

# Warehousing and Logistics Case Study





## Warehouse and Distribution Practices Among States During COVID-19

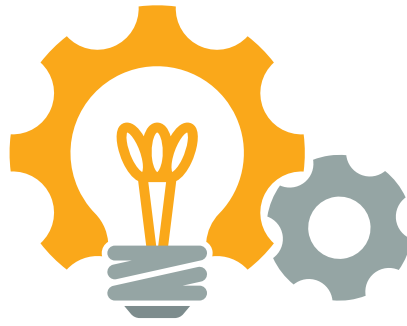
In the 21st century, public organizations have increasingly shifted to an on-demand **just-in-time model** of procurement and supply chain management. This model has been useful for shrinking budgets by cutting out the overhead costs associated with operating a warehousing system for the storage and distribution of commodities purchased in bulk.

However, the COVID-19 pandemic exposed a critical risk in this system. Production disruptions and bottlenecks in the supply chain left hundreds of organizations and governments trying to secure mass quantities of personal protective equipment (PPE) at once. The spike in demand left many manufacturers and suppliers choosing their customers and often selecting the most lucrative contracts. States had to compete against each other to purchase PPE in volumes rarely seen. That was only part of the problem. The arrival of mass quantities of PPE presented new challenges.

Once emergency supplies were secured, some major questions lingered: Where do you put all this stuff? How do you get it to where it's needed most? Across the country, procurement officers were suddenly thrust into full-scale supply-chain management roles, moving beyond sourcing into storage, distribution, and logistics. Many states did not have warehouses or modern logistics capabilities to track and manage stockpiles, as they had eliminated warehouse capacity over the years.<sup>1</sup>

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<sup>1</sup> Handfield, R., Wu, Z., Patrucco, A., Yukins, C., & Kull, T. (2021, March). Assessing State PPE Procurement During COVID-19: A Research Report. Retrieved from [https://www.naspo.org/wp-content/uploads/2021/03/2021\\_COVIDReportC.pdf](https://www.naspo.org/wp-content/uploads/2021/03/2021_COVIDReportC.pdf).



## Making Square Pegs Fit Round Holes

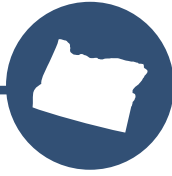
For several states, the solution to the sudden warehousing and logistics crises involved modifying and using existing infrastructure to facilitate the stockpiling and distribution of PPE. These solutions required collaboration, strong communication, creative sourcing ideas, and imaginative repurposing of existing systems. Central procurement offices and their agency partners found success by thinking outside of the box. Oregon and Utah provide pertinent examples.



At the start of the pandemic, Oregon's Department of Administrative Services (DAS) Procurement Services (PS) did not operate a central warehousing system. Planning response efforts required collaboration with FEMA and the Oregon Office of Emergency Management (OEM). The tasks of managing and facilitating PPE distribution were given to DAS. Central procurement worked in tandem with DAS' facilities and information technology divisions to quickly set up a distribution system for PPE that could reach all counties and communities, including those in remote areas. DAS had recently procured a former Microsoft distribution center complete with offices, warehouse space, and loading docks. Instead of being remodeled to meet its originally intended purpose, this complex became the center for the state's PPE distribution. Also within Oregon's DAS is the Office of Publishing and Distribution which has its own small warehouse and distribution system to handle all of the state's printing and publishing needs. The head of that office was brought in to implement and oversee the inventory tracking and logistics operations for a significantly scaled-up version of their distribution system.

As the operation grew, National Guard troops were brought in to work in the central warehouse, inspect incoming goods, and make deliveries to emergency distribution sites in each county using rented cargo trucks. After three months, the DAS team fully switched to using state trucks to deliver to counties near the population centers and contracted trucking services to deliver to remote areas across the state. As needs emerged, the types of supplies distributed broadened. Central procurement worked with the

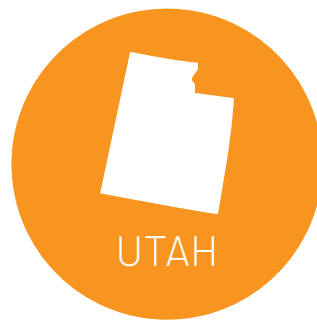
Department of Education and the Early Learning Division to distribute supplies for childcare facilities through the warehouse system. County distribution sites provided PPE to small businesses to help keep them open. Distribution volume for each county was determined using a matrix developed in partnership with the Oregon Health Authority.



