N.C. Department of Transportation

Freight & Logistics

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July 2022

NCDOT RAIL DIVISION FREIGHT & LOGISTICS PROGRAM

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Cost of Congestion & Key Freight Bottlenecks — June 2022 Recap

Delay and congestion cost commercial industry millions of dollars each year. This cost eventually becomes a burden on the sustainability of the freight transportation sector, and the cost of goods and services for the end-consumer. This can be as straightforward as friction between volume and capacity, but freight congestion can also represent the challenge of reconciling network functionality with economic behavior.

	Q2							
Performance Measure	Apr-22	% CHANGE	May-22	% CHANGE	Jun-22	% CHANGE	Quarterly Summary (Q2)	Quartely % CHANGE
NCPFN System Total Commercial Cost of Delay (NPMRDS)	$ 136,275,953	-1.4%	$ 137,257,584	0.7%	$ 128,352,420	-6.5%	$ 133,961,986	4.64%
NCPFN System Commercial Average Daily Cost per VMT (NPMRDS)	$ 0.31	3.7%	$ 0.30	-3.2%	$ 0.29	-3.3%	$ 0.30	5.9%
Commercial VMT on the NCPFN System	445,170,405	-4.6%	456,729,896	2.6%	448,662,661	-1.8%	1,350,562,962	-2.0%
NCPFN System Com. Vehicle-hours of Delay (NPMRDS) (#Hours)	1,356,115	-1.4%	1,365,883	0.7%	1,277,266	-6.5%	1,333,088	4.41%
Top 10 Bottlenecks Total Cost of Delay	$ 5,400,178	3.3%	$ 5,200,501	-3.7%	$ 5,925,551	13.9%	$ 5,508,743	42.5%
Top 10 Bottlenecks % of Total Cost	3.96%	6.0%	3.79%	-4.4%	4.62%	21.8%	4.12%	36.8%
Top 10 Bottlenecks Average Daily Total Cost of Delay	$ 180,006	11.8%	$ 167,758	-6.8%	$ 197,518	17.7%	$ 181,761	40.4%
Commercial VMT on Top 10 Bottlenecks NCPFN System	7,605,291	-37.2%	10,502,695	38.1%	11,376,198	8.3%	$ 29,484,184	27.0%
Top 10 Bottlenecks Cost per VMT	$ 0.71	25.5%	$ 0.50	-29.6%	$ 0.52	4.0%	$ 0.58	14.6%

Rank	Previous Rank	June 2022 Bottleneck Locations	Average Daily Delay*	Events or Incidents	Division
1	1	I-40 East at US-70 Exit 306 between Garner and Clayton	3 h 9 m	28	5
2	3	I-85 South at NC-273 Exit 27 between Charlotte and Belmont	2 h 51 m	21	10
3	7	I-26 West at NC-146 Exit 37 south of Asheville	3 h 45 m	85	13
4	9	US-17 South at Gordon Road in Wilmington	13 h 29 m	2	3
5	6	US-264-ALT West at NC-11/NC-43/NC-903 in Greenville	7 h 25 m	0	2
6	4	I-77 North at Tyvola Road Exit 5 in Charlotte	3 h 7 m	12	10
7	286	I-26 East at US-64, Chimney Rock Road near Fletcher	56 m	40	13
8	14	US-401 North at I-40/US-64 in Raleigh	9 h 38 m	1	5
9	15	I-77 South at Gilead Road, Exit 23 in Huntersville	2 h 52 m	18	10
10	5	I-26 West @ US-25 Asheville Hwy Exit 44 south of Asheville	1 h 10 m	45	13

** hours per day in which congestion was present*

In June 2022, the Statewide Priority Highway Freight Network experienced broad improvement in congestion with total commercial congestion costs decreasing by 6.5% to $128.4M, as well as a total 1.8% reduction in commercial vehicle miles traveled on the network. June's improvement in overall congestion costs is the most significant since January of this year, however the second quarter witnessed an increase of more than 4.6% over Q1 overshadowing a 2% decrease in overall miles travelled on the network during the same three-month period. Despite this volume improvement, average daily cost of congestion per VMT also increased by $0.02 a mile during the second quarter. Contrary to network-wide improvement during June, the final month of Q2 saw double-digit increases in the impact of the Top 10 statewide freight bottlenecks on the network including a 21.8% increase in the impact on statewide congestion with the Top 10 bottlenecks representing more than 4.6% of statewide congestion costs, the highest such percentage since October 2021. These bottlenecks once again are largely concentrated in urban and suburban areas and represent the highest volumes since October 2021, pushing Q2 VMT up more than 40% from 1Q2022. Total incidents and events on the Top 10 bottlenecks were the highest total since before the pandemic with 252 incidents and events, a nearly 29% increase YOY and a 31% increase over May 2022. Overall the Statewide Priority Highway Freight Network saw improved fluidity versus May 2022, a robust 12.3% improvement Year-over-Year from June 2021, but the positive trend was not strong enough to salvage the second quarter which showed overall increased congestion costs and bottleneck impacts over the first quarter of the year.

