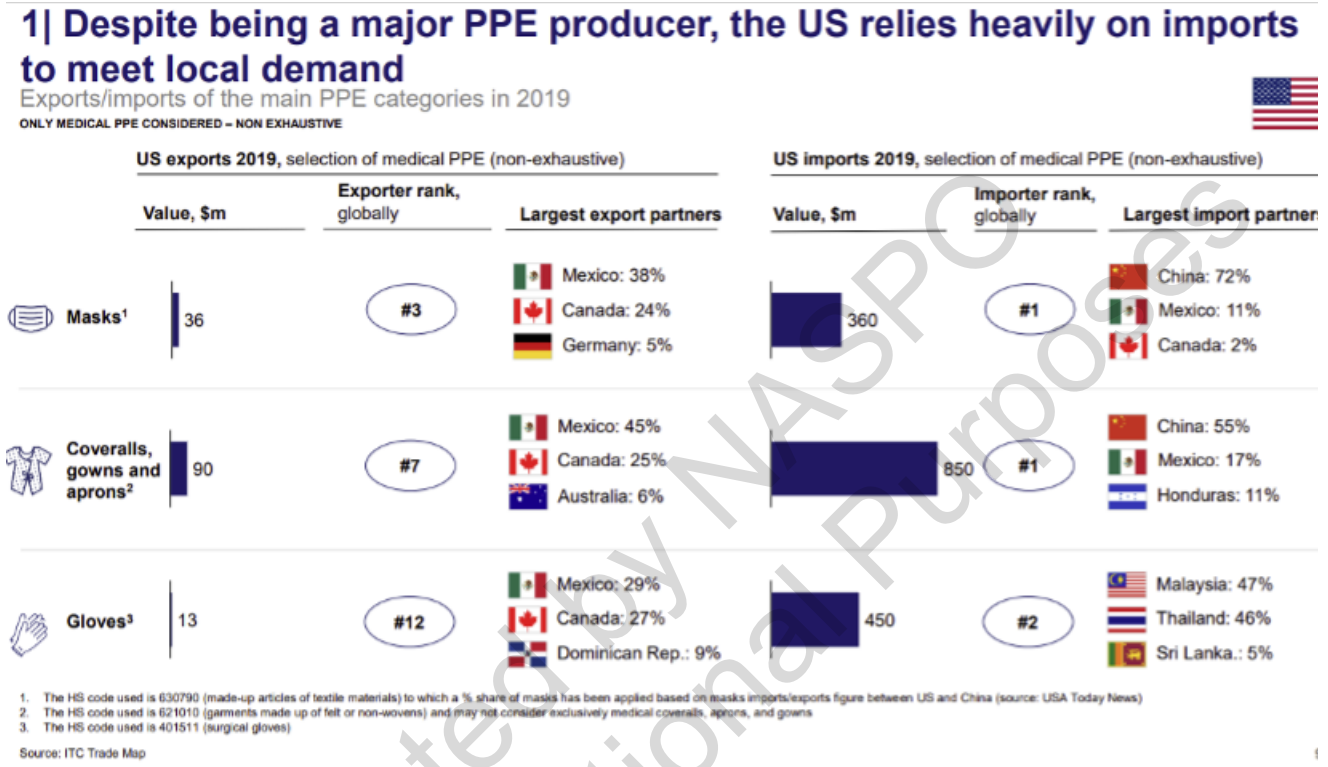


Figure 2: Displays pre-pandemic data on the relationship between US manufacturers and other nation states regarding the import and export of masks, gloves, and protective clothing. Adapted from COVID-19-PPE Demand & Supply Perspectives, UK Aid (2020, December) https://www.ifc.org/wps/wcm/connect/1d32e536-76cc-4023-9430-1333d6b92cc6/210402_FCDO_GlobalPPE_Final+report_v14updated_gja.pdf?MOD=AJPERES&CVID=nyjUnTU.