**“Just like a warehouse at Amazon, we actually give orders that have been approved by the folks who are professionals in that industry. Oregon Health Authority sends us the approvals to send out to counties for PPE. Business Oregon sends us approvals for us to send out the goods to small businesses. Department of Education gives us the approval to send out all the different supplies to these daycare centers and essentially, we’re just filling orders.”**

**—Oregon Public Procurement**

As the pandemic continued into 2021, Oregon DAS leased another warehouse and shifted PPE distribution operations to it. It is intended to function as a central storage and distribution center for all DAS needs, emergency and otherwise, beyond the end of the COVID-19 pandemic. Pandemic response also saw Oregon’s emergency stockpile management policies evolve for more efficient use of supplies moving forward.



When the pandemic reached Utah, the state procurement office found itself in an unfamiliar position. When state agencies reported problems sourcing their own PPE, the central procurement office took the lead on logistics and turned their office into a warehouse. Agencies were authorized to purchase PPE wherever they could find it, while a pair of conference rooms in the central office were converted into storage. They exhausted the available supplies on their statewide contracts, with agencies coming to pick up PPE from the procurement office. Within 2 weeks, the volume of the purchasing and the scope of the crisis grew beyond this temporary capacity. All storage and distribution operations were transitioned to the state’s central warehouse. Executive agencies would provide PPE to all public entities across the state, including hospitals, school systems, local governments, police and fire departments, and health departments. Utah leaned on an existing system within the state, the Department of Alcoholic Beverage Control, to distribute PPE orders to localities statewide.



“So, they had trucks that were going down to the remote locations in Utah to deliver liquor, we would load that truck up half with PPE to get it to those locations. So, it worked out really well because we didn’t have to go and figure out a different mechanism and there were warehouses at each of the liquor stores that the PPE could be stored in until the county, school district, health department, or hospital came to pick them up.”

