

**BEFORE THE
SURFACE TRANSPORTATION BOARD**

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REVIEW OF COMMODITY, BOXCAR, AND TOFC/COFC EXEMPTIONS

OPENING COMMENTS OF CN

Kathryn J. Gainey
Counsel, US Regulatory Affairs
CN
601 Pennsylvania Ave, NW
Suite 500, North Building
Washington, DC 20004
(202) 347-7840
Kathryn.gainey@cn.ca

Matthew J. Warren
Morgan B. Lindsay
Sidley Austin LLP
1501 K Street, N.W.
Washington, DC 20005
(202) 736-8000
mjwarren@sidley.com

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EXECUTIVE SUMMARY

The U.S. rail operating subsidiaries of Canadian National Railway Company¹ (hereafter “CN”) respectfully submit these opening comments on the Decision served on September 30, 2020, in the above-captioned proceeding and the proposed approach that the Office of Economics has set forth as a tool for the Board to use in analyzing commodity exemptions (the “Proposed Approach”). It is apparent that the Proposed Approach was the product of hard work and thoughtful consideration, and CN appreciates both the work of the STB and its staff to develop this Proposed Approach and the opportunity to comment on the proposal.

CN does have some concerns with the Proposed Approach, and it joins in the comments and constructive criticism that the Association of American Railroads will be offering in this docket. CN submits these separate comments on three discrete points.

First, regardless of whether or how the Board chooses to use some form of the Proposed Approach, it should not be used as a substitute for the statutory standards governing the creation and revocation of exemptions. Indeed, the statute reflects a longstanding and continuing directive from Congress for the Board to grant exemptions “to the maximum extent consistent with [the statute].” 49 U.S.C. § 10502(a). Every commodity exemption that is currently codified in the Board’s

¹ CN’s U.S. rail operating subsidiaries include Illinois Central Railroad Company, Wisconsin Central Ltd., Grand Trunk Western Railroad Company, and Bessemer & Lake Erie Railroad Company, and they report to the Board on a consolidated, Class I basis under the name of Grand Trunk Corporation, CN’s U.S. holding company.

regulations was adopted because the agency or its predecessor found on the record that competition in the marketplace made it unnecessary for the federal economic rail regulator to intervene in the transportation market for that commodity. A decision to revoke one of these longstanding codified exemptions is a weighty one, which should only be reached if the Board concludes based on an adequate record that re-regulation is necessary to remedy abuse of market power. Data are an important—and indeed a necessary—tool for the Board to consider when determining those questions. But any data analysis must be considered alongside qualitative evidence of actual competitive dynamics in the market for the transportation of the commodity in question.

Second, CN's Comments provide evidence about the robust competition CN is seeing for four groups of commodities referenced in the Proposed Approach:

(1) scrap metal; (2) crushed stone and rip rap; (3) forest products; and (4) frac sand.

Kelly Levis, CN's Vice-President, Industrial Products, has provided a verified statement that discusses the markets in which CN competes for the transportation of these commodities. As Ms. Levis explains, CN sees intense competition in the transportation markets for these commodities from truck, barge, and other railroads, as well as indirect product and geographic competition.

Third, CN believes it is particularly important for the Board to incorporate into its analysis modal market share data. This data historically has been used by the agency when considering exemptions, and it is highly compelling evidence of the

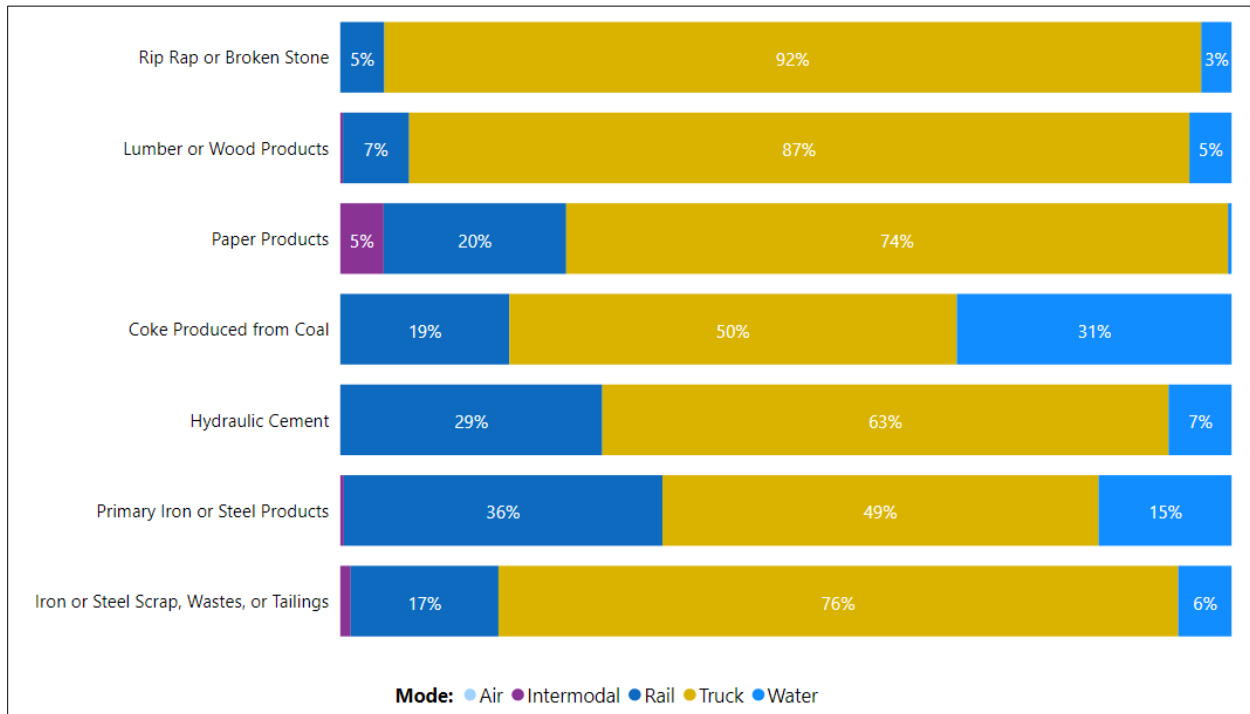
actual ability of other modes, particularly trucks, to compete with railroads.² To this end, CN asked Andreas Aeppli and Daniel Beagan of Cambridge Systematics to present modal market share data on the extent to which the commodities that have been referenced in this proceeding are transported by modes other than rail. They studied modal market share data for the following categories:

- Rip Rap or Broken or Crushed Stone (5-digit STCCs 14 211, 14 212, 14 213, 14 219)
- Lumber or Wood Products (5-digit STCCs 24 114, 24 115, 24 211, 24 321, 24 991, 24 996)
- Paper Products (5-digit STCCs 26 217, 26 311)
- Coke Produced from Coal (5-digit STCC 29 914)
- Hydraulic Cement (5-digit STCCs 32 411, 32 412)
- Primary Iron or Steel Products (5-digit STCCs 33 121 through 129)
- Iron or Steel Scrap, Wastes, or Tailings (5-digit STCCs 40 211, 40 241)

Their analysis of data from Transearch reveals that these commodities are overwhelmingly transported by modes other than carload rail service—by truck, barge, or even rail intermodal service. Figure 8 from their Verified Statement, which is reproduced below, shows that the carload rail share of transportation was just 5% for crushed stone; 7% for forest products, 20% for paper products; 19% for coke; 29% for hydraulic cement; 36% for primary iron or steel products; and 17% for scrap metal.³

² See *infra* notes 5 and 24.

³ Verified Statement of Andreas Aeppli & Daniel Beagan (“V.S. of Aeppli/Beagan”) at Figure 8.

Figure 1 Modal Share by Commodity (%)

Modal share data like this was considered by the agency when adopting many of its existing exemptions, and this data likewise should be considered in this or any future proceeding to consider the revocation of existing exemptions or adoption of new exemptions.

I. CONGRESS ESTABLISHED EXEMPTIONS AS CRITICAL TO THE STATUTORY SCHEME TO DEREGULATE THE RAIL INDUSTRY.

Exemptions are an essential part of Congress’s statutory directive for the STB as the economic regulator of the rail industry. It is well-trodden ground to say that the current iteration of the Interstate Commerce Act is the product of deliberate policy decisions by Congress to pull back from an era of prescriptive, intrusive regulation. Congress intentionally pivoted away from the prior statutory approach that hindered the rail industry’s ability to innovate and compete with

other modes of transportation and that brought the rail industry to the brink of financial collapse. Part of that deregulation was carried out by Congress directly, through removing outdated statutory provisions and requirements in successive legislative enactments that reduced the agency's involvement in the rail industry.

But Congress also directed and expected the agency itself to carry out the deregulatory mission, by identifying areas where agency jurisdiction is not needed and exercising its authority to grant exemptions to the “maximum extent consistent” with the statute.⁴ The exemptions that the agency created for certain commodities, and for certain equipment and service like boxcars and intermodal, were established to implement this directive from Congress and were based on clear evidentiary records that found modal competition was sufficient and ongoing regulatory oversight was unnecessary.⁵

⁴ 49 U.S.C. § 10502(a). See H.R. Rep. 104-311 at 96 (1995) (describing exemption authority as a “crucially important delegated power to expand existing statutory deregulation through administrative action”).

⁵ See, e.g., *Improvement of TOFC/COFC Regulation*, Ex Parte No. 230 (Sub-No. 5), 364 I.C.C. 731, 734–35 (1981) (exempting TOFC/COFC service based on “vigorous competition” with motor carriers, intramodal competition, and geographic competition); *Rail General Exemption Authority—Lumber or Wood Products*, Ex Parte No. 346 (Sub-No. 25), 7 I.C.C.2d 673, 676–78 (1991) (concluding that, despite railroads holding significant market shares in many forest products markets, the record still “overwhelmingly demonstrates that there is adequate intermodal, geographic and product competition for the lumber traffic at issue.”); *Rail General Exemption Authority—Miscellaneous Manufactured Commodities*, Ex Parte No. 346 (Sub-No. 24), 1988 WL 225776, at *3 (ICC Jan. 29, 1988) (“the commodity groups selected in this proceeding all share one common economic characteristic: they can and do move freely by truck as well as by rail in almost all significant markets and over essentially all relevant distance”); see also *Brae Corp. v. United States*, 740 F.2d 1023, 1036–42 (D.C. Cir. 1984) (affirming ICC exemption of single-line boxcar freight rates based on evidence: that “market abuse was rare, if not non-existent”; modal share data comparing truck and rail market shares across boxcar

Most existing commodity exemptions were created by the ICC between 1979 and 1995, and thus they were in place when Congress adopted the ICC Termination Act (“ICCTA”). In ICCTA, Congress wanted to sustain the ICC’s efforts to carry out its statutory deregulatory mission as directed by Congress in the Staggers Act.⁶ Congress reaffirmed that the newly created STB should continue to grant exemptions “to the maximum extent consistent with this part.” 49 U.S.C. § 10502(a).

The statute is equally clear that the Board should only exercise its authority to revoke an existing exemption to the extent that it finds that re-regulation “is necessary to carry out the transportation policy of [49 U.S.C.] section 10101.” *Id.* at § 10502(d). This statutory revocation standard has long been interpreted to require a finding of railroad market power, both by federal courts⁷ and by the Board itself, which has “held that the extent of railroad market power is an essential issue in exemption revocation proceedings.”⁸ ICCTA’s legislative history indicates that

commodities; and “evidence of such factors as transportation alternatives, trends in the transportation of these commodities, shipper market power, etc., from which it was reasonable to conclude that railroads either do not dominate these submarkets or could not abuse any market power they did have”).

⁶ *E.g.*, H.R. Conf. Rep. 104-422, at 169 (1995) (“the Conference supports the current practice of granting exemptions from regulation when regulation is not needed to carry out the national transportation policy or protect against market abuse”).

⁷ *See Mr. Sprout, Inc. v. United States*, 8 F.3d 118, 123 (2d Cir. 1993) (“The Commission properly found the initial inquiry in a reregulation case is whether the carrier has market power.”).

⁸ *See WTL Rail Corp. Pet. for Partial Revocation of Exemption*, STB Ex Parte No. 230 (Sub-No. 9) (served Feb. 17, 2006) (“[W]e have held that the extent of railroad market power is an essential issue in exemption revocation proceedings.”).