CURRENT PRESSURES ON PPE SUPPLIES

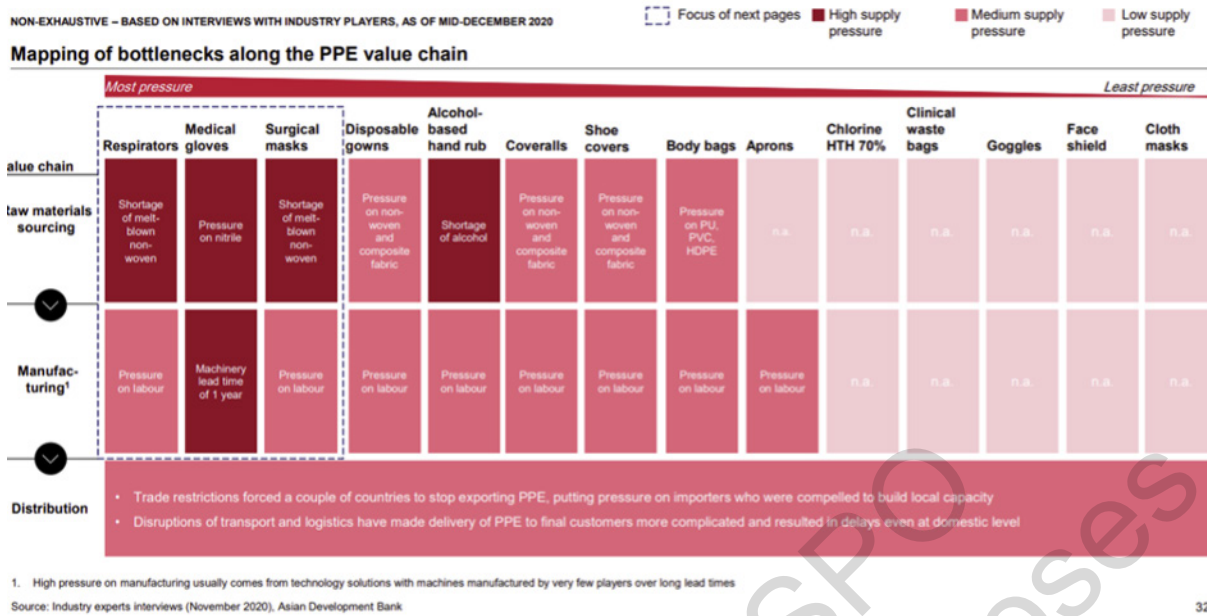


Figure 3: Displayed is the increased pressure placed on PPE items in the sourcing and manufacturing contexts and provides additional sources of disruption Adapted from COVID-19-PPE Demand & Supply Perspectives, UK Aid (2020, December) https://www.ifc.org/wps/wcm/connect/1d32e536-76cc-4023-9430-1333d6b92cc6/210402_FCDO_GlobalPPE_Final+report_v14updated_gja.pdf?MOD=AJPERES&CVID=nyjUnTU.

FRANKLIN'S PROCUREMENT ENVIRONMENT

Unsolicited Offers, New Suppliers, and International Sourcing

Because of the shortages in PPE, the team is considering new suppliers. Since several major companies are refusing to do business with new clients, considering less well-known and unconventional suppliers seems like the only option.

Currently, the process for vetting new suppliers is time-consuming, and Franklin's procurement office is receiving an average of 75 unsolicited offers per day to help source PPE. The offers are coming in by phone and email. It is uncustomary for procurement officials to talk directly to suppliers without first creating a public solicitation for the needed good or service. The emails and phone calls are from celebrities, unknown suppliers, and anyone in between. Veronica's team is unsure how to monitor, vet, and organize these offers.

In normal times, prior to being considered for a solicitation, procurement policies require suppliers to register with the state's Supplier Database. The registration process is time-consuming and requires several documents, such as proof of physical address, a registered tax identification number (potentially challenging for international or new businesses), and various financial statements. This process is managed by the Office of Administration—not Veronica and her team.

The central purchasing staff is becoming more overwhelmed by the day but overlooking a potential supplier could be fatal. Each unsolicited offer comes with the potential to save lives but contracting with a dishonest supplier means throwing away taxpayer money and limiting the availability of life-saving medical supplies. Veronica and her team know that they must consider all potential suppliers if they are going to find a way to meet Franklin's PPE needs. This demands a redesign of the current process used for vetting suppliers and determining their ability to provide the needed goods and services. The system must evaluate all potential sources for factors such as cost, quality, and guarantee of delivery.

Uncommon Contract Terms and Shipping

Since Franklin, the United States, and the world are all competing for these masks with little coordination, suppliers are beginning to demand uncustomary terms and conditions. Veronica's contract team has seen nothing like it. Last week, the team thought they had secured a contract for hand sanitizer only to learn that the supplier demanded upfront payment and FOB origin. Normally, per state procurement policies, all contracts through the central procurement office use FOB destination to protect the state. To the team's knowledge, there has never been a contract with anything but FOB destination language.

The demand for these uncustomary contract terms is further complicated by Franklin's new reliance on international suppliers. Domestically produced PPE cannot meet the state's needs, so her team must look internationally. Veronica has major concerns about additional hurdles that international shipping and suppliers might require, like navigating customs and tariffs.

Delivery, Inspection, and Warehousing

Yesterday, the Chief Procurement Officer (CPO) from another state told Veronica that she received an entire shipment of only lefthanded gloves. A week before, another CPO shared that he received an entire pallet of empty boxes that were supposed to contain sterilized gowns. Veronica's concerns over fraud continue to grow, and she knows that they need to develop a more strategic approach to receiving and inspection.

However, because of personnel shortages and the large quantities of incoming PPE, the procurement office recruited volunteers from different state agencies to help unpack and organize the shipments. Despite best efforts, it created more chaos. The volunteers were unfamiliar with the inspection and documentation process and unpacked a large shipment of masks and gloves, but they did not save the packing slips for shipments. This left officials scrambling trying to figure out the shipper and intended quantity of the goods. Veronica knows this is just one of many mistakes that can happen without a proper intake system.

The Central Procurement Office has limited storage. Normally, purchased goods are either shipped directly to agency offices or the central office if it is a small quantity or high value. When shipped to the central office, the building maintenance staff, 3 personnel, manage the temporary storage. The maintenance staff manages all incoming shipments for all agencies and departments housed in the office complex. Now, shipping directly to the agencies is not an option considering the potential level of fraud, the need to repackage and redistribute large shipments, and new working hours and locations due to health restrictions.

Unfortunately, all of Franklin is suffering from this lack of warehousing expertise. Five years ago, following a national trend to move to a "just-in-time" model to save costs, the state decided to sell its large storage facilities. Plus, medical PPE has strict shipping and storage requirements. Due to health regulations, most medical supplies have small windows of use before expiration dates, and storage facilities must consider climate requirements, such as heat and moisture.

Developing a customized, straightforward, universal intake and processing system for PPE has become a new priority, especially considering the office is unsure of how long the pandemic will continue and whether stockpiling PPE is the best choice. Veronica must weigh cost and availability with expiration dates and storage. If they contract a supplier now, will the supplier still have PPE a few months from now?

FDA GUIDANCE ON THE SHIPMENT OF MEDICAL DEVICES

The Food and Drug Administration (FDA) continues critical work to protect public health, including the review of shipments of medical devices offered for import during the COVID-19 pandemic. This page provides information on importing certain medical devices during the COVID-19 pandemic. It describes procedures for importing devices that have been issued Emergency Use Authorizations (EUA) and for devices for which an enforcement discretion policy has been published in guidance. It does not address products that are intended only for general, non-medical purposes, such as use in industrial or manufacturing settings, or construction or home improvement; for those products, importers do not need to transmit FDA-specific entry information.