Key Supply Chain Issues facing North Carolina

- *West Coast labor negotiations show progress on health benefits; talks continues without replacement contract or anticipated stoppage:* The July 1st expiration of the labor contract between the International Longshore and Warehouse Union (ILWU), and shipping terminal and carrier industry's representation the Pacific Maritime Association (PMA) leaves ongoing operations at west coast ports in a precarious position. The PMA and the ILWU, representing 22,400 workers at nearly 30 west coast ports, announced this week that a tentative deal has been reached on health benefits, a significant issue for an aging union workforce. Discussions between the two organizations began in May and have been progressing without significant issue. The joint announcement on health benefits signals continued cooperation and highlights the effort by both parties to keep the marketplace and freight stakeholders informed. Calming any economic anxiety, the announcement comes as shippers and labor both prepare for peak shipping season where freight volumes are expected to continue at record volume while retailers restock shelves and bring new merchandise into the US from Asia. Beyond health benefits, talks between the two sides continue with key points of negotiation including wage increases and expansion of automation, neither new to this long-standing conversation between labor and operators.

- *Semiconductor legislation will improve U.S. supply chain resiliency, efficiency:* On 27 July, the U.S. Congress passed the CHIPS and Science Act of 2022 (Creating Helpful Incentives to Produce Semiconductors), a $280B funding package for research and manufacturing subsidies. The bill is expected to improve U.S. competitiveness in the manufacture of high-tech products, a key industrial national security concern, while also directing the investment and funding of advanced manufacturing and scientific research. Improvements in domestic semiconductor manufacturing will help the US marketplace address strong demand for the product which is generally sourced from Asia. Of the $280B, nearly $52B will be directed to microchip manufacturers to incentivize construction of domestic manufacturing facilities and operations. Manufacturing this key component in the US will improve access to a key supply chain input for many industrial sectors including consumer goods, electronics, and automotive. In 2021, the top 10 semiconductor buyers increased their spend by 25.2%, while these top 10 companies (i.e. Apple, Samsung, Lenovo, HP, etc.) carried an outsized share of market spending of more than 42%. Despite this, supply could not keep up with demand for the lynchpin component. The bill will incentivize domestic manufacturing, but this will inherently improve domestic supply chain efficiencies and resiliency. Beyond manufacturing, the bill includes $100B for a five-year program through National Science Foundation (NSF) to develop regional technology hubs to support high tech startups. The legislation also restricts U.S. firms from expanding or initiating manufacture of semiconductors in China for ten years after accepting the incentive.

- *Federal regulators recommend two-person minimum train crew despite objections of Class 1 railroads:* The Federal Railroad Administration (FRA) has stated its intention to require at least two crew members for all operations, a move intended to strengthen rail safety. Currently some states have laws regulating train crew size, creating a patchwork regulatory landscape. In North Carolina there is no specific regulation requiring a minimum crew assignment on railroad operations. Under the new regulation, railroads will also be required to complete a risk assessment and annual oversight exercise for rail operations where they intend to staff trains with less than two-person crews. Industry response to the proposed rule articulated through the American Association of Railroads was decidedly negative labeling the rule "misguided" and politically-driven. On the labor side, the AFL-CIO's Transportation Trades Department (TTD) focused on the ruling as fundamentally important for safety and highlighted establishing a federal standard across the industry. Earlier this month, the Biden Administration established an emergency board by executive order to manage contentious contract negotiations between the rail unions and freight railroads, ongoing since January 2020. The move to establish a three-person mediation panel was lauded by rail unions who had previously threatened strike action and work stoppage. The executive order also restricted work stoppages for 60 days. The most recent rule requiring two-person minimum crews has been a key issue of debate, and a possible headwind to further automation and technology deployment by the freight railroads.