



WIN, LOSE OR DRAW

A MARKETS RETROSPECTIVE OF THE PLASTICS SUPPLY CHAIN

Presented by Kathy Hall
November 5, 2021

Presented by **Kathy Hall**

Executive Director Product Management, Global Petrochemicals

Kathy monitors market news and behaviors, including plant shutdowns, import/export activity and chemical industry investment commitments. She has watched these markets for 25+ years and can speak to the markets' history and evolution. Her perspectives on what drives and influences these markets are popular in the marketplaces and she is a sought-after speaker and trainer on these key markets.

Kathy spent 10+ years at Platts, started PetroChem Wire in 2007 and sold the company to OPIS (owned by IHS Markit) in 2018.



Presentation Overview:

- **A Trip Down Memory Lane**
 - > January – April 2020
 - > May – August 2020
- **And Now, For the Weather**
 - > August 2020 and the Aftermath
- **Stumbling into 2021, Adjusting to Long-Term ‘New Normal’**
- **What’s Ahead for 2022**
- **Conclusions & Takeaways**
- **Q&A Session**



Today's news ain't news to us It's just now hitting consumers at home

B Bloomberg.com

Supply Chain Crisis Has Central Banks Facing Stagflation Lite

New Bloomberg Economics gauges show the extent of the global supply shortages that are pushing prices higher and putting economic recoveries...

11 hours ago



W Yahoo Finance

Walmart is hiring 'supply chain associates' \$20.37 per hour on average

Walmart (WMT) is holding a national supply chain-hiring event later this week. The average wage for the retail giant's supply chain...

22 hours ago



W Yahoo Finance

Microsoft announces new tools to modernize supply chain and manufacturing

The pandemic has wreaked havoc on the world's supply chains for a number of reasons from a lack of raw material to labor shortages...

50 mins ago



G Gothamist

Early Addition: The Supply Chain Meltdown Has Finally Come For Financial District Pret-A-Mangers

Because NASA is figuring out how to make the sonic boom a "sonic thump," here are your early links: balloon on the loose, tuna baguette...

1 day ago



NBC29.com

Bodo's Bagels faces supply chain issues

CHARLOTTESVILLE, Va. (WVIR) - Supply chain shortages have worked their way to Charlottesville. Annabel Granger, a Bodo's employee,...

16 hours ago




WCPO

'Homegrown' businesses thrive by not depending on clogged 'supply chain'

ERLANGER, KY — The disrupted supply-chain has slowed the delivery of everything from computer chips to potato chips, but some local...

18 hours ago




NBC25

Supply chain issues causing shortages at local liquor stores

Ahead of the holiday season, supply chain issues are causing a shortage of alcohol at local liquor stores.

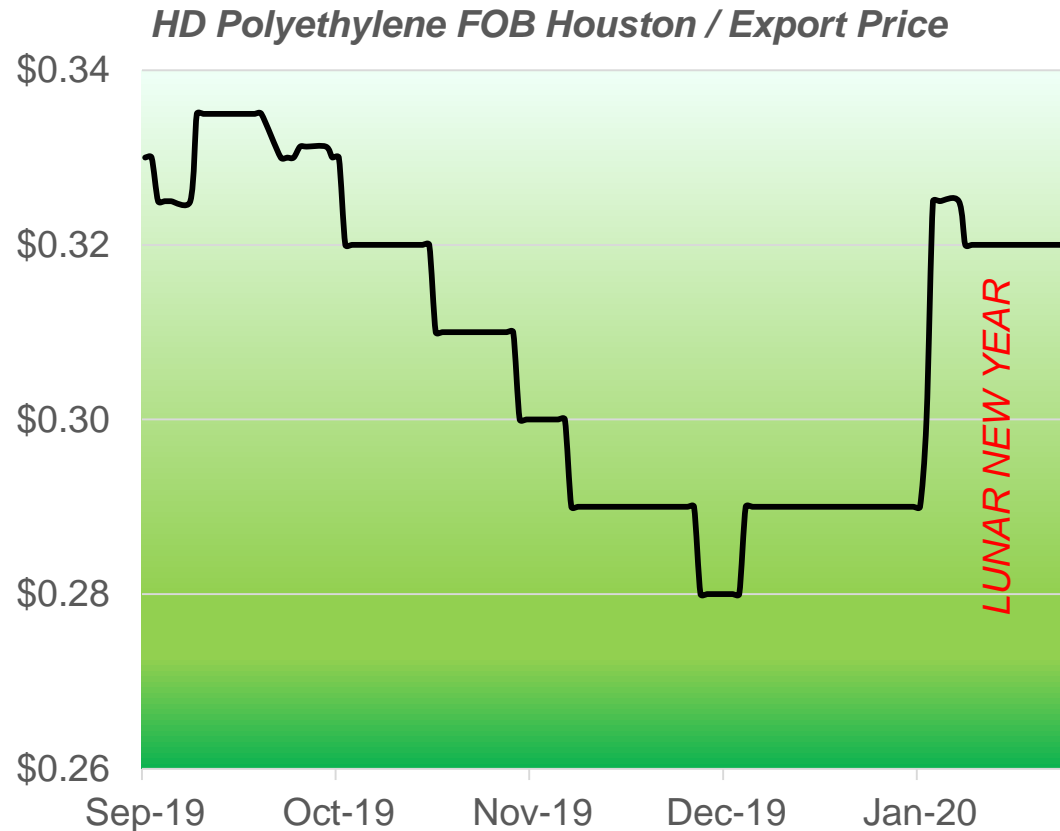
14 hours ago



We've seen this coming for a while...

A Trip down Memory Lane: January - April 2020

Waiting for post-New Year demand, watching a pandemic begin

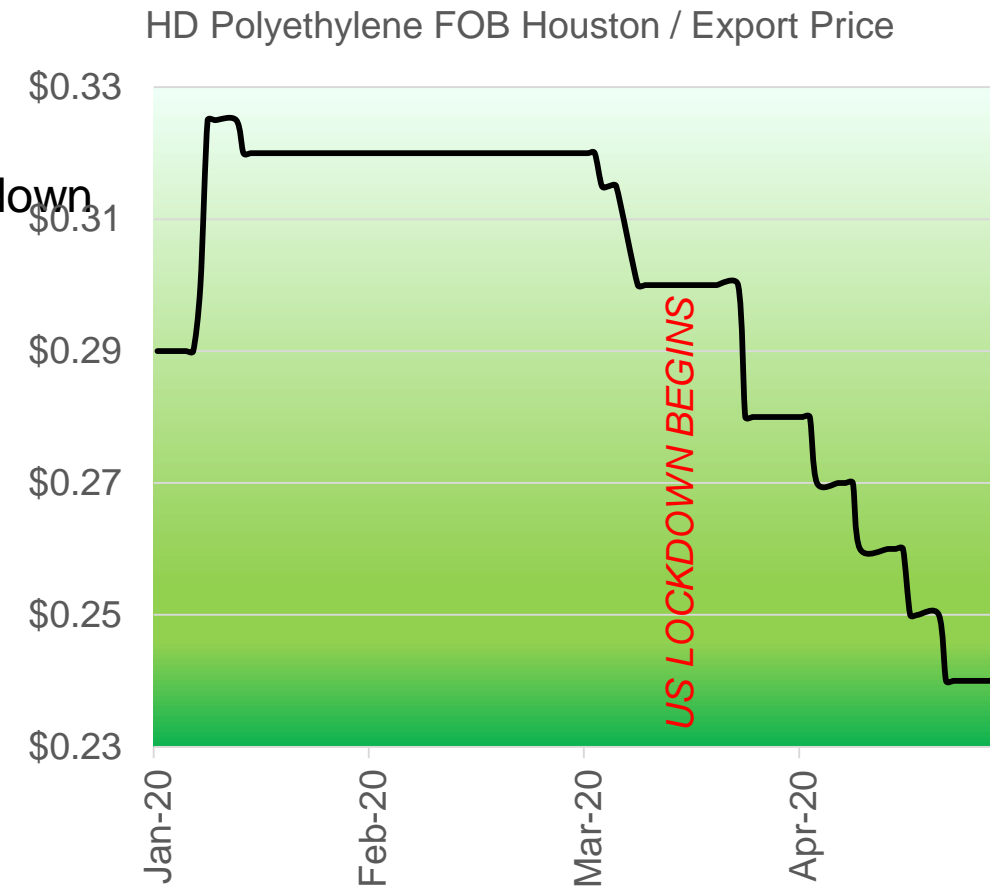
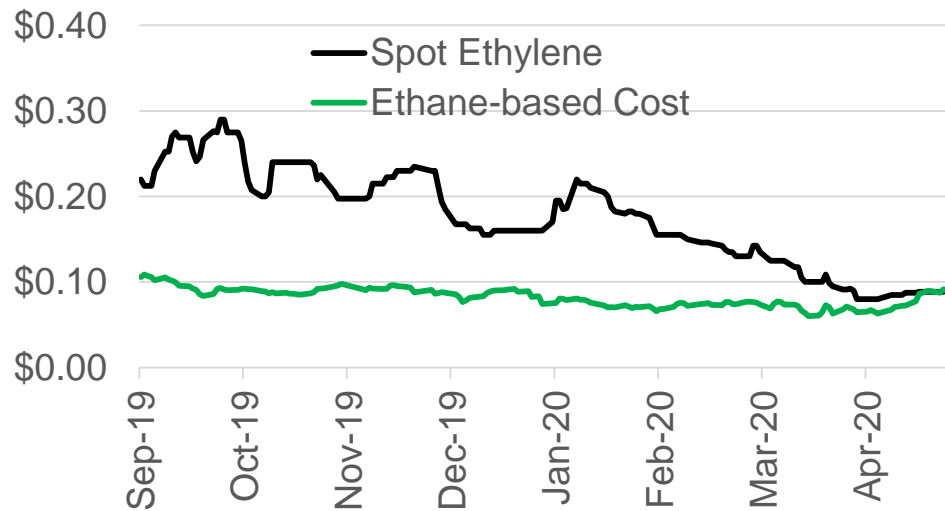


It was a typical end to the year, demand drops off, operating rates are reduced, and we began 2020 in the usual way...

...but Lunar New Year celebrations in Wuhan gave rise to what appeared to be an epidemic, and the world watched what appeared to be a localized situation.