Congress was aware of and approved that market power standard when it re-enacted § 10502 in ICCTA.⁹ Indeed, the legislative history indicates that, in any revocation request, “[t]he Conference expects the Board to examine all competitive transportation factors that restrain rail carriers’ actions and that affect the market for transportation of the particular commodity or type of service for which revocation has been requested.”¹⁰

In light of this longstanding statutory directive to pursue exemptions, revocation decisions plainly should not be driven by any singular data analysis. Only a consideration of “all competitive transportation factors” that leads to a conclusion that reregulation is necessary to prevent an abuse of market power is sufficient. Nor should the Board be tempted to re-regulate a commodity group nationwide based on anecdotal complaints from a particular trade association or a handful of customers. Individual petitions for partial revocation in a particular case are a tailored, effective tool available to the Board to review allegations of specific instances of market power abuse.¹¹

Whether or not the Board chooses to use some version of the Proposed Approach in reviewing proposed commodity exemptions or proposed revocations in

⁹ H.R. Conf. Rep. 104-422, at 169 (1995) (“When considering a revocation request, the Board should continue to require demonstrated abuse of market power that can be remedied only by reimposition of regulation or that regulation is needed to carry out the national transportation policy.”).

¹⁰ *Id.*

¹¹ See, e.g., *PYCO Industries, Inc.—Alternative Rail Service—South Plains Switching, Ltd. Co.*, Fin. Docket No. 34802 (June 21, 2006).

the future, the agency is correct to look for ways to make an evidence-based decision that is consistent with these statutory directives to promote de-regulation to the “maximum extent consistent with this part.”

II. CN’S EXPERIENCE SHOWS THAT TRANSPORTATION FOR SCRAP METAL, CRUSHED STONE, FOREST PRODUCTS, AND FRAC SAND IS HIGHLY COMPETITIVE

The Verified Statement of Kelly Levis summarizes CN’s experience in the markets for four major commodity groups referenced in the Proposed Approach. CN’s experience is that there is robust competition for transportation of each of these commodities.

Scrap Metal. Trucks are an ever-present competitor with CN to transport scrap metal. All steel mills have access to high capacity trucks, which regularly compete for business with CN, including for longer movements that had formerly moved by rail.¹² CN also faces barge competition to transport scrap metal. Steel mills and scrap processors find it cost-effective to transport materials by barge due to the large volumes that can be shipped and the potential for barge backhauls with finished materials.¹³ And the location of “mini-mills” on waterways makes barge an effective competitive option.¹⁴

Crushed Stone and Rip Rap. The transportation markets for crushed stone and rip rap are highly competitive. The large number of quarries creates

¹² See Verified Statement of Kelly Levis (“Levis V.S.”) at 5.

¹³ See *id.*

¹⁴ See *id.*

ample source competition and makes it so that customers can often find options in local markets that are ideal for short-haul truck transportation.¹⁵ Even at longer distances, truck remains a competitive option, as does barge.¹⁶ While CN is able to compete successfully for some aggregates business, [REDACTED]

[REDACTED]¹⁷

Forest Products. CN competes fiercely with truck transportation options to serve forest products customers. In part, this competition is driven by natural advantages that trucks have in the forest products market, including a greater opportunity for backhauls.¹⁸ In recent years, CN has steadily lost market share to trucks, despite working to compete effectively on price and service.¹⁹ This truck competition has not been limited to shorter distance hauls. On the contrary, CN sees trucks moving product in this industry across much longer distances — as far as [REDACTED] which is over 1,000 miles.²⁰

Sand. Sand is not currently exempt from STB regulation, but it is referenced in the Proposed Approach because a commenter proposed it as a candidate for a potential new exemption. That proposal to exempt sand accords with CN's experience that the sand transportation market is extraordinarily competitive, in

¹⁵ *See id.* at 7.

¹⁶ *See id.*

¹⁷ *See id.*

¹⁸ *See id.* at 10–11.

¹⁹ *See id.* at 11.

²⁰ *See id.* at 10.

part because sand is a fungible commodity that can be sourced from multiple locations.²¹ Sand consumers can source sand from local sand mines who can ship locally by truck.²² And, increasingly, CN has faced competition from barges, which can transport large amounts of sand at far lower prices than CN could offer.²³

III. ANY EXEMPTION ANALYSIS IN THIS OR FUTURE PROCEEDINGS SHOULD CONSIDER MODAL SHARE DATA

Finally, CN urges the Board to consider reliable modal share data in any analysis of whether an exemption should be created or revoked, and not to rely on anecdotes or general modeling assumptions about which commodity groups can be moved by truck or barge at what distances. Such marketplace evidence of the transportation modes used for the commodity at issue was regularly considered by the ICC and STB when creating class exemptions.²⁴ And this evidence continues to

²¹ See *id.* at 14–17.

²² See *id.*

²³ See *id.* at 15.

²⁴ See, e.g., *Rail General Exemption Authority—Petition of AAR to Exempt Rail Transportation of Selected Commodity Groups*, Ex Parte No. 346 (Sub-No. 29), 9 I.C.C.2d 969, 974–82 (1993) (heavily relying on modal share data for each challenged commodity group and noting that low rail market shares are “not consistent with a finding of market power,” while instances of high rail market share could be mitigated by other data indicating competition, such as high rates of contracting, intermodal and intramodal competition, product and geographic competition, etc.); *Rail General Exemption Authority—Lumber or Wood Products*, Ex Parte No. 346 (Sub-No. 25), 7 I.C.C.2d 673, 666–67 (1991) (noting that while “railroads continue to hold onto significant market shares in many markets, ... the overall level of competition for this traffic is no less vigorous than in those other markets where railroads have already lost virtually all of the traffic”); *Miscellaneous Manufactured Commodities*, Ex Parte No. 346 (Sub-No. 24), 6 I.C.C.2d 186, 189, 191–94 (1989) (relying heavily on market share data, noting that “at least 80% of the total nationwide traffic of each of the commodity groups ultimately selected for exemption moved by modes other than rail. More recent data

be an important indicator of whether railroads possess the degree of market power that Congress believed should be considered in any potential exemption or potential revocation decision.

The Verified Statement of Andreas Aepli and Daniel Beagan presents such modal share data, derived from the Transearch database. Transearch is a widely-used source for analyzing commodity flow data between points in the United States, Canada, and Mexico. Mr. Aepli and Mr. Beagan studied modal share for movements between U.S. counties for seven commodity groups down to the 4-digit STCC level:

- Rip Rap or Broken or Crushed Stone (5-digit STCCs 14 211, 14 212, 14 213, 14 219)
- Lumber or Wood Products (5-digit STCCs 24 114, 24 115, 24 211, 24 321, 24 991, 24 996)
- Paper Products (5-digit STCCs 26 217, 26 311)
- Coke Produced from Coal (5-digit STCC 29 914)
- Hydraulic Cement (5-digit STCCs 32 411, 32 412)
- Primary Iron or Steel Products (5-digit STCCs 33 121 through 129)
- Iron or Steel Scrap, Wastes, or Tailings (5-digit STCCs 40 211, 40 241)

Mr. Aepli and Mr. Beagan concluded that carload rail has a minority market share of the transportation of every commodity group that has been at issue in this proceeding. For example, their analysis shows that rail accounts for only 17% of

submitted here show that non-rail modal shares for these movements have generally increased.”); *Exemption from Regulation—Boxcar Traffic*, Ex Parte No. 346 (Sub-No. 8), 367 I.C.C. 425, 432–44 (1983) (measuring ability to abuse market power by considering modal share data and R/VC ratios against other evidence of competition, such as truck competition, intramodal competition, and product and geographic competition, and concluding—even in instances of high rail market share (75–90%) or R/VC ratios over 180—that exemptions were still appropriate given the whole of the evidence), *aff’d in part, vacated in part, and remanded by Brae Corp.*, 740 F.2d 1023 (D.C. 1984).

steel scrap transportation on a tonnage basis, with truck accounting for 76%.²⁵

Forest products are similarly dominated by truck transportation, with trucks accounting for 87% of transportation and carload rail only 7%.²⁶ The same story could be told for paper products, where rail's 20% market share is dwarfed by truck's 75% share.²⁷ Moreover, the data show that trucks have substantial market share at all distance bands,²⁸ which is powerful evidence that the OE Approach's assumption that trucks are only competitive for shipments below 500 miles is not consistent with the marketplace.

To be sure, Transearch data is collected at the four-digit STCC level, and a party advocating for revocation of an exemption for a particular 5-digit or 7-digit commodity would be free to present evidence that rail has a different modal share of transportation for that particular commodity than it does for the broader four-digit STCC. But no such evidence has been presented to this point in this long-running proceeding.

Nearly five years ago, the Board proposed to revoke the existing class exemptions for crushed or broken stone or rip rap; hydraulic cement; coke produced from coal; primary iron or steel products; and iron or steel scrap, wastes, or

²⁵ See V.S. of Aepli/Beagan at Figure 8.

²⁶ See *id.*

²⁷ See *id.*

²⁸ See *id.* at Figures 1–7.

tailings.²⁹ The record in this proceeding is full of comments from multiple parties explaining why that prior proposal was not well grounded in the regulatory framework or the competitive realities of the marketplace. Those comments are underscored by the data presented by Messrs. Aeppli and Beagan, which show that railroads have a small market share of the transportation of these commodity groups:

- Rip Rap/Broken Stone: 5%
- Hydraulic Cement: 29%
- Coke Produced from Coal: 19%
- Primary Iron or Steel Products: 36%
- Steel Scrap: 17%³⁰

These rail market shares are not compatible with any finding that railroads possess a degree of market power over transportation of these commodities sufficient to justify any exemption revocation.

In short, in this proceeding and in any future proceeding to consider adoption of new exemptions or revocation of existing exemptions, the Board should consider data about the extent to which different modes transport the commodity at issue.

CONCLUSION

CN thanks the Board and its staff for creating a data-driven approach to examining competition in transportation markets and for the considerable efforts

²⁹ *Review of Commodity, Boxcar, and TOFC/COFC Exemptions*, Ex Parte 704 (Sub-No. 1) (served Mar. 23, 2016).

³⁰ See V.S. of Aeppli/Beagan at Figure 8.

that went into the Proposed Approach. As discussed above, CN believes that any data analysis that the Board chooses to pursue in exemption decisions in this or future proceedings needs to conform with the statutory standard, which encourages exemptions to be granted and sets a high standard for revocations. Any data analysis also needs to use accurate available information that bears on critical issues, including data on the extent to which commodities are transported via modes other than railroads. Finally, any data analysis should be considered only in conjunction with qualitative evidence about competition among modes to transport the commodities to market, as well as indirect competition where commodities can be sourced from other locations, such as the information provided by Ms. Levis on scrap metal, crushed stone, forest products, and frac sand.

Respectfully submitted,

Kathryn J. Gainey
Counsel, US Regulatory Affairs
CN
601 Pennsylvania Ave, NW
Suite 500, North Building
Washington, DC 20004
Kathryn.gainey@cn.ca

/s/ Matthew J. Warren
Matthew J. Warren
Morgan B. Lindsay
Sidley Austin LLP
1501 K Street, N.W.
Washington, DC 20005
(202) 736-8000

Dated: January 29, 2021

VERIFIED STATEMENT OF KELLY LEVIS
TO
CN COMMENTS

Ex Parte No. 704 (Sub-No. 1)
Review of Commodity, Boxcar, and
TOFC/COFC Exemptions

Verified Statement of Kelly Levis

I. Introduction

My name is Kelly Levis, and I am Vice-President, Industrial Products, at CN. In this role, I lead the Industrial Products business unit, which includes responsibility for sales and marketing for customers in the forest products and metal and minerals markets. I joined CN in 1997 and have over 20 years of experience in sales and marketing for CN. I began my career at CN as a commodity manager in CN's Petroleum and Chemicals business unit and moved into Sales in January 2000 after being transferred to Chicago. I subsequently served as Director of Sales and Pricing for CN's international freight forwarding subsidiary, CN WorldWide Inc., and then as Director of Supply Chain and Director of Sales U.S. I became Assistant Vice-President, Industrial Products, in July 2015 — overseeing all sales for Industrial Products — and was appointed to my current position in October 2018. I hold a Masters of Business Administration from the University of Chicago and a Bachelor of Commerce with a Major in Statistics & Decision Sciences from Concordia University in Montréal.

CN is dedicated to providing safe and reliable service to its customers and CN invests in its network, locomotives, railcars, and technology for the long run. CN's network spans 19,500 route miles in North America and is the only Class 1 railroad to connect ports on three coasts: the Atlantic, the Pacific, and the Gulf of Mexico. CN's presence in the United States is quite extensive, through the Chicago region, with lines extending to Nebraska out west and through Michigan out east. As shown in the

system map below, CN's U.S. network is parallel to the Mississippi River down from Iowa to the Gulf of Mexico in Louisiana.

