LOGISTICS + FREIGHT BULLETIN

NCDOT is a part of your supply chain.

Welcome to the first of many *NCDOT Logistics + Freight Bulletin* updates created and distributed by the NCDOT Office of Logistics + Freight. This bulletin is dedicated to the internal NCDOT audience, as well as those closely engaged with NCDOT. We will focus on sharing current issues, trends, data, and analyses on freight and logistics across every mode. We also aim to expand awareness and understanding of the larger supply chain ecosystem in which multimodal freight transportation is an active and important player. We hope you will enjoy this briefing and if there are topics you'd like us to address, please feel free to email us and offer your ideas, suggestions, or questions.

We have included you in our initial distribution, however if you would like to be excluded from future bulletins, please reply and we'll gladly remove you. Alternatively, if you would like to share this with your group or colleagues, please do. Email us if you'd like to sign up for future bulletins.

ABOUT THE NCDOT OFFICE OF LOGISTICS + FREIGHT

The NCDOT Office of Logistics + Freight are supply chain management professionals at NCDOT dedicated to supporting and providing resources to NCDOT stakeholders at every stage of project delivery from planning through construction, ensuring infrastructure investment is connected to industry + commerce. We are dedicated to driving North Carolina's development as the preeminent environment for freight transportation and logistics services. The Office of Logistics + Freight is also focused on promoting the understanding and facilitate freight + logistics development and activities throughout the state. We are available to provide relevant data, research, insight, and analysis for NCDOT project managers, planners, or stakeholders on freight activity and behavior across every mode of transportation.

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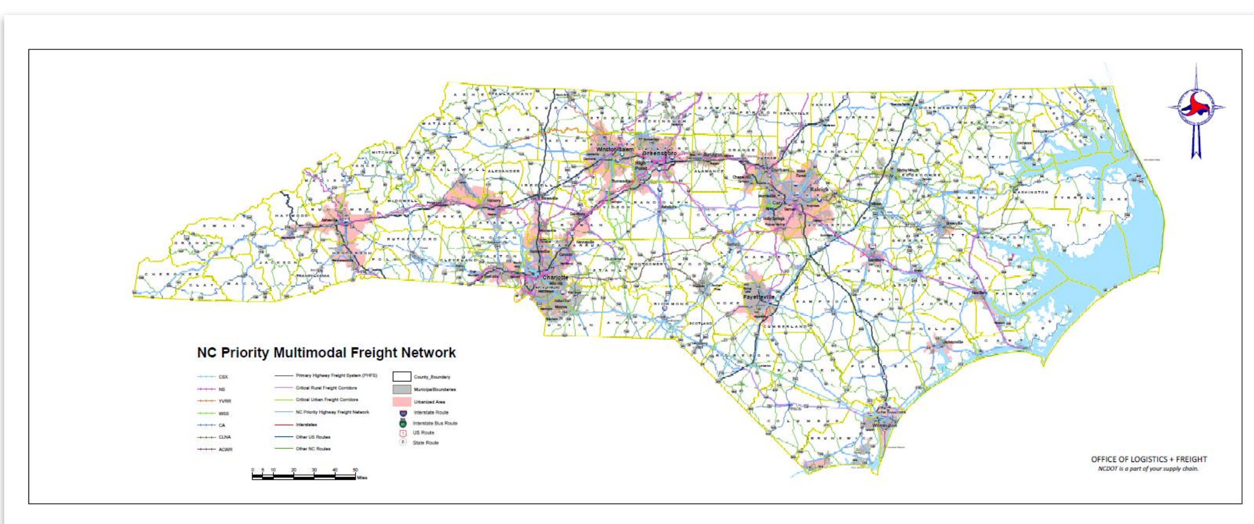
CURRENT LOGISTICS + FREIGHT ISSUES + DATA



COVID-19 + the Transportation Sector

Drastic declines in consumption, demand, and consumer purchasing combined alternatively with panic-buying and overconsumption of certain commodities and services have put supply chain and freight transportation under pressure - and squarely in the spotlight of public awareness. The pandemic has prompted a major shift in operations, and put normal pricing, supply, and demand dynamics into disarray. From a transportation perspective, this is a "Black Swan" event, but it is also one in which multimodal freight logistics and transportation is excelling in its ability to adapt and to serve communities and economies in the new and ever-changing paradigm. We will continue to watch, learn, and hopefully understand what impacts this will have on the future of our sector. In terms of freight bottlenecks and congestion, a significant cost to the industry, the past quarter reflects the behavior of our economy and offers insight into the health of our freight and logistics ecosystem.