The FDA has taken action to help expand availability of medical devices that may be of use during the COVID-19 pandemic. Such medical devices generally fall into one of the following categories:

- Devices for which the FDA has issued a device-specific enforcement policy in COVID-19-Related Guidance Documents. When imported, these devices should be declared as FDA-regulated with modified entry information specific to the enforcement policy. These guidance documents describe circumstances during which the FDA does not intend to object to certain device modifications, or the distribution and use of some types of devices, without compliance with certain regulatory requirements as explained in each specific policy.
- Devices that the FDA has authorized for emergency use. When imported, these devices should be declared as FDA-regulated with modified entry information per the EUA.

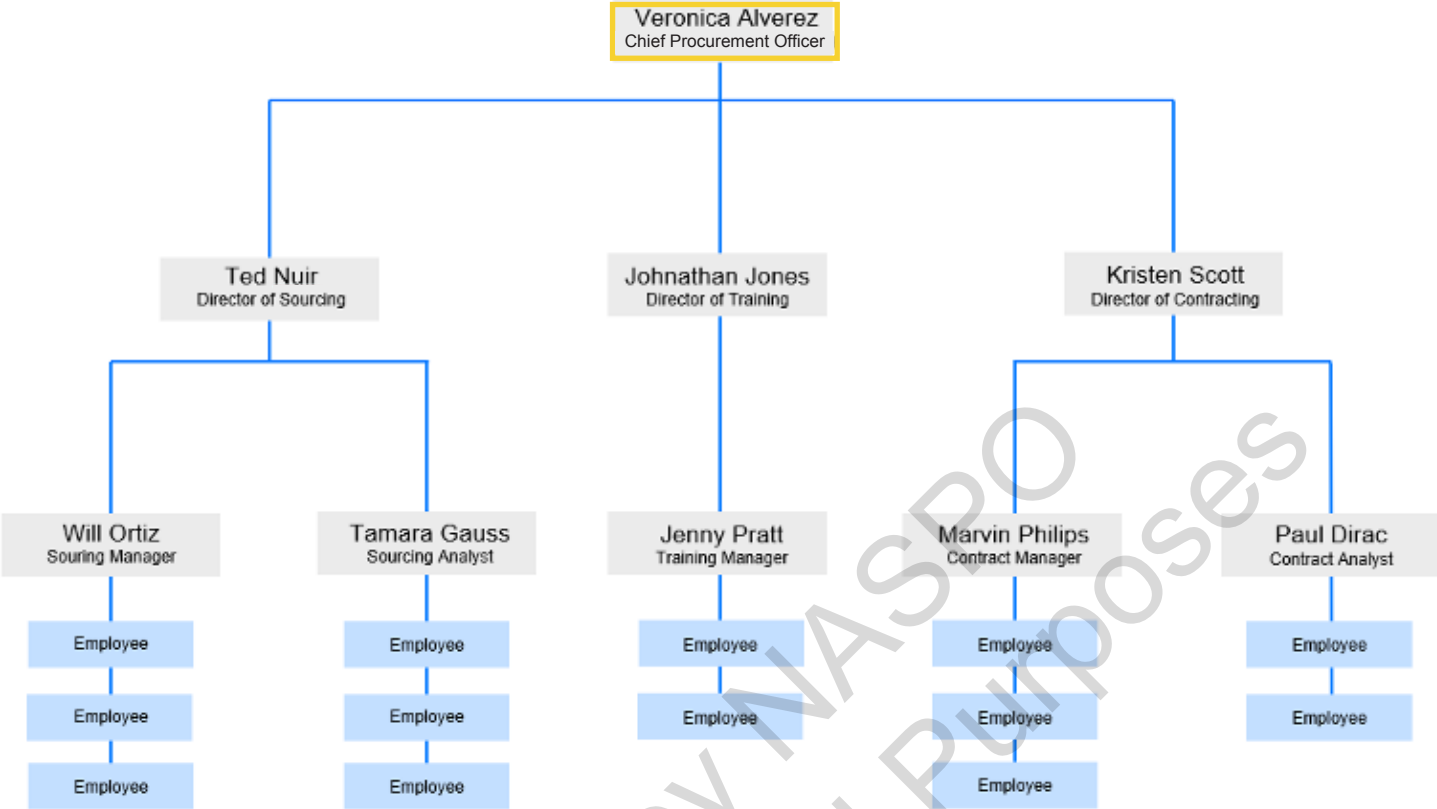
FRANKLIN AND THE CENTRAL PROCUREMENT OFFICE

Franklin's Procurement Office

Franklin is a centralized procurement state located in the American northwest. All state purchasing of goods, services, and technology over \$50,000 are made by the central procurement office and managed by Veronica, the CPO. All state agencies must submit purchasing requests to Veronica's team, and depending on the dollar value, the procurement officer will complete a solicitation for the items. Beyond this, the Governor has declared that all PPE purchasing is to be made through the central procurement office no matter the price.

Veronica's team consists of 21 employees, and she reports directly to the Governor.

ORGANIZATION CHART
Franklin's Central Procurement Office



The staff is working around the clock to try and meet these needs, but the pandemic is taking an additional emotional toll. Not only are staff suffering from uncertainties of the pandemic, staff members and their families are beginning to get sick with COVID. Veronica fears a labor shortage is near. This week 4 employees are in quarantine due to exposure, and she expects this number to grow.

Recently, Franklin began using a new eProcurement system, PeopleSoft. Because it is a new system, the procurement team is only using basic functions. There is the potential to further customize the system to improve data flow, like vendor data or warehousing controls, but these have not been explored.

FRANKLIN'S DEMOGRAPHICS

According to the most recent census data, 5.3 million people live in the state. As the central procurement office, the state is responsible for purchasing goods and services for all state agencies in addition to social services, such as public hospitals, schools, and nursing homes.