Figure 1: CN System Map



I have personal knowledge of the competition for transportation that CN faces in the United States in the following markets: Scrap Metal, Aggregates, Forest Products, and Sand. I understand that each of these markets has been the subject of commentary in this proceeding, and that commodities in each of these markets were analyzed by the STB's staff in the proposed approach for which the STB requested comment. In the

following sections, I will provide a high-level overview of the competitive realities that we see in transportation for these markets.

II. Scrap Metal

CN's Metals and Minerals business unit transports a number of commodities, including steel, non-ferrous ores and base metals. Below is a map showing rail traffic flows to and from CN's network for metals and minerals. In addition to flows of metals, the map includes metal distribution centers on CN's network as well as intermodal terminals and ports.

Figure 2: CN Traffic Flows for Metals and Minerals



For scrap metal (STCC code 40211), CN serves a variety of scrap yards and mills in this market. For scrap metal originating from customer facilities served by CN, most of the carloads originate from scrap yards in Canada, with only [REDACTED] of CN's carloads

originating in the United States. The largest destinations for scrap iron are in Indiana [REDACTED], followed by Ohio [REDACTED], and CN interchanges with various Class I carriers and short lines to reach mills in these states.

Competition in transportation markets to move scrap metal. CN faces competition for transportation of scrap metal from many different sources, including truck, barge, and other railroads. Trucks in particular have significant and growing market share for transporting scrap metal. Most of CN's rail moves of scrap metal are under [REDACTED] miles, which are easily susceptible to truck competition. Indeed, truck has the largest market share for those moves.

In addition, over time, we have seen trucks become more competitive with rail transportation for longer distances. High-capacity trucks have been moving scrap metal farther and farther distances, replacing rail transportation on lanes that had formerly moved by rail due to the longer length of haul. All mills have access to high capacity trucks, which compete with CN from on-line origins to destinations in Chicago, Detroit, Cleveland, Minneapolis, and often beyond.

CN also faces constant barge competition in the scrap metal markets that CN serves. Where barge is an option, barge rates generally are lower than rail rates due to economies of scale. Often, it is therefore cost-effective for steel mills and scrap processors to transport materials by barge due to the large volumes that can be shipped via barge, the location of mini-mills on the waterways, and the fact that barges can be reloaded with finished material. Reloading a barge with finished material reduces the overall cost of the headhaul move because the barge is not moving back empty. Most

scrap steel transported by rail moves in low-sided open gondola cars, which are often not suitable for reloading on the backhaul.

Indirect competition. As described above, we face direct competition from trucks and/or barges for transporting scrap metal over all the routes we serve. But we also face significant indirect competition from the fact that scrap metal can be sourced from so many locations and consumed at so many locations. The steel scrap markets have always been highly competitive. These markets are volatile, as they are based on commodity prices for raw materials and steel demand. As a result, CN's [REDACTED] [REDACTED] in order to maintain a cost-effective delivered price for scrap steel traffic moving by rail.

III. Crushed Stone/ Rip Rap

In the Aggregates markets, rail is not the primary mode of transportation, at least not where CN's network is concerned. While numerous quarries exist in the United States, the majority of those are situated to serve local or nearby markets by truck, where the product is often used for highway and other construction projects. CN directly serves primarily crushed stone/rip rap producers in Illinois and Iowa. Our major flows of stone include rail moves [REDACTED] [REDACTED] CN's average length of haul for stone and gravel in the United States averages [REDACTED]

Competition in transportation markets to move crushed stone/ rip rap. As a result of the large share of the market moved by truck, the transportation markets for crushed stone and rip rap are inherently highly competitive. Many customers transport

their products in local markets with short lengths of haul, and trucks are more competitive than rail over such short distances, particularly where final delivery by truck to a project site will be required in any event.

Even for products being transported over longer distances (*e.g.*, greater than 500 miles), both truck and barge/vessel are ever-present competitive options for customers.

These market dynamics [REDACTED]

Thus, when rail is used for these aggregate commodities, the traffic is mostly moved short distances over routes where the infrastructure allows for rail [REDACTED] [REDACTED]

[REDACTED] For these customers who have rail as a transportation option, CN nonetheless handles less than [REDACTED] of outbound shipments for such customers. And even in cases where rail is chosen due to customer preference, competitive pressures remain ever-present in the form of barge options [REDACTED] [REDACTED]

[REDACTED] and truck transload.

Indirect competition. Just as with scrap metal, we see significant indirect competition for crushed stone. With the numerous quarries spread throughout the United States, multiple locations – rail served or not – can bid on projects or contracts. Source rock with the best landed price (including transport and other costs) will win. This requires CN’s pricing to be [REDACTED]

[REDACTED]

IV. Forest Products

CN is the largest rail carrier of forest products in North America. The following map shows rail traffic flows on CN's network for lumber and panels, and for pulp and paper. The map also indicates forest products distribution centers as well as intermodal terminals and ports.

Figure 3: CN Traffic Flows for Forest Products



CN transports various lumber and panel commodities, including lumber oriented strand board panels, plywood, siding, engineered wood products, and timber mats. CN also moves pulp and paper commodities that include woodpulp, newsprint, printing paper, logs, wood chips, wood pellets, and clay.

Investment. CN maintains the largest high-capacity centerbeam railcar fleet in the industry with more than 10,000 centerbeams. Centerbeams are utilized to transport lumber and various other types of forest products. Ten years ago, CN started research

for optimal draft energy management systems for railcars, which resulted in a CN patent for a new arrangement that is currently being employed in a new centerbeam build order. The new builds are 73-foot riserless centerbeams with a maximum load capacity of 286,000 lbs. The new centerbeams (pictured below) are also equipped with the latest appliance standards, enhancing both safety and comfort of our crews.

Figure 4: 73-Foot Riserless Centerbeam



We continue to invest in our fleet to meet our forest products customers' needs. In the third quarter of 2020, we leased an additional 500 centerbeam cars to further increase our ability to supply cars for customers. CN also acquired 350 boxcars in 2018 to help move paper-related products for our customers, and those cars were delivered by the end of 2018.

Competition in transportation markets to move forest products. Transportation of forest products is subject to robust competition from trucks. In these markets, CN serves customer facilities including logging sites, paper mills (including pulp/liner board), and lumber mills.

To win forest products transportation business from customers, CN competes fiercely with truck transportation options. This robust competition has [REDACTED] [REDACTED] for many years, and those competitive dynamics have become even more pronounced in recent years.

For example, over the years, trucks have become even more competitive over long distances. In my experience, a decade ago, a typical truck haul for forest products ranged from 200 to 250 miles. Now, we see trucks moving forest products across much longer distances. Trucks move forest products at distances that can exceed 2,000 miles, from points in Ontario, Canada, to destinations in the southern United States in states such as Tennessee and Texas. As a specific example, one of our customers has moved product by rail to warehouses in [REDACTED] and then used trucks to move that same product all the way to [REDACTED] a distance of approximately 1,000 miles. The reality is that for the transportation of forest products to their destination markets, trucks are competitive with rail over distances far in excess of 500 miles.

One reason trucks are more competitive is because trucks have greater backhaul opportunities – where a truck, after delivery to a destination, can load goods from the destination and move those goods back to the truck’s point of origin. This is similar to the barge backhaul opportunities discussed above. For example, inbound trucks handling loads of lumber can be reloaded with product going back into Canada, such as lumber mats moving from the United States to Alberta, Canada. Similarly, trucks moving forest products north from Chicago into Wisconsin can and do pick up paper

products that those same trucks can then bring back down south into the Chicago area. By contrast, railcars require larger volumes going to specific locations (*i.e.*, from rail station to rail station) in order to utilize backhaul opportunities. While triangle routes are sometimes possible, CN is unable to offer rail backhauls in the same way that trucks can. Indeed, in most instances in CN's network, centerbeam cars used to transport lumber commodities are not suitable for backhaul movement because of the unique equipment type and geographic location of lumber origins.

With regard to log transportation, CN [REDACTED] } of truck rates. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] As a result, trucks are further increasing their already dominant share of the transportation market for logs.

In addition, the largest paper mills CN serves show market share shifts from rail to truck. For example, [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Adding to the competitive pressure, multiple CN customers are building additional trucking capacity, which will give trucks even more of an advantage over rail for those facilities by increasing the economies of scale available for the trucking option.

Indirect competition. In addition to the fierce truck competition for transportation of forest products described above, customers are shifting their product mix in response to changes in market demand in ways that are favorable to truck. The consumer market for paper is decreasing, a trend that began even before the pandemic-related work-from-home developments. As a result, mills are converting their product mix from standard paper to more specialty-type papers. This shift in product mix has resulted in shifting even more business to truck, since these products tend to have smaller batch sizes and more just-in-time delivery. CN faces additional source competition from offshore imports, primarily [REDACTED]

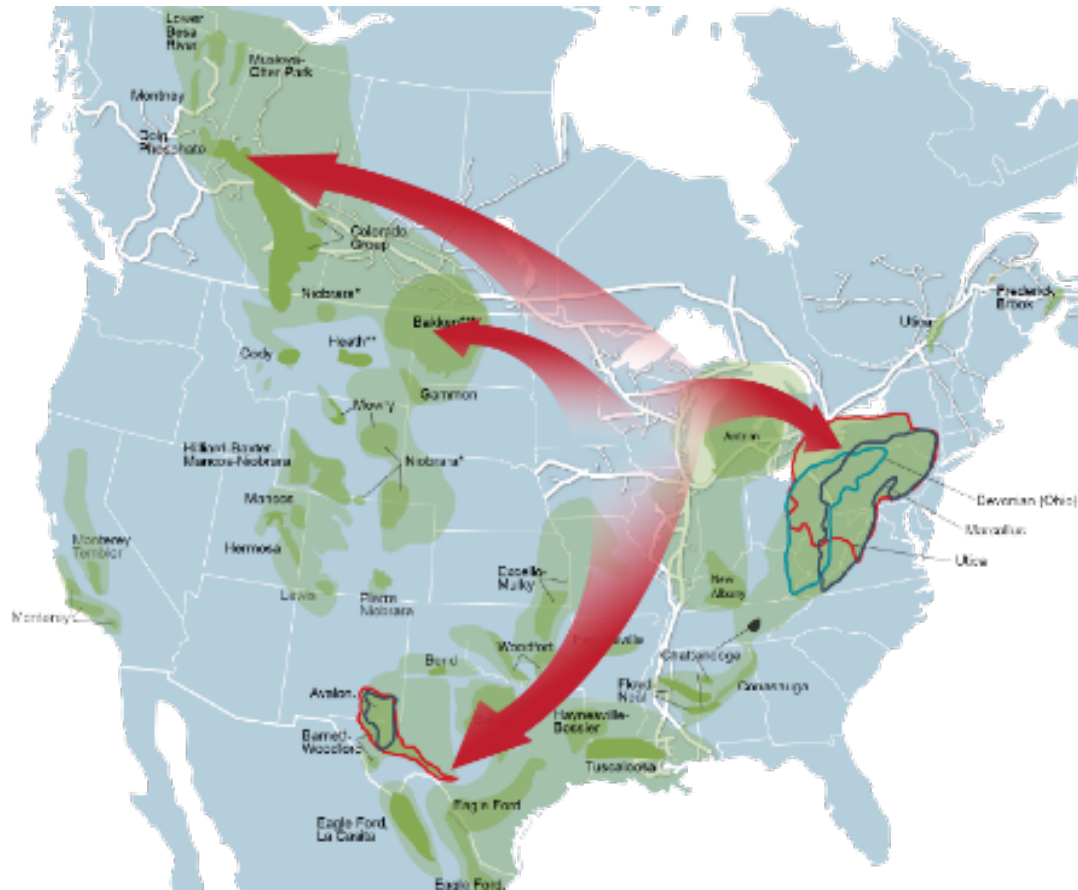
[REDACTED]

V. Sand

CN is the sole direct railroad provider for frac sand franchises on its rail lines in Wisconsin. CN's frac sand franchise serves primarily three destination markets from CN origins in Wisconsin. Those destination markets are in Western Canada (Montney and Duvernay shale), Northeastern U.S. (Marcellus and Utica shale), and the U.S. Upper Plains (Bakken shale). CN's sand shipments to a fourth destination market (Texas Permian Basin shale) from Wisconsin have [REDACTED]

[REDACTED].

Figure 5: CN Traffic Flows for Frac Sand



Investment. In recent years, CN invested heavily in rail infrastructure in Wisconsin to benefit frac sand franchises in the State. CN rehabilitated previously inactive track to provide a rail route from Wisconsin to markets for these frac sand franchises. Investments in rail infrastructure such as these are largely sunk costs, for one cannot simply pick up an improved rail line and move it to a different location. While CN's investment in Wisconsin benefited some other rail customers, frac sand franchises were the primary and intended beneficiaries.