Below is a six-month review of freight network delay costs to commercial enterprise, as well as a breakdown on the impact freight bottlenecks have on the network.

Performance Measure	Jan-20	% CHANGE	Feb-20	% CHANGE	Mar-20	% CHANGE
Freight Network Travel Time Index (weekday)	0.94	0.0%	0.94	0.0%	0.93	-1.1%
NCPFN System Total Cost of Delay	$ 29,095,001	-8.0%	$ 28,047,344	-3.6%	$ 24,941,600	-11.1%
NCPFN System Average Daily Total Cost of Delay	$ 938,548	-8.0%	$ 967,150	3.0%	$ 804,568	-16.8%
NCPFN System Average Daily Cost per VMT	$ 0.10	-9.1%	$ 0.10	1.0%	$ 0.09	-10.9%
Top 10 Bottlenecks Total Cost of Delay	$ 483,100	-11.9%	$ 508,988	5.4%	$ 207,714	-59.2%
Top 10 Bottlenecks % of Total Cost	1.66%	-4.2%	1.81%	9.3%	0.83%	-54.1%
Top 10 Bottlenecks Average Daily Total Cost of Delay	$ 15,584	-11.9%	$ 17,551	12.6%	$ 6,700	-61.8%
Top 10 Bottlenecks Average Daily Cost per VMT	0.51	2.0%	0.46	-9.8%	0.24	-47.8%

Performance Measure	Apr-20	% CHANGE	May-20	% CHANGE	Jun-20	% CHANGE
Freight Network Travel Time Index (weekday)	0.92	-1.1%	0.98	6.5%	0.92	-6.1%
NCPFN System Total Cost of Delay	$ 14,241,492	-42.9%	$ 11,585,149	-18.7%	$ 19,067,559	64.6%
NCPFN System Average Daily Total Cost of Delay	$ 474,716	-41.0%	$ 373,714	-21.3%	$ 615,083	64.6%
NCPFN System Average Daily Cost per VMT	$ 0.05	-44.4%	$ 0.04	-20.0%	$ 0.07	75.0%
Top 10 Bottlenecks Total Cost of Delay	$ 171,298	-17.5%	$ 294,754	72.1%	$ 511,500	73.5%
Top 10 Bottlenecks % of Total Cost	1.20%	44.4%	2.54%	111.5%	2.68%	5.4%
Top 10 Bottlenecks Average Daily Total Cost of Delay	$ 5,710	-14.8%	$ 9,508	66.5%	$ 16,500	73.5%
Top 10 Bottlenecks Average Daily Cost per VMT	0.1	-58.3%	0.5	400.0%	0.56	12.0%

NOTE: default cost of hourly congestion based on Texas A+M Transportation Institute 2018 recommendations
SOURCE: NCDOT Office of Logistics + Freight

Congestion Cost Overview: In March as we began to see traffic patterns change in response to stay-at-home orders, our most significant freight bottlenecks began to ease and with it, the headwind of congestion for freight providers. The top 10 bottlenecks statewide experienced a 59.2% decline in congestion delay costs over the previous month of February while cost per VMT fell slightly less with a nearly 48% decline. On the overall North Carolina Statewide Priority Highway Freight Network, a network of 3,900 miles identified as important to freight transportation including interstates, state roads, and other key freight corridors, March figures showed a less dramatic decline similar to the drop that follows fall peak freight movements ahead of holiday purchasing. As stay-at-home orders continued to impact transportation (and economic behavior) into the end of March and through April, lagging congestion improvement across the network mirrored the March declines witnessed specifically in key bottlenecks. Overall, the system cost of delay dropped nearly 43% with a two-month compounded improvement in network travel time index of just over 2%.