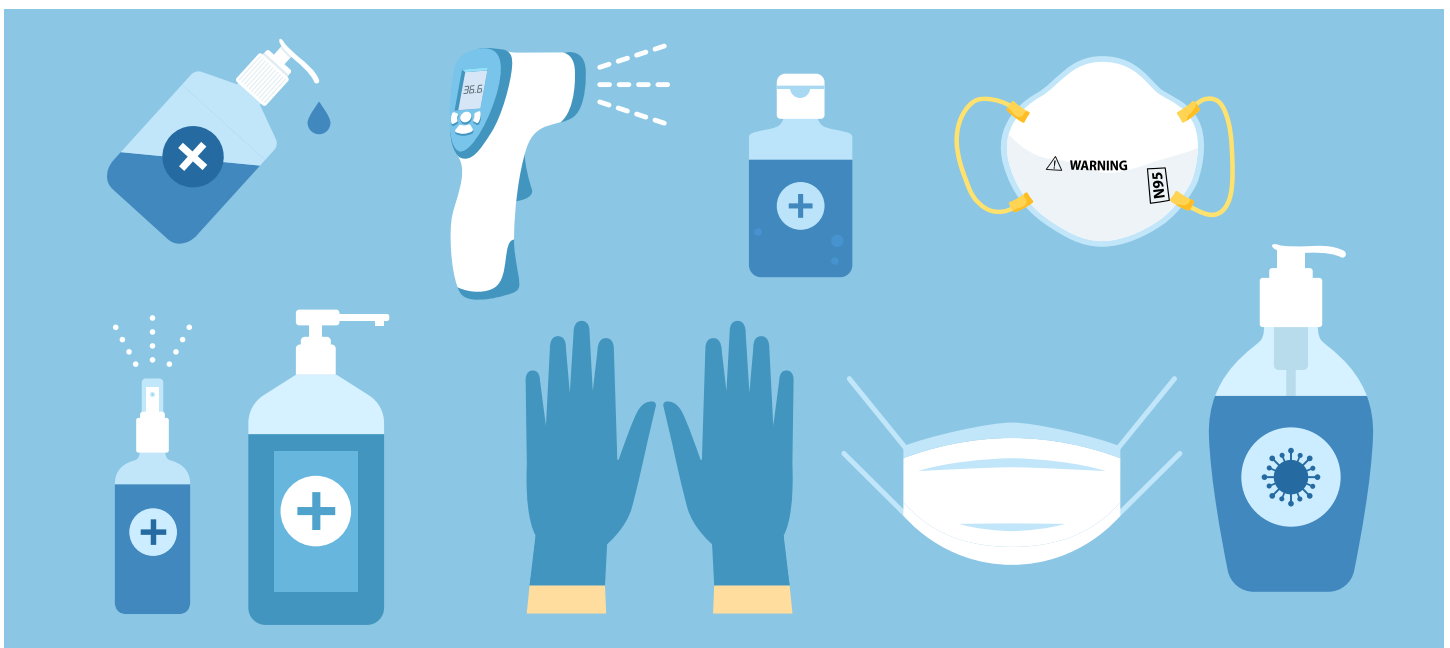
–Utah Public Procurement

Central procurement took on new functions and duties outside of their pre-pandemic scope. Public offices would put in requests for PPE to the central warehouse and supplies would be delivered with ABC trucks to the local ABC warehouse where supplies could be picked up. Central procurement assumed responsibility for tracking the intake and distribution of procured PPE. Frequent meetings with officials from state agencies, hospitals, and other frontline organizations helped determine the needs, usage rates, and performance specifications for PPE and supplies. They implemented a color-coded system to monitor the available supplies in each local warehouse and developed an algorithm to determine the amount of PPE needed for each to maintain a stockpile.



“It ended up working because we were able to know what was arriving and how many people needed to be at the warehouse to help unload the trucks, but it was a massive undertaking because it’s not just moving one truckload or two truckloads of items. I think at the end of it, we figured we filled over 200 54-foot-trailer loads of PPE from China to Utah and that’s a large amount of items to get there in such a short amount of time.”

–Utah Public Procurement





## Pump Up the Volume

When the pandemic became an emergency, some states found an advantage in leaning on robust warehousing and distribution capabilities already established. For them, the widespread and prolonged nature of the crisis meant sustained and extraordinary volume and usage. Virginia and Florida provide examples of the value of warehousing capacity in a time of crisis.



Virginia is an example of a decentralized procurement model. The central procurement office delegates purchasing authority out to agencies and only conducts procurements that exceed the delegated authority thresholds. However, they also establish contracts for statewide use by agencies and other public entities. These statewide contracts for bulk goods fall under the purview of the Virginia Distribution Center (VDC), a large warehousing and logistical hub. Agencies are required to use the VDC as a primary source for any commodities it carries.

During emergency COVID operations, requests from front-line organizations for PPE came through the Department of Emergency Management, which worked with the central office and the VDC to complete bulk purchases. The Virginia Department of Health also performed their own procurements for supplies. Storage and distribution of these supplies was primarily handled by the VDC. Despite the robust central warehousing capacity, the scope of the demand and the volume of the purchases required additional supplemental warehouse sites to be set up by VDEM and VDH. Still, the well-established logistical capacity of the VDC helped ensure that the state was able to successfully meet the needs of front-line organizations.



“You know, we may have been trying to find the same thing as another agency, so everybody was in a way competing. But a good thing we had is that many of those products were available through the Virginia Distribution Center, that warehousing facility. So, they were going to the VDC to request these items and then it was buying these in huge bulk, storing them, and shipping out as needed... They can get that stuff cheaper, because he buys in such huge bulk quantities and stores, than the individual agencies can get it themselves.”

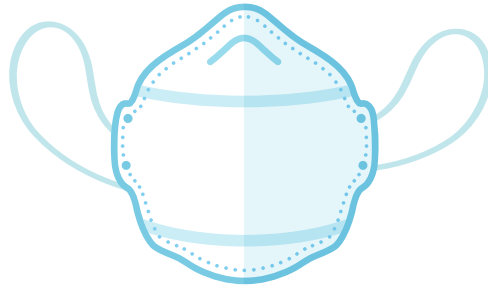
—Virginia Public Procurement



States with higher frequencies of natural disasters, like hurricanes, had some advantage due to robust and comprehensive emergency response operations and built-in infrastructure for storage and distribution under those circumstances.<sup>2</sup> However, these capabilities were not designed for such a prolonged state of emergency, nor a complete state-wide one.

Florida has a robust emergency operations system complete with a central warehouse, fleets of trucks, and staging sites around the state. Florida’s mature model for emergency response allowed for them to lean on the same logistical processes that they use annually to mitigate hurricane damage. However, Florida’s large population and the magnitude of the pandemic called for an expansion of response capacities. Procurement officers worked with the Division of Emergency Management to stand up extra warehouses in strategic locations to store and distribute bulk PPE. While state agencies and local entities had authority to conduct their own PPE procurements, the majority submitted requests to the state’s emergency operations center for fulfillment. The process required longer-sustained cooperation with the DEM and more procurement team members than even the most destructive of hurricanes.