Competition in transportation markets to move frac sand.

In the following subsections, I provide more detail regarding the robust competition CN faces in each of its frac sand markets.

Wisconsin to Western Canada

Over [REDACTED] of CN sand shipments move from Wisconsin sand mines to Western Canada shale plays in Montney, Alberta; Duvernay, British Columbia; and Viking, Saskatchewan. Customers in Western Canada have the option to source sand from various sand mines in Wisconsin and Illinois served by other Class I railroads. In addition, CN faces substantial competition from sand mines in Western Canada, which ship sand locally by truck. Energy companies are taking advantage of these cost-saving options and are sourcing more sand locally by truck. Largely due to this truck competition to transport sand in Western Canada, [REDACTED]

Wisconsin to U.S. Northeast

CN's second largest sand market representing [REDACTED] of sand shipments is traffic moving from Wisconsin sand mines to U.S. Northeast shale plays in the Marcellus and Utica fields (Ohio, Pennsylvania, West Virginia, and New York). CN's market share to the U.S. Northeast region has been eroding for the past couple of years due to energy companies buying more of their sand supply from alternate sourcing origins, some of which deliver via other competing railroads like CSX and Norfolk Southern, and some of which can deliver by barge.

CN also faces intense direct barge competition for its movements of frac sand to the U.S. Northeast. CN competes head-to-head with barge transportation options on the Mississippi River. Many of the energy companies that buy sand have access to multiple sand mines that have access to waterway transportation options via the Mississippi River and Ohio River. As a result of this intense competition, CN has lost most of its frac sand market share to the U.S. Northeast to barge, which [REDACTED]

[REDACTED] And though barge is a slower transit option, the speed advantages of rail are typically not sufficient to win business from these customers.

Wisconsin to U.S. Upper Plains

CN's third largest sand market is traffic moving from Wisconsin sand mines to U.S. Upper Plains shale plays in the Bakken fields (North Dakota, South Dakota, and Montana). CN does not directly serve destinations in the Bakken, and thus CN's rail moves are interchanged with a destination rail carrier. For frac sand moves to the U.S. Upper Plains, sand mines located on CN face intense competition from sand mines located on the lines of Canadian Pacific in Wisconsin and Iowa that can reach the Upper Plains markets directly without interchanging with another railroad. Recently, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] As illustrated in Figure 6, due to competitive forces, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Wisconsin to Texas

Finally, sand mines on CN used to ship carloads to destinations in Texas served by other rail carriers. However, with the development of local sand origins in Texas, minimal frac sand carloads have moved from Wisconsin to Texas in two years. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



Indirect competition. CN's sand customers in Wisconsin face extreme volatility in the demand for frac sand, with respect to both global markets and more localized dynamics such as decisions by frac sand users in Texas to source sand locally. While CN remains committed to the frac sand franchises in Wisconsin, these market dynamics illustrate structural constraints on sand mines served by CN to function and compete in the frac sand markets. [REDACTED]

[REDACTED]

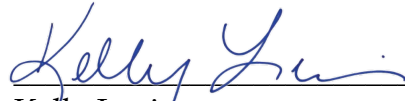
[REDACTED]

[REDACTED]

[REDACTED]

VERIFICATION

I, Kelly Levis, declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

A handwritten signature in blue ink, appearing to read "Kelly Levis", is written over a horizontal line.

Kelly Levis
CN Vice-President, Industrial Products

Executed on January 29, 2021

**Verified Statement of
Andreas Aeppli and
Daniel Beagan**

Review of Commodity, Boxcar, and TOFC/COFC Exemptions

STB Ex Parte No. 704 (Sub-No. 1)

Verified Statement of Andreas Aeppli and Daniel Beagan

1. Our names are Andreas Aeppli and Daniel Beagan, and we submit this verified statement on behalf of CN in the Surface Transportation Board's Ex Parte No. 704 (Sub-No. 1) proceeding.
2. Mr. Aeppli is a Principal of Cambridge Systematics who has over 35 years of experience in the areas of goods movement policy, carrier economics, asset management, and transportation information systems. He has been involved in numerous projects involving all surface modes (marine, rail, and highway), intermodal freight systems, and freight supply chains for public and private clients. He has extensive experience conducting policy-level studies, having served in senior roles in statewide rail and freight plans, as well as examinations focused on modal economics and system performance. A summary of his experience is attached as Attachment 2.
3. Mr. Beagan is a Principal of Cambridge Systematics who has more than 43 years of experience in transportation, traffic analysis, and planning in the public and private sectors. Mr. Beagan is a recognized expert on freight forecasting and has practical experience in applying passenger and freight forecasting techniques for planning projects in Florida, Georgia, Texas, Tennessee, Virginia, New York, Minnesota, Ohio, and Oregon. A summary of his experience is attached as Attachment 3.
4. The purpose of this statement is to present data about (a) the degree to which each of the commodities that have been the subject of EP 704 are constrained by modal competition by using reliable data to measure market shares, and (b) the typical length of haul for each of these commodities by mode. Specifically, we present an analysis of data from Transearch, a commercial database that collects information on freight flows by commodity, transportation modes, and other variables used in the marketplace. These data show that non-rail modes, especially trucks, are responsible for a significant majority of transportation for most of the commodity groups that have been discussed in this proceeding, including rip rap or broken stone, lumber or wood products, paper products, coke produced from coal, hydraulic cement, primary iron or steel products, and iron or steel scrap, wastes or tailings.
5. Below, we present a brief explanation of the Transearch database and our methodology, as well as our findings for the seven commodity groups that we studied.

Overview of Methodology

6. Transearch is a product of IHS Markit. It provides information on the flow of goods moving by multiple modes of transportation between various geographies, including U.S. counties; U.S. Bureau of Economic Analysis Economic Areas (“BEAs”); Canadian Consolidated Metropolitan Areas (“CMAs”); Canadian provinces; and Mexican states. Commodity detail is available at a four-digit level of Standard Transportation Commodity Code (“STCC”), as used by the STB.
7. CN provided us with its Transearch database for a base year of 2015. This database contains over 27 million commodity flow records. We extracted from this database records relating to the commodities of interest in this proceeding, as defined in Attachment 1, which resulted in approximately 3.5 million commodity flow records.
8. To calculate length of haul for a particular movement, we used a table of county-to-county distances provided by the Oak Ridge National Laboratory’s Center for Transportation Analysis. Distances in this table includes the great circle distance (“GCD”) between counties, as well as distances between counties on highway, rail and water networks. For purposes of this analysis, we used GCDs because network distances can vary as links on these modal networks are added, deleted, or changed by performance, operational or regulatory issues. GCDs, on the other hand, are static because they are defined by each county’s geographic location.
9. For this analysis, we calculated distances for movements in which both the origin and destination zone were U.S. counties. We excluded any records whose origin or destination zones were Canadian CMAs or provinces and Mexican states. Thus, our analysis does not include either cross-border shipments from or to Canada or Mexico, or shipments entirely within either Canada or Mexico. We also excluded records whose origin or destination zones were U.S. BEAs, rather than counties. Because BEAs are aggregations of counties, they can be geographically large, and there is no way to determine from the Transearch database precisely where the origin and destination points are located within a BEA. Therefore, distances between BEAs may not be an accurate measure of actual movement distance.
10. Following completion of paragraphs 7 through 9, the resulting U.S.-county-to-U.S.-county records totaled 2.6 million records, which represented over 1 billion tons of freight in 2015. The data includes information on the mode used for transportation, including classifications for rail, rail intermodal (*e.g.*, container-on-flatcar or trailer-on-flatcar), truck, water, and air. These records thus constitute a robust data set that supports a reasonable estimate of modal share by length of haul for domestic traffic movement of the seven commodities studied.

Analysis of Individual Commodities

A. Rip Rap or Broken or Crushed Stone (5-digit STCCs 14 211, 14 212, 14 213, 14 219)

11. To analyze movements of rip rap or broken or crushed stone, we reviewed Transearch records for 4-digit STCCs 1420 and 1421. Table 1 presents the modal shares and average lengths of haul by mode for this commodity.

Table 1 Modal Share and Average Length of Haul by Mode for Rip Rap/Broken or Crushed Stone

Mode	Modal Share	Avg Length of Haul (Miles)
Rail	5.0%	151
Intermodal ¹	0.0% ²	1,768
Truck	91.6%	69
Water	3.5%	248
Grand Total	100.0%	80

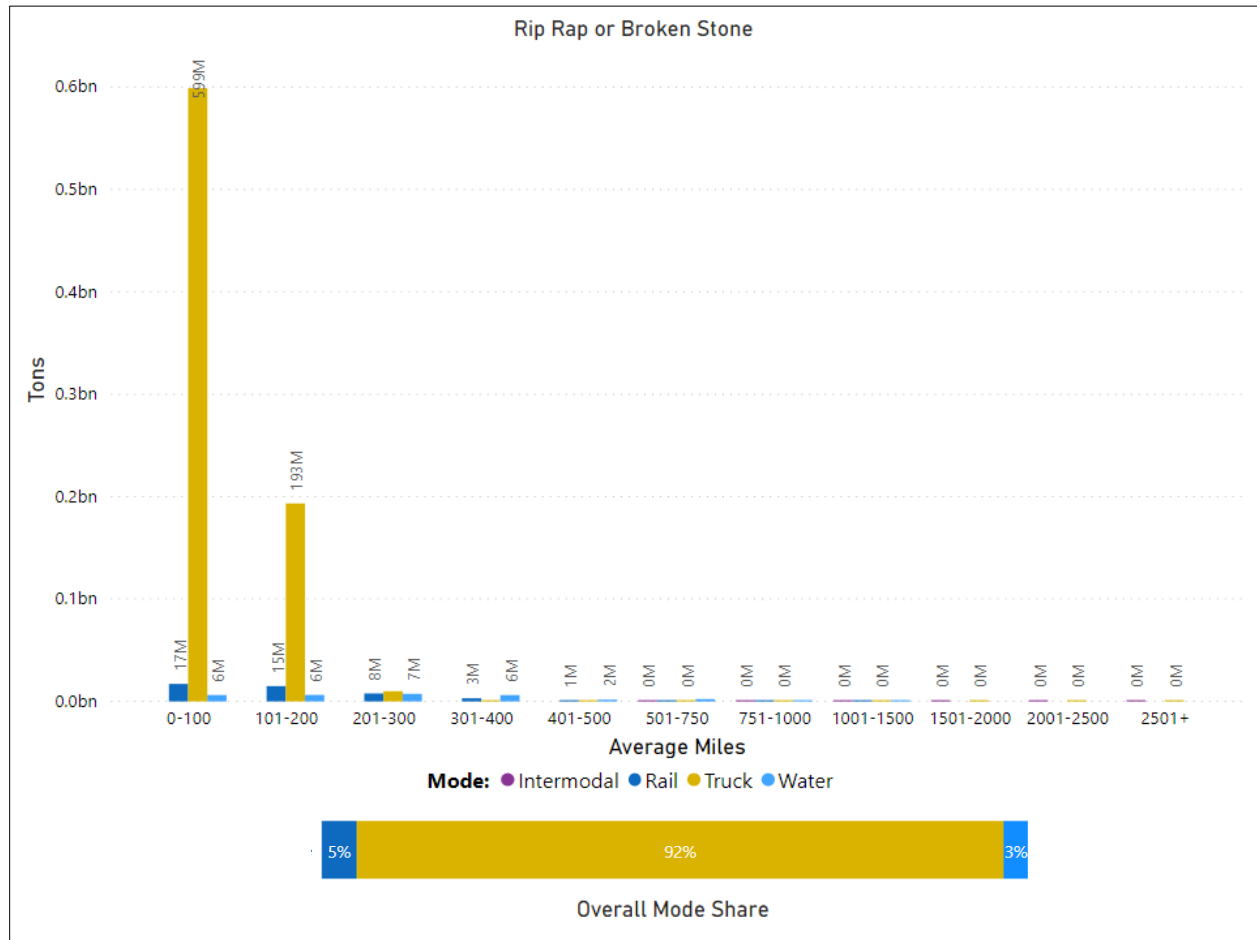
12. Truck was the dominant mode for the transport of rip rap or broken or crushed stone, carrying 92% of the commodity for all lengths of haul, and 96% of the commodity for hauls of less than 100 miles. Hauls less than 100 miles comprised 71% of the transport of rip rap or broken or crushed stone.³ These results are clearly illustrated in Figure 1, which shows tonnage by length of haul and mode for this commodity. Rail carried only approximately 5% of the tonnage of rip rap or broken or crushed stone.