Wading into uncharted waters ... markets stop, then US exports boom

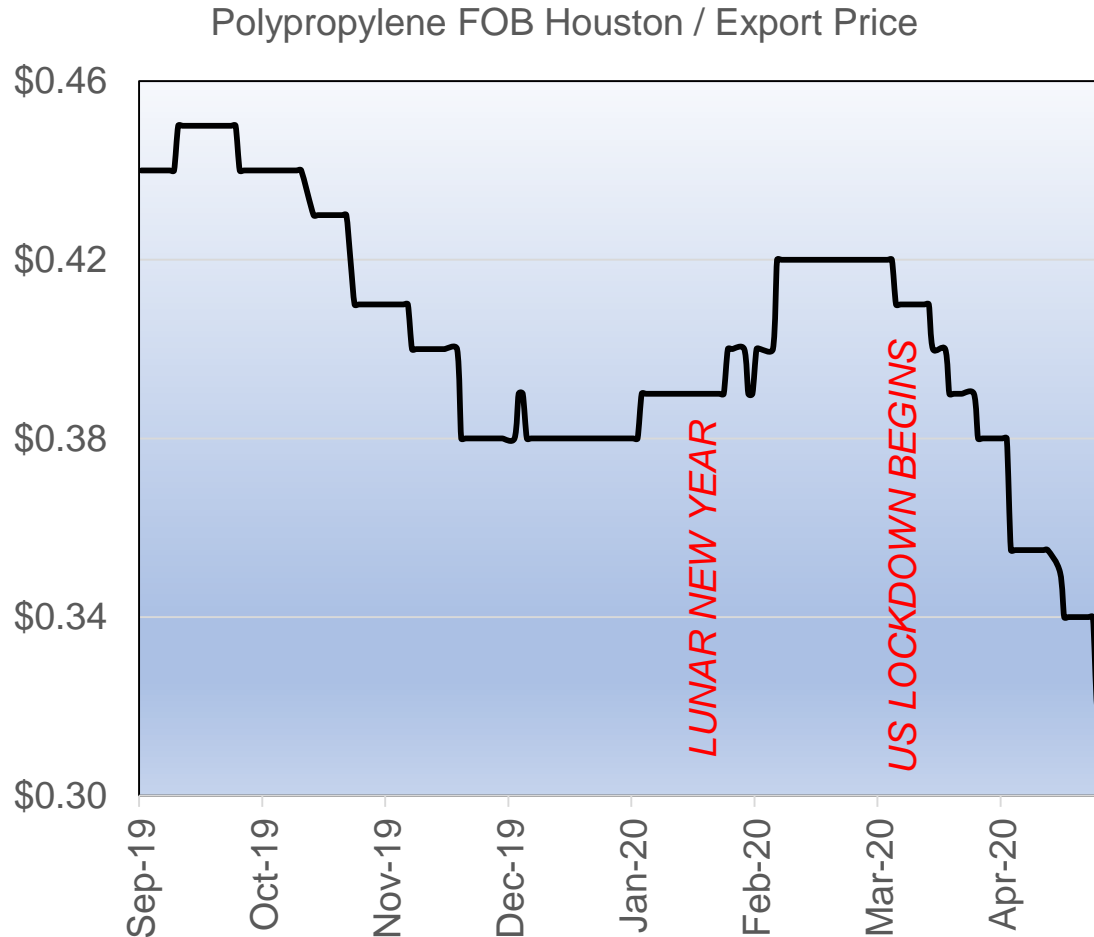
- Resin buying slows domestically
- Prices drift lower
- Resin demand from Asia soars
- Plants in China & US reduce operating rates or shut down
- Worker shortages seen across the chain
- Panic mentality begins in the US





	WIN	LOSE	DRAW
1Q 2020	POLYETHYLENE SELLERS	ETHYLENE PRODUCERS	POLYETHYLENE BUYERS

Meanwhile, over in Polypropylene ... it was much the same story

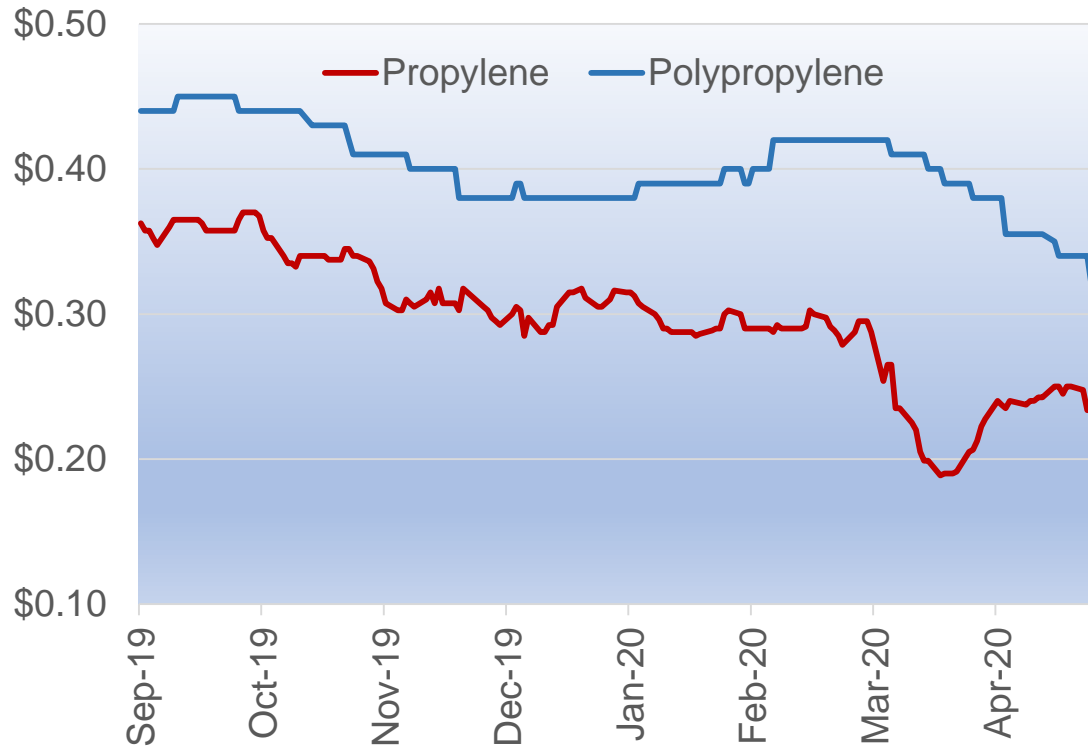


- Polypropylene saw the same general trend as polyethylene
- Slowdown at the end of the year
- Uptick after Lunar New Year
- Early COVID panic caused a tailspin

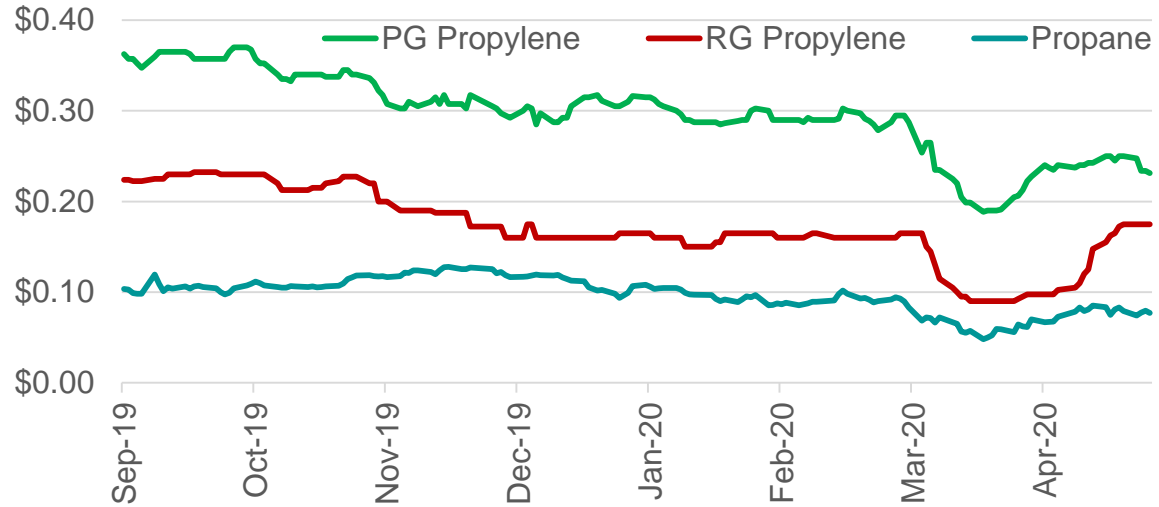
Some fundamental difference to polyethylene

- Different applications – more reliance on automotive
- Far less capacity in the US than PE
- Propylene chain is a ‘two-headed monster’

The demand panic overtook the supply panic



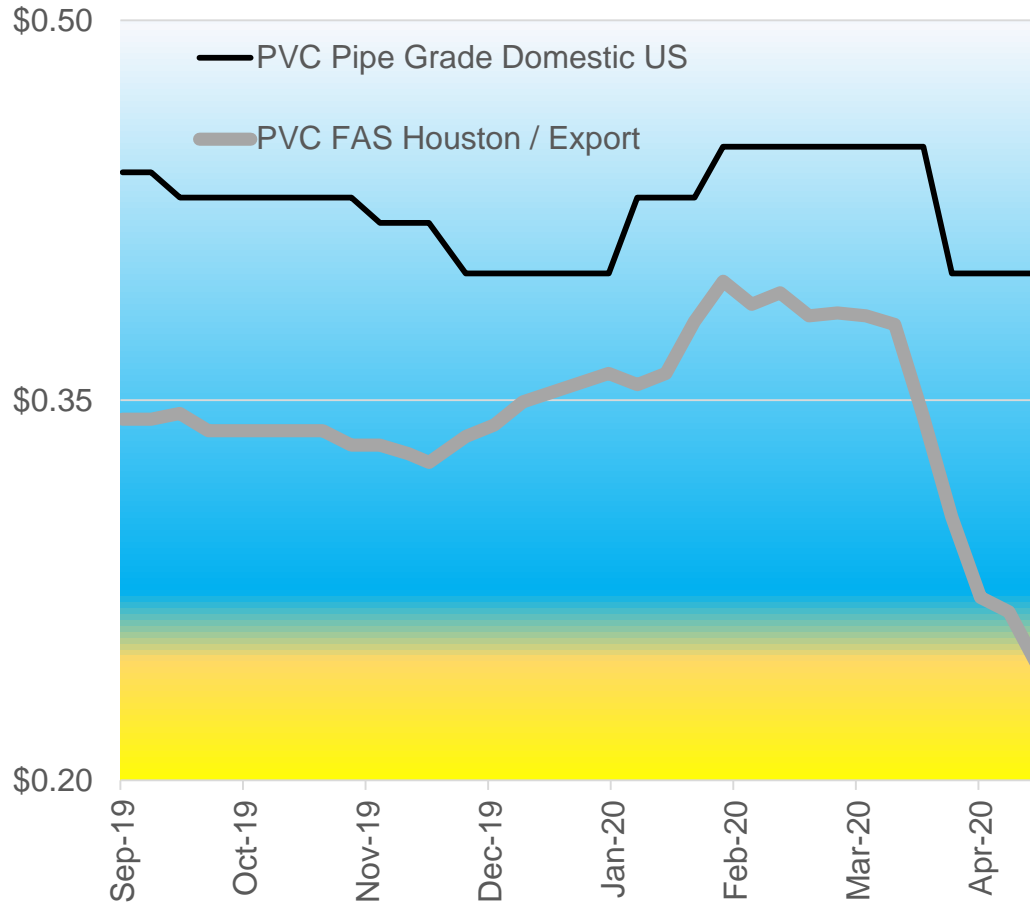
- The effect of a standstill in automotive demand offset the supply issues – otherwise, prices would have fallen more.
- Uncertainty in demand weighed heavily on upstream propylene prices, which restored margin to the resin side in March.