Of Franklin's population, 68% live in urban areas and the remaining population is spread throughout the state's rural areas. Franklin is famous for its large swaths of dense forest, though recently they have been threatened by wildfires, for which the state has spent a great deal of its budget developing emergency dispatch and disaster teams. Smitric is Franklin's largest city and the capital. Multinational organizations, such as UPS, HUAWEI, and GE maintain offices in Smitric due to favorable tax credits and fiscal incentives. Additionally, the central purchasing office is located in Smitric, and this is where Veronica and all of her team live.

2020 FRANKLIN CENSUS DATA – SELECTED DATA

Census Data and General Information		
Total Population, 2020		5,345,129
Total Population, 2010		4,703,482
% change, 2010-2020		13.64%
Persons under 18 years, percent		20.97%
Persons 65 years and over, percent		22.40%
Households, 2016-2020		1,105,663
Persons per household, 2016-2020		2.62
Persons age 25+ with a high school diploma or higher		81.50%
Persons age 25+ with a bachelor's degree or higher		22%
Persons with a disability under 65 years of age		11.60%
Persons without health insurance under 65 years of age		12.58%
Median household income (2020 dollars)		\$52,934
Persons in poverty, percent		16.40%
Land Area in square miles, 2010		32,847
Population per square mile, 2010		1.627

Fast Facts		
Corporate Income Tax, State		5.00%
Persons under 65 years of age with a preexisting condition		31.20%
Total wildfires in 2019-2020 FY		1,834
Acreage burned		14,934
Square miles burned		23.33
Largest Urban Center (Smitric) Population		843,154
Total Urban Population, percent		68.23%

LEGAL AND POLITICAL ENVIRONMENT

Veronica has been the CPO for Franklin for 5 years. Prioritizing the building of good working relationships with other states and actively participating in a national purchasing cooperative has been one of Veronica’s key initiatives. And because of her support, Franklin has adopted the ABA’s Model Procurement Code in its entirety. The foundation of public procurement laws is transparency, competition, and fairness.

The Governor recently declared Franklin under a state of emergency. Executive order 2020-14 declares the following:

Executive Order 2020-14

The Administrator of the State Purchasing Division, pursuant to Franklin Administrative Code, to the extent necessary, may authorize an emergency purchase for any amount, or provide the using agency with written authorization for the emergency purchase, including, without limitation, a description of the justification for authorizing the emergency purchase, and suspend the standard procurement process to allow the purchase of food, supplies, services, and equipment.

Although Executive Order 2020-14 provides greater flexibility, Veronica is unsure of how long the state of emergency will last and worries about creating a proper documentation system to justify spending. Veronica and her team know that any missteps could jeopardize their positions and the reputation of the central procurement office.

Thankfully, The Coronavirus Aid, Relief, and Economic Security Act (CARES) was just signed into law on March 27, 2020. The Bill allocated \$1.7 billion through the Coronavirus Relief Fund (CRF) to Franklin. The Franklin General Assembly authorized spending in two phases. The first phase allocates \$12,850,000.00 for a PPE stockpiles and related supply chain issues, \$120,000,000.00 dedicated to hospital relief, and \$10,000,000.00 for grant management and oversight. However, the state legislature has signaled that the second phase will not include additional spending, beyond the state's already allocated budget for PPE.

Procurement officers play a vital role in ensuring taxpayers' funds are managed correctly. The public procurement process provides the goods and services that state agencies need to accomplish their mission but sometimes this can be overlooked by other agencies and the public. Despite this, Veronica and her team know that the procurement process must be fair, open, and honest throughout every stage and provide equal access for all suppliers to state and local business opportunities while managing compliance with state regulations and codes. Having ethical and transparent procedures ensures taxpayer funds are spent correctly. Procurement professionals are stewards of the public trust.

Upholding these standards and implementing a Procurement Action Plan that can withstand the scrutiny of the legislature and constituents is a top priority. Open access to records, public bids, and proposals is foundational, and an essential practice is maintaining written records throughout each stage. The team can't overlook these elements in their plan.

Additionally, procurement officials need to ensure competition and rely on effective competition to guarantee the best cost and maximize funds. Without this, the Procurement Action plan will fail and cause public uproar further jeopardizing the office's ability to serve constituents and save lives.

NEXT STEPS

Each day there seems to be a new set of challenges for Veronica and her team. They have been working around the clock trying to keep up with the latest updates and emerging information, but it is starting to affect the staff. Veronica's team has experienced several disruptions to the state's normal procurement process—from shortages to price gouging—and they are trying to quickly adapt to the many challenges that come with trying to purchase PPE in the current climate. Veronica is beginning to wonder how the team will keep the procurement office staffed and continue with normal purchasing in addition to implementing the Procurement Plan.

It is Friday morning and Veronica is in the conference room waiting for her three Directors to arrive for their final planning session before tomorrow's Covid Task Force Meeting. She has asked the team to brace for an all-day planning session and warned them the planning session could go well into the wee hours of the night because the team has less than 24 hours to finalize the Procurement Action Plan. Not only does the reputation of the office depend on the effectiveness of the plan, but it is also truly a matter of life and death. Veronica's team's Procurement Plan will greatly impact the lives of Franklin residents and further support the health and well-being of other state workers. The Procurement Action Plan must not only address the current known crisis but prepare for unknown supply chain issues for an unforeseen amount of time. No one knows how long this will last.

Veronica thinks to herself -- in order to address the protracted pandemic and future disaster, we need to be data-driven in procurement management. Meanwhile, we need to think beyond procurement and be proactive to understand and influence the entire supply chain.