¹ The “Intermodal” category consists of rail intermodal shipments in container-on-flatcar or trailer-on-flatcar service. Other rail movements are captured in the “Rail” category.

² 0.0% indicates that the total number of shipments was less than 0.05%, so as to round to 0.0%. It does not necessarily mean that there were no shipments.

³ See *infra* at Figure 9.

Figure 1 Tons by Length of Haul for Rip Rap/Broken or Crushed Stone by Mode



B. Lumber or Wood Products (5-digit STCCs 24 114, 24 115, 24 211, 24 321, 24 991, 24 996)

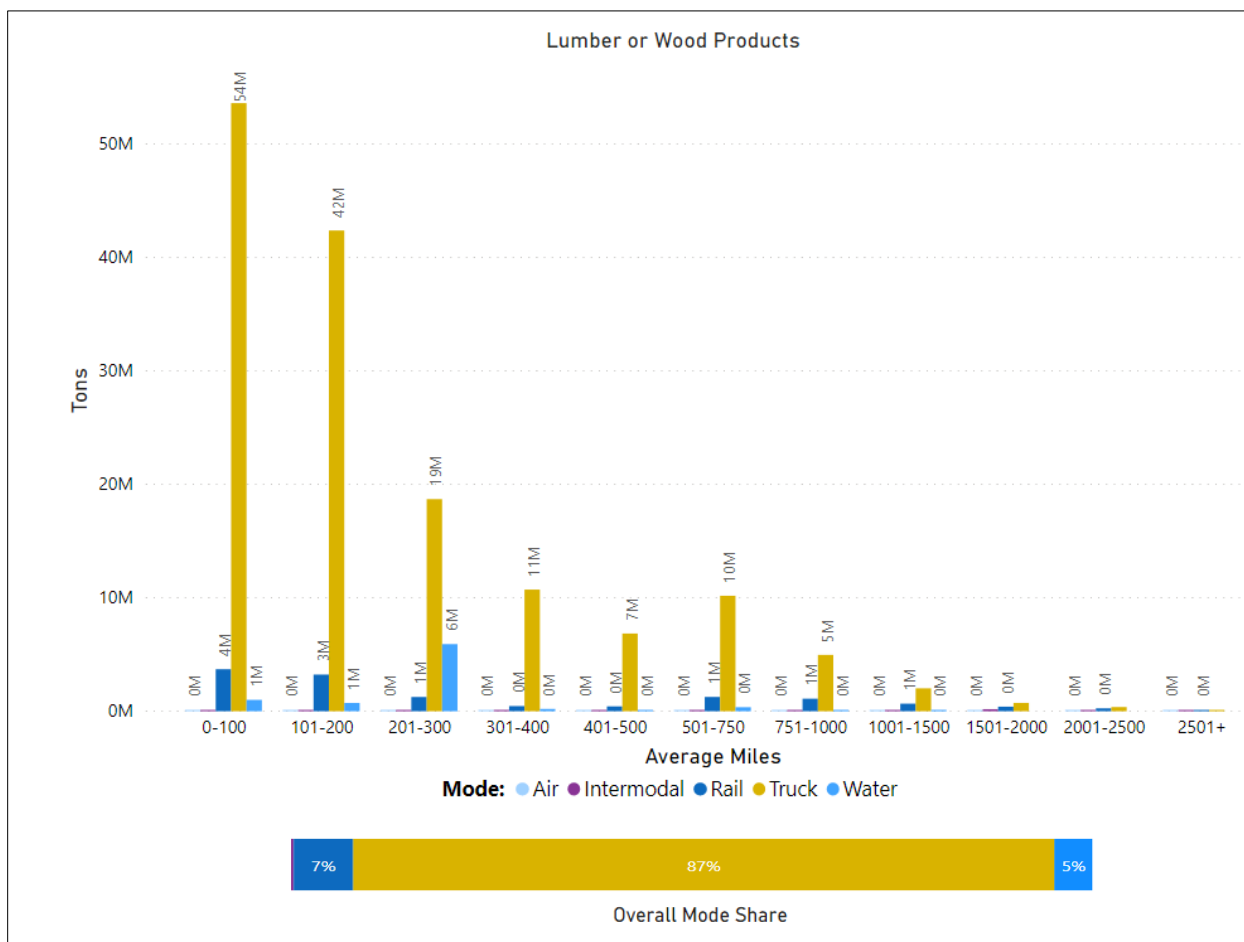
13. To analyze movements of lumber or wood products, we reviewed Transearch records for 4-digit STCCs between 2400 and 2499. Table 2 presents the modal shares and average lengths of haul by mode for this commodity.

Table 3 Modal Share and Average Length of Haul by Mode for Lumber or Wood Products

Mode	Modal Share	Avg Length of Haul (Miles)
Air	0.0%	1,541
Rail	7.4%	413
Intermodal	0.3%	1,386
Truck	87.5%	236
Water	4.8%	234
Grand Total	100.0%	253

14. Truck was the dominant mode for the transport of Lumber or Wood Products carrying 88% of the commodity for all lengths of haul, 91% of the commodity for hauls between 101 and 200 miles, and 72% of hauls between 201 and 300 miles. Hauls less than 300 miles comprised 76% of the transport of Lumber or Wood Products.⁴ These results are clearly illustrated in Figure 2, which shows tonnage by length of haul and mode for this commodity. Rail carried only 7% of the tonnage of Lumber or Wood Products.

Figure 2 Tons by Length of Haul for Lumber or Wood Products by Mode



⁴ See *id.*

C. Paper Products (5-digit STCCs 26 217, 26 311)

15. To analyze movements of paper products, we reviewed Transearch records for 4-digit STCCs between 2600 and 2699. Table 3 presents the modal shares and average lengths of haul by mode for this commodity.

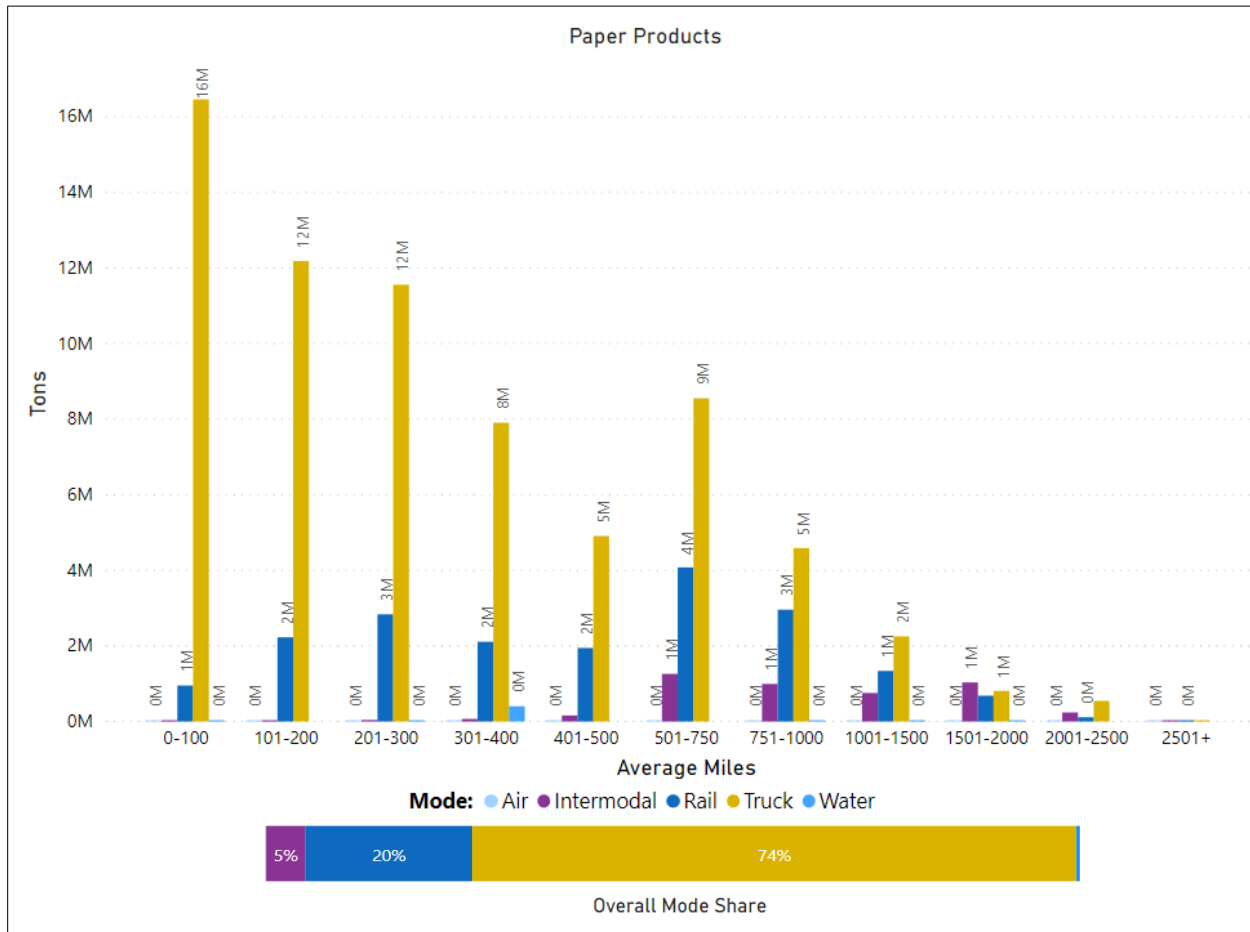
Table 4 Modal Share and Average Length of Haul by Mode for Paper Products

Mode	Modal Share	Avg Length of Haul (Miles)
Air	0.0%	1,251
Rail	20.5%	566
Intermodal	4.9%	1,103
Truck	74.2%	359
Water	0.5%	369
Grand Total	100.0%	437

16. Truck was the dominant mode for the transport of Paper Products, carrying 74% of the commodity for all lengths of haul, 94% of hauls less than 100 miles, 84% of hauls between 101 and 200 miles, and 80% of hauls between 201 and 300 miles. Hauls between 200 and 500 miles comprised 80% of the transport of Paper Products.⁵ These results are clearly illustrated in Figure 3, which shows tonnage by length of haul and mode for this commodity. Rail carries only 20% of the tonnage of Paper Products. Notably, at distances above 500 miles, intermodal handled a significant portion of this traffic, exceeding all other modes in the 1,501 to 2,000 mile range.