- Remember, propylene is made two ways
- Upgrading refinery grade propylene (>90%)
 - Upgrading propane (<10%)

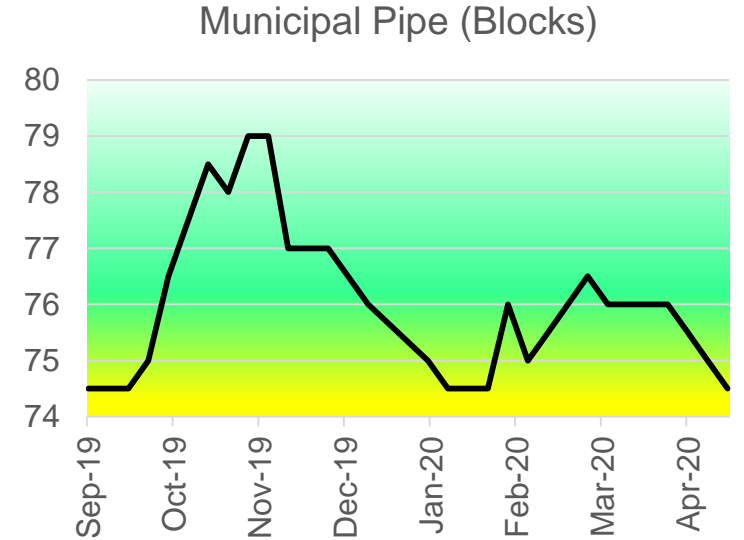
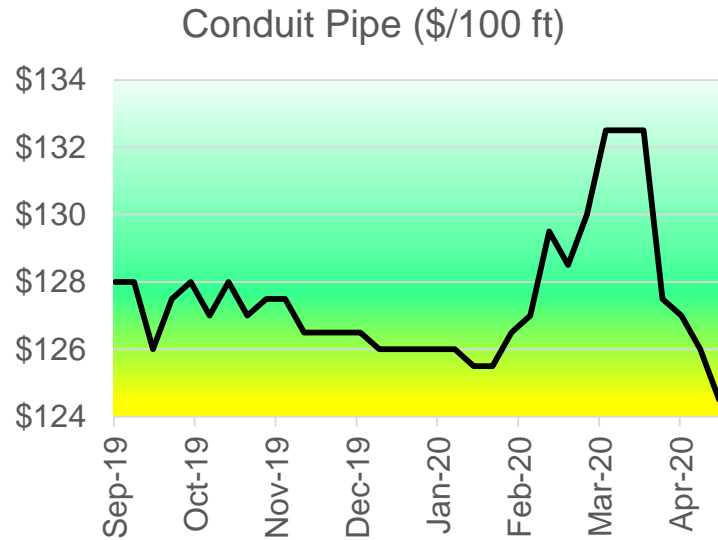
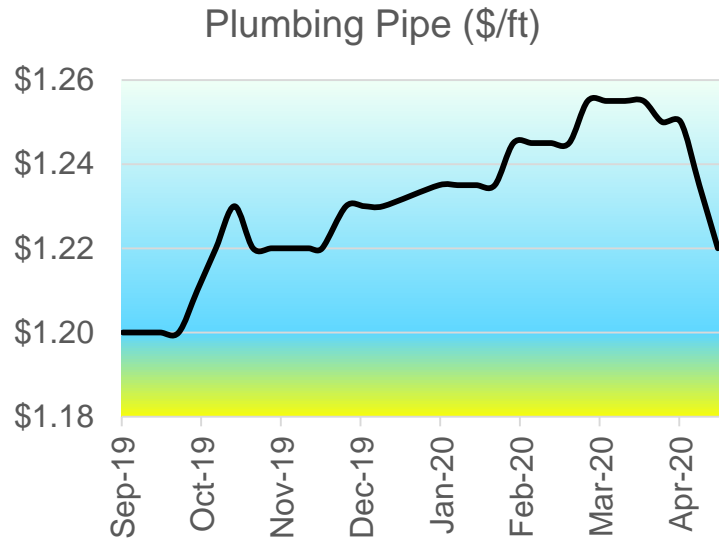
WIN		LOSE	DRAW
1Q 2020		PROPYLENE PRODUCERS	POLYPROPYLENE PRODUCERS POLYPROPYLENE BUYERS

PVC: An Unusual Start to the Year

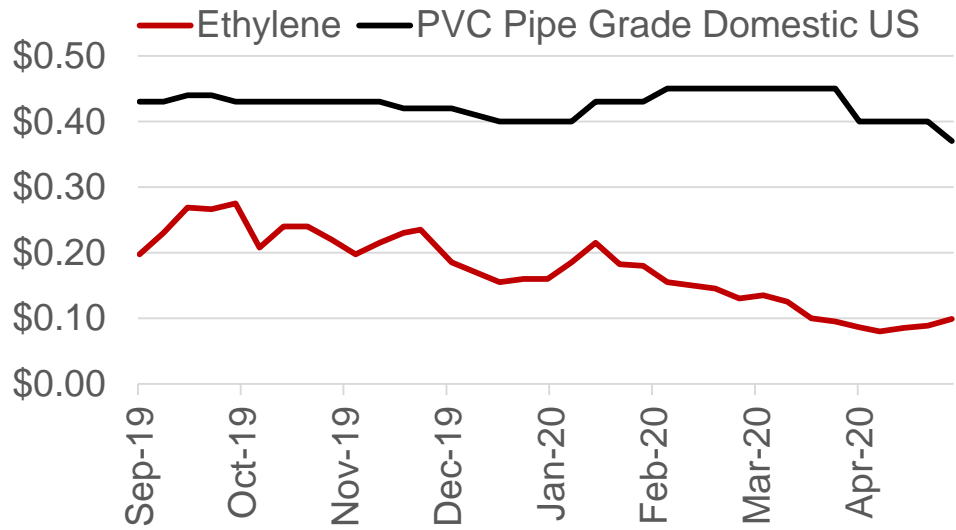


- PVC prices ended 2019 in their usual way – drifting lower as production slowed.
- Being tied so heavily to construction demand, prices rarely rise during cold weather months.
- Exports increased to China as plants there shut, but plants shutting in the US kept export volumes down. Exporters could name their price.
- The export situation was so dramatic that its price spike was credited with dragging US domestic prices higher.
- As the reality of the construction industry stopping in Asia, export prices plummeted, which was unusual as warm weather months approached.

Pipe pricing slides as construction stops



After pushing through their final price increases for 2019, pipe producers expected to see a typical 1Q as builders prepared for the Spring return of construction demand. By April, it was apparent this would not happen as the construction industry froze and prices slipped.



PVC PRICES



PVC MARGINS



ETHYLENE PRICES

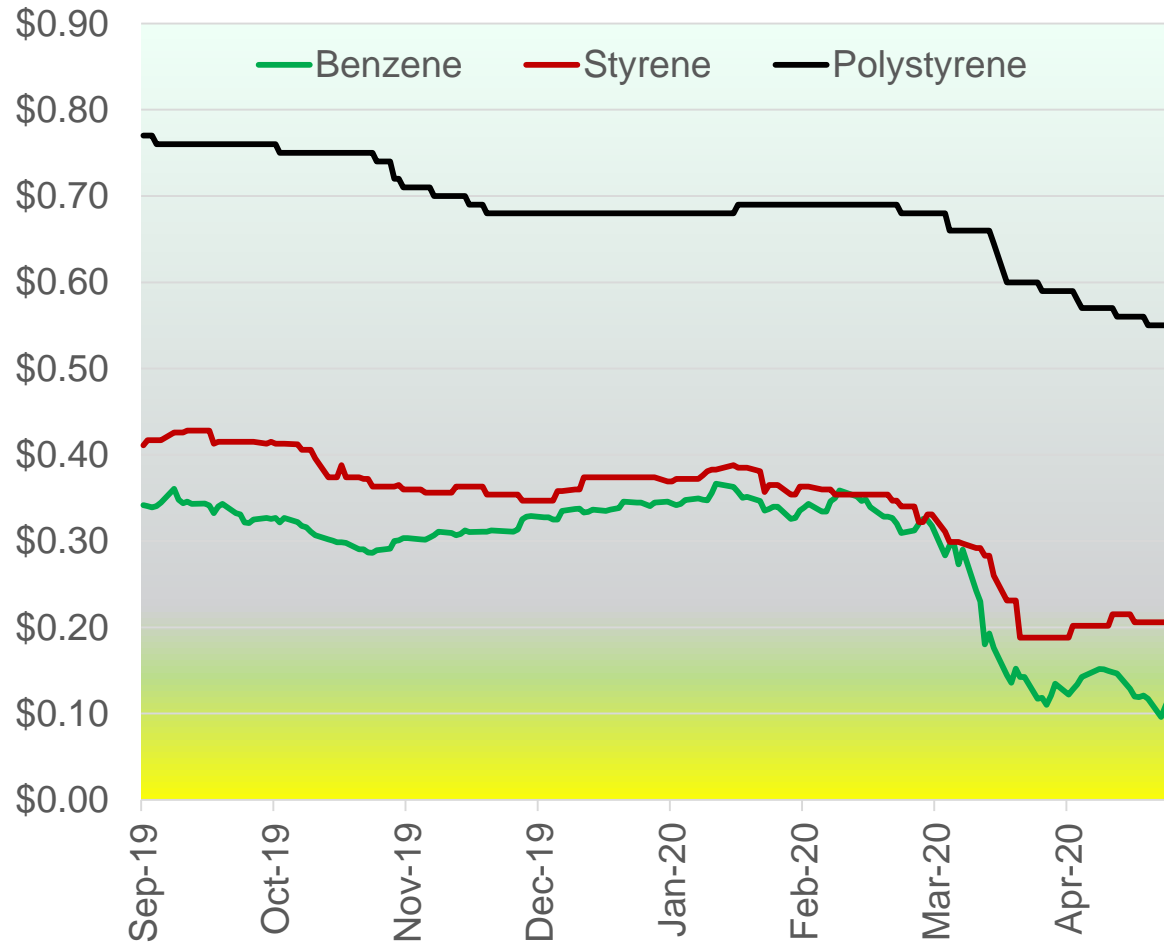


PVC PIPE PRICES



	WIN	LOSE	DRAW
1Q 2020	PVC PRODUCERS	PVC PIPE PRODUCERS PVC EXPORTERS	

Polystyrene: A Different Set of Circumstances

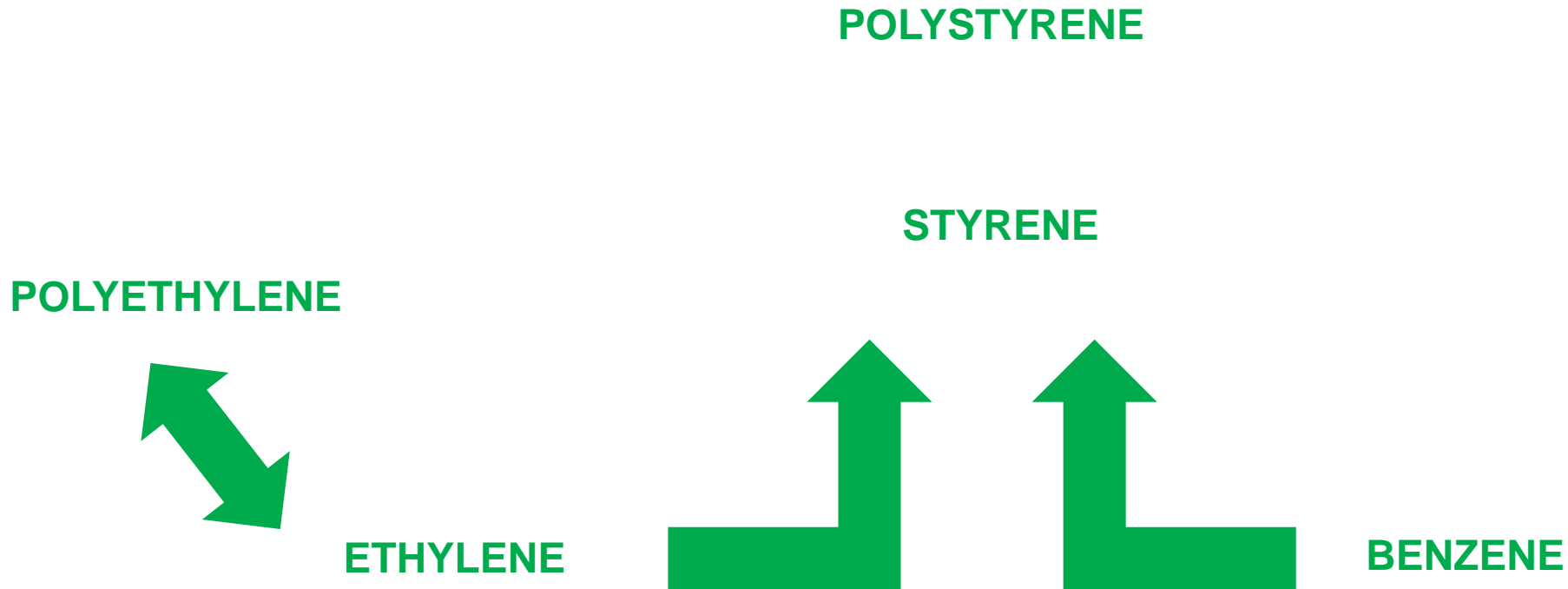


Polystyrene is not an international market because polyethylene and polypropylene, its monomer (styrene) is a robust international market.