In looking at the same period in 2019, we see a similar pattern with March 2020 representing a 19% drop year over year, while the significant network-wide impact can be seen in April and May. Compared to congestion and delay costs in the same period 2019, this year's April declined a whopping 57.6% to just over $14M. As we entered the month of May the overall network continued to improve in terms of congestion and delay, showing a similar drop of more than 61% YOY, however the level of activity brought with it a surge in congestion costs associated with bottlenecks. With the continued easing of restrictions in North Carolina, June 2020 saw congestion costs on the network more than double to just over $19M, however this still represents a 45% decrease in costs compared to June of last year. It is expected with the increase in economic activity, freight movement will face the headwind of more and more passenger cars on the road, and the costly congestion that comes with it.

MULTIMODAL LOGISTICS + FREIGHT SECTOR BRIEIFINGS

In this section, we will regularly share timely, current information, analysis, and context for freight logistics and transportation sector organized by each mode. This will be a mix of current events, as well as recaps on important data or reports issued recently relevant to multimodal freight movement and planning in North Carolina, our region, our nation, and the global economy.

TRUCKING

HOURS OF SERVICE CHANGES: FMCSA publishes new Hours of Service regulations in response to COVID-19 challenges and supply chain dynamics. The new rule allows for more flexibility with breaks and allows drivers more control over how they organize their operations within the HOS. For more on this, here's the FMCSA's recap.

CROSS BORDER ISSUES: In March, US and Canadian officials announced non-essential border crossings on the US-Canada Border will be restricted originally for 30 days, but have been extended until July 21, 2020. With the deadline pressing, Canadian Prime Minister Justin Trudeau has signaled that discussions are ongoing, however public sentiment in Canada stands firmly against re-opening the border. Here's an update from CTV News. The silver lining here is that trucking is exempt; some positive news for the State of North Carolina as Canada ranks as our most important export market. Canada imports more from North Carolina than any other foreign country, more than the export value of both the second (Mexico) and third (China) ranking nations combined. Canada is also a top-5 import market for North Carolina, currently ranking 4th in 2017 after dropping from 3rd in 2015-2016 with imports of more than $3.3B in 2017. North Carolina enjoys a positive trade balance with Canada of more than 2:1, and trade with Canada supports more than 247,500 jobs in North Carolina. More information on the original situation via Transport Topics here.

CAPACITY AND RATES: Unsustainable rates mixed with wild supply-demand dynamics, and controversy over brokerage practices are two key issues facing the trucking community. This is especially the case for independent owner-operators and smaller trucking businesses. In an asset-utilization business, many drivers are faced with the decision take loads at unsustainable rates or park their truck. However, COVID-19 has been a showcase for the importance of truckers and the essential service they provide each and every one of us. One key metric we follow is the Outbound Tender Rejection Index (ORTI) which according to Freightwaves/American Shipper has plummeted 85%, signaling that carriers are moving whatever freight they can find. Capacity is loose, rates are down and truckers and brokers are wrestling over margins with truckers accusing brokers of taking advantage of trucking supply economics to pressure rates downward. Contract volumes are beginning to increase, but market dynamics are not kind to smaller trucking firms. This is definitely the case in NC. For more on this, check out the OTRI here.

RAIL

INTERMODAL CHALLENGES: Domestic intermodal services saw their competitive advantage over trucking disappear in April and May of 2020 despite rate volatility in the trucking sector. According to a report from the Intermodal Association of North America, international and domestic intermodal volume fell 6.7% YOY in the first quarter of 2020 due to the impact of COVID-19, as well as other unfavorable market dynamics. One key metric we follow is the Journal of Commerce's US Intermodal Savings Index. Unfortunately, the recent news isn't good as the April intermodal savings index dropped to its lowest level in more than a year. Analysts do not foresee a full recovery to the level of 2019 volumes until well into 2021.

