

MARKET UPDATE

MARCH 2022

Mill shutdowns and conversions over the past few years have considerably reduced the overall paper supply. The unexpected Evergreen Pine Bluff and Resolute Calhoun mill shutdowns late last year added to that decline. The ongoing UPM strike in Finland, the Canadian trucker blockade, and the Russian invasion of Ukraine have also put a strain on the supply. Plus, we are seeing a significant increase in demand as companies work ramp up their businesses post pandemic and as other companies enter the catalog and direct mail marketplace for the first time because of digital marketing constraints.

Factor in historic low mill inventories and reduced imports, and we are seeing very high mill operating rates every month. Sharply rising fuel and energy costs, ongoing transportation and supply chain challenges, hiring challenges to run the machines, and high pulp and other input (titanium dioxide, starch, latex) costs are adding fuel to the fire. On top of that, major mills are taking extended maintenance downtime in May and July as we enter the busy fall catalog season. These conditions have provided the backdrop for paper mills to rationalize their product offering, revise their freight policies, add fuel surcharges, and fully implement a series of price increases across every grade line.

In short, **demand is far outstripping supply** on all grades, and this has led to an extremely allocated and oversold market where securing paper and delivering it on time has become an overwhelming and daily challenge where compromises are having to be made.

Mill / Machine Closures and/or Bankruptcies:

- Norpac PM1 Longview, WA, White Birch Ashland, Resolute Forest Products Thorold idled - 900,000 annual tons of newsprint
- Resolute Forest Products Catawba PM2 – 193,000 tons of coated groundwood (2017 Q3)
- Resolute Calhoun PM3 and PM5 - 435,000 tons of uncoated mechanical (2017 Q3)
- Glatfelter Chillicothe PM24 - 57,000 tons of uncoated freesheet (2017 Q3)
- Verso Androscoggin PM3 - 215,000 tons of coated (2017 Q3)
- Appleton Coated - 300,000 tons, mix of coated, uncoated and C1S freesheet (2017 Q4)
- West Linn - 267,000 tons, mix of coated and uncoated and C1S freesheet (2017 Q4)
- UPM Blandin PM5 - 128,000 tons of coated groundwood (2017 Q4)
- Georgia Pacific Camaas PM20 - 237,000 tons of uncoated freesheet (2018 Q2)
- Flambeau River PM3 - 70,000 tons of uncoated freesheet (2018 Q1)
- Nippon Paper Group: Fuji, Jekkaido and Kushiro - 531,000 tons (2019-20)
- Georgia Pacific Port Hudson, LA mill - 630,000 tons (2019)
- Verso Luke, MD mill – 450,000 tons (2019 Q2)
- Flambeau River Papers - Chapter 128 – 20,000 tons (2019 Q2)
- UPM Plattling, Germany PM 10 - 155,000 tons (2019 Q2)
- Norske Albury Mill – 265,000 tons of newsprint (2019 Q4)
- Domtar PM A63 at Ashdown and PM PH6 at Port Huron – 204,000 short tons (2019 Q3)
- Greif, Inc. PM1 at Mobile, AL – 64,965 tons of uncoated recycled board (2019)
- UPM Rauma, Finland PM2 – 265,000 tons of SC (2019 Q4)
- Resolute Forest Products Augusta, GA – 214,000 tons of newsprint (2019 Q4)
- UPM Chapelle, Grand-Couronne, France – 240,000 tons of newsprint (2020 Q1)
- Verso Duluth and Wisconsin Rapids – 810,000 tons of coated and super cal (2020 Q2)
- Pondaray Newsprint Company, Newport, WA (2020 Q2)
- Sappi Stockstadt Germany and Westbrook, ME Mills (2020 Q3 and Q4)
- Domtar Ashdown, AR, Port Huron, MI, and Kingsport, TN mills - 720,000 short tons (2021 Q1)
- UPM Kaipola, Finland – 270,000 tons (2020 Q4)
- WestRock, Evadale, TX – 200,000 tons of SBS (2020)
- Norske Skog Saugbrugs, Norway PM5 Shutdown – 110,000 tons of SC (2020 Q4)
- Stora Enso Veitsiluoto Pulp and Paper Mill - 790,000 tons of uncoated freesheet (2021 Q3)
- Stora Enso Kvarnsveden Pulp and Paper Mill – 565,000 tons of SC (2021 Q3)
- Evergreen Packaging Pine Bluff Arkansas Mill– 180,000 tons of coated groundwood (2021 Q4)
- Resolute Forest Products Calhoun, TN Mill – 164,245 tons of uncoated freesheet (2022 Q1)

Mill / Machine Conversions:

- Sappi Somerset PM1 - Rebuild to add packaging capabilities 198,000 tons (2018 Q2)
- Verso Jay PM#3 - Restart as packaging machine in (2018 Q3)
- Packaging Corp of America Boise Wallula, WA - 200,000 tons of packaging & kraft liner
- Kruger Trois Rivières PM10 - Recycled lightweight linerboard (2017 Q4)
- ND Paper Biron PM B25 – 120,000 ton conversion to medium and linerboard (2019)
- Oji Paper Tomakomai PM#5– 200,000 ton conversion to packaging (2020)
- New-Indy – 350,000 ton conversion to packaging (2020 Q3)
- Int'l Paper Selma PM15 - 235,000 tons of UFS converting to linerboard (2020)
- ND Paper Rumford R12 – 110,000 tons converting to specialty packaging (2020 Q3)
- Stora Enso Oulu – 1,080,000 tons conversion to packaging & kraft line (2020 Q3)
- SCA Ortviken, Sweden – 756,000 tons (2021)
- ND Paper Rumford R15 - 280,000 tons of CFS/CGW converting to linerboard (2020 Q4)

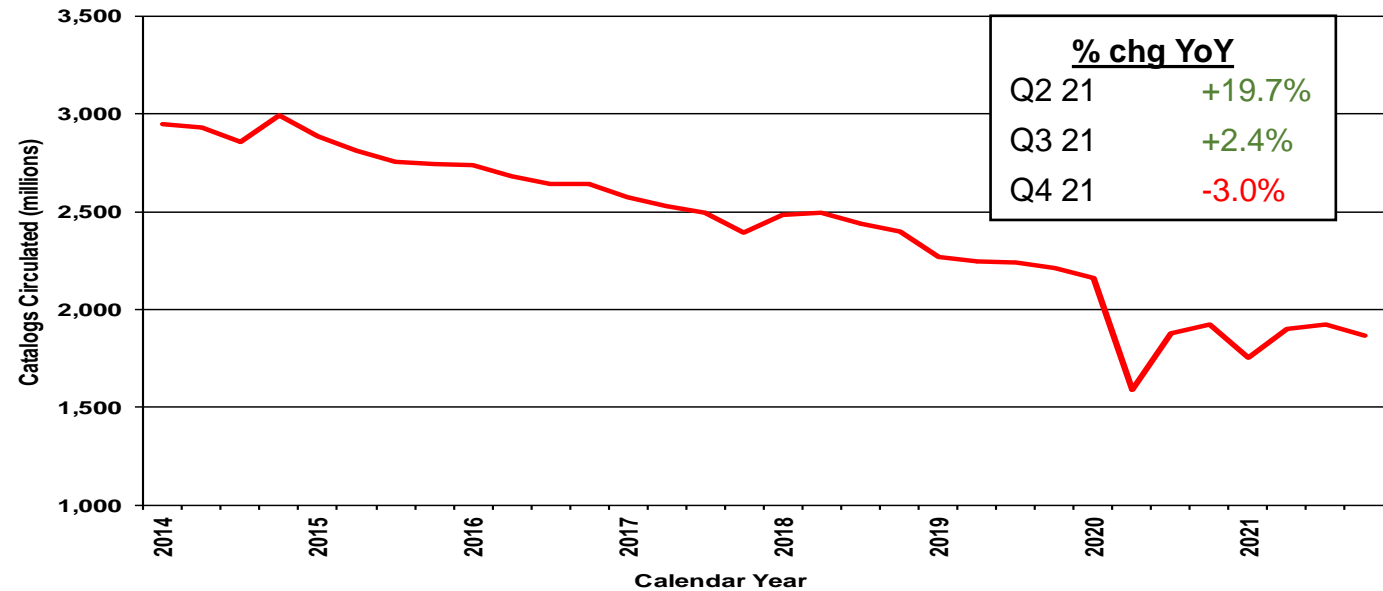
Mill Acquisitions:

- Manchester Industries acquired by Clearwater Paper (2016)
- Tembec acquired by Rayonier Advanced Materials (2017)
- Multi Packaging Solutions acquired by WestRock (2017)
- KapStone Paper and Packaging acquired by WestRock (2018)
- Mondi Pine Bluff kraft mill acquired by Twin Rivers Paper Company (2018)
- Crane Stationary Corp. acquired by Mohawk Fine Papers, Inc. (2018)
- Appvion acquired by Franklin Advisors, Inc. (2018)
- Norske Skog AS acquired by Oceanwood investment management firm (2018)
- Catalyst Biron and Rumford mills acquired by Nine Dragons Paper (2018)
- Expera Specialty Solutions acquired by Ahlstrom-Munksjo (2018)
- White Birch Bear Island acquired by Cascades, Inc. (2018)
- Schluter Print Pharma Packaging acquired by WestRock (2018)
- Verso Wickliffe Mill acquired by Global Win Wickliffe LLC (2018 Q3)
- Glatfelter Specialty Papers Business Unit acquired by Lindsay Goldberg (2018)
- Clearwater Paper's Ladysmith facility acquired by Dunn Paper, Inc. (2018 Q3)
- Resolute Forest Products Fairmont, WV Pulp mill acquired by ND Paper (2018)
- Resolute Forest Products Catawba, SC mill acquired by New-Indy Containerboard (2018)
- Catalyst Pulp & Paper acquired by Paper Excellence Canada (2018)
- OTM Holdings (Old Town) pulp mill acquired by ND Paper (2018)
- Carthage Specialty Paperboard assets acquired by Ox Industries (2018)
- Carastar Industries acquired by Greif, Inc. (2019 Q1)
- Int'l Paper APPM Ltd (India) acquired by West Coast Paper Mills Ltd (2019)
- Verso Androscoggin & Stevens Point mills acquired by Pixelle Specialty Solutions (2020)
- Midwest Paper acquired by Industrial Opportunity Partners (2020)
- Appvion Point of Sale business acquired by Domtar (2020 Q2)
- Appvion Specialty Paper Business acquired by Pixelle (2021 Q2)
- **Midwest Paper acquired by McKinley Paper Company, Bio PAPPEL (2022 Q1)**
- **Verso pending acquisition by BillerudKorsnäs (2022 Q2)**

Mill / Machine Re-Starts:

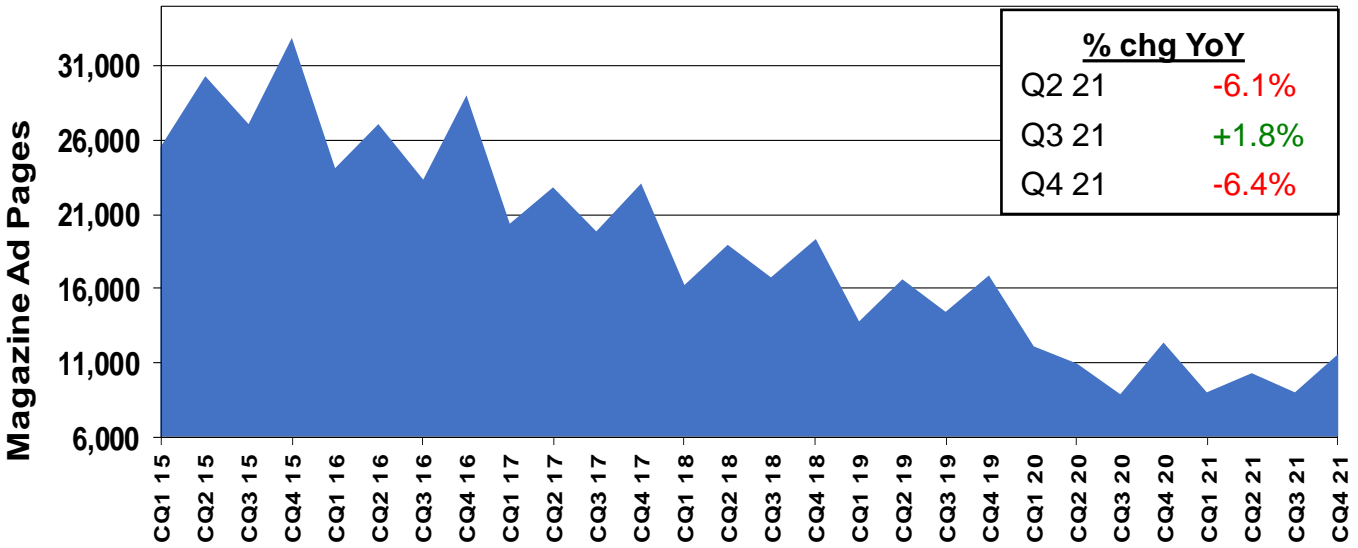
- Norpac restarts PM1 Longview, WA (2018 Q2)
- Appleton Coated mill restarts as Midwest Paper Group – packaging and UFS (2018 Q2)
- White Birch Paper restarts Bear Island mill in Virginia (2018 Q3)
- Wickliffe mill restarts as Phoenix Paper/Shanying International (2019 Q2)
- West Linn Paper Co. mill restarts as Willamette Falls Paper Co. (2019 Q3)
- **Domtar Ashdown A62 paper machine restart (2022 Q1)**