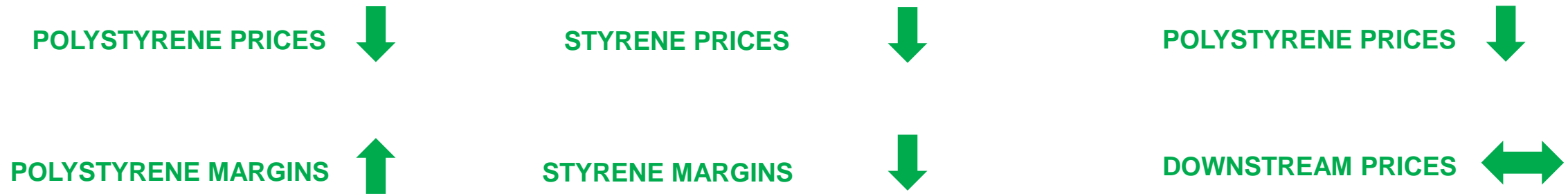
Therefore, the styrene price began to really slump in Asia in February, which affected US styrene prices.

Polystyrene demand in North America took a hit, but margins were okay.

Polystyrene: A Different Set of Circumstances



Polystyrene demand varies per grade – from food packaging to jewel cases to home appliances.
Each fared differently as the pandemic progressed



	WIN	LOSE	DRAW
1Q 2020	POLYSTYRENE PRODUCERS	STYRENE SELLERS	DOWNSTREAM

Memory Lane Continues: May – August 2020

By May 2020, it was becoming apparent that Lockdown could be a long haul.

Demand and consumer behaviors adjusted. Businesses pivoted. Industries arose.

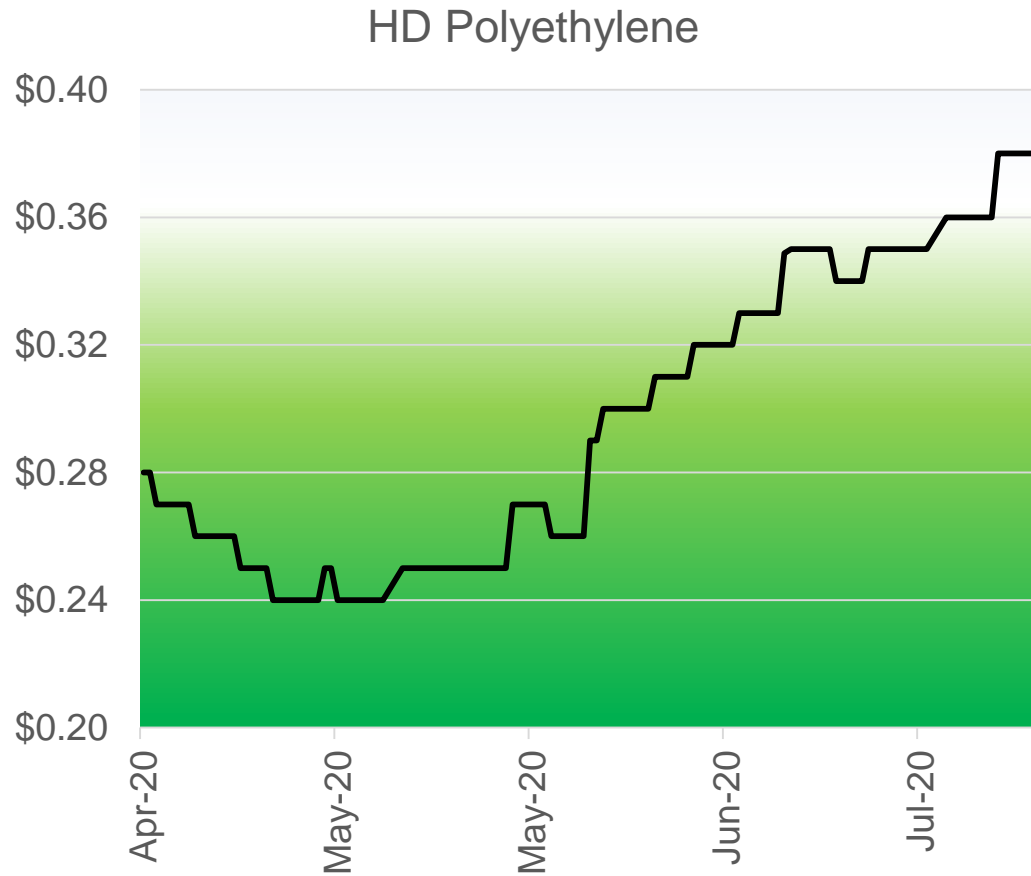


Staying home also shifted packaging demand in significant ways

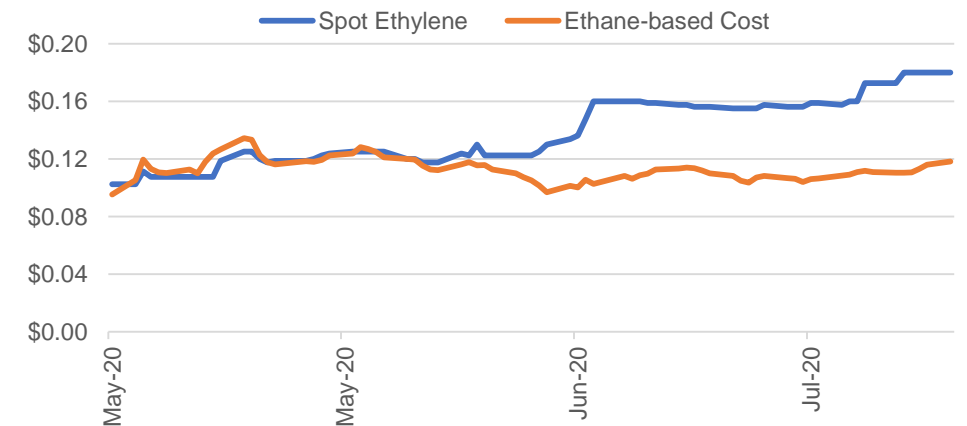


Single-use plastic was all the rage!

Adjusting to a 'new normal' and planning for usual 2H 2020 demand



- Plants increased rates as workplaces adjusted & workers returned
- Exports resumed to an extent – high US prices limited demand
- Restocking of goods along the supply chain boosted demand
- Demand for single-use packaging, PPE and medical equipment stayed strong

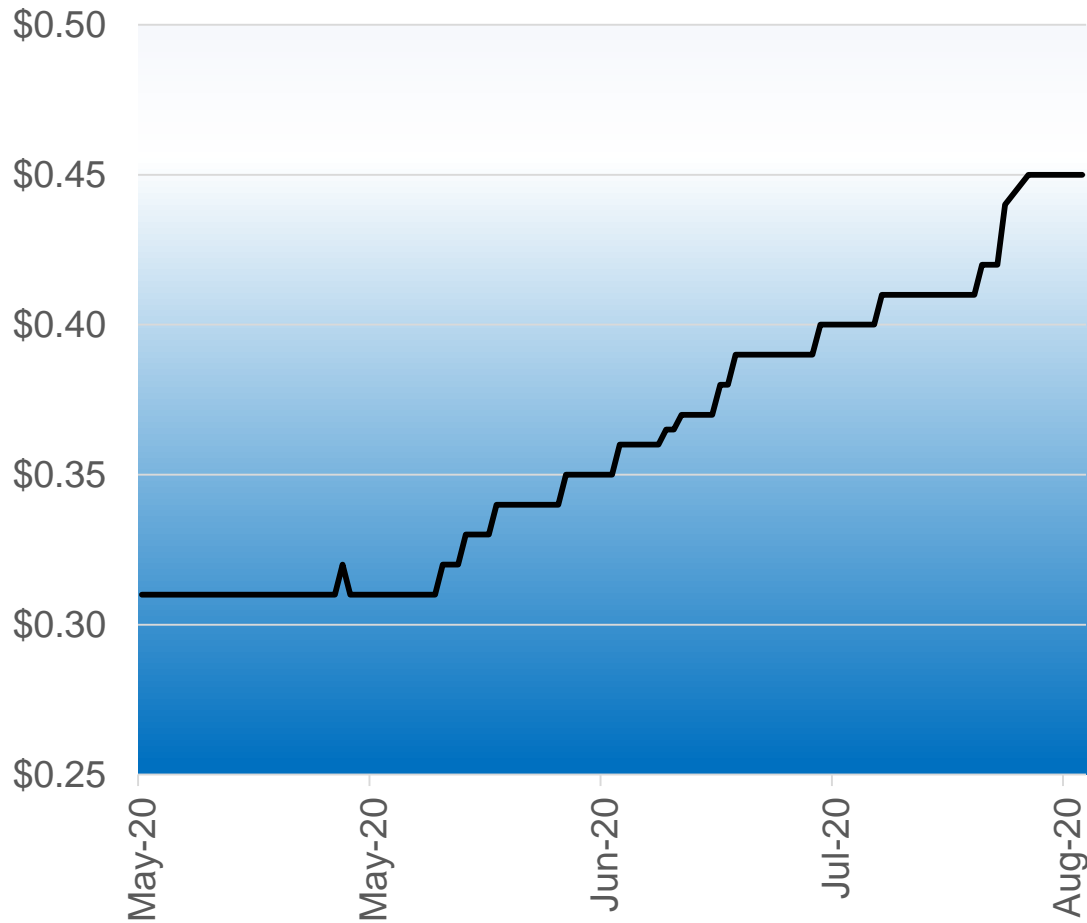


- Ethylene margins became positive again

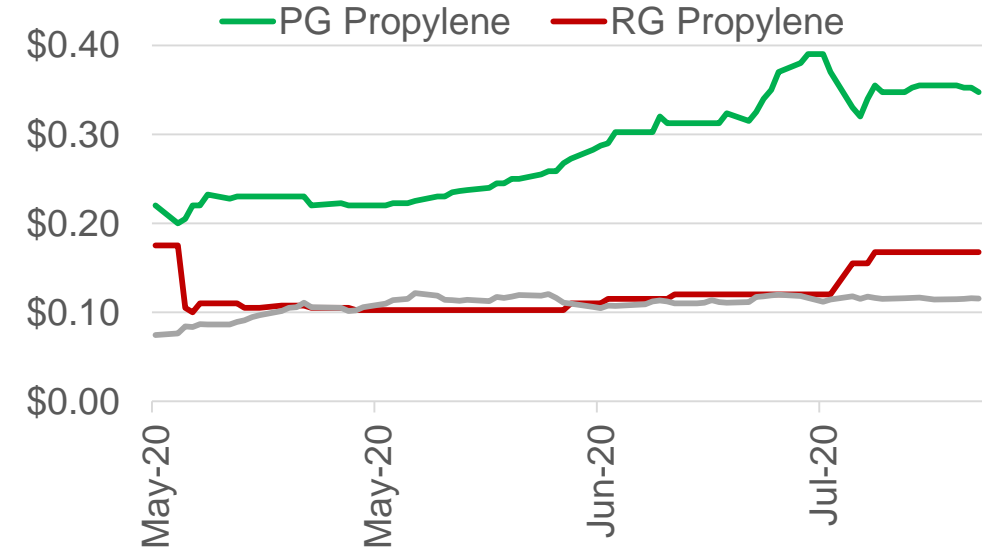


	WIN	LOSE	DRAW
1Q 2020	POLYETHYLENE SELLERS	ETHYLENE PRODUCERS	POLYETHYLENE BUYERS
2Q 2020	POLYETHYLENE SELLERS POLYETHYLENE BUYERS		ETHYLENE PRODUCERS

Polypropylene



- Polypropylene prices rose, but so did propylene.
- Raw/refinery grade propylene prices did not rise much, and propane prices were flat, expanding the margins for the finished grade/polymer grade propylene.