In railroading, intermodal efficiencies – those benefits in cost and logistics complications saved by using intermodal containers moving across multiple modes of transportation from maritime to rail versus trucking – are weakening as trucking rates fall and capacity in the trucking sector rebounds. Spot rates for trucking, often the piecemeal competitor to railroading, were on a sharp downward trajectory eliminating the savings railroading can provide. For more on the index and situation in rail, the IHS Markit 1Q2020 report is worth reviewing.

MARITIME

BIG NEWS IN NC: There's big news coming out of Wilmington, literally, as NC Ports welcomes its largest ever container ship with the arrival of the MV Hyundai Hope, a nearly 14,000 TEU capacity vessel (pictured to the right). According to NC Ports, "The arrival of the MV Hyundai Hope follows the completion of four major projects aimed at improving access for 14,000-TEU container ships to the Port of Wilmington.

Earlier this year, NC Ports completed phase two of its turning basin expansion project; opened 2,600 contiguous feet of container berth space; and completed an air draft improvement project which increased the air draft over the Cape Fear River. Additionally, the Ports Authority welcomed three neo-Panamax cranes in 2018 and 2019 specifically designed to work ultra-large container vessels (ULCVs)." More here.

Click the photo below for video of the arrival. SOURCE: NC Ports Authority

REEFER VOLUMES UP: More great news out of NC Ports is that April was a record month for their handling of refrigerated containers at the Port of Wilmington. Moving more than 1,400 containers through the port in April, this volume growth continues a trend at the port and one reflective of the investment and strategic focus of the Ports Authority to grow temperature-controlled services and capacity. More on this development from NC Ports here.

CAPACITY COMING BACK: Carriers are beginning to return capacity to their summer shipping schedules as the global economy revives in the wake of COVID-19 impacts. In response to the steep drop in demand, carriers cancelled many sailings scheduled during the 1st and 2nd quarter of 2020, however some of these are being reinstated. Capacity controls are often used by container lines to support rates which despite a drop in demand, are higher YOY on the water. According to Sea-Intelligence Maritime, the container carrier sector has reached peak for blank sailings, however a report this week from Danish carrier Maersk announced further capacity cuts with an expected 140 blank sailings in Q2. In their Q1 report, Maersk anticipates a 20-25% drop in demand in Q2 across all of its businesses (from container shipping, port operations, oil/gas, supply services, freight forwarding) This is bad news against company forecasts anticipating a 1% to 3% increase ocean freight demand in 2020. The Journal of Commerce has a great recap on developments here and here's the Maersk 1Q Report.

PORT LABOR NEGOTIATIONS: The current labor contract between the International Longshoremen's and Warehouse Union (ILWU), the longshore and dockworker's union on the west coast, and the Pacific Maritime Association, the organization representing employers and container lines, will expire in 2022. Ongoing negotiations have focused on technology and the implementation of automation on port and in port operations on west coast ports. This includes the nation's busiest, the Port of Los Angeles/Long Beach. This uncertainty however provides an opportunity for US east coast ports to grow their share of trans-Pacific trade volumes. Prior to COVID-19, US east coast ports were growing while west coast ports were losing business. The current labor contract between the International Longshoreman's Association (ILA) and the US Maritime Alliance (USMX), the industry group representing shipping lines and employers on the east coast, is set for renegotiation in 2024 but will take queues from the ILWU/PMA exercise. Similar concerns around automation and job loss were front and center in the last east coast agreement with the ILA winning concessions to limit full port automation until renegotiation. More on this situation from the JOC.