MAGAZINE AD PAGES AND CATALOG CIRCULATION

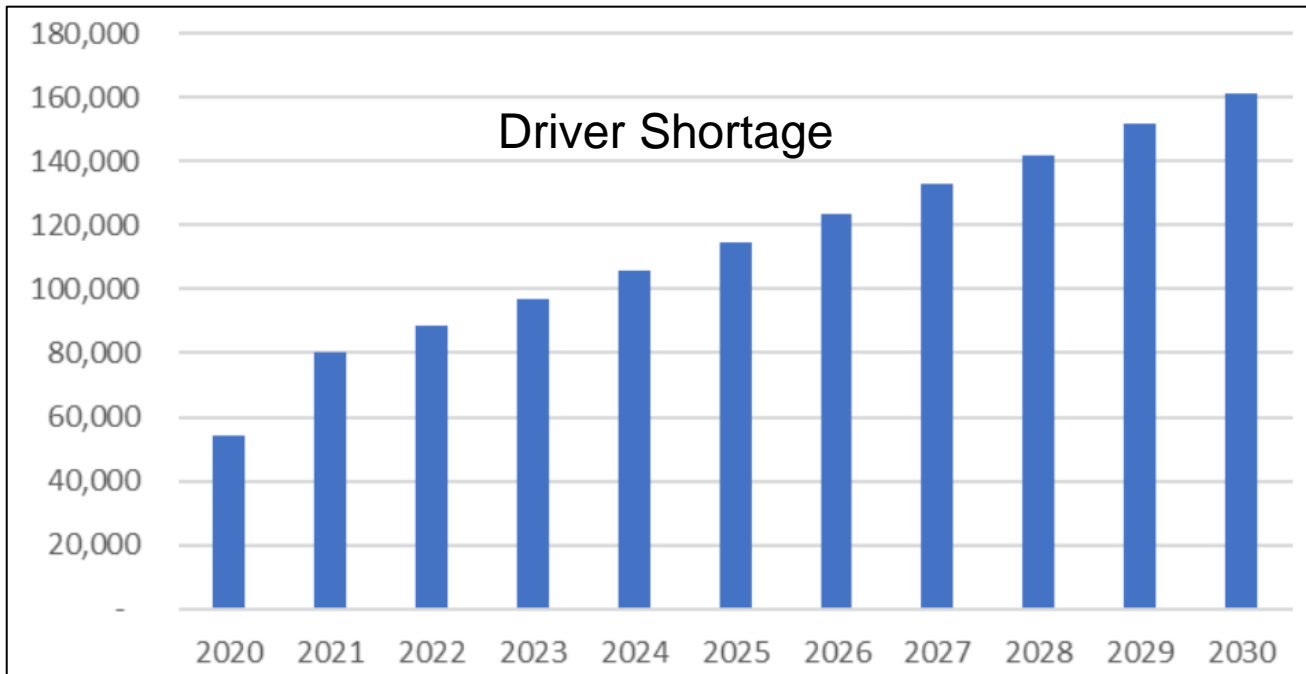


Catalog Circulation was **down 3%** in 2021 Q4 versus the same quarter in 2020

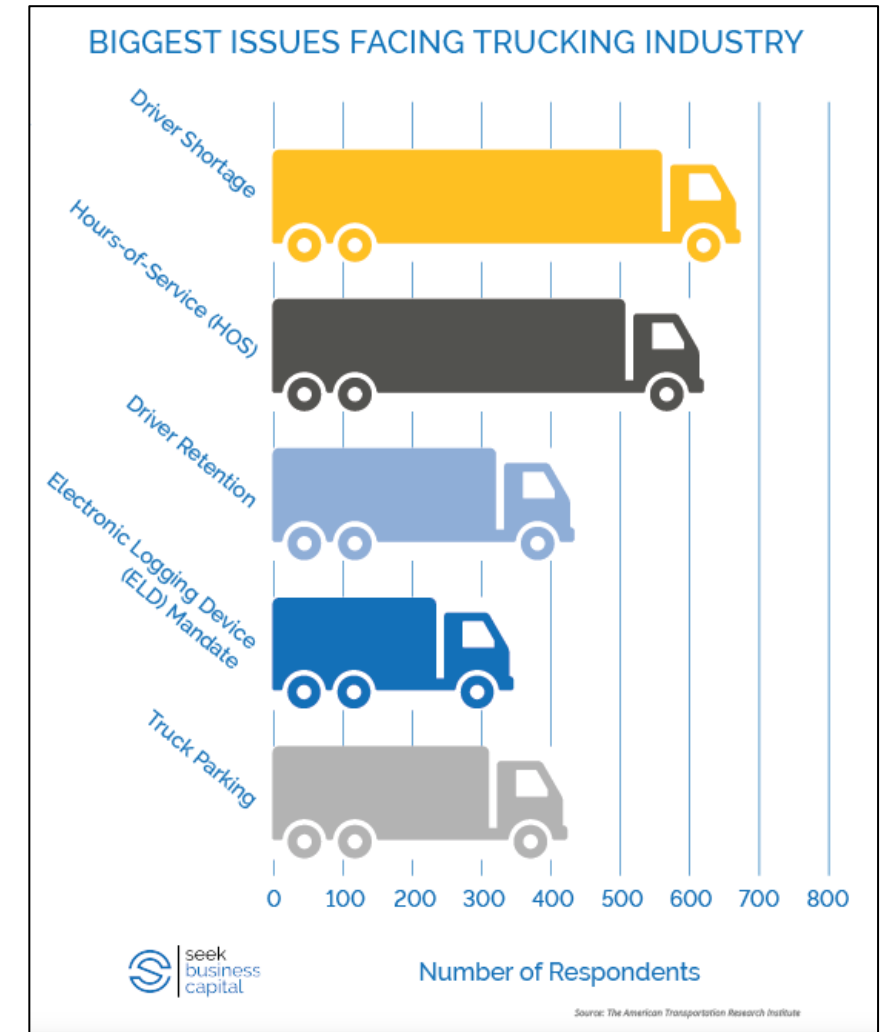
Magazine Ad Pages were **down 6%** in 2021 Q4 versus the same quarter in 2020



TRUCK DRIVER SHORTAGE TREND



- Over the next decade the trucking industry will need to hire roughly 898,000 new drivers (90,000 drivers per year) to replace retiring truck drivers and industry growth. America will be short 175,000 drivers by 2026. The average age of a commercial truck driver in the U.S. is 55 years old. The shortage is most acute for long-haul drivers, where the average age is 46, and workers are on the road for weeks at a time.
- The Electronic Logging Device mandate required all motor carriers to install this equipment on their trucks to automatically track drivers' hours of service. New government regulations allow no more than 11 hours of driving, followed by a mandatory and continuous rest period of 10 hours.
- The median annual wage for heavy and tractor-trailer truck drivers in the U.S. was \$47,130 in 2020. As of December 27, 2021, the national average annual pay was \$55,098.
- There is a trend of more owner operators in the market, allowing drivers to be more selective with the loads they take, leading to spot capacity price escalation and pressures on driver availability.



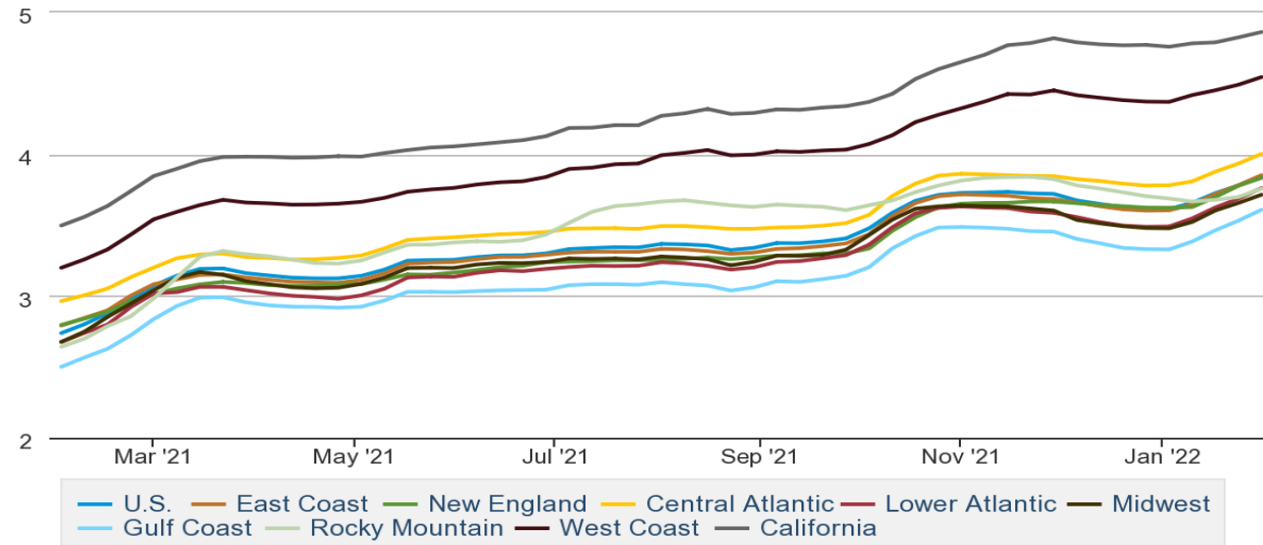
Sources: American Trucking Associations Truck Driver Shortage Analysis 2021, FleetOwner, Truck Driver Shortage on Course to Double in a Decade 2019, and Truckdriverssalary.com

DIESEL FUEL PRICES AND VAN HAUL RATES

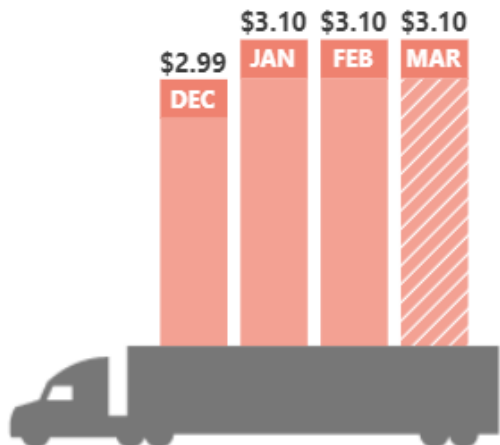
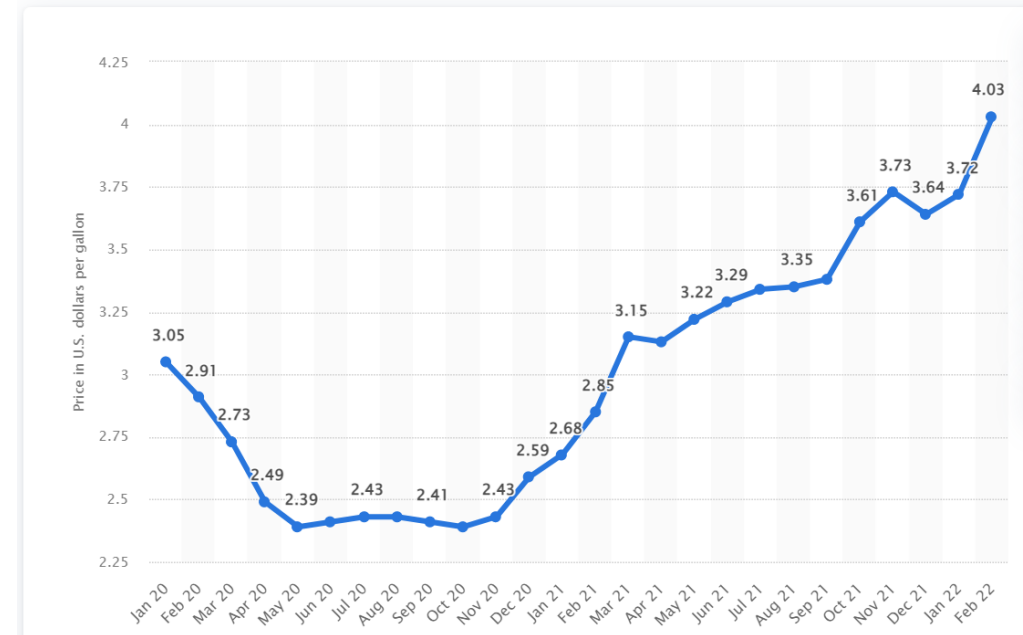


On-Highway Diesel Fuel Prices

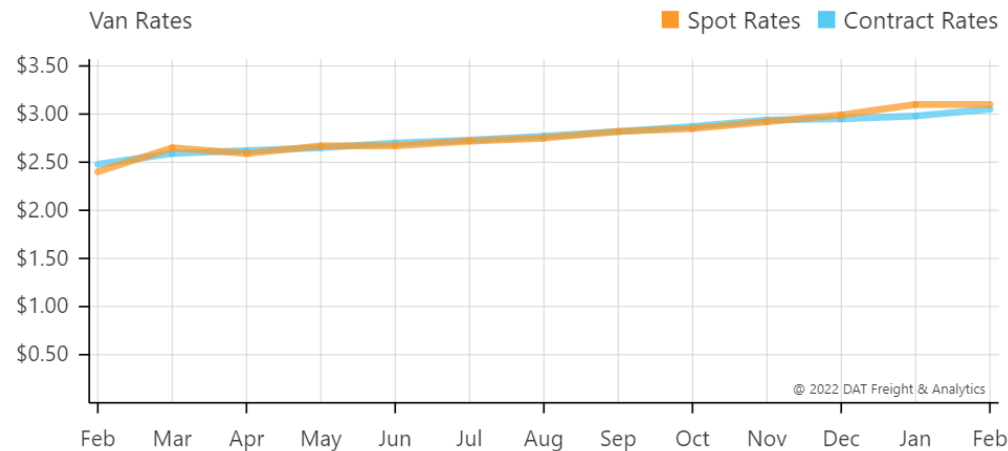
(dollars per gallon)