⁵ See *id.*

Figure 3 Tons by Length of Haul for Paper Products by Mode



D. Coke Produced from Coal (5-digit STCC 29 914)

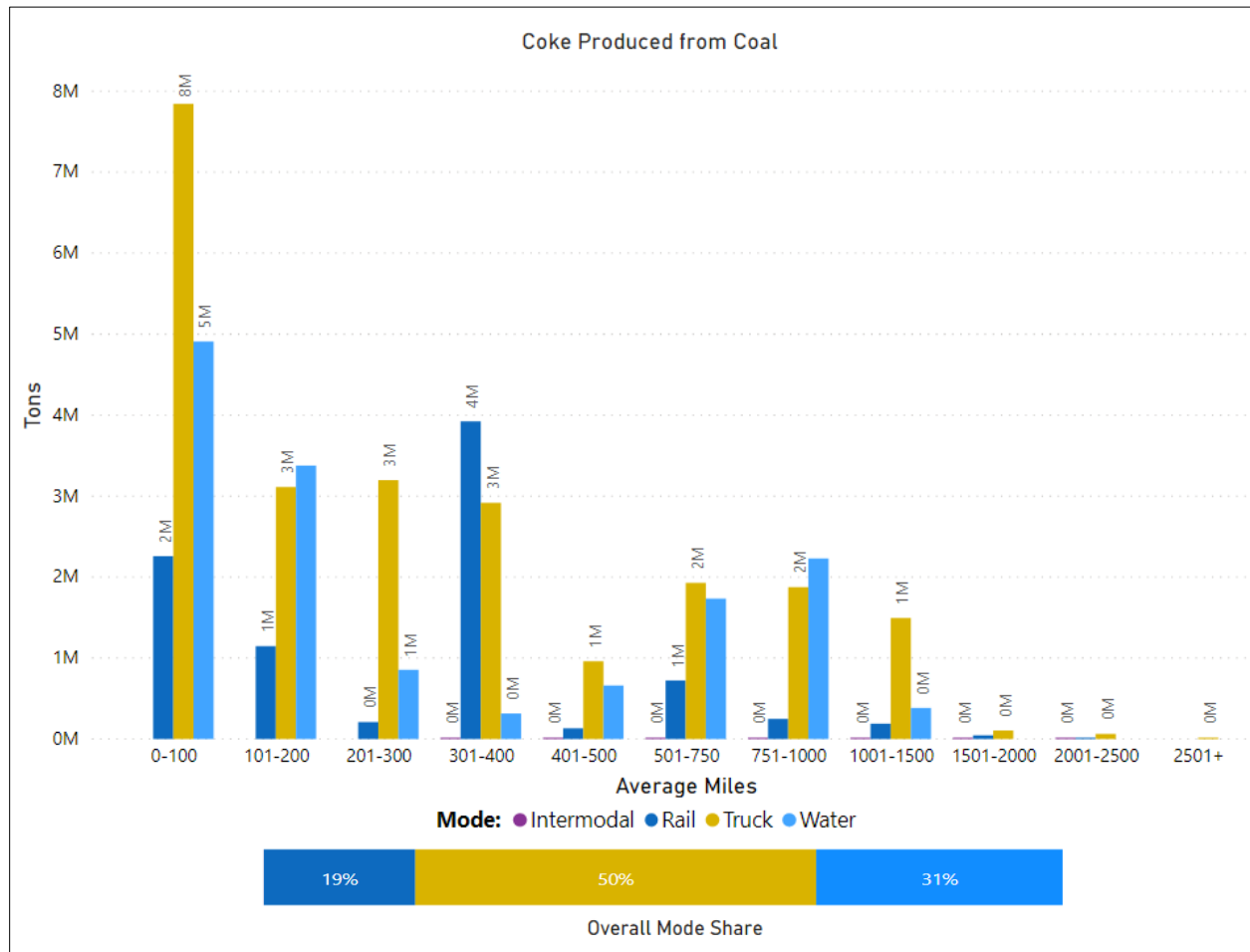
17. To analyze movements of coke produced from coal, we reviewed Transearch records for 4-digit STCC 2991. Table 4 presents the modal shares and average lengths of haul by mode for this commodity.

Table 5 Modal Share and Average Length of Haul by Mode for Coke from Coal

Mode	Modal Share	Avg Length of Haul (Miles)
Rail	19.0%	306
Intermodal	0.0%	1,456
Truck	50.2%	342
Water	30.9%	316
Grand Total	100.0%	327

18. Truck was the primary mode for the transport of coke from coal, carrying 50% of the commodity for all lengths of haul, and 52% of hauls between 0 and 100 miles. Hauls between 0 and 400 miles comprised 72% of the transport of coke from coal.⁶ These results are clearly illustrated in Figure 4, which shows tonnage by length of haul and mode for this commodity. Rail carried only 19% of this tonnage, and water handled 31%.

Figure 4 Tons by Length of Haul for Coke from Coal by Mode



⁶ See *id.*

E. Hydraulic cement (5-digit STCCs 32 411, 32 412)

19. To analyze movements of hydraulic cement, we reviewed Transearch records for 4-digit STCC 3241. Table 5 presents the modal shares and average lengths of haul by mode for this commodity.

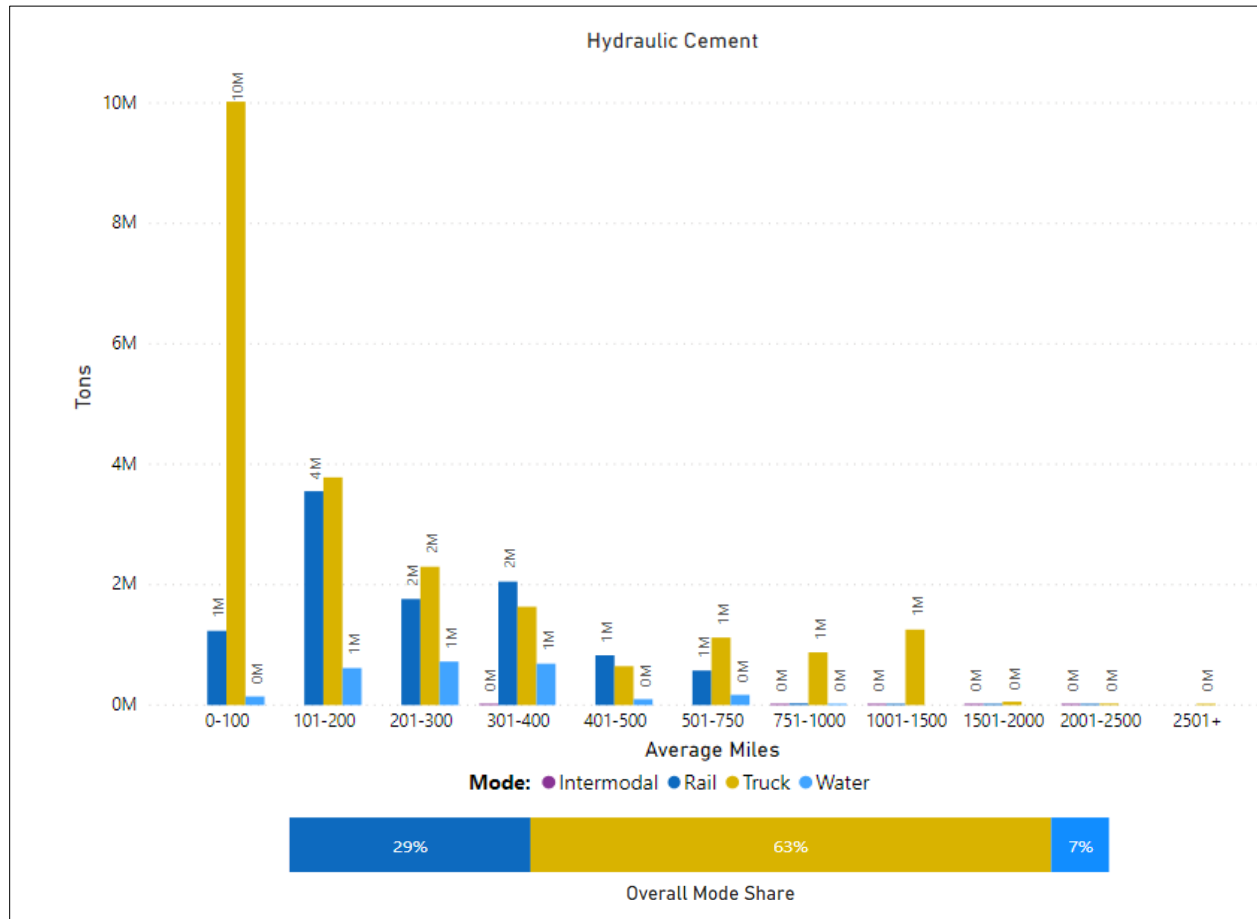
Table 6 Modal Share and Average Length of Haul by Mode for Hydraulic Cement

Mode	Modal Share	Avg Length of Haul (Miles)
Rail	29.4%	253
Intermodal	0.0%	1,139
Truck	63.5%	253
Water	7.1%	264
Grand Total	100.0%	254

20. Truck was the dominant mode for the transport of hydraulic cement carrying 64% of the commodity for all lengths of haul, and 88% of hauls between 0 and 100 miles. Hauls between 0 and 300 miles comprised 70% of the transport of this commodity.⁷ These results are clearly illustrated in Figure 5, which shows tonnage by length of haul and mode for this commodity. Rail carried only 29% of the tonnage of hydraulic cement, and water handled 7%.

⁷ See *id.*

Figure 5 Tons by Length of Haul for Hydraulic Cement by Mode



F. Primary Iron or Steel Products (5-digit STCCs 33 121 through 129)

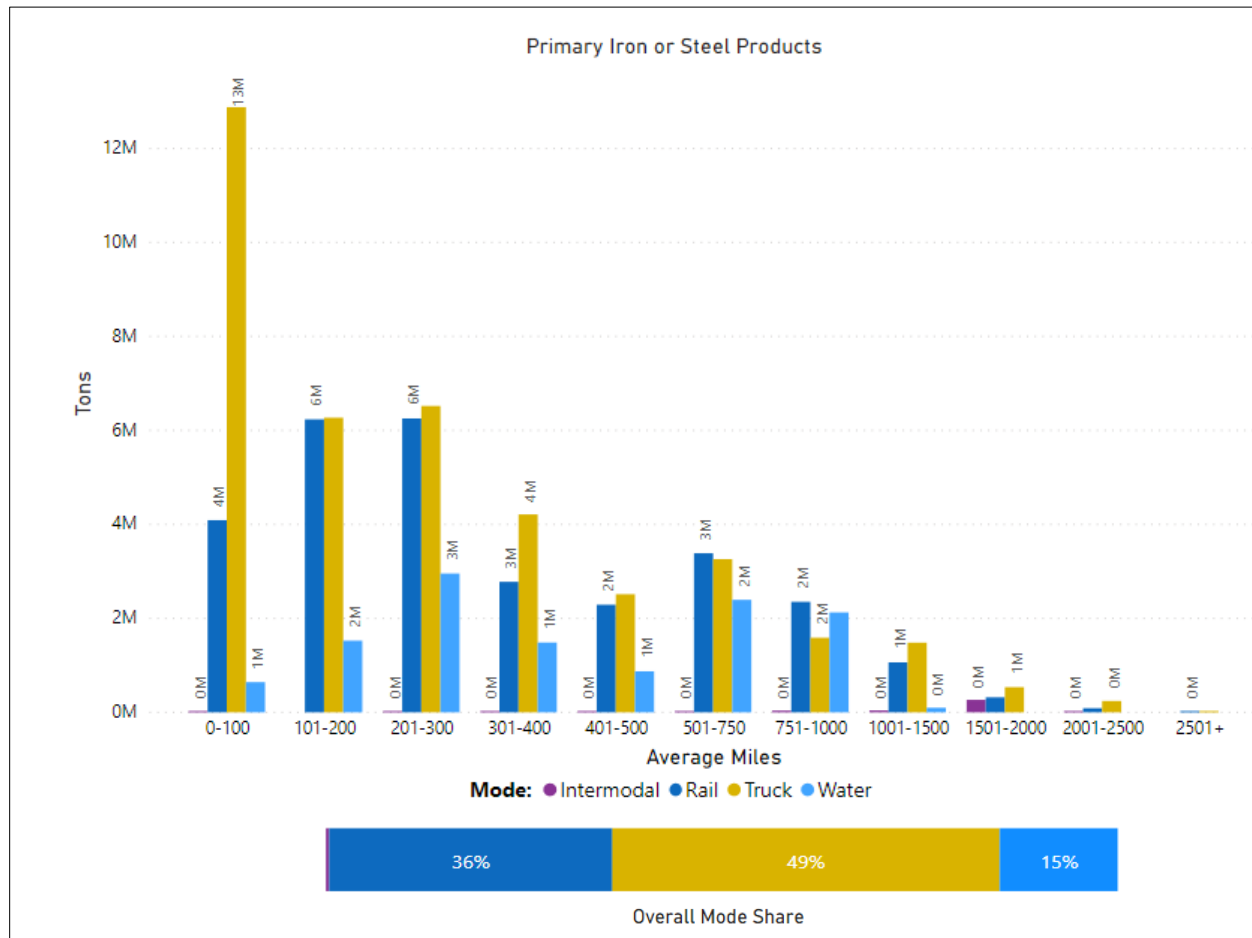
21. To analyze movements of primary iron or steel products, we reviewed Transearch records for 4-digit STCCs 3312. Table 6 presents the modal shares and average lengths of haul by mode for this commodity.

Table 7 Modal Share and Average Length of Haul by Mode for Primary Iron or Steel Products

Mode	Modal Share	Avg Length of Haul (Miles)
Rail	35.7%	368
Intermodal	0.4%	1,532
Truck	48.9%	313
Water	15.0%	443
Grand Total	100.0%	358

22. Truck is the primary mode for the transport of primary iron or steel products, carrying 49% of the commodity for all lengths of haul, while rail handles 36% and water accounts for 15%. Hauls between 0 and 300 miles comprise 58% of the transport of this commodity.⁸ These results are clearly illustrated in Figure 6, which shows tonnage by length of haul and mode for this commodity.

Figure 6 Tons by Length of Haul for Primary Iron or Steel Products by Mode



G. Iron or Steel Scrap, Wastes, or Tailings (5-digit STCCs 40 211, 40 241)

23. To analyze movements of Iron or Steel Scrap, Wastes, or Tailings, we reviewed Transearch records for 4-digit STCCs 402X. Table 7 presents the modal shares and average lengths of haul by mode for this commodity.