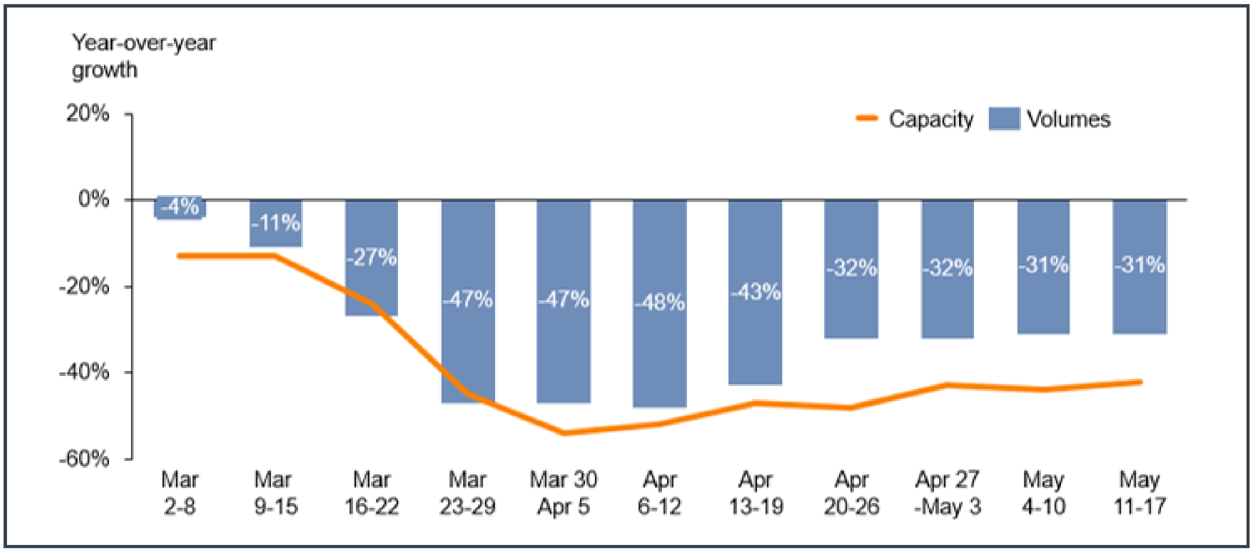
Air freight operations at commercial airports statewide face volatile times.

AIR CARGO

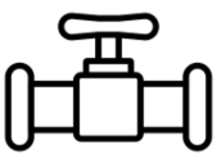
AIR FREIGHT VOLATILITY: Air freight rates and capacity have experienced significant volatility in the first half of the year. With a sharp drop in passenger travel, airlines responded rapidly by converting passenger carriers to cargo carriers in whatever means possible to address capacity restraints. By the middle of May there were more than 1,200 passenger planes flying in all-cargo roles. Largely influenced by the movement of personal protective equipment (PPE) in response to booming global demand, air freight capacity out of China has been strained and rates, reflectively, jumped sky high.

For air cargo trade lanes other than ex-China, drops in capacity are still a concern, and rates remain high because the nearly 50% of total air cargo capacity was grounded. For North America/Europe, capacity is down 52% behind 2019 on export, with import down 61% YOY. This is challenging, but better than some markets, as carriers witnessed capacity drops in excess of 80% in the Latin America/Europe trade.

Capacity improvements in June were minor, however there is room for optimism with increases in domestic tonnage and dynamic load factors (air cargo demand is measured against capacity in both weight and dimension. Often cargo will "cube out" despite being light, a factor in pricing and planning.) Worldwide yield for air cargo operations post COVID, according to World Air Cargo Market Data (WorldACD), experienced a staggering 63% increase month on month in April with bigger shipments (>5000kg) favored while May's figures showed a more modest yet significant 11% increase over April.

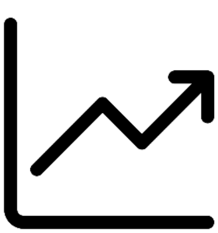


SOURCE: CLIVE Data



PIPELINES

HINTS OF RECOVERY: Earlier this year decline in fuel demand and global energy prices, especially oil, proved challenging for the Pipeline sector. According to the American Petroleum Institute's April 2020 Monthly Statistical Report, U.S. petroleum demand fell nearly 27% to 14.2 million barrels per day in April with gasoline deliveries at their lowest level since 1972. In May 2020, U.S. petroleum recorded its largest monthly increase since 1975 with a 14% improvement, but the sector still faces a 20% decline year over year. Jet fuel deliveries, which experienced its largest-ever decline of nearly 56% month over month in April continued to tumble in May to its lowest level since 1967. For supply, production is also down with US drilling down 70% year-to-date reflective of producers' prompt adjustment to demand. A great recap of what's happening in the pipeline sector is also in May's API report here.