STATE CHALLENGES AND CONSIDERATIONS FOR PUBLIC PROCUREMENT DURING COVID-19

1. Think about your own experience and the history of COVID-19; what challenges did the states and country face by May of 2021? According to the case information, what are Veronica's major concerns as the CPO of Franklin? What are the procurement challenges that she and her team need to navigate in the coming months?
2. How should Veronica's office handle: (a) international procurement that addresses both risks and remedies and considers factors such as international regulations, laws, and customs; personnel assignments and labor distributions; and internal and external communication structure; and (b) unsolicited offer from new suppliers and sale representatives at a time of great shortages? What procedures need to be put in place?
3. Provide a procurement model that will allow Franklin to determine purchase quantities of PPE for now and the foreseeable future. What information does Veronica's office need to execute the forecast, inventory planning, and distribution of PPE? Be sure to consider the unpredictability of the pandemic, including varying infection rates, changes in production and availability of PPE, the unknown finish line of the virus, and how the PPE will physically reach those in need.
4. The central procurement office must consider warehouse options, such as intake, storage, inventory management, and distribution of specialized medical supplies and other relief goods. The state could rebuild such capacity in-house or use a third party. What would be the long-term and short-term implications and trade-offs? Is there a different option?
5. Beyond COVID-19, what are the long-term PPE procurement and management issues for the State of Franklin? Help Veronica develop a strategic plan, the Procurement Action Plan. The project needs to provide a roadmap and design a long-term strategy. Discuss the practicality, trade-offs, and challenges of your plan.

IOWA STATE CASE STUDY APPENDIX

- Appendix A:** Overview of the US PPE Market
- Appendix B:** Local/Specialty Supplier Chart
- Appendix C:** Franklin Public Facilities Information (2018)
- Appendix D:** Franklin's Budget
- Appendix E:** Hospital Spend per Day
- Appendix F:** Current Events
- Appendix G:** Overview of Public Procurement Process
- Appendix H:** Selected Language from Sample State Contract

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APPENDIX A

INTENDED TO PROVIDE INSIGHT BASED ON CURRENTLY AVAILABLE INFORMATION FOR CONSIDERATION AND NOT SPECIFIC ADVICE



Overview of the US PPE market

1. Overview of the national market pre-Covid-19

Despite being a leading producer of several categories of PPE, the US is also heavily reliant on imports to meet domestic demand

- The US is a leading manufacturer of masks, coveralls and aprons, accounting for a 20-25% share of global production and is home to several top global players (e.g., 3M, Honeywell, Kimberly-Clark)
- However, the US still relies considerably on imports, being the largest¹ importer of masks and coveralls (imports of \$360m in 2019, mostly from China) and the second largest importer of gloves (imports of \$450m in 2019, mostly from Malaysia)

2. Perspectives on the Covid-19 supply/demand

The US has been one of the countries worst hit by the Covid-19 pandemic, with over 20m cases and 340k deaths (as of end-December 2020), which has driven booming demand for medical PPE

This increased demand, combined with export restrictions imposed by historic supply markets, has resulted in shortages, leading the US to scale up local PPE production (e.g., ~10x for masks, ~5x for face shields) to meet domestic needs

This increase in local manufacturing has been supported by several measures by the US government: (i) financial support for local supply chain operators through the DFC¹, (ii) use of the Defense Production Act to push manufacturers to increase production, and (iii) export bans on PPE (still active up to December 2020)

As of early December 2020, shortages still exist in some US states as the pandemic reaccelerates; conversely, early signs of oversupply of surgical masks have been observed during Q3 2020 when the pandemic slowed down temporarily (e.g., Fastenal announced it had a glut of masks, as it has built significant stockpiles)

3. Overview of the national distribution strategy

Pre-Covid-19, the PPE buyers landscape was dominated by distributors (accounting for ~60% of PPE transactions) who were selling directly to healthcare systems

Since the start of the Covid-19 crisis, this picture has changed considerably, notably because of new public sector entities:

- Federal and state governments are now the largest PPE buyers in the country (~40% of PPE transactions vs. ~10% pre-crisis)
- E-commerce channels have grown (~15% of transactions vs. ~10% pre-crisis) driven by the surge in consumer PPE usage (especially masks)

1. US International Development Finance Corporation
Source: Mordor Intelligence (updated in November 2020), Press search, interviews with industry experts (November-December 2020), Johns Hopkins Coronavirus Resource Center (data for Covid-19 cases and deaths as of December 31, 2020)

COVID-19-PPE Demand & Supply Perspectives, UK Aid (2020, December) https://www.ifc.org/wps/wcm/connect/1d32e536-76cc-4023-9430-1333d6b92cc6/210402_FCDO_GlobalPPE_Final+report_v14updated_gja.pdf?MOD=AJPERES&CVID=nyjUnTU.

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APPENDIX B

INTENDED TO PROVIDE INSIGHT BASED ON CURRENTLY AVAILABLE INFORMATION FOR CONSIDERATION AND NOT SPECIFIC ADVICE

While global leaders still account for ~40% of the market, local/specialty players have emerged in both direct sales and contract manufacturing

ONLY MEDICAL PPE CONSIDERED – NON-EXHAUSTIVE

Type of player	Description	Geographical footprint	Preferred distribution channel	Examples of players (non-exhaustive)	
Manufacturing	Global leaders (~40% of the market)	Large players supplying a broad range of PPE (without necessarily manufacturing them all)	Manufacturing facilities across the world to support different requirements and standards across regions	Distribution through major and well-established distributors across the world	3M , DUPONT , Honeywell , Kimberly-Clark PROFESSIONAL
	Local players	Mid-sized players supplying a limited range of PPE and relying strongly on partnerships	Manufacturing facilities in usually just 1 country or region	Distribution through distributors or through large manufacturers (CM) ¹	Dräger , Sundström
	Specialty players	Mid-sized players supplying a single PPE type (e.g., gloves)	Manufacturing facilities in usually just 1 country or region	Distribution through retailers across the world or through large manufacturers (CM) ¹	TOP GLOVE , Cardinal Health , SHOWA , Ansell
Distribution ² (to end user)	Distributors (~60% of market)	Largest distribution channel – usually specialized in pharma and medical supplies		MCKESSON , MEDLINE	
	E-commerce (~25% of market)	Growing distribution channel, allowing distributors to better serve customers		amazon , Alibaba.com	
	Key accounts (~15% of market)	Major hospitals and companies who purchase PPE directly from manufacturers			