<sup>2</sup> Handfield, R., Wu, Z., Patrucco, A., Yukins, C., & Kull, T. (2021, March). Assessing State PPE Procurement During COVID-19: A Research Report. Retrieved from [https://www.naspo.org/wp-content/uploads/2021/03/2021\\_COVIDReportC.pdf](https://www.naspo.org/wp-content/uploads/2021/03/2021_COVIDReportC.pdf).



## PPE Meets PPP



Some states solved their warehousing crises by looking outward, partnering with private enterprise to meet storage and logistical needs. In fact, many states rapidly created formal and informal partnerships to source, secure, store, and distribute PPE and provide end-to-end supply chain visibility.<sup>3</sup> California was one of the first states to contend with the pandemic, activating the State Emergency Operations Center in late January. During times of activation, procurement officials from the Department of General Services perform roles as purchasers for acquisition task forces. DGS is also responsible for Emergency Support Function #7 (**ESF-7**) under FEMA, providing logistical support to the response. Task forces not only purchase for state agencies, but also for local governments and entities who submit requests to the Emergency Operations Center. California's immense geography and population presented challenges of their own. Purchasers needed to source PPE in extreme quantities: 500,000,000 N95 masks, 400,000,000 surgical masks, 100,000,000 gowns, and 1,000,000,000 gloves.

DGS needed to set up a warehousing framework quickly. The California Department of Health maintained a few warehouses with emergency stockpiles for local distribution. Small requests from local entities were fulfilled using these warehouses, but they lacked the capacity to meet statewide needs. Armed with emergency authorization to waive some competitive rules, DGS reached out to UPS and began negotiations. A contract was drawn up and within a week UPS began providing warehousing, logistics, and inventory management for the bulk of California's response efforts.

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<sup>3</sup> Handfield, R., Wu, Z., Patrucco, A., Yukins, C., & Kull, T. (2021, March). Assessing State PPE Procurement During COVID-19: A Research Report. Retrieved from [https://www.naspo.org/wp-content/uploads/2021/03/2021\\_COVIDReportC.pdf](https://www.naspo.org/wp-content/uploads/2021/03/2021_COVIDReportC.pdf).





**“So, with UPS, it was a matter of us saying, “Okay, who do we know that does warehousing? We know UPS does.” We already had a bit of a relationship with them anyway because we have a state contract with UPS and so we just reached out directly, negotiated, gave them very tight constraints, and off we went. And yes, they did step up and really help the state of California in that effort.”**

**—California Public Procurement**

With the pandemic in full swing, large state stockpiles presented potential targets for crime. California also contracted for extra security services as the pandemic increased in intensity. The locations of state warehouses were kept confidential and extra security measures were put in place as the price of PPE skyrocketed.



## Lessons Learned

For state governments, emergencies are typically products of natural disasters and long-established processes and procedures are in place to facilitate an emergency response. Similarly, clearly outlined plans of action exist for less frequent or predictable emergencies like industrial accidents and weather-related anomalies. However, most states were not prepared for a global pandemic that would require prolonged statewide emergency response. To say this was a learning experience is glib understatement, but there is much to be gained from the struggle. The just-in-time approach to purchasing and delivery that had typically been efficient in normal times suddenly became a tremendous obstacle when every state needed the same commodities, at the same time. Many states struggled to sustain operations in a prolonged emergency, while the geographic scope of the emergency created logistical obstacles.

## PLANNING AND PREPAREDNESS

In [Assessing State PPE Procurement During COVID-19: A Research Report](#), NASPO and their academic partners assert that a mature procurement model requires direct central procurement involvement in emergency response planning and decision-making for both sourcing and logistics.

## ROTATING EMERGENCY STOCKPILES

Many states realized too late that the PPE previously stored in emergency stockpiles had expired and could no longer be used by frontline health and safety professionals. Oregon updated policies to monitor and rotate the stored PPE, ensuring that the oldest items are delivered before reaching expiration, then replenishing the stockpile with fresh supplies. Their new plan includes a 1-for-1 exchange where frontline organizations purchase new supplies to replace the stockpiled ones delivered by the state. Emergency stockpiles should include a plan to ensure that products are available when needed and used efficiently.