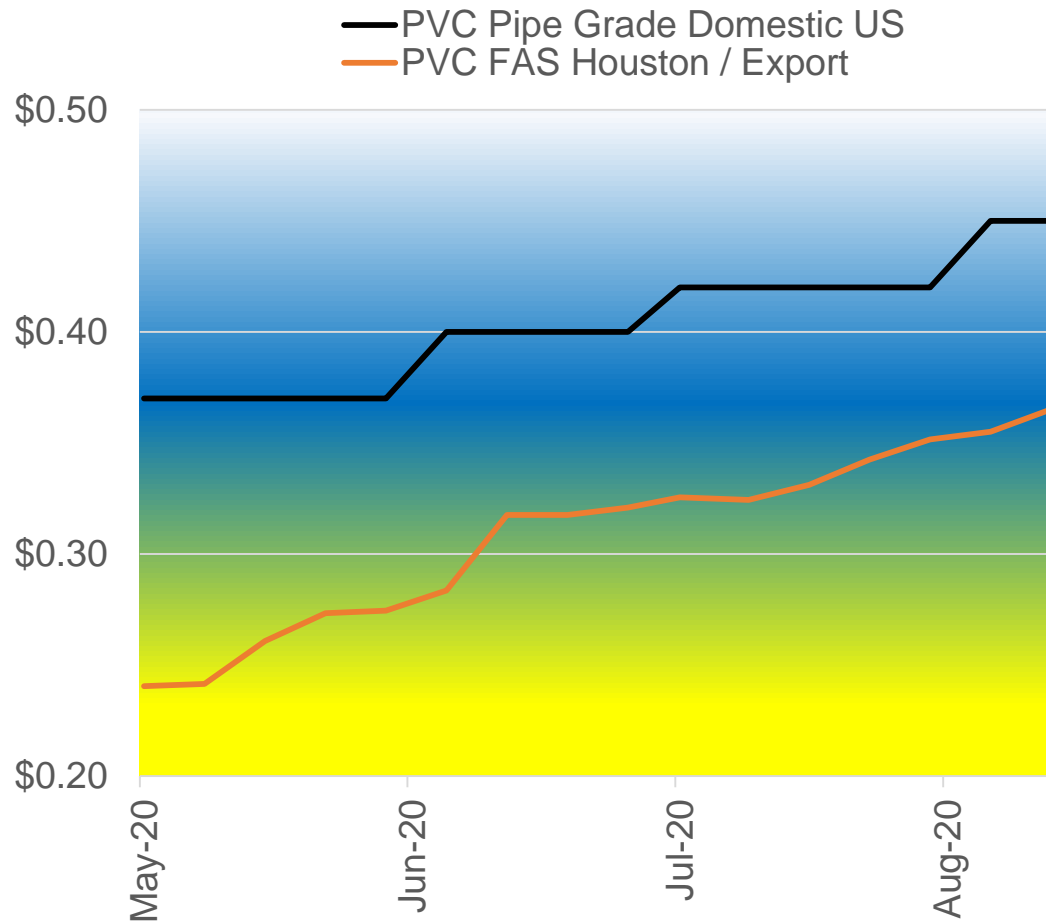
POLYPROPYLENE PRICES ↑
POLYPROPYLENE MARGINS ↓

PROPYLENE PRICES ↑
PROPYLENE MARGINS ↑

POLYPROPYLENE PRICES ↑
CONSUMER PRICES ↑

	WIN	LOSE	DRAW
1Q 2020		POLYPROPYLENE BUYERS	POLYPROPYLENE PRODUCERS PROPYLENE PRODUCERS
2Q 2020	PROPYLENE PRODUCERS		POLYPROPYLENE PRODUCERS PROPYLENE BUYERS

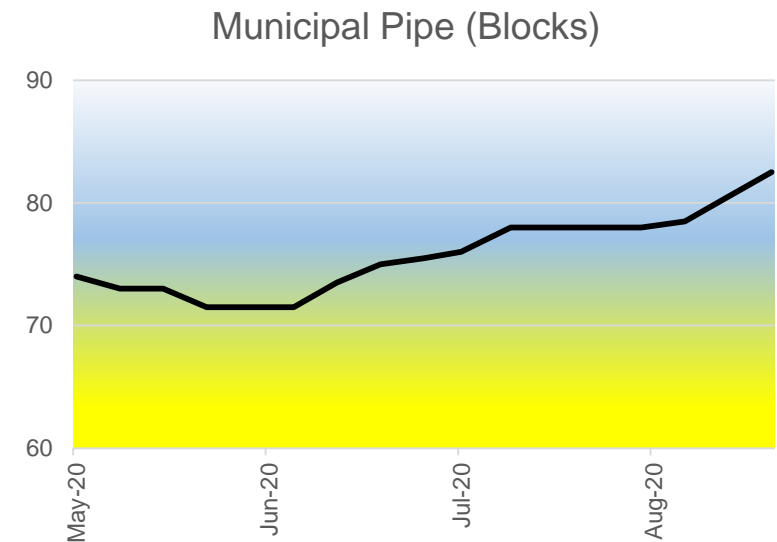
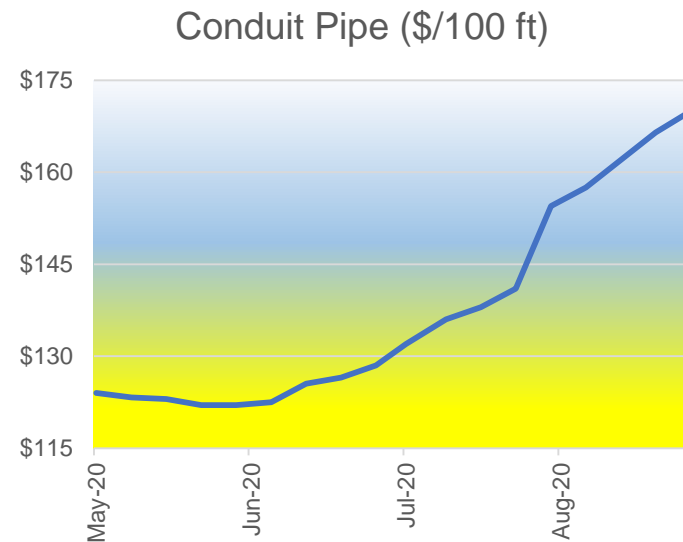
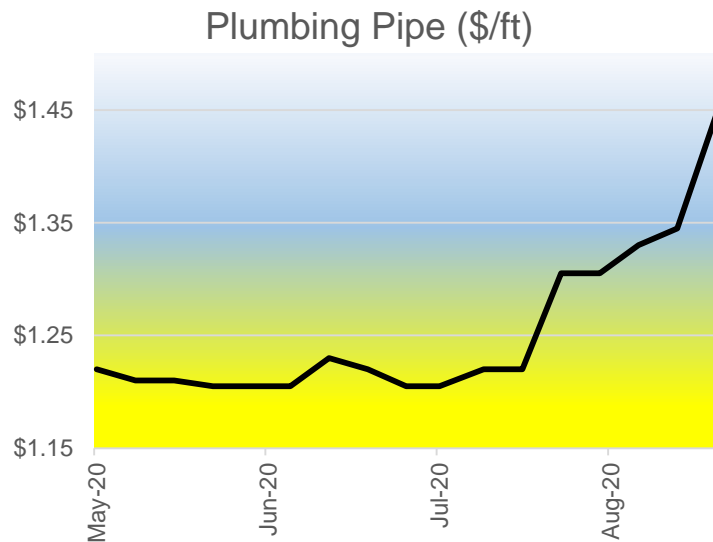
PVC Settles into an Unusual Year



- Export prices rose, but volumes remained low and offers became less workable.
- Domestic PVC prices stood still in May but a resurgence in Home Improvement markets enables price increases starting in June.



Pipe Makers Roll With an Unusual Year



- Home improvement projects began boosting prices in June 2020.
- Housing starts & home sales turnaround from negative numbers to robust growth as working from home became a long-term situation.

PVC PRICES



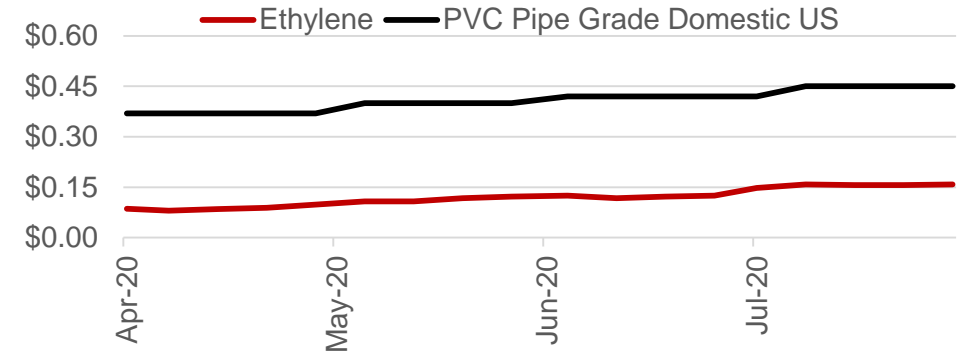
PVC MARGINS



ETHYLENE PRICES

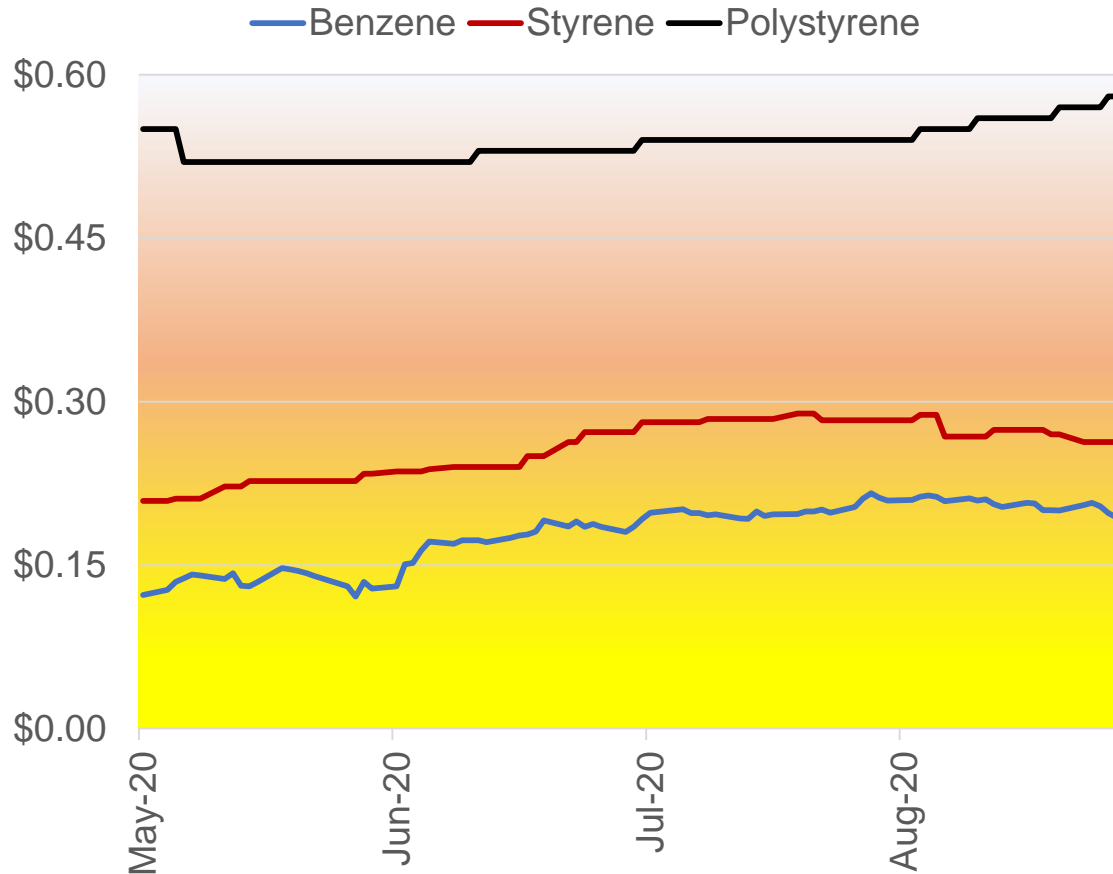


PVC PIPE PRICES



	WIN	LOSE	DRAW
1Q 2020	PVC PRODUCERS	PVC PIPE PRODUCERS	PVC EXPORTERS
2Q 2020	PVC EXPORTERS		PVC PRODUCERS PVC PIPE PRODUCERS

Polystyrene: A Different Set of Circumstances



- Polystyrene prices ebbed and largely held steady as demand leveled off, but margins remained stout.
- Packaging demand shifted to more home cooking, which is more polyethylene and PET-driven.
- Buying appliances is not a rapidly repeating business.
- Styrene prices got a boost from some production outages, but a lack of robust demand limited upside.
- Benzene swung in line with international pricing.