1. Contract manufacturing – local players and specialty players sometimes supply to large manufacturers who then brand with their own name
2. Governments managed very small distribution channels pre-crisis but grew rapidly during the pandemic
Source: Interviews with experts (November 2020), press search

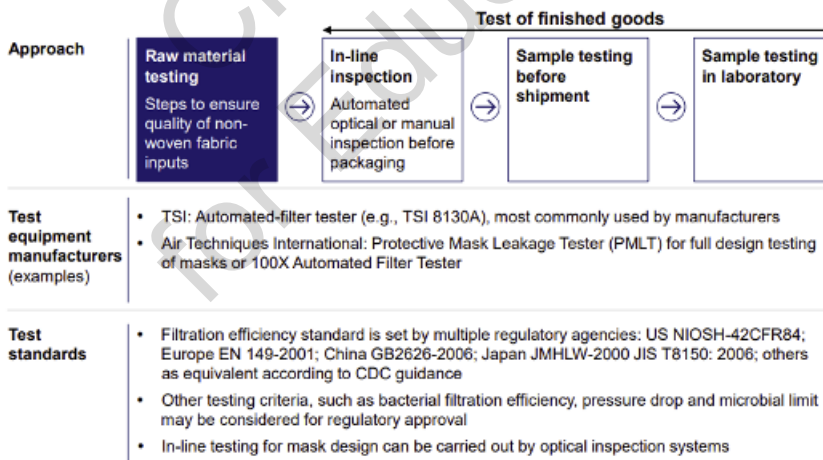
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INTENDED TO PROVIDE INSIGHT BASED ON CURRENTLY AVAILABLE INFORMATION FOR CONSIDERATION AND NOT SPECIFIC ADVICE

Conversely, quality issues arose against a backdrop of accelerated testing processes, limited testing capacity and fraud

NON-EXHAUSTIVE AND ILLUSTRATIVE

Representative testing approach and standards for N95 masks



Source: press search, interviews with industry experts (November 2020), ECRI (Emergency Care Research Institute)

Main insights from interviews

- During the Covid-19 crisis, quality issues have arisen due to three main factors
- Compressed testing procedures to speed up delivery time, with some steps entirely skipped (e.g., sample testing)
 - Limited testing capacity (TSI machines were a particular constraint) and use of less efficient alternative methods
 - Fraudulent behaviors by manufacturers who labelled their products as finished despite not passing tests
- ECRI** Researchers at ECRI [...] found that 60-70% of imported N95 masks do not filter 95% of aerosol particulates, contrary to what their name suggests
– ECRI, 22 September 2020
- ECRI** Smaller new players usually achieve lower end quality and target less quality-sensitive PPE (e.g., shoe covers)
– former Life Safety Products Manager of leading PPE manufacturer

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COVID-19-PPE Demand & Supply Perspectives, UK Aid (2020, December) [https://www.ifc.org/wps/wcm/connect/1d32e536-76cc-4023-9430-1333d6b92cc6/210402_FCDO_GlobalPPE_Final+report_v14updated_gja.pdf](https://www.ifc.org/wps/wcm/connect/1d32e536-76cc-4023-9430-1333d6b92cc6/210402_FCDO_GlobalPPE_Final+report_v14updated_gja.pdf?MOD=AJPERES&CVID=nyjUnTU)

APPENDIX C

2018 FRANKLIN PUBLIC FACILITIES INFORMATION

Hospital/Healthcare Information		
Total Hospitals		71
	Hospitals with more than 500 beds	4
	Hospitals with 300-499 beds	5
	Hospitals with 200-299 beds	9
	Hospitals with 100-200 beds	19
	Hospitals with less than 100 beds	34
Total Hospital Beds		12,877
Hospitals in Smitric		5
	Beds in Smitric	1,735
Other Healthcare Facilities		156
	Total Employees, Other HC Facilities	3,875
Correctional Department Information		
Number of Prisons		29
	Level 1 (Minimum Security)	11
	Level 2 (Medium Security)	8
	Level 3 (Maximum Security)	10
Number of Beds		23,890
Number of Inmates		16,366

Public School Information		
Total Number of Students		750,186
	Pre-K	25,356
	Elementary School (K-5)	328,056
	Middle School (6-8)	176,594
	High School (9-12)	220,180
Number of School Districts		80
Total Number of Schools		1,098
	Number of Schools in Smitric	101
	Number of Students Smitric	71,657

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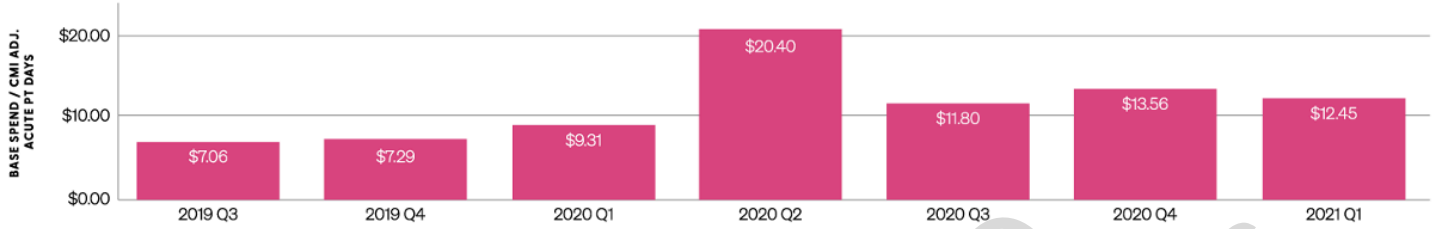
APPENDIX D

Budget	Dollars (in Millions)	Percentage
K-12 Education	\$3,814,054,469.86	38%
Public Safety, Criminal Justice	\$1,204,438,253.64	12%
General Government	\$702,588,981.29	7%
Transportation	\$200,739,708.94	2%
Regulatory	\$100,369,854.47	1%
Higher Education	\$401,479,417.88	4%
Health and Social Services	\$2,910,725,779.63	29%
Economic Development, Natural Resources	\$702,588,981.29	7%
Total	\$10,036,985,447.00	100%