(in U.S. dollars per gallon)



Van Rates

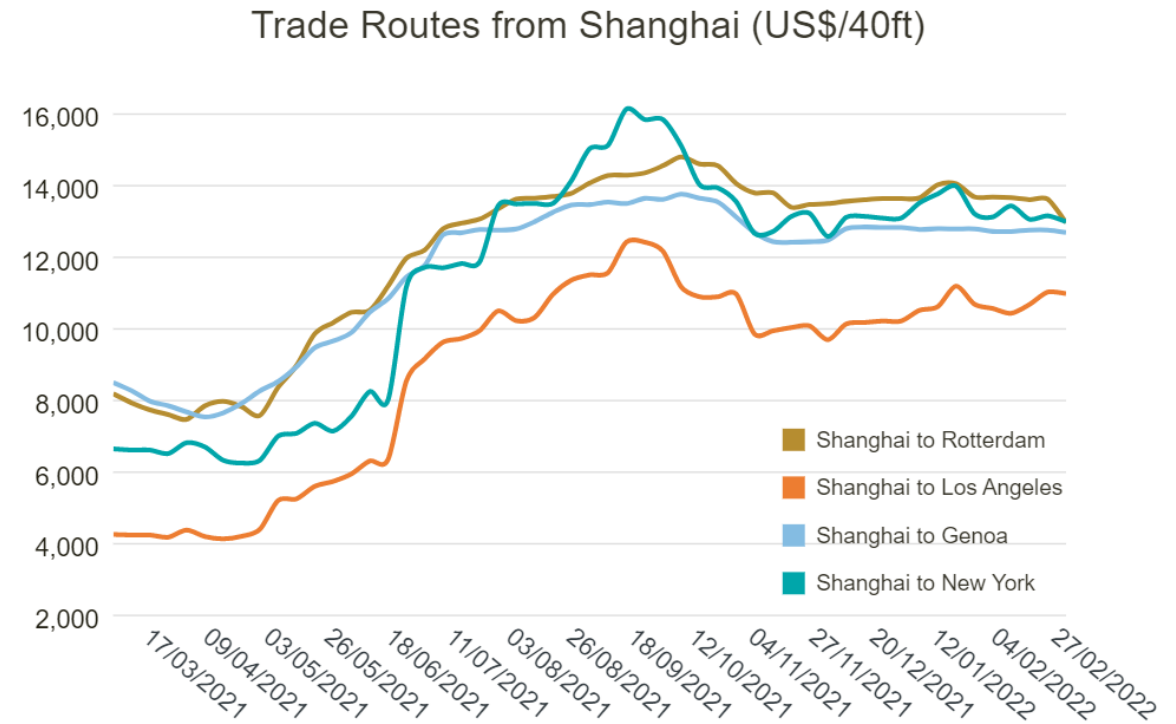
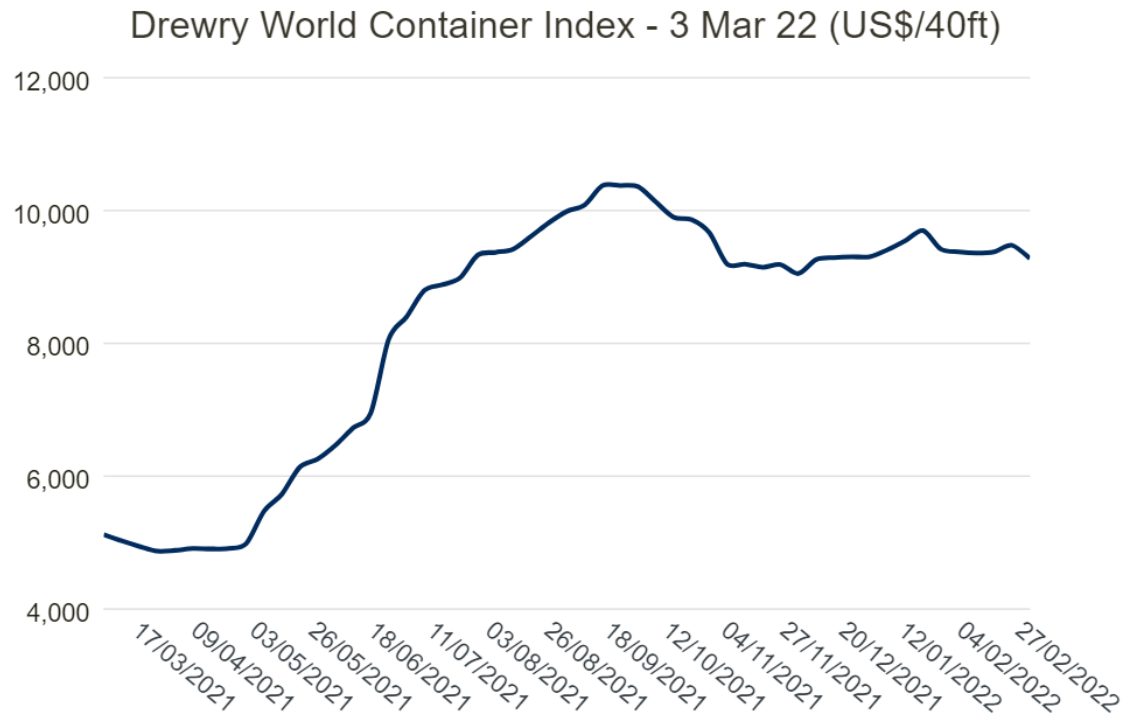


Van Haul Rates are holding steady.

The national average diesel fuel prices have been on a steep rise since January 2021. Prices were at **\$4.10/gallon** as of March 5th and will rise further with the Russian invasion of Ukraine.

Source: U.S. Energy Information Administration

SHIPPING CRISIS: CONTAINER CHALLENGES AND SOARING COSTS



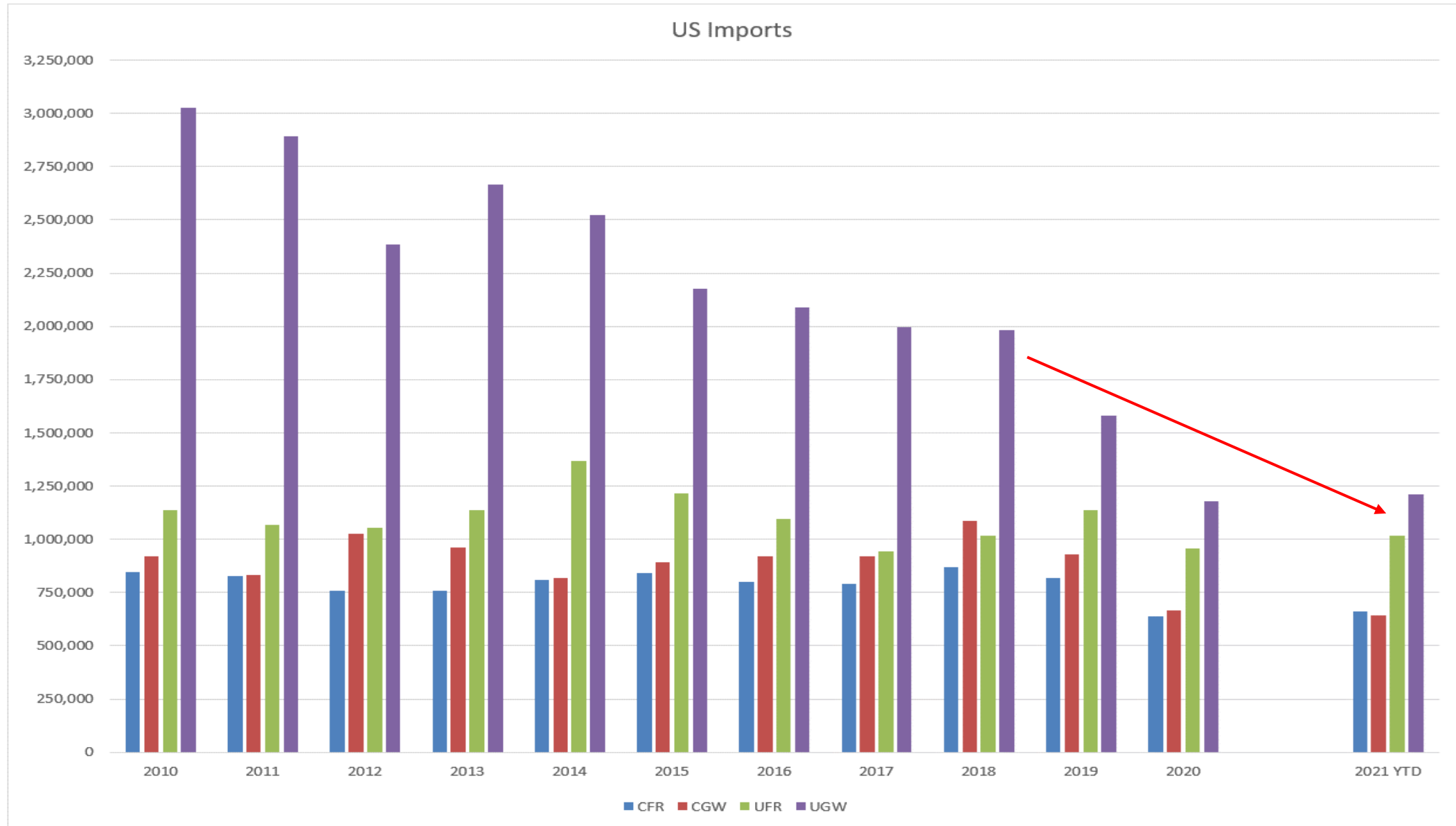
The Drewry World Container Index (WCI), which measures the price of a shipping container, is up 81% from this same time last year, at \$9,279.

The average composite index of the WCI year-to-date is \$9,438 per 40 ft container, which is \$6,367 higher than the 5-year average of \$3,071.

The global shortage of shipping containers, primarily caused by the pandemic, has led to drastic inflation in shipping and container prices and increased delay times for companies that move items all over the world. Shipments to NA out of East Asia are almost double the average.

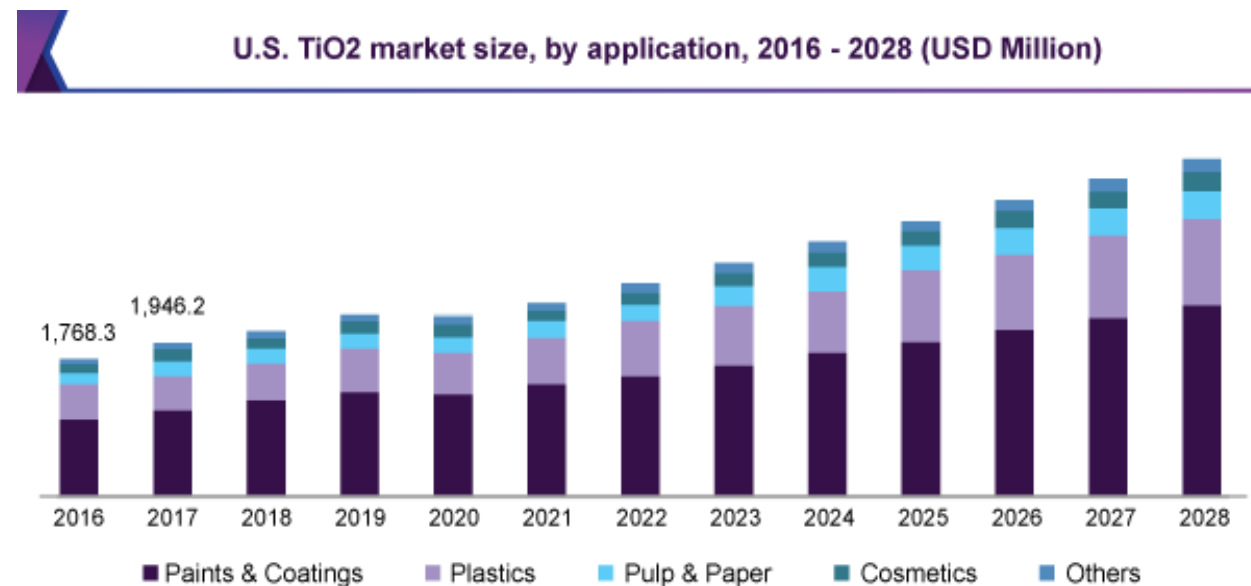
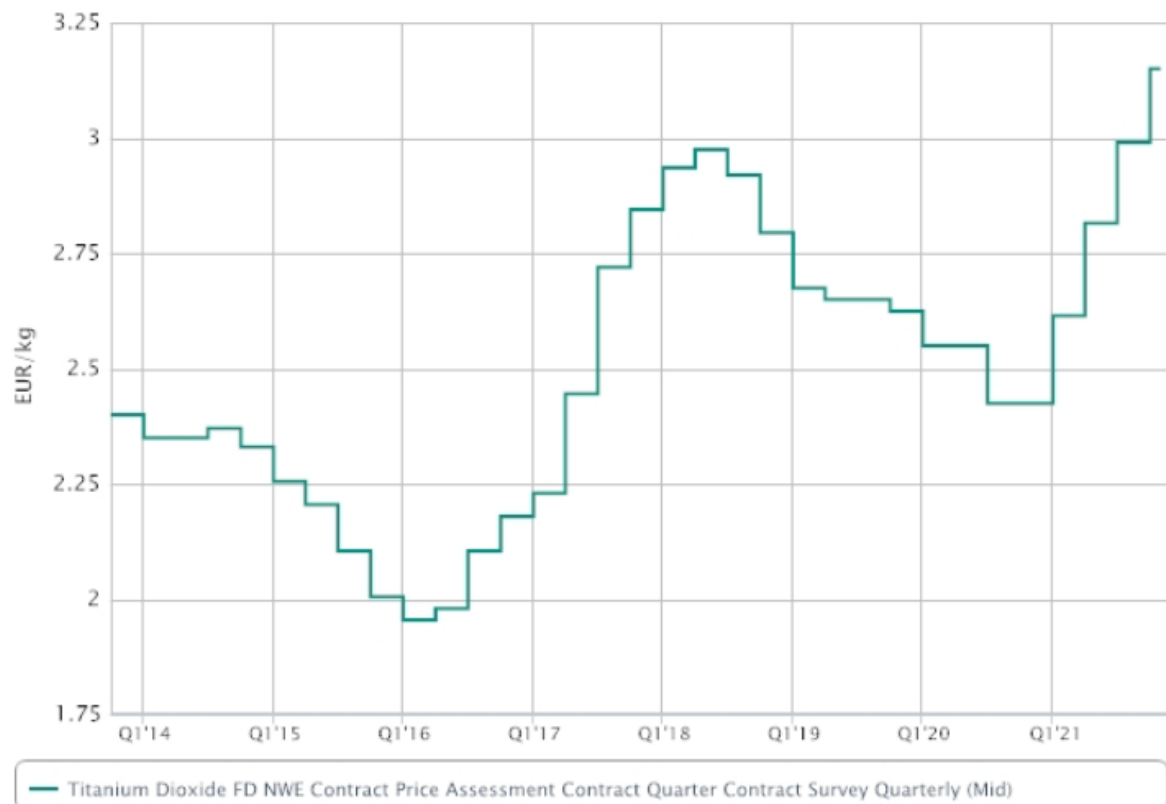
All the links in the supply chain are stretched: Ships, Ship Mooring Space, Containers, Warehouse Space, and Trucks

U.S. IMPORT TRENDS (2010 – 2021)



TITANIUM DIOXIDE INPUT COSTS ON THE RISE

TiO₂ is a filler used in the papermaking process to make paper whiter and stronger.



Source: www.grandviewresearch.com

ANNUAL SHIPMENTS & CAPACITY COMPARISON



Coated Freesheet				Coated Mechanical				Uncoated Freesheet				Uncoated Mechanical			
	SADJ Shipments	Capacity	N.A. CFR SADJ Ship/Cap		SADJ Shipments	Capacity	N.A. CM SADJ Ship/Cap		SADJ Shipments	Capacity	N.A. UFR SADJ Ship/Cap		SADJ Shipments	Capacity	N.A. UM SADJ Ship/Cap
Jan-20	240.0	248.3	97%	Jan-20	129.5	167.0	78%	Jan-20	599.0	668.0	90%	Jan-20	214.2	241.7	89%
Feb-20	222.5	248.3	90%	Feb-20	123.3	167.0	74%	Feb-20	612.0	668.0	92%	Feb-20	188.0	241.7	78%
Mar-20	219.8	248.3	89%	Mar-20	140.8	167.0	84%	Mar-20	624.0	668.0	93%	Mar-20	206.2	241.7	85%
Apr-20	148.2	244.3	61%	Apr-20	102.9	153.0	67%	Apr-20	424.0	652.0	65%	Apr-20	152.8	241.7	63%
May-20	106.7	244.3	44%	May-20	77.1	153.0	50%	May-20	395.0	652.0	61%	May-20	127.4	241.7	53%
Jun-20	128.2	244.3	52%	Jun-20	85.3	153.0	56%	Jun-20	455.0	652.0	70%	Jun-20	122.5	241.7	51%
Jul-20	160.1	208.3	77%	Jul-20	79.8	138.7	58%	Jul-20	505.0	617.0	82%	Jul-20	139.5	241.7	58%
Aug-20	167.1	208.3	80%	Aug-20	93.5	138.7	67%	Aug-20	493.0	617.0	80%	Aug-20	145.0	241.7	60%
Sep-20	186.2	208.3	89%	Sep-20	112.4	138.3	81%	Sep-20	540.0	617.0	88%	Sep-20	156.3	226.7	69%
Oct-20	196.4	190.7	103%	Oct-20	103.9	132.3	79%	Oct-20	527.0	594.7	89%	Oct-20	156.0	226.7	69%
Nov-20	190.7	190.7	100%	Nov-20	97.5	132.3	74%	Nov-20	510.0	594.7	86%	Nov-20	158.8	226.7	70%
Dec-20	195.0	190.7	102%	Dec-20	93.1	132.3	70%	Dec-20	510.0	594.7	86%	Dec-20	165.0	226.7	73%
	2,160.9	2,674.8	81%		1,239.1	1,772.6	70%		6,194.0	7,595.1	82%		1,931.7	2,840.4	68%
Jan-21	167.7	180.0	93%	Jan-21	82.7	105.3	79%	Jan-21	500.0	574.7	87%	Jan-21	166.1	203.3	82%
Feb-21	168.7	180.0	94%	Feb-21	94.1	105.3	89%	Feb-21	475.0	574.7	83%	Feb-21	166.4	203.3	82%
Mar-21	199.9	180.0	111%	Mar-21	106.0	105.3	101%	Mar-21	543.0	574.7	94%	Mar-21	198.9	203.3	98%
Apr-21	185.0	181.7	102%	Apr-21	98.5	105.3	94%	Apr-21	509.0	548.7	93%	Apr-21	161.3	194.0	83%
May-21	188.3	181.7	104%	May-21	105.3	105.3	100%	May-21	504.0	548.7	92%	May-21	170.3	194.0	88%
Jun-21	200.6	181.7	110%	Jun-21	112.1	105.3	106%	Jun-21	546.0	548.7	100%	Jun-21	163.3	194.0	84%
Jul-21	187.4	181.7	103%	Jul-21	92.9	107.3	87%	Jul-21	528.0	548.7	96%	Jul-21	160.1	190.7	84%
Aug-21	183.1	181.7	101%	Aug-21	100.9	107.3	94%	Aug-21	538.0	548.7	98%	Aug-21	163.5	190.7	86%
Sep-21	164.4	181.7	90%	Sep-21	101.8	107.3	95%	Sep-21	489.0	548.7	89%	Sep-21	170.4	190.7	89%
Oct-21	159.1	183.3	87%	Oct-21	92.0	93.3	99%	Oct-21	520.0	548.7	95%	Oct-21	166.6	190.7	87%
Nov-21	166.6	183.3	91%	Nov-21	89.6	93.3	96%	Nov-21	503.0	548.7	92%	Nov-21	170.3	190.7	89%
Dec-21	184.8	183.3	101%	Dec-21	89.8	93.3	96%	Dec-21	499.0	548.7	91%	Dec-21	169.7	190.7	89%
YTD	2,155.6	2,180.1	99%		1,165.7	1,233.6	94%		6,154.0	6,662.4	92%		2,026.9	2,336.1	87%

COATED AND SUPER CAL WEB GRADES REMAIN IN FLUX



Evergreen Packaging Pine Bluff discontinued all **TruSpec** grades in Q4 2021.

ND Paper discontinued **Sirius**, their short-lived coated freesheet grade #2. Also removed long-time brands, **Vision**, **Dependoweb** and **Capri** from their line-up.

Catalyst discontinues all SC and Book grades that were made at Powel River mill as well as **Electracote Brite** in 2022.

Stora Enso shuts down the Veitsiluoto mill and discontinues their **NovaPress** grade #3.

Verso shut down the Duluth mill and discontinued their SC grades (**Voyager** and **Superior**). In 2021 they also discontinued the **Velocity** and **Balance** grades.

Resolute Forest Products and *UPM* are both making SCA++ grades now.

New-Indy shut down the Catawba mill and discontinued coated grades in 2020 for a full conversion to packaging grades.

AF&PA Classification GE Brightness/Tappi T452	Grade #1 Freesheet ≥ 91.0	Grade #2 Freesheet 87.0 to 90.9	Grade #2 Groundwood ≥ 87.0	Grade #3 Freesheet 82.0 to 86.9	Grade #3 Groundwood 82.0 to 86.9	Grade #4 Freesheet ≤ 81.9	Grade #4 Groundwood 75.0 to 81.9	Grade #5 Groundwood ≤ 74.9	SCA, SCB, SNC, MFC, LWU
PAPER MILLS									
Burgo		Tecno Plus (95 ISO) (Sa) R4 Gloss (95 ISO) (M) (Sa) (RG) Respecta Web (95 ISO) (M) (Sa)	Uno Bright (90-94 ISO) (Sa)		Uno Prime (88-89 ISO) (M) (Sa)			Uno Web (71-78 ISO) (RG)	
Catalyst					Advance (85-87) (87 M) Ascent (82-84) (M 83) (S 83) * available as Sage brand		Pacificote (79-80) Electracote Brite (75-76) * available as Sage brand	Electracote (71-73) * available as Sage brand	
Irving Paper									Opulence SCA++ (74-75) (RG) Radiance SCA+ (70) (RG) Irving SCA (68) (RG) Ultrasmooth SCB (65) (RG)
Kruger Paper					Krukote (80) (Sa) (pcw)		Krukote (76) (Sa) (pcw)	Krukote (70-72) (Sa) (HB-70)	
ND Paper		Orion (88) (Sa) (M) (pcw)		Oxford C1S (86) (HB 89)			Escanaba (80-82) (M 82) (RG 78-80) (pcw)	Consoweb (70-73) (Sa 73) (RG 71-73) (pcw) Consoweb HB (70-73) (pcw)	
Norske Skog (NorCell)			Norcote Trend H (92-95 ISO) Norcote Top H (92-93 ISO)		Norcote Super H (85-87 ISO) Norcote Silk H (86-88 ISO)			Norcote H (75-76 ISO) Norcote Satin H (76 ISO)	NorSC Polar (76-80 ISO) (RG) NorSC Lite (69 ISO) (RG) NorSC Value (65 ISO) (RG)
Port Hawkesbury									Artisan SCA++ (75-77) (80) (RG) Prominence Plus SCA+ (70-71) (RG) Prominence SCA (67-68) (RG) Maritime SCB (65) (RG)
Rayonier Advanced Materials		Kallima Web Coated Cover C1S / C2S (90)							
Resolute Forest Products									ResoluteSCA++ (75 ISO) ResoluteSCA+ (70-71 ISO) (RG) ResoluteSCA (68 ISO) ResoluteSCB (63 ISO) ResoluteSNC (63 ISO) ResoluteSelect (75, 70, 65) ResoluteBook (75, 70, 65, 60)
Sappi	McCoy (96) (M) (Si) (V) Opus (92) (D) (Sa) (M) (pcw) Opus PS (92) (D) (M) (pcw) Opus 30 (92) (D) (M)	Somerset (88) (M) (Sa) (pcw)	Galerie Fine (92-99 ISO) (Si) (HB)	Flo Web (82-83) (M) (pcw)	Galerie Brite (85-87 ISO) (HB)			Galerie Lite (68-73 ISO) (HB)	
Steinbeis							Charisma Brilliant Plus (81 ISO) Charisma Brilliant (79-80 ISO) Silk (81.5-83 ISO)		
Stora Enso	Lumi (99 ISO) (Si)						StellaPress (87 ISO) (HB)		MagniPress SCA+ (71-75 ISO) (RG) PublPress SCA (67 ISO) (Sa) (RG) Envipress SCB (66-67 ISO) (RG) PrimaPress (80-81 ISO) (RG)
Twin Rivers Paper Company									Border Brite (85 ISO) (pcw) Bridge Opaque (80 ISO) (pcw) Bridge Supreme (82 ISO) (pcw) Frontier Opaque (80 ISO) (pcw) Frontier Supreme (82 ISO) (pcw) FraBrite (72 & 76 ISO) (pcw)
UPM	Finesse (EU 95) (Si) (M) (RG)		Star (EU 87-92) (RG EU 88) (M) Star Silk (EU 91-92) (RG EU 88) Valor Heatset (90-91)		Ultra Plus H (83-84) (EU 80-85) (RG EU 80-84) Ultra Plus Silk H (84) (EU 82-87) (RG EU 80-81)		Ultra H (80-81) (M) (RG) (pcw) Ultra Silk H (80-81) (RG) Cote Plus H (76) Cote Plus Silk (77) (EU 76) Valor Gravure (76)	Cote H (70-71) (EU 70-80) (RG 70-71) (RG EU 70-76)	Smart SCA++ (76-80) (RG 76-78) Impresse Plus SCA+ (80) (RG) Cat SCA+ (70-72) (RG 68-76) Max SCA (66-68) (RG) Impresse SCA (68) (RG) Eco SCB (63-74) (RG 63)
Verso Corp.		Sterling Ultra Web (88-90) (D 90) (M 90) (pcw) ArborWeb Plus (88-90) (D 90) (M 90) (pcw) Sterling Ultra Caliper (90) (M) (D)		Influence (86-88) (M) (SG) (RG 88) (pcw) ArborWeb (86-88) (SG) (pcw)	Velocity (85-86) (D) Liberty (82-84) (D 82) (M 83) (pcw)		Balance (80) (pcw)		
WestRock	Tango Coated Cover C1S (92)								
Willamette Falls	Capistrano (92) (D) (M) (pcw) Nature Plus (92) (D) (M)			Sonoma (86-88) (D) (M) (pcw) Nature Web (86-88) (D) (M)					

* Grades listed as Gloss finish; Options: (Cr) Cream, (D) Dull, (GFG) Glare Free Gloss, (LG) Low Glare, (M) Matte, (Sa) Satin, (Si) Silk, (Su) Suede, (SG) Soft Gloss, (V) Velvet; (RG) Gravure, (HB) High Bulk, (pcw) Recycled Fiber Available; *Italic type indicates grade contains recycled fiber*; FSC, PEFC, SFI available on select grades

N.A. MILL MARKET SHARE – COATED FREESHEET



January 2017

COATED
FREESHEET

Company	Volume (tons)	Market Share
Verso Corp.	1,770,000	46%
Sappi	1,240,000	32%
Appleton Coated	390,000	10%
West Linn Paper	250,000	7%
Catalyst	200,000	5%
Total	3,850,000	

January 2022

COATED
FREESHEET

Company	Volume (tons)	Market Share
Sappi	1,000,000	49.6%
Verso	730,000	36.2%
Willamette Falls Paper	200,000	9.9%
ND Paper	85,000	4.2%
Catalyst	0	
Appleton Coated	0	
Total	2,015,000 *	

- Appleton closure (2017)
- West Linn closures (2017)
- Catalyst sale of Biron and Rumford mills to ND Paper (2018)
- Sappi Somerset PM1 SBS Conversion (2018-20)
- Verso Luke Mill Closure (2019)
- West Linn restarts as Willamette Falls Paper (August 2019)
- Verso Wisconsin Rapids Closure (2020)
- ND Paper Rumford R15 Conversion (2020)

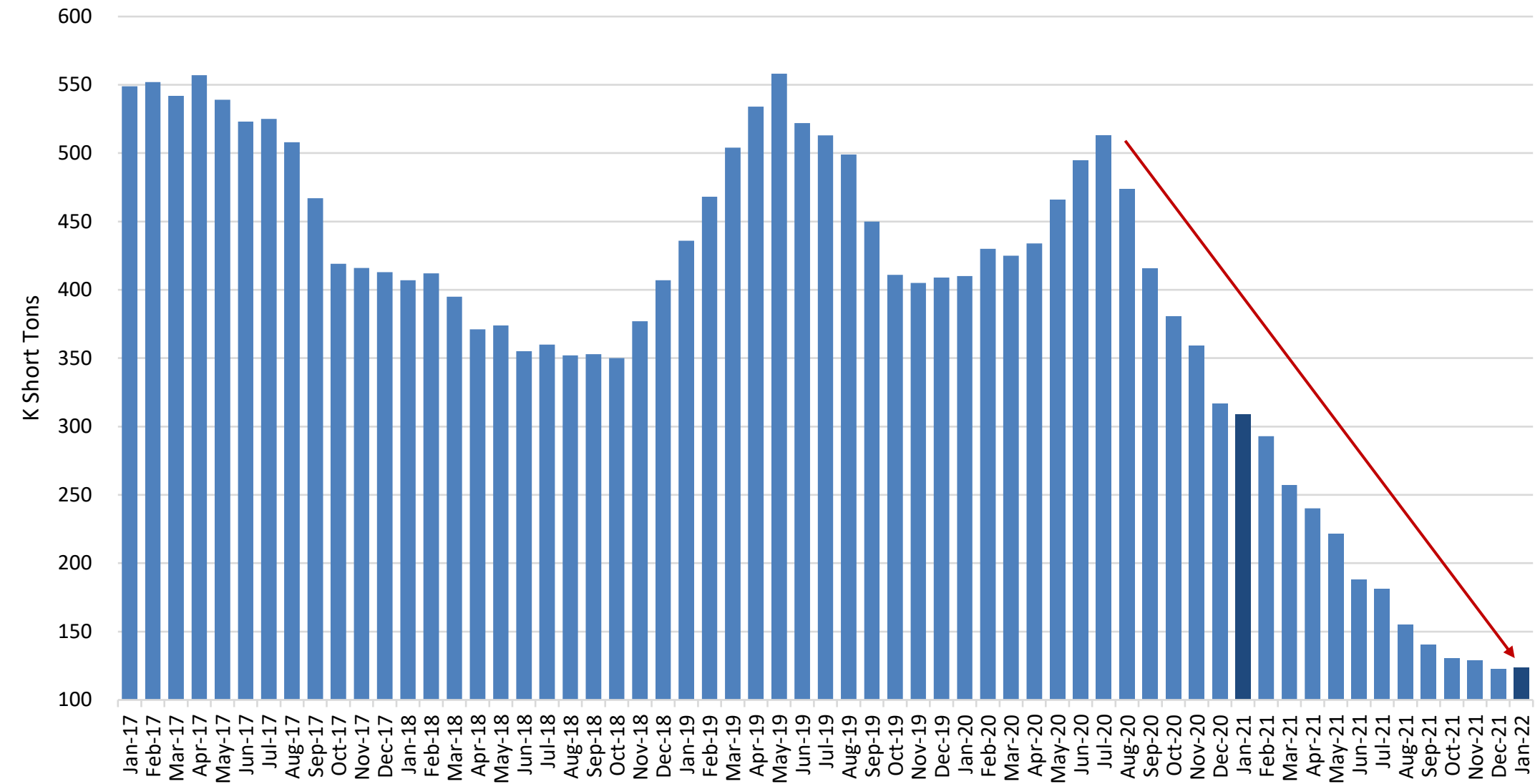
48% less volume today!

* The current volume produced is significantly less than reported. Sappi and Willamette Falls are transitioning some tons away from coated graphic papers to packaging and other grades.

N.A. COATED FREESHEET MILL INVENTORY SIGNIFICANT REDUCTION



NA CFS Mill Month-End Inventory



Source: PPPC

N.A. MILL MARKET SHARE – COATED GROUNDWOOD



January 2017

COATED
GROUNDWOOD

Company	Volume (tons)	Market Share
Catalyst	860,000	32%
Resolute Forest Products	550,000	20%
Verso Corp.	465,000	17%
UPM	390,000	14%
Kruger	275,000	10%
Evergreen Packaging	180,000	7%
Total	2,720,000	100%

January 2022

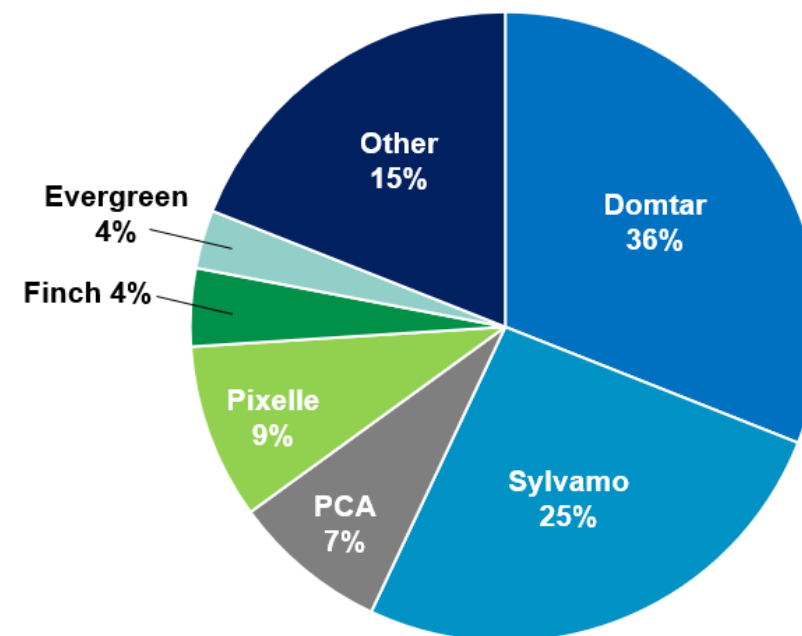
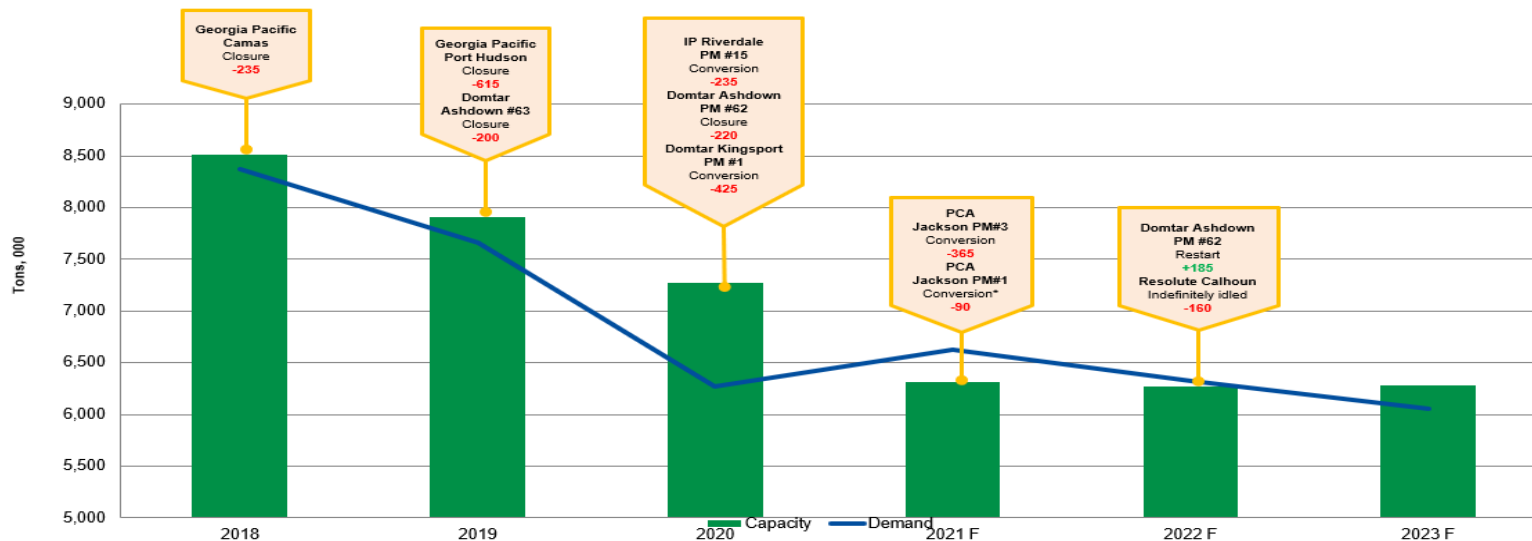
- Catalyst sale of Biron and Rumford mills to ND Paper (2018)
- UPM Blandin PM5 shutdown (2017)
- ND Paper Rumford R15 and Biron PM25 Conversions (2020)
- Resolute (New Indy Catawba Machine) Conversion (May 2020)
- Evergreen shut Pine Bluff mill (2021 Q4)

COATED
GROUNDWOOD

Company	~ Volume (tons)	Market Share
ND Paper *	385,000	23.3%
Verso Corp.	315,000	19.1%
Kruger	275,000	16.7%
UPM	265,000	16.1%
Catalyst (Paper Excellence)	231,000	14.0%
Evergreen Packaging	0	
Resolute Forest Products	0	
Total	1,471,000	100%

* 46% less volume

SIGNIFICANT UNCOATED FREESHEET CAPACITY REDUCTION

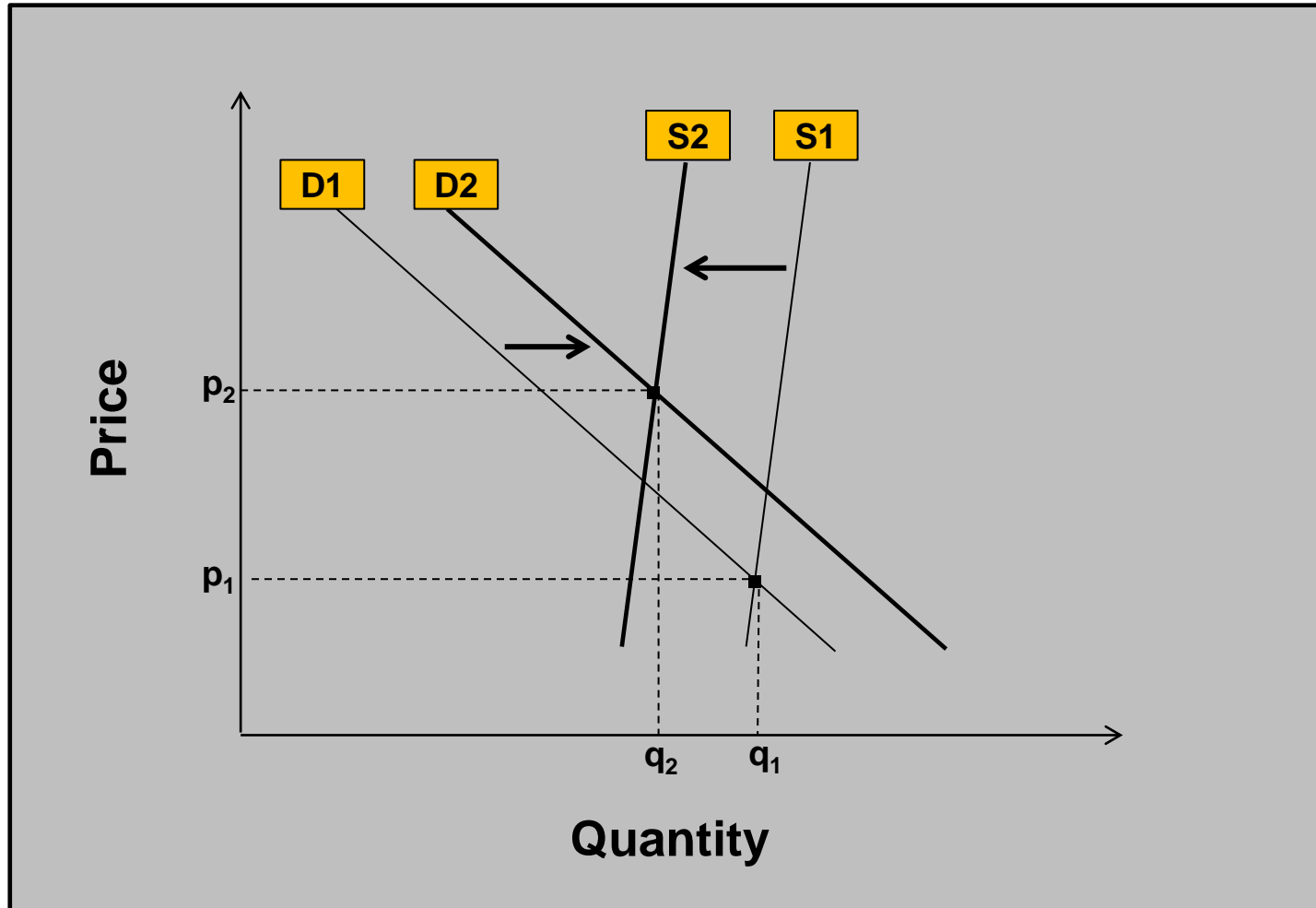


Date	Mill Name	Mill Location	Comments	Tons (,000)
Jan '18	Flambeau River	Park Falls, WI	Perm. shutdown PM# 3	-100
Jan '18	Appleton Coated (Midwest Paper)	Combined Locks, WI	Restart PM# 6 to produce CWF & UWF	50
May '18	Georgia Pacific	Camas, WA	Perm. shutdown PM# 20	-235
May '18	PCA	Wallula, WA	Conversion PM# 3 to Kraft Liner	-75
Mar '19	Georgia Pacific	Port Hudson, LA	Perm. shutdown PM# 3 & PM# 4	-615
June '19	Flambeau River	Park Falls, WI	Perm. shutdown PM# 1 & PM# 2	-65
Aug '19	Neenah Paper	Appleton, WI	PM# 5 Converted to Airlaid Non-Woven	-10
Aug '19	Williamette Falls	West Linn, OR	Restart PM #2	50
Oct '19	Domtar	Ashdown, AR	Perm. shutdown PM# 63	-200
Nov '19	Phoenix Paper	Wickliffe, KY	Restart PM# 21	170
Jan '20	International Paper	Riverdale, AL	Conv. of PM #15 to containerboard	-235

Date	Mill Name	Mill Location	Comments	Tons (,000)*
May '20	Neenah	Neenah, WI	Indefinitely Idled PM# 3	-18
Aug '20	Domtar	Ashdown, AR	PM #62 Closure	-220
Aug '20	Domtar	Kingsport, TN	Conversion of PM # 1 to containerboard	-425
Q1 '21	Domtar	Port Huron, MI	Perm. Closure	-30
Q1 '21	PCA	Jackson, AL	Conversion to Linerboard	-365
April '21	Appvion	Roaring Spring, PA	Mill to closed. Business sold to Pixelle Specialty Solutions	-120
April '21	Midwest Paper	Combined Locks, WI	Conversion to containerboard	-50
Q3 '21	PCA	Jackson, AL	Conversion of PM #1 to corrugated medium; retains UFS capability	-90
Jan '22	Domtar	Ashdown, AR	PM # 62 Restart UFS	185
Feb '22	Resolute	Calhoun, TN	Indefinitely Idled PM #4	-160

Company	# of Mills	# of Paper Machines
Domtar	8	14
Sylvamo/I.P.	2+2	7
PCA-Boise	2	3
Pixelle	2	7
Atlas/Finch	2	5
Evergreen	1	3

Source: RISI, PPPC, Domtar



The microeconomic relationship between the quantity demanded and pricing in the current paper market.

Where are we now?
Supply Decreasing
Demand Increasing
= Prices Rising