⁸ See *id.*

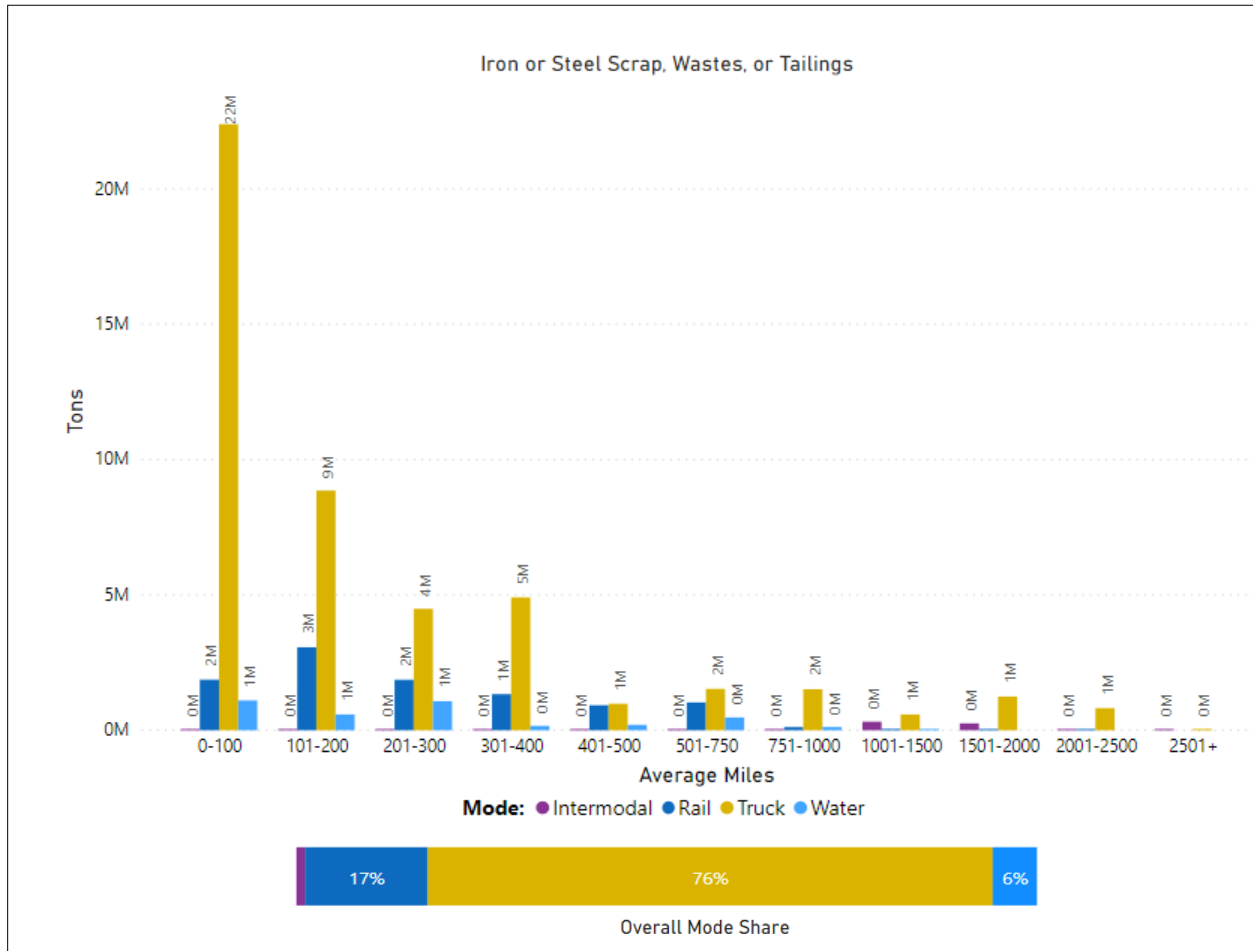
Table 8 Modal Share and Average Length of Haul by Mode for Iron or Steel Scrap, Wastes, or Tailings

Mode	Modal Share	Avg Length of Haul (Miles)
Rail	16.6%	265
Intermodal	1.2%	1,257
Truck	76.2%	265
Water	6.0%	256
Grand Total	100.0%	277

24. Truck was the dominant mode for the transport of Iron or Steel Scrap, Wastes, or Tailings carrying 76% of the commodity for all lengths of haul, and 88% of hauls between 0 and 100 miles. Hauls of less than 200 miles comprised 61% of all traffic.⁹ These results are clearly illustrated in Figure 7, which shows tonnage by length of haul and mode for this commodity. Rail accounted for 17% overall.

⁹ See *id.*

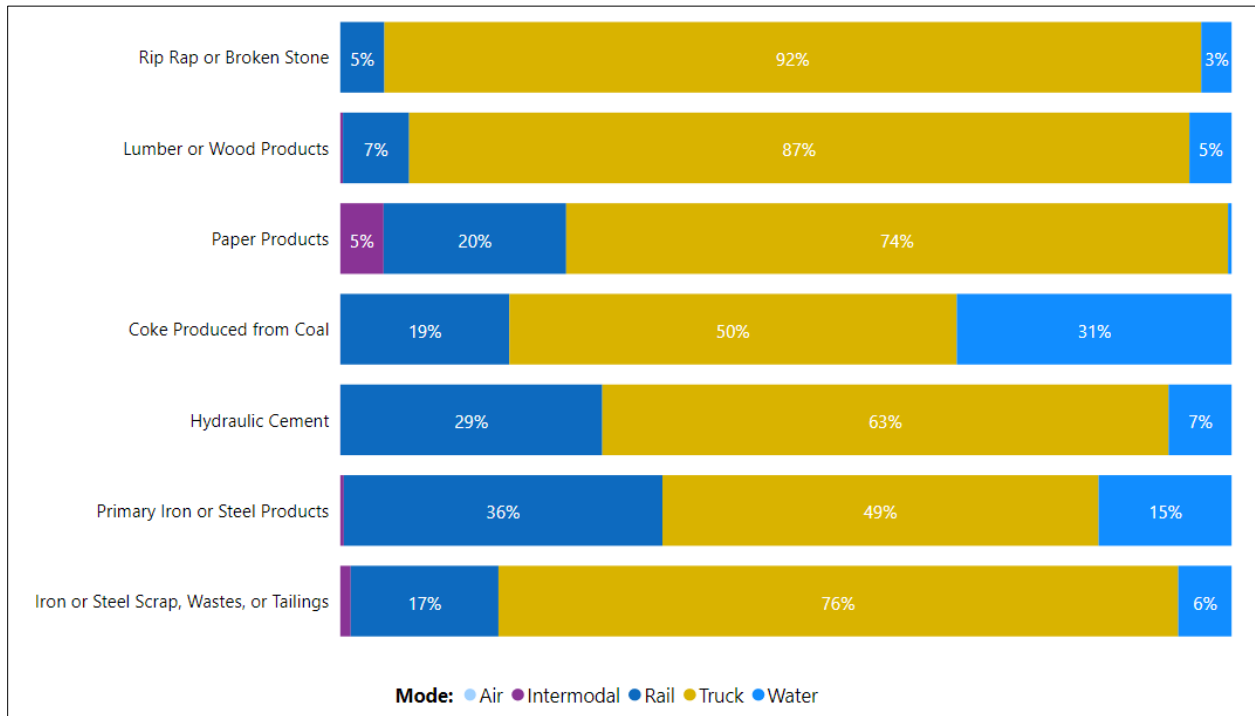
Figure 7 Tons by Length of Haul for Haul for Iron or Steel Scrap, Wastes, or Tailings by Mode



Concluding Comments

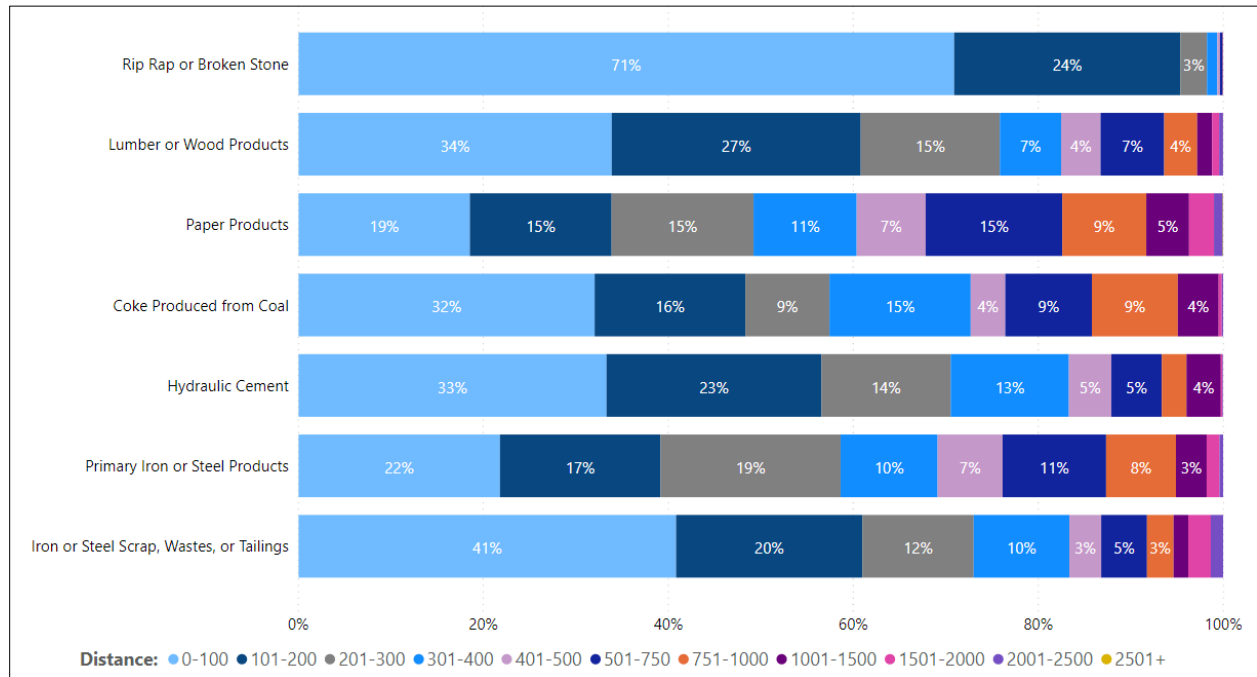
25. Figure 8 summarizes modal shares for each of the EP-704 commodity groups. As stated previously, truck was the primary mode of transport for all commodities. The only commodities for which modes **other than truck** handled at least 30% of the traffic volumes are Primary Iron or Steel products, Coke Produced from Coal, and Hydraulic Cement. Rail did not represent a majority of the market for the transport of any commodity analyzed, nor did it represent the highest share of the market for the transport of any commodity analyzed.

Figure 8 Modal Share by Commodity (%)



26. Figure 9 illustrates a summary of share of volume moved by length of haul and by commodity. Except for paper products and iron or steel products, for all other commodities, at least 30% of the hauls are between 0 and 100 miles, and the vast majority of traffic volumes travels over distances of less than 500 miles.

Figure 9 Average Length of Haul by Mode for EP-704 Commodities (%)



VERIFICATION

I, Andreas Aeppli, declare under penalty of perjury that the foregoing is true and correct.

Further, I certify that I am qualified and authorized to file this verified statement.

A handwritten signature in dark ink, appearing to read 'Andreas Aeppli', is positioned above a horizontal line.

Andreas Aeppli

Executed on January 29, 2021

VERIFICATION

I, Daniel Beagan, declare under penalty of perjury that the foregoing is true and correct.

Further, I certify that I am qualified and authorized to file this verified statement.

A handwritten signature in black ink, appearing to read "Daniel Beagan", is written over a horizontal line. The signature is fluid and cursive.