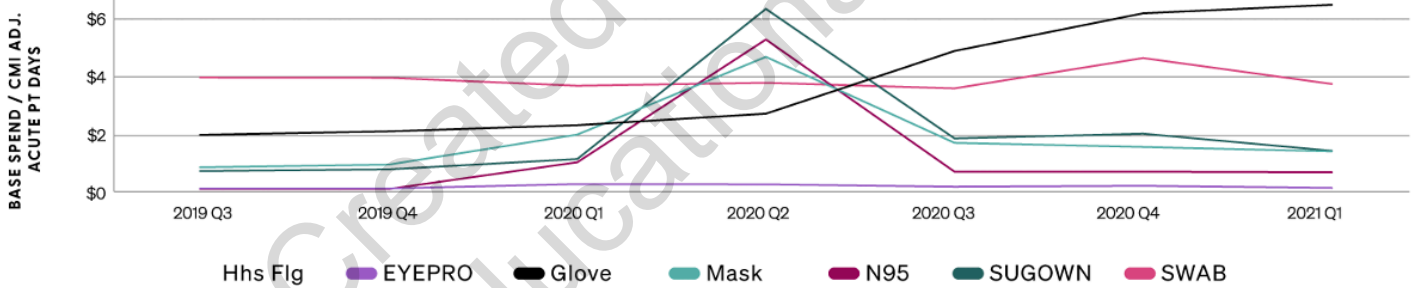
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APPENDIX E

Total Spend per Hospital Patient per Day



Spend per Hospital Patient Trend



Adapted from *The Current State of PPE Costs: Are Providers Out of the Woods?*, Premier (2021) <https://www.premierinc.com/newsroom/blog/the-current-state-of-ppe-costs-are-providers-out-of-the-woods-1>

APPENDIX F

CURRENT EVENTS (EXAMPLES)

Faulty masks. Flawed tests. China's quality control problem in leading global COVID-19 fight

<https://www.latimes.com/world-nation/story/2020-04-10/china-beijing-supply-world-coronavirus-fight-quality-control>

Gouged prices, middlemen and medical supply chaos: Why governors are so upset with Trump

<https://www.washingtonpost.com/business/2020/03/26/gouged-prices-middlemen-medical-supply-chaos-why-governors-are-so-upset-with-trump/>

Germany bans export of medical protection gear due to coronavirus

<https://www.reuters.com/article/health-coronavirus-germany-exports-idUSL8N2AX3D9>

Washington state hospitals scramble to find counterfeit N95 masks, test staffers

<https://www.seattletimes.com/seattle-news/health/washington-state-hospitals-scramble-to-find-counterfeit-n95-masks-test-staffers/>

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APPENDIX G



1. New need (never solicited before), known need (re-solicited in alignment with agency policy), or a reimagining of current needs (combining categories, etc.)
2. Based on agency need: Request for Proposals (RFP), Request for Information (RFI), Invitation to Bid (ITB)?
3. Development of Scope of Work (SOW) if needed, as well as solicitation documents (Technical Proposal for example, if RFP). Schedule solicitation milestones and then post.
4. Include an evaluation team, if appropriate. How are responses scored (based on solicitation type) - cost only? Quality?
5. After award but before contract is executed, negotiate terms and conditions with awarded supplier.
6. Agree upon terms, dually sign contract and submit for agency approval.
7. Manage vendor performance, correct issues, monitor pricing and compliance, submit renewals if appropriate until the contract term ends.
8. Some contracts are one-time, but many categories are re-solicited repeatedly (after a certain number of years, the solicitation is done again). Contract closeout, continuity plans if another contract is being created for the same category.

<https://www.naspo.org/course/procurement-101-foundations-of-public-procurement/>

APPENDIX H

Duties of the Contractor

B. Quality Assurance

The Contractor shall provide only unused products, unless otherwise agreed to by the State Vendor Contract Manager. The Contractor shall guarantee its products to be free from defects in materials and workmanship, given normal use and care, over the period of the manufacturer warranty. The Contractor shall repair and/or immediately replace any defective or failed item within the warranty period specified at no expense to the Ordering Agency (including labor, freight both ways, and materials) for products that are returned in accordance with the Returns Section of this Contract. In the event the product cannot be repaired or replaced to the satisfaction of the Ordering Agency, the Contractor shall refund any amounts paid by the Ordering Agency for the product. The terms of this Contract shall supersede any language to the contrary on purchase orders, invoices, or other documents provided by the Contractor, manufacturer or other sources.

1. Warranty

Ordering Agencies are eligible to receive manufacturers' warranties and the Contractor shall honor all manufacturers' warranties and guarantees on the entire catalog of products offered as part of this Contract. If the manufacturer offers an on-site warranty, those warranty services shall be passed on to the Ordering Agencies. If a product warranty extends beyond the term of this Contract, the Contractor shall agree to provide warranty services throughout the life of the warranty.

2. Product Recall Procedures

The Contractor shall provide recall notification, regardless of level, in writing to the State Vendor Contract Manager and each Ordering Agency through the most expedient method possible. The notices, at a minimum, shall include an item number, complete product description, delivery order number and disposal instructions.

The Contractor shall pick up, test, destroy or return recalled products to the manufacturer at no expense to the State. The Contractor shall issue replacement of product or credit for any product removed or recalled. Each Ordering Agency shall have the option of accepting either replacement product or credit in exchange for recalled/removed products.

3. Test Samples

Contractor shall supply sample products in sufficient quantities for testing purposes when reasonable and requested. The Contractor shall contact the State Vendor Contract Manager in instances where the request for samples is believed to be unreasonable. The State Vendor Contract Manager shall deem if the request is reasonable or unreasonable. Samples shall be provided at no expense to the Ordering Agency and delivered within 2-4 business days of request.