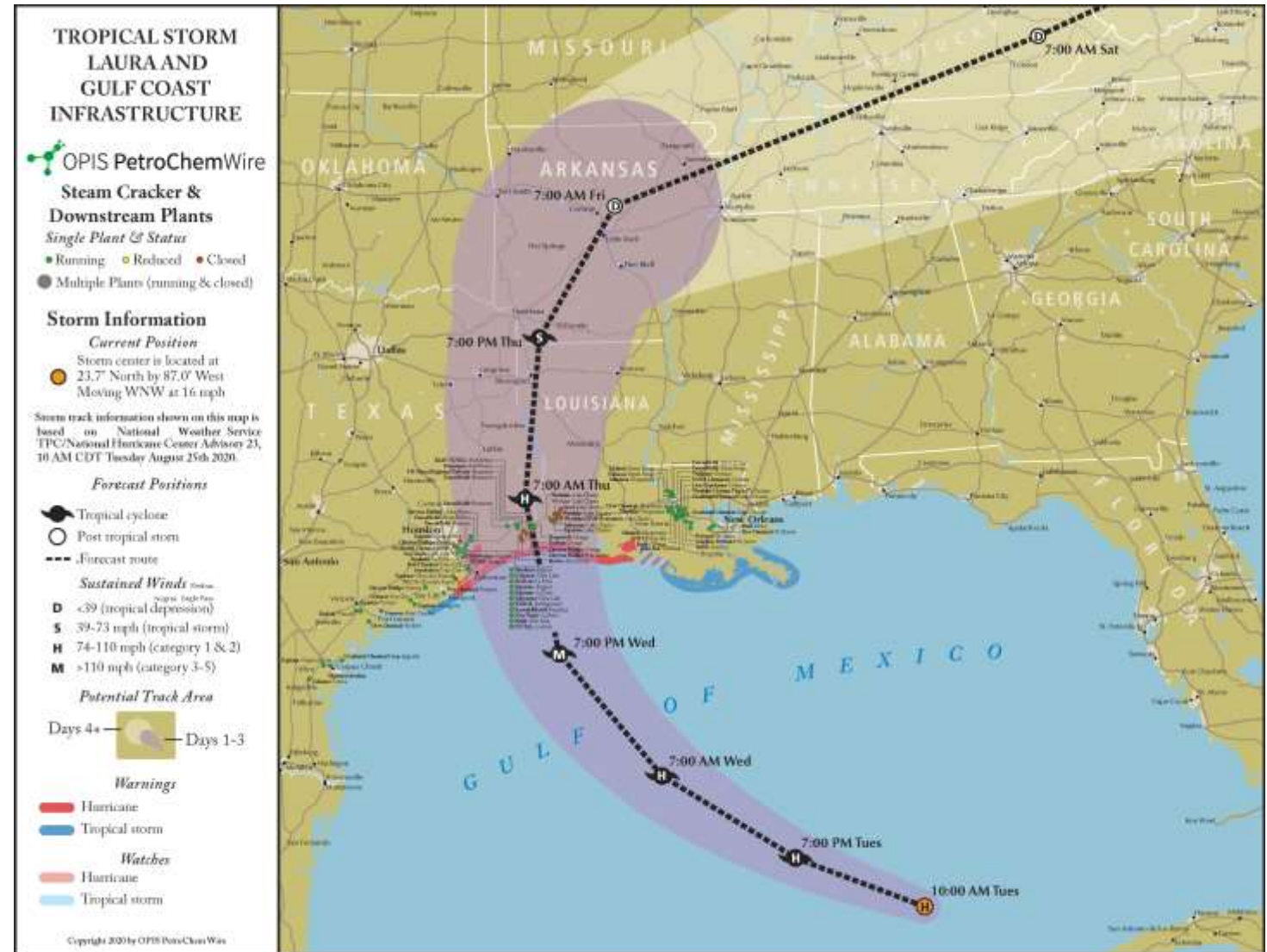


WIN		LOSE	DRAW
1Q 2020	POLYSTYRENE PRODUCERS	STYRENE SELLERS	DOWNSTREAM
2Q 2020	POLYSTYRENE PRODUCERS		STYRENE SELLERS DOWNSTREAM

And Now, For the Weather: August 2020 and the Aftermath

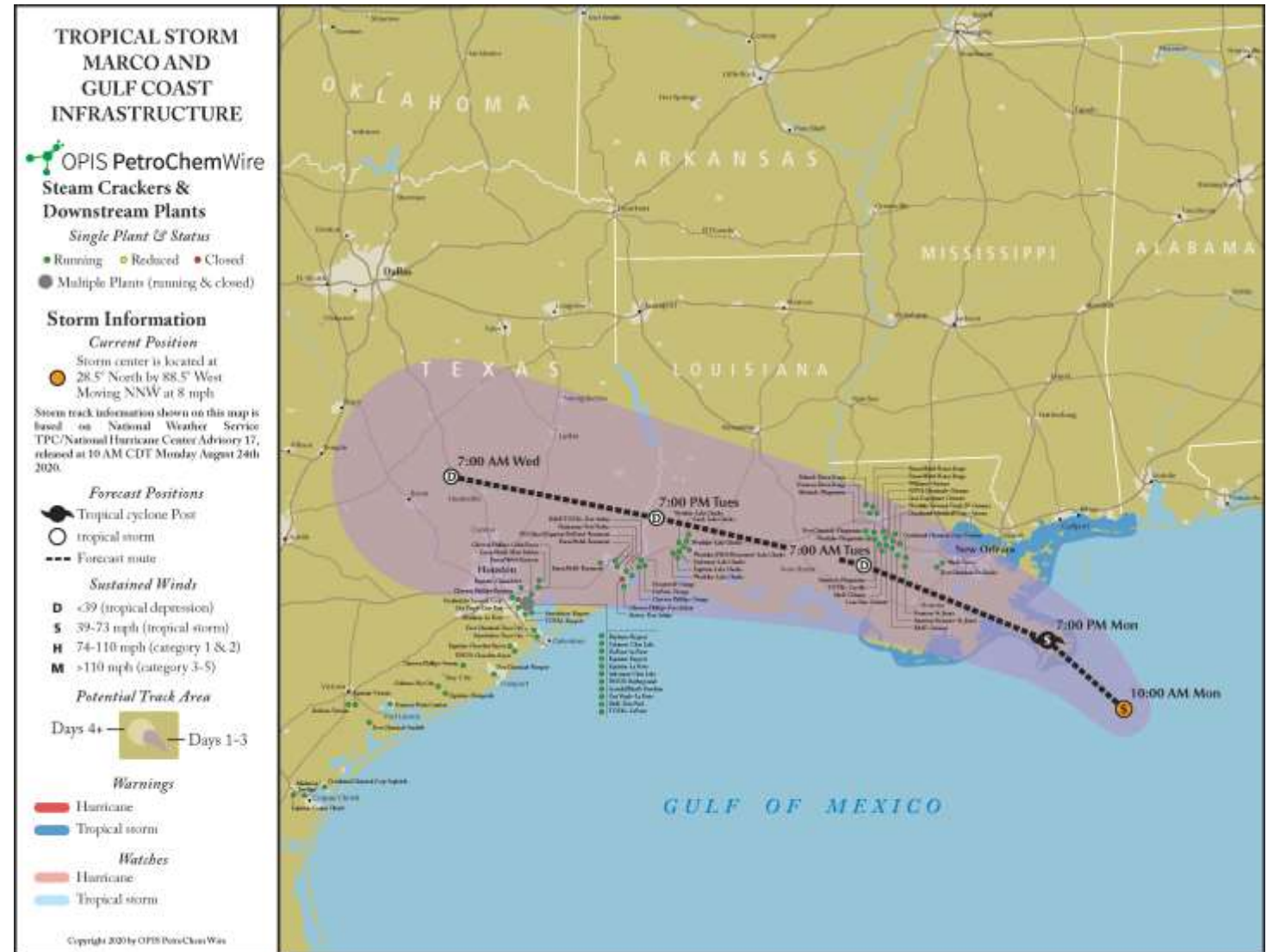
August 25-27, 2020

- Laura made landfall as a Category 4 Hurricane, which at the time was the strongest landfall on record since 1856.
- Laura's path ran through the Lake Charles area, forcing many plants there to close.



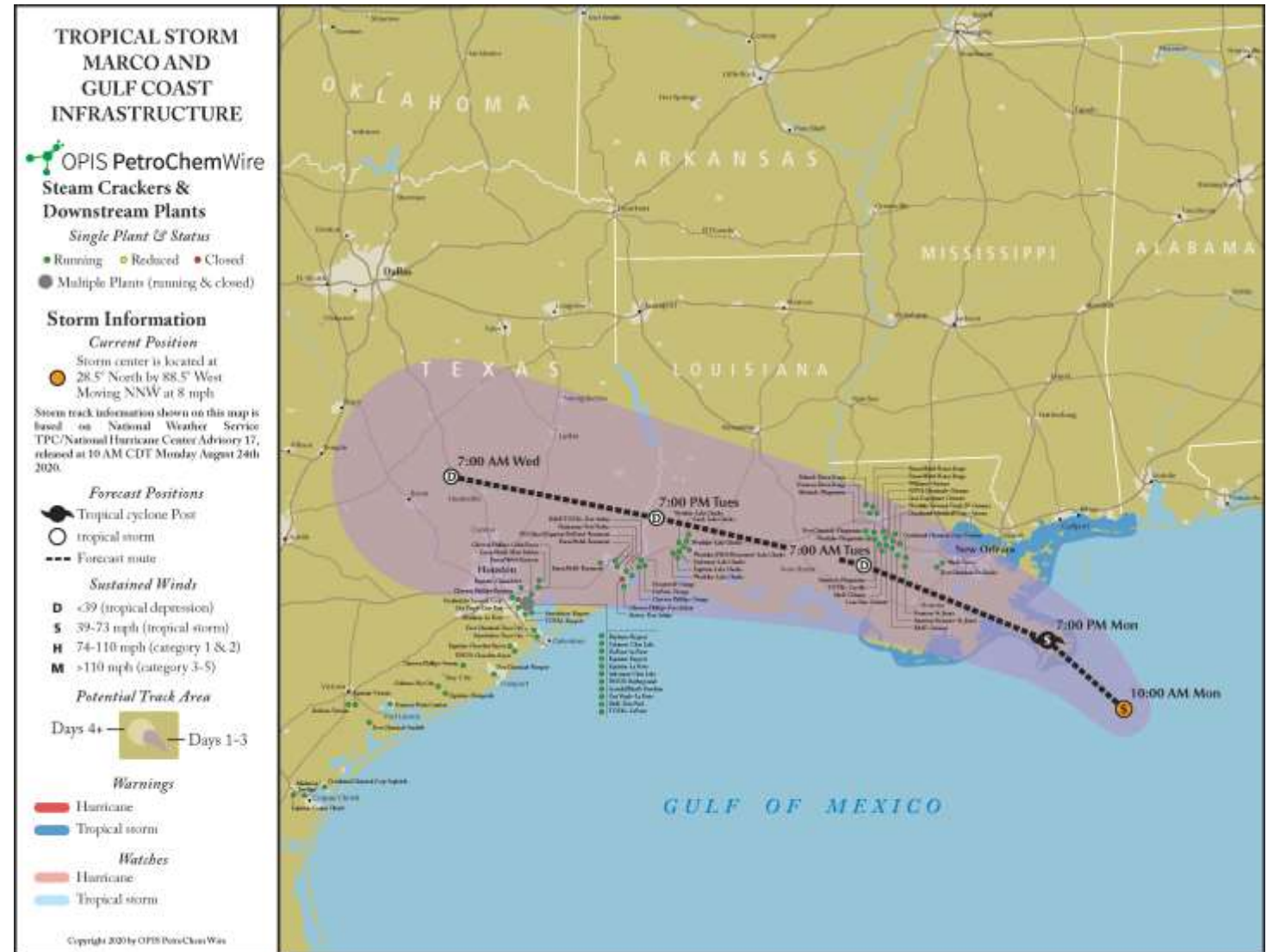
August 25-27, 2020

- Marco formed after Laura but reached the Louisiana coast around the same time, from a different direction.
- Not nearly as strong as Laura, Marco never developed beyond a Category 1 hurricane and was a Tropical Depression by landfall.
- Its main effect on the same area affected by Laura was flooding.