MARKET DYNAMICS TO WATCH: *It is anticipated that inventory is piling up for nearly every sector, both industrial and retail, and that when possible, distribution of this inventory (holding working capital) will be a priority for firms and drive up freight volumes (and rates as capacity tightens).*

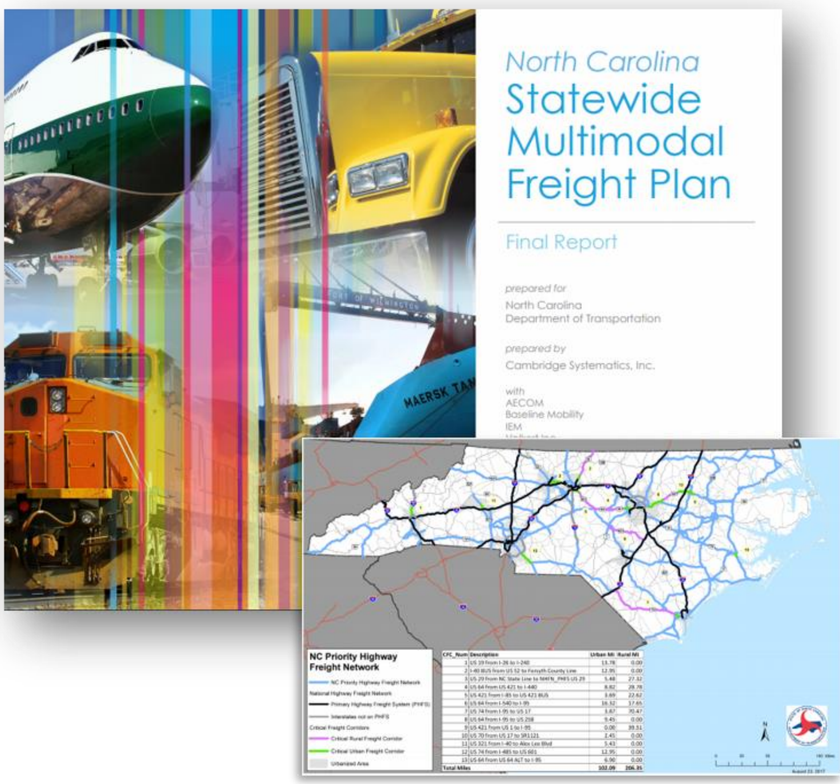
NORTH CAROLINA FREIGHT FACTS

Truckers are vital to the North Carolina economy. Of the 14 supply chain sectors, transportation, distribution and logistics ranks #1 in both employment and labor income generated, and top 5 in contributions to state GDP. More than 105 thousand North Carolinians work in this field with trucking and truck drivers at the core of this essential sector.

TOTAL ECONOMIC IMPACT OF THE SECTOR

Employment	Labor Income	Value Added	Output	Taxes
105,690 Direct	$5.69B Direct	$7.43B Direct	$17.21B Direct	$1.48B State & Local
101,940 Indirect & Induced	$4.41B Indirect & Induced	$7.59B Indirect & Induced	$13.14B Indirect & Induced	$2.15B Federal
207,630	$10.10B	$15.02B	$30.35B	$3.63B

SOURCE: NC Supply Chain: Conduit for Economic Connectivity (2016)



A key resource:

North Carolina Statewide Multimodal Freight Plan

- Common freight and logistics planning-related acronyms (NCSWMMFP)
- Data sources which may be of interest
- Freight transportation assets, operational stats, commodities and trade information
- Freight and supply chain sector data
- Performance, key metrics, safety information, trends and issues, asset management, and more…

→ bit.ly/NCDOTfreightplan

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