D. Shipping / Delivery

The Contractor shall be able to deliver to all current and potential delivery sites within the State of Franklin, where some may include desktop delivery, and meet specified delivery requirements as well as delivery to all other Ordering Agency locations. This shall include desktop delivery within

given State facilities. The Contractor shall receive a weekly report from the State to identify delivery State Agency site updates or new locations.

1. Delivery Timeframes

Except for sourced products and special circumstances discussed by the Contractor, Ordering Agency, and State Vendor Contract Manager, the Contractor shall use commercially reasonable efforts to ensure that orders placed shall be dock or desktop delivered, whichever the ordering location prefers, within twenty-four (24) hours. The Contractor shall use commercially reasonable efforts to maintain an on-time delivery percentage of 99%.

2. Shipping Charges

The Contractor agrees that all prices include shipping and handling fees required to provide delivery to all State and Ordering Agency locations unless specifically approved in writing by the State of Franklin Vendor Account Manager. The Contractor shall remain responsible for goods until the Ordering Agency takes possession.

3. Proof of Delivery

The Contractor shall provide proof of delivery for an order upon request from the Ordering Agency that shall include, but not limited to, the accepting individual's name, signature, delivery date, delivery time, and packing list.

4. Backorders

In the event that a product is backordered, partial shipments or shipment is delayed for any reason, the Contractor shall notify the Ordering Agency of such delay in the following ways:

- a. Backordered item(s), item number (s), and expected delivery date(s) shall be annotated on the email order confirmation.
- b. Backordered item(s) shall be annotated on the packing list that the Ordering Agency receives with the order and include the expected delivery date(s).
- c. Contractor's online catalog/punch-out provides in-stock/backorder status.

The Contractor shall then work to fill the backorder. If the Contractor's system is unable to fill a line, the Contractor's local purchasing group shall source the backordered item. If an item is discontinued, or unavailable, the Contractor shall call the Ordering Agency and give a choice of canceling the order, or a like-for-like alternate.

5. Product Substitutions

Product substitution is not allowable unless pre-approved in writing by the State or Ordering Agency, and only then may the item be shipped. The substituted item shall be of equal functionality and quality and shall not exceed the contract price of the backordered or unavailable item. Contractor shall submit a quarterly report of all items that have been substituted.

F. Billing/Payment

1. Invoice

The Contractor shall invoice the State only after items have been delivered prior to payment. The Contractor shall invoice the State only after completion of the work described in the purchase order/Contract, and as required below prior to any payment. The Contractor shall submit an invoice to the Ordering Agency's Bill To Address. The Contractor's invoice shall identify, at a minimum, the information listed below:

Invoice Number, Invoice Date, Ordering Agency's Bill To Information, Ordering Agency's Ship To Information, Business Unit, Purchase Order Number, Item Number, Item Description, Order Qty for each Item, Item Price, Invoice Total

2. Billing

The Contractor understands and agrees that the invoice shall;

- Include only charges for products that have been shipped/fulfillment completely
- Not include any items shipped separately or backordered item(s), which shall have a separate invoice for payment on the same Purchase Order
- If multiple invoices are sent for the same Purchase Order, there shall be a note that it is for partial payment
- Not include sales tax or shipping charges

3. Payments

It shall be the responsibility of the "Bill To" Agency to make payment. Any questions concerning payment should be addressed to the "Bill To" Agency listed on the purchase order. If there is a dispute over charges on the State's invoice, the State shall work with the Contractor's Dedicated Account Manager to determine the issue and path of resolution.

The Contractor agrees that the timeframe for payment (and any discounts) begins when the "Bill To" Agency is in receipt of a correct invoice that meets the minimum requirements stated above and products have been delivered in satisfactory condition.

The Contractor understands and agrees that the State shall not accept any responsibility for purchase orders issued by Governmental Entities, including K- 12 entities or libraries.

K. Returns

For all products, the Contractor shall accept returns from an Ordering Agency within thirty business days of receipt of product. For all returns, the Contractor shall provide full credit or full refund to Ordering Agency, whichever an agency requests, within thirty (30) business days. With the exception of damaged or defective items, Ordering Agencies shall use best efforts to return products in original packaging (including manuals and all parts), in resalable condition and a copy of the packing list. Without a packing list, items will be eligible for an exact-item exchange or merchandise credit.

Product returns shall be processed by calling Customer Service or filling out the return request form located on the Contractors website. The product will then be added for pick up on the next scheduled delivery day.

The Contractor shall credit all returns to the Ordering Agency within fifteen (15) business days of receipt.

1. Damaged Freight, Error in Shipment, Defective Items

The Contractor shall pay and arrange for all shipping and handling charges for items returned because of freight damage or error in shipment. Ordering Agencies shall be credited the full amount of all items returned. All credits shall be made to the account codes used to purchase the returned items. If the order had multiple account codes, the Ordering Agency shall instruct the Contractor to which code or codes the credit shall be assigned. The Contractor shall issue credit within fifteen (15) business days once item has been returned to Contractor's warehouse.

2. Restocking Fee

Contractor shall not impose a return or restocking fee on Ordering Agencies for items that have been returned in accordance with the Returns section.

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ADDITIONAL NASPO RESOURCES

NASPO is a non-profit association dedicated to advancing public procurement through leadership, excellence, and integrity. It is made up of the directors of the central purchasing offices in each of the 50 states, the District of Columbia, and the territories of the United States. NASPO is an organization that helps its members achieve success as public procurement leaders through the promotion of best practices, education, professional development, research, and innovative procurement strategies.

The following resources are available on [**NASPO's Content Library**](#):

- Assessing State PPE Procurement During COVID-19: A Research Report
- NASPO Procurement Tabletop Exercise: After Action Report
- Warehousing and Logistics Case Study
- NASCA-NASPO Strategies and Techniques for Successful Emergency Preparedness: A Toolkit for State Government Operations

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