Daniel Beagan

Executed on January 29, 2021

Attachment 1 EP 704 Commodities in Transearch

STCC4	Name	STB STCC Grouping
1420	Broken Stone Or Riprap	Crushed Or Broken Stone Or Rip Rap (STCC 14 2)
1421	Broken Stone Or Riprap	
2400	Lumber Or Wood Products	Lumber or Wood Products (STCC 24-XXX)
2410	Primary Forest Materials	
2411	Primary Forest Materials	
2420	Sawmill Or Planing Mill Products	
2421	Lumber Or Dimension Stock	
2429	Misc. Sawmill Or Planing Mill	
2430	Millwork Or Prefab Wood Products	
2431	Millwork Or Cabinetwork	
2432	Plywood Or Veneer	
2433	Prefab Wood Buildings	
2434	Kitchen Cabinets, Wood	
2439	Structural Wood Prod, NEC	
2440	Wooden Containers	
2441	Wood Cont. Or Box Shooks	
2490	Miscellaneous Wood Products	
2491	Treated Wood Products	
2492	Rattan Or Bamboo Ware	
2493	Lasts Or Related Products	
2494	Cork Products	
2495	Hand Tool Handles	
2496	Scaffolding Equip Or Ladders	
2497	Wooden Ware Or Flatware	
2498	Wood Prod, NEC	
2499	Misc. Wood Products	

STCC4	Name	STB STCC Grouping
2600	Pulp, Paper Or Allied Products	Paper Products (STCC 26-XXX)
2610	Pulp Or Pulp Mill Products	
2611	Pulp Or Pulp Mill Products	
2620	Paper	
2621	Paper	
2630	Fiber, Paper Or Pulpboard	
2631	Fiber, Paper Or Pulpboard	
2640	Converted Paper Or Ppbd Products	
2642	Envelopes	
2643	Paper Bags	
2644	Wallpaper	
2645	Die-Cut Paper Or Ppbd Products	
2646	Pressed Or Molded Pulp Goods	
2647	Sanitary Paper Products	
2649	Misc. Converted Paper Products	
2650	Containers Or Boxes, Paper	
2651	Containers Or Boxes, Paper	
2654	Sanitary Food Containers	
2655	Fibre Cans, Drums Or Tubes	
2660	Paper Or Building Board	
2661	Paper Or Building Board	
2990	Misc. Coal Or Petroleum Products	Coke Produced From Coal (STCC 29 914)
2991	Misc. Coal Or Petroleum Products	
3240	Portland Cement	Hydraulic Cement (STCC 32 4)
3241	Portland Cement	
3311	Blast Furnace Or Coke	Primary Iron Or Steel Products (STCC 33 12)
3312	Primary Iron Or Steel Products	
4000	Waste Or Scrap Materials	Iron Or Steel Scrap, Wastes, Or Tailings (40 211)
4020	Waste Or Scrap	
4021	Metal Scrap Or Tailings	

Attachment 2

**Andreas Aeppli
Summary of Experience**

Andreas E. Aeppli

Principal



Mr. Aeppli has over 35 years of experience in the areas of goods movement policy, carrier economics, asset management, and transportation information systems. He has been involved in numerous projects involving all surface modes (marine, rail, and highway), intermodal freight systems, and freight supply chains for public and private clients. He has extensive experience conducting policy-level studies, having served in senior roles in statewide rail and freight plans, as well as examinations focused on modal economics and system performance. Previous experience includes serving as a Principal with Global Insight and predecessor Reebie Associates; co-founder and President of a firm specializing in asset management and carrier economics; and, as a Manager with the Chicago and North Western Railroad.

Relevant Experience

Association of American Railroads and Professor Gerard McCullough, **Technical Analysis for Surface Transportation Board Docket Ex Parte-704, Review of Commodity, Boxcar, and TOFC/COFC Exemptions.** Mr. Aeppli served as project manager to provide supporting testimony and analysis for the AAR's submission. Activities included conducting interviews of industry marketing officials and experts, estimation of modal market shares for specific commodities and geographies, and developing and reviewing draft STB submissions. A central element of the analysis was a critical analysis of mode share, volumes and distance traveled using the FHWA's Freight Analysis Framework and the STB's Public Use Carload Waybill Sample.

Confidential Client, Rail Service Negotiation Support. For a high-volume bulk shipper, Aeppli provided assistance in negotiating the terms and conditions of long-term contracts for rail service. Tasks included analyzing proposed railroad rates to Pacific Coast and Gulf Coast ports for export, along with domestic and NAFTA destinations. For this purpose, he utilized the Surface Transportation Board's (STB) Uniform Rail Cost System (URCS) software to calculate the regulatory costs of shipments to various domestic and export destinations, and evaluated the proposed rates in the context of actual rates paid for similar moves found in the public version of the STB's Waybill Sample. A model incorporating key parameters was estimated using regression techniques, the results of which were used to examine and compare the proposed moves with the URCS estimates and the quoted rates.

Confidential Client, Superfund Litigation Support. For Superfund cases in Wisconsin and Michigan, Mr. Aeppli investigated the logistics of the shipment of contaminated materials by rail and truck that were associated with a particular producer. The work entailed development of extensive data that included the collection and analysis actual shipment data, and then corroborating it with carrier documents and interviews. A rigorous statistical assessment was performed, providing the client a clear understanding of the robustness of the conclusions that could be drawn from the data. Aeppli wrote testimony and verified statements for use in court, participated in depositions, and educated the legal team in the complexities of freight logistics.

Greenbrier, Inc., Analysis of Proposed PHMSA-2012-0082 (HM-251) Rulemaking, Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains. Aeppli oversaw analysis to address the following: help formulate discussion points in response to a report developed by a consultant on behalf of an industry group, and develop independent assessments of quantitative projections related to contract shop capacity, tank car fleet demographics, and the railcar manufacturing industry's capacity to build new tank cars. The results were presented to the Office of Management and Budget in March, 2015, and subsequently became part of the rulemaking docket. Aeppli presented the results at an industry gathering in Houston, as well as various media outlets. The USDOT's Final Rule evidently reflected the contract shop and tank car construction capacity estimates produced as part of this project.

Confidential Legal Client, Transit Rolling Stock Component Reliability Analysis. Aeppli performed reliability analysis of particular high-failure components for a railcar manufacturer involved in legal action with a transit agency. Analysis was credited with achieving satisfactory settlement during arbitration phase, thereby averting the need to litigate.

FHWA Office of Transportation Policy Studies (HPTS) Intermodal Transportation and Inventory Cost Model (ITIC) Mode Shift Model Review and Assessment. As part of a review of key policy-level analytical tools, Mr. Aeppli conducted an in-depth analysis of the ITIC rail/highway modal diversion model and alternatives. The analysis examined the theoretical constructs, adequacy, reliability, and accuracy of the ITIC model in its ability to fulfill HPTS' needs. A principal outcome was an identification of ITIC's limitations, shortfalls, and oversimplifications, and recommendations for potential improvements and solutions in methodology, data inputs, technical approaches, approximations, assumption, and processes.

U.S. Department of Transportation, Assistant Secretary for Transportation Policy, Benefits of Road Pricing to the Trucking Industry. This study, for which Aeppli served as the Principal Investigator, examined the issue of congestion relief through the lens of the trucking industry and the perceived costs and productivity gains that may arise through the use of dedicated or mixed-use toll road facilities. A Profit Maximization Model was developed and then applied to estimate a trucker's maximum willingness to pay for representative urban and rural toll facilities, given expected gains in reliability and time savings versus parallel non-tolled alternatives. Data for the model was drawn from publicly available financial performance data for a range of trucking firms.

Confidential Client, Rail Network Capacity Study. On behalf of a trade association, Mr. Aeppli managed the development of a network-level long-term rail system capacity assessment. The analysis used a variety of innovative techniques to examine line capacity needs and their associated costs, assess future market development in various key industries, and estimate potential modal diversion resulting from shifts in modal costs. Key features of the study included application of a parametric line capacity model, and estimation and application of both short and long-term modal cross-elasticities between rail and highway. Through this approach, both the immediate impacts of changes in relative costs on mode-share (such as would be caused by a spike in the price of energy), as well as the longer term effects from industries adapting to more permanent changes in relative modal costs was examined.

Education

M.S., Transportation, Massachusetts Institute of Technology
B.A., Economics, Claremont McKenna College

Attachment 3

Daniel Beagan Summary of Experience

Daniel Beagan, P.E.

Principal



Mr. Beagan is a Principal of Cambridge Systematics (CS) with more than 43 years of experience in transportation, traffic analysis, and planning in the public and private sectors, and is a recognized expert on freight forecasting. He recently served as the Project Manager for the Development and Testing of a Behavioral Freight Model under a SHRP2 C20 grant to the Wisconsin DOT; as a task leader in the development of a truck model for the Memphis MPO; as a principal and senior advisor for the Commercial Vehicle Survey for Detroit; and as senior advisor for the development of freight models for the Virginia, Texas, Arkansas, Mississippi DOTs. Mr. Beagan has practical experience in applying passenger and freight forecasting techniques for planning projects in Florida, Georgia, Texas, Tennessee, Virginia, New York, Minnesota, Ohio, and Oregon.

Relevant Experience

Cross Harbor Freight Movement Program. For the Port Authority of New York and New Jersey (PANYNJ), Mr. Beagan assisted in the completion of an ongoing Environmental Impact Statement (EIS) for project alternatives designed to improve freight movement to, from, and through New York City and the northern New Jersey region. Mr. Beagan led the application of highway network modeling tools and evaluating the performance of major program alternatives. He assisted in the development of shipper choice models from stated preference (SP) surveys and led the calculation of the economic benefits of the alternatives.

NJTPA 2040 Freight Industry Level Forecasts. For the North Jersey Transportation Planning Authority (NJTPA) Cambridge Systematics, developed Year 2040 Industry Level Freight Forecasts. Mr. Beagan assisted in the development of a tool to apply "what if" forecast scenarios reflecting different assumptions regarding critical forecast drivers, documenting findings at the region-wide and county level. Mr. Beagan also developed procedures to include the outputs into NJTPA's travel demand model.

National Cooperative Freight Research Program (NCFRP) Project 6 – Freight Demand Modeling to Support Public-Sector Decision-Making. For the NCFRP, Mr. Beagan served as the Principal Investigator examining, identifying, and reporting on the high-priority, high-payoff improvements that might be considered for freight-demand models and other analysis tools. This analysis includes the investigation the use of FAF data as revealed preference data for the development of a freight mode choice model. Based on these findings, the project developed a guidebook, published as NCFRP Report 8, to assist model developers in implementing these improvements. The recommendations included in the guidebook will ultimately improve the usability of freight-demand models and other analysis tools for public-sector decision-makers at a range of geographical levels.

Federal Highway Administration (FHWA) Quick Response Freight Manual Update. For the FHWA Office of Operations, Mr. Beagan served as the Project Manager on a project to update current information and adding new material to the 1996 Quick Response Freight Manual (QRFM) originally prepared by

Cambridge Systematics. The goal of this update is to provide a comprehensive freight movement modeling reference to practitioners at both the state and local MPO levels that covers all modal issues.

Memphis MPO Travel Demand Model Update. For the Memphis Urban Area MPO, CS prepared a new travel demand model (TDM) that is a state-of-the-practice four-step TDM with advanced features. Mr. Beagan was a task leader for the development of the truck portion of the model, which included estimating an external truck model from TRANSEARCH commodity flows and an internal truck model from ATRI GPS truck data.

Wisconsin SHRP 2 C20 Behavior-Based Freight Model. For the Wisconsin DOT, Mr. Beagan served as the Project Manager in the development of behavior-based freight model systems that the DOT can use to address their planning needs and fulfill its obligations under its Strategic Highway Research Program (SHRP) 2 C20 award. The system developed a national long distance “open tour” model, as well as a local short distance “open tour.” These models were combined, and their results were compared and contrasted with those of the existing trip-based freight models currently used by the DOT.

NREL Transportation Energy Futures. For the National Renewable Energy Laboratories (NREL), Mr. Beagan developed a Freight Tool, which included developing base data from the Freight Analysis Framework and tools which applied changes in demand or mode to forecast changes in freight and its associated energy demand.

National Rail Freight Capacity Study/Phase II. For the Association of American Railroads, Mr. Beagan was a team leader in developing mode choice models of rail demand using the historical TRANSEARCH data as Revealed Preference, RP, data and using these models to evaluate changes in rail demand and capacity.

Education

M.S., Civil and Urban Engineering, University of Pennsylvania, 1975
B.S., Urban Engineering, Brown University, 1973

Professional Registrations

Professional Engineer: Massachusetts (#35806)

Selected Publications and Papers

Forecasting Statewide Freight Toolkit, NCHRP Report 606, Transportation Research Board, National Academy Press, Washington, D.C., 2008.

Quick Response Freight Manual II, Federal Highway Administration, Washington, D.C., September 2008

Impacts of Climate Variability and Change on Transportation Systems and Infrastructure – Gulf Coast Study, Department of Transportation, Washington, DC, March 2008. (Contributing Author)

Freight-Demand Modeling to Support Public-Sector Decision Making, NCFRP Report 8, Transportation Research Board, National Academy Press, Washington D.C., 2010

Cell Phone Location Data for Travel Behavior Analysis, NCHRP Report 868, Transportation Research Board, National Academy Press, Washington D.C., 2018 . (Contributing Author)

Quick Response Freight Manual III, Federal Highway Administration, Washington, D.C. September 2019