## STORAGE AND DISTRIBUTION PLANS

Some could argue that the COVID-19 pandemic is exhibit A in the case for building and maintaining some form of central warehousing and distribution infrastructure. While this infrastructure might not be used regularly to sell and distribute commodities to other entities in the state like in Virginia, the capacity to immediately store and deliver large quantities of vital supplies in the event of a statewide emergency could prove invaluable. States should use their pandemic experiences to inform the creation of a large-scale storage and distribution plan to respond to similar future emergencies. This could mean temporarily shifting an existing system and repurposing facilities, such as in Utah and Oregon, or establishing new protocols for existing permanent logistical systems like the Virginia Distribution Center or Florida's Division of Emergency Management. Although increased investments in commodities and logistical infrastructure means greater responsibilities and elevated risk for state offices, preparedness and the capacity to respond in times of crisis are paramount.

## COOPERATIVE PLANS

Another effective approach could be to establish cooperative agreements and framework contracts with private companies that have large-scale storage and/or distribution capabilities. Consider logistics and delivery companies, trucking companies, manufacturers, or wholesalers and distributors active in your state with the capacity to react in a timely manner. California was able to set up its warehousing operations within one week by leveraging its relationship with UPS. The use of open-ended and indefinite-quantity contracts that could go into effect in the event of a clearly defined emergency situation are one way to prepare for large-scale emergencies while lowering the amount of dedicated resources needed on the government's side.

## RISK MANAGEMENT PLANS

As the COVID-19 pandemic has shown, every emergency situation is unique and presents unique risks. Therefore, risk management planning should be a regular or continual process. State emergency response teams should conduct a supply chain risk analysis to identify the government agencies, partners, and suppliers potentially impacted in a particular emergency and the potential effects on the supply of crucial items.<sup>4</sup> Procurement offices should engage both suppliers and customer agency experts to identify the commodities and services most vital to operations and the areas at greatest risk for disruption. Consider using Consequence Management Table exercises (CMT) to simulate different emergency scenarios. Risk management plans should be designed to mitigate disruptions and ensure that procurement can continue in a crisis.

Your risk management and mitigation plans should cover:<sup>5</sup>

- Bottlenecks or disruptions in the upstream supply chain
- Customer agency needs
- Inbound and outbound logistics
- Staffing and labor supply
- Equipment and technology support
- Hygiene, health, and safety measures
- Compliance with the Stafford Act and FEMA regulations where applicable

It may require an investment to update these plans on a regular basis, but the resulting safety and protection of your office, agencies, and citizens is invaluable.



<sup>4</sup> Handfield, R., Wu, Z., Patrucco, A., Yukins, C., & Kull, T. (2021, March). Assessing State PPE Procurement During COVID-19: A Research Report. Retrieved from [https://www.naspo.org/wp-content/uploads/2021/03/2021\\_COVIDReportC.pdf](https://www.naspo.org/wp-content/uploads/2021/03/2021_COVIDReportC.pdf).

<sup>5</sup> Grifoni, G. (2021, July 28). How to ensure emergency preparedness in the warehouse. Supply Chain Brain. Retrieved from [https://www.supplychainbrain.com/blogs/1-think-tank/post/33402-how-to-ensure-emergency-preparedness-in-the-warehouse?oly\\_enc\\_id=0684E424715611U](https://www.supplychainbrain.com/blogs/1-think-tank/post/33402-how-to-ensure-emergency-preparedness-in-the-warehouse?oly_enc_id=0684E424715611U).



## Questions to Consider

When examining your warehousing and logistical capabilities during emergency preparedness planning consider the following questions:

- What potential resources are available to help facilitate storage and distribution of supplies?
- Who are the primary stakeholders you must collaborate with to fulfill logistical functions?
- Which of the example responses makes sense for your organization's role and resources?

## Resources for Further Learning

For more information about emergency procurement and emergency preparedness, see Chapter 18 of [\*\*State and Local Government Procurement: A Practical Guide\*\*](#) and download [\*\*NASPO's Emergency Preparedness Guide\*\*](#).

For more about the role of procurement in pandemic response efforts, read [\*\*Assessing State PPE Procurement During COVID-19: A Research Report\*\*](#) and watch the accompanying webinar: [\*\*Emergency State Procurement During COVID-19\*\*](#).

For more about warehousing, check out this piece on NASPO Pulse, [\*\*Warehousing: What you Need to Know\*\*](#), and review Federal guidelines from the [\*\*General Services Administration: Warehouse Asset Management Best Practices\*\*](#).