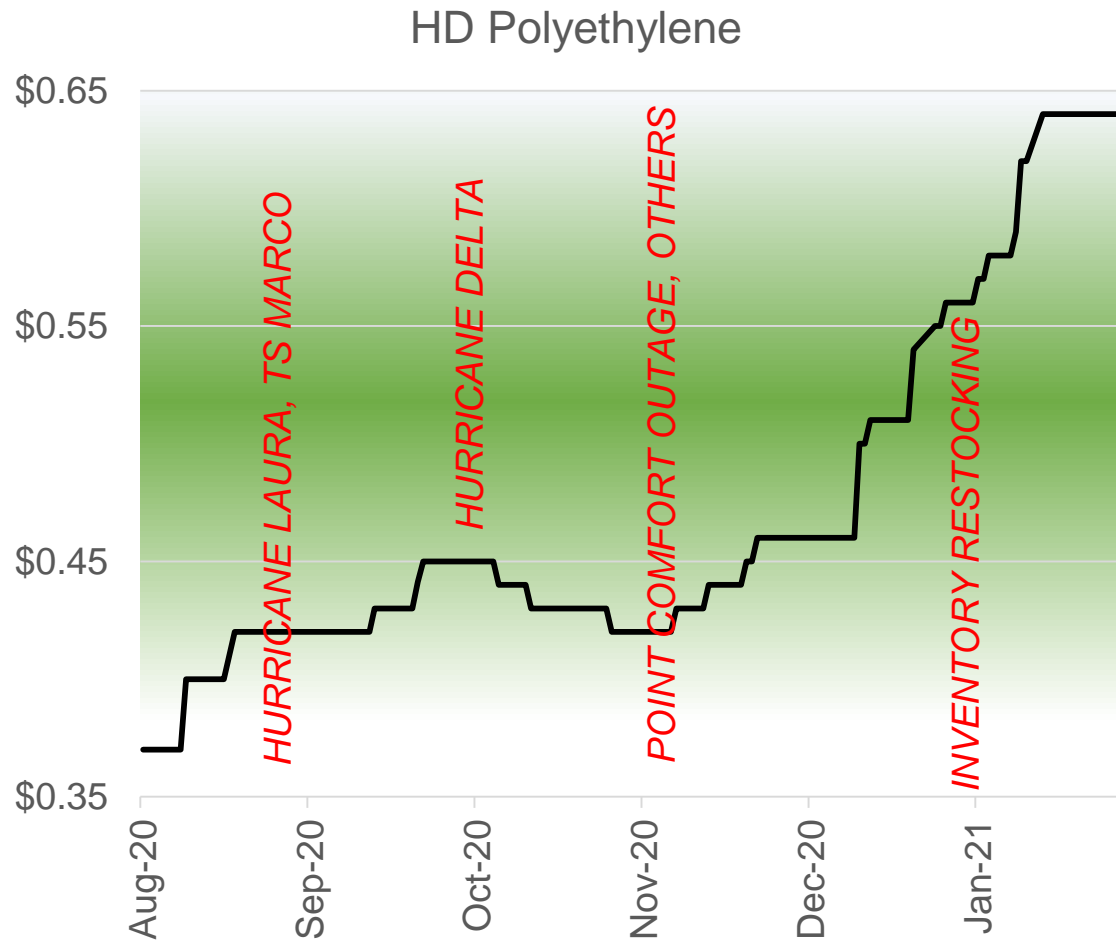
October 9-10

- A busy storm season began with storms named for the Greek alphabet by the end of September.
- Hurricane Delta hit Louisiana late October 9 as a Category 2 hurricane.
- It then passed through Lake Charles, where some sites were still shut from Laura/Marco.



Stumbling in 2021, Adjusting to Long-Term 'New Normal'

An Unusually Strong Start to 2021



- New patterns of demand appeared to be baking into the markets.
- Prices generally rose as supply tightened due to Lake Charles-area plants being shut for several weeks and retreated as they restarted.
- A significant outage at Formosa's Point Comfort (TX) site that started in November, combined with various unexpected operational blips in Dec and Jan sent prices on a fast ascent combined with typical January inventory restocking initiatives.

POLYETHYLENE PRICES ↑

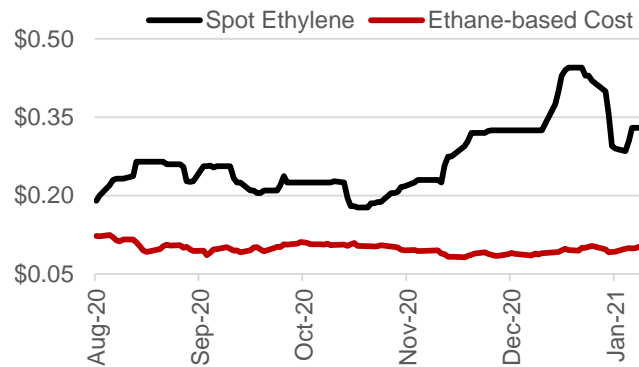
ETHYLENE PRICES ↑

POLYETHYLENE PRICES ↑

POLYETHYLENE MARGINS ↔ ↓

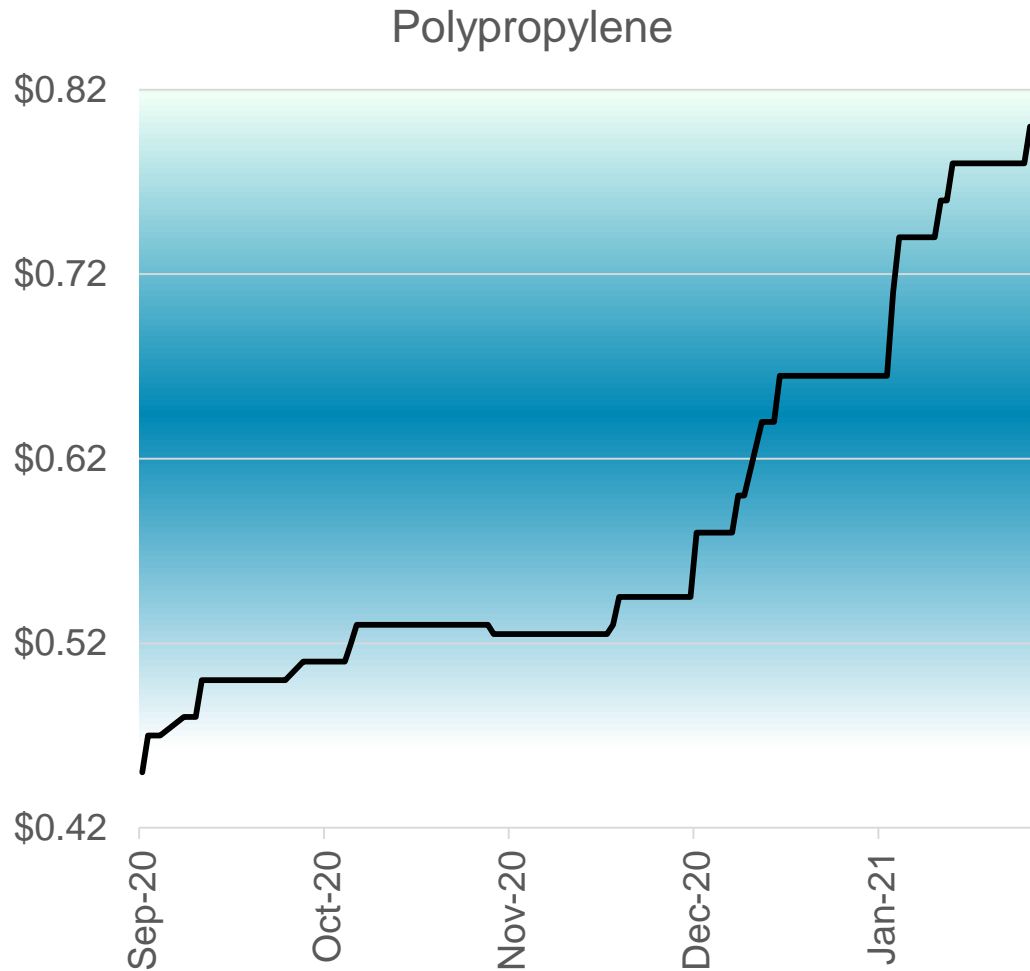
ETHYLENE MARGINS ↑

CONSUMER PRICES ↓ ↔

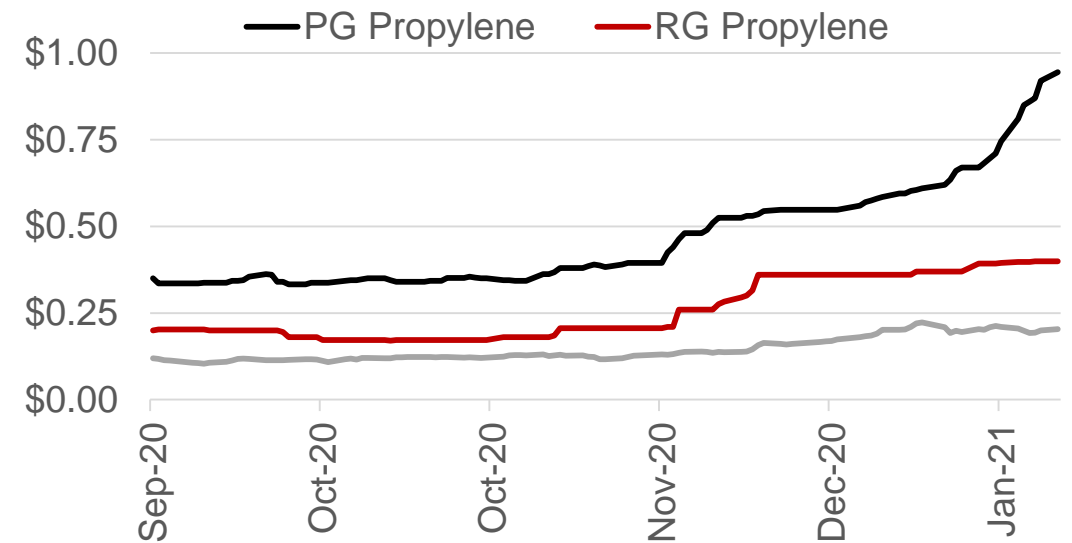


	WIN	LOSE	DRAW
1Q 2020	POLYETHYLENE SELLERS	ETHYLENE PRODUCERS	POLYETHYLENE BUYERS
2Q 2020	POLYETHYLENE SELLERS		ETHYLENE PRODUCERS
	POLYETHYLENE BUYERS		
3Q 2020	POLYETHYLENE SELLERS		ETHYLENE PRODUCERS
			POLYETHYLENE BUYERS
4Q 2020	ETHYLENE PRODUCERS	POLYETHYLENE BUYERS	POLYETHYLENE SELLERS
1Q 2021	POLYETHYLENE SELLERS		
	ETHYLENE PRODUCERS	POLYETHYLENE BUYERS	

The Ride Becomes Wild; Buckle up!



- Polypropylene supply remained tight and plants tried to run hard with limited propylene supply.
- The run-up in PP prices in January couldn't keep up with feedstock propylene's own spike; margins went negative.
- No end in sight for the supply crunch.



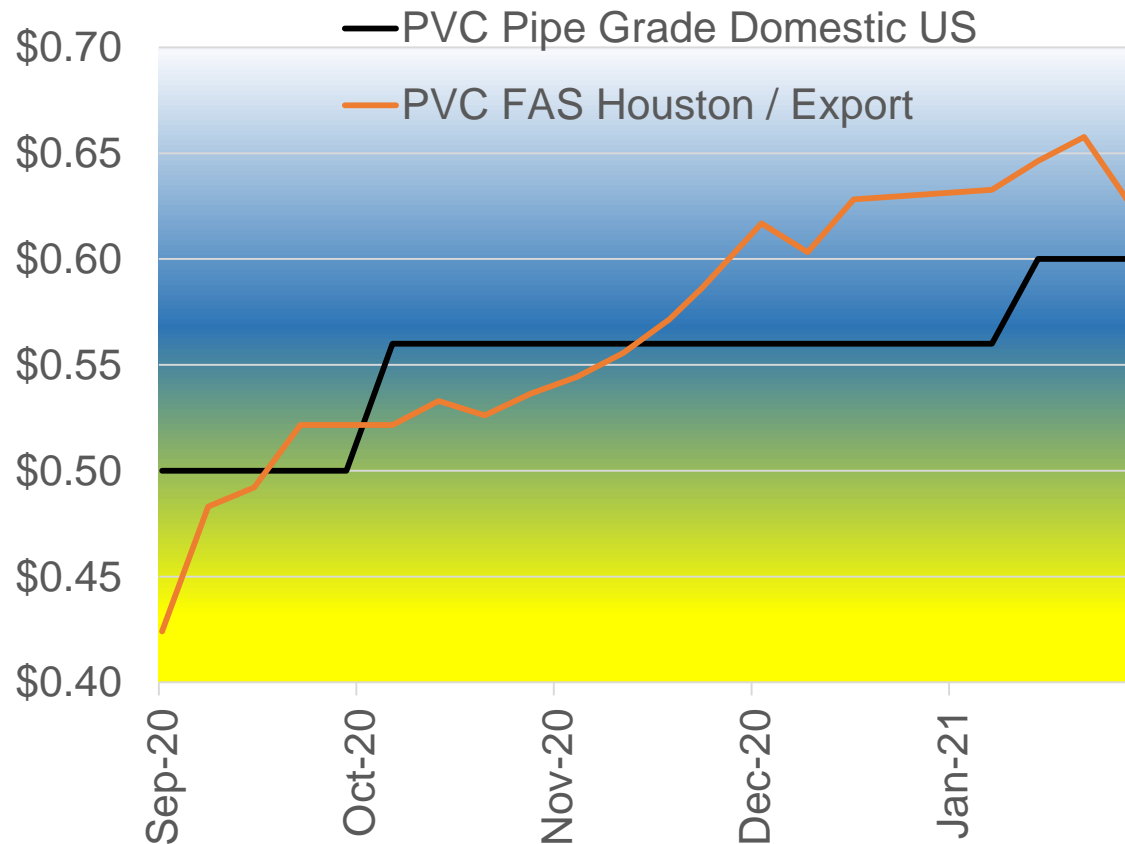
POLYPROPYLENE PRICES ↑
POLYPROPYLENE MARGINS ↓

PROPYLENE PRICES ↑
PROPYLENE MARGINS ↑

POLYPROPYLENE PRICES ↑
CONSUMER PRICES ↔

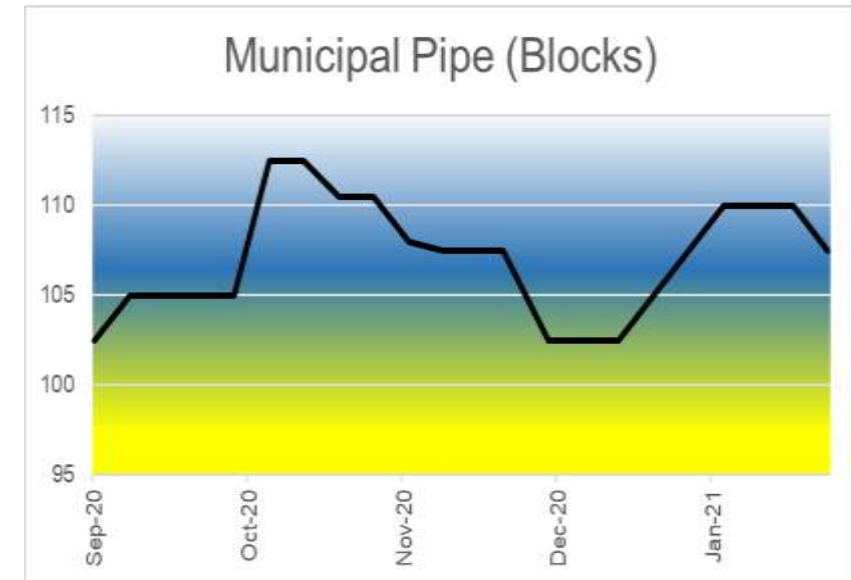
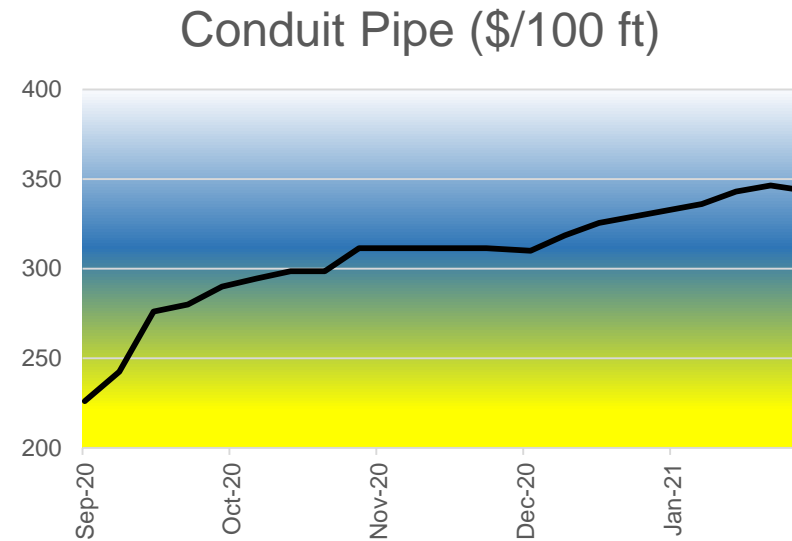
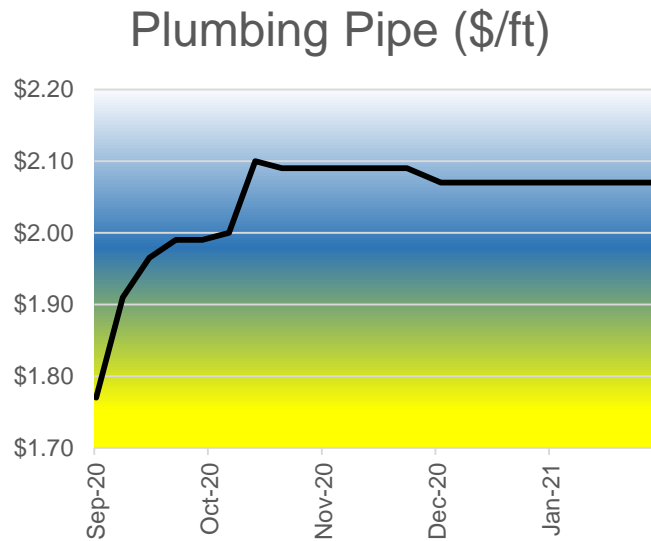
WIN		LOSE	DRAW
1Q 2020		POLYPROPYLENE BUYERS	POLYPROPYLENE PRODUCERS PROPYLENE PRODUCERS
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3Q 2020	PROPYLENE PRODUCERS		POLYPROPYLENE PRODUCERS POLYPROPYLENE BUYERS
4Q 2020	PROPYLENE PRODUCERS		POLYPROPYLENE PRODUCERS POLYPROPYLENE BUYERS
1Q 2021	PROPYLENE PRODUCERS	POLYPROPYLENE BUYERS	POLYPROPYLENE PRODUCERS

PVC: A Storm Gathers in 2021

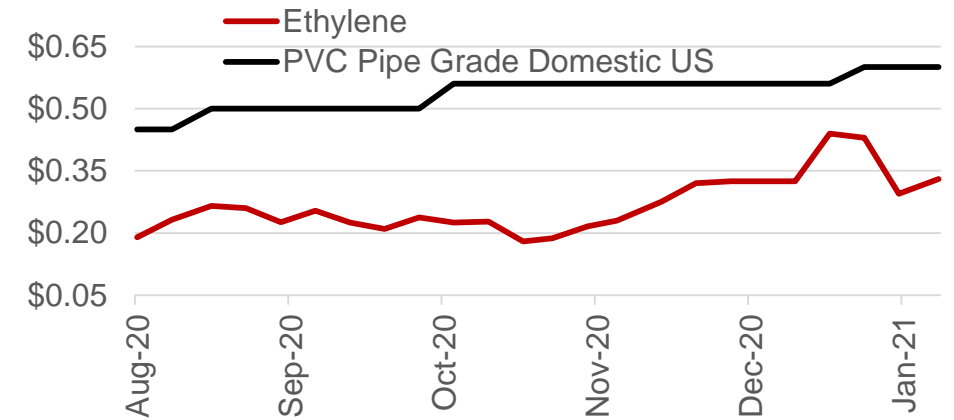
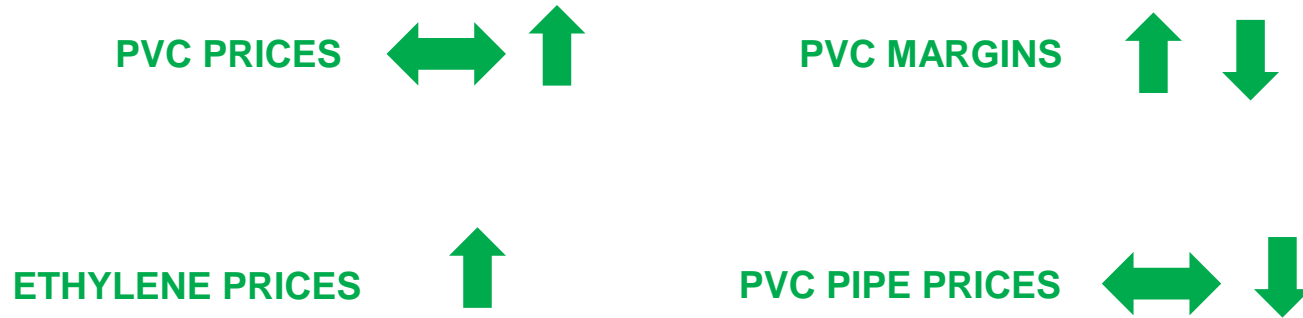


- Export prices continue rising and supply remains short after the Aug-Oct hurricanes hobble Louisiana production.
- Domestic PVC prices found stability, not trailing off like in typical years during 4Q. Pipe order backlogs begin to get serious and fresh 2021 demand looms.

Pipe Order Backlogs Strain Price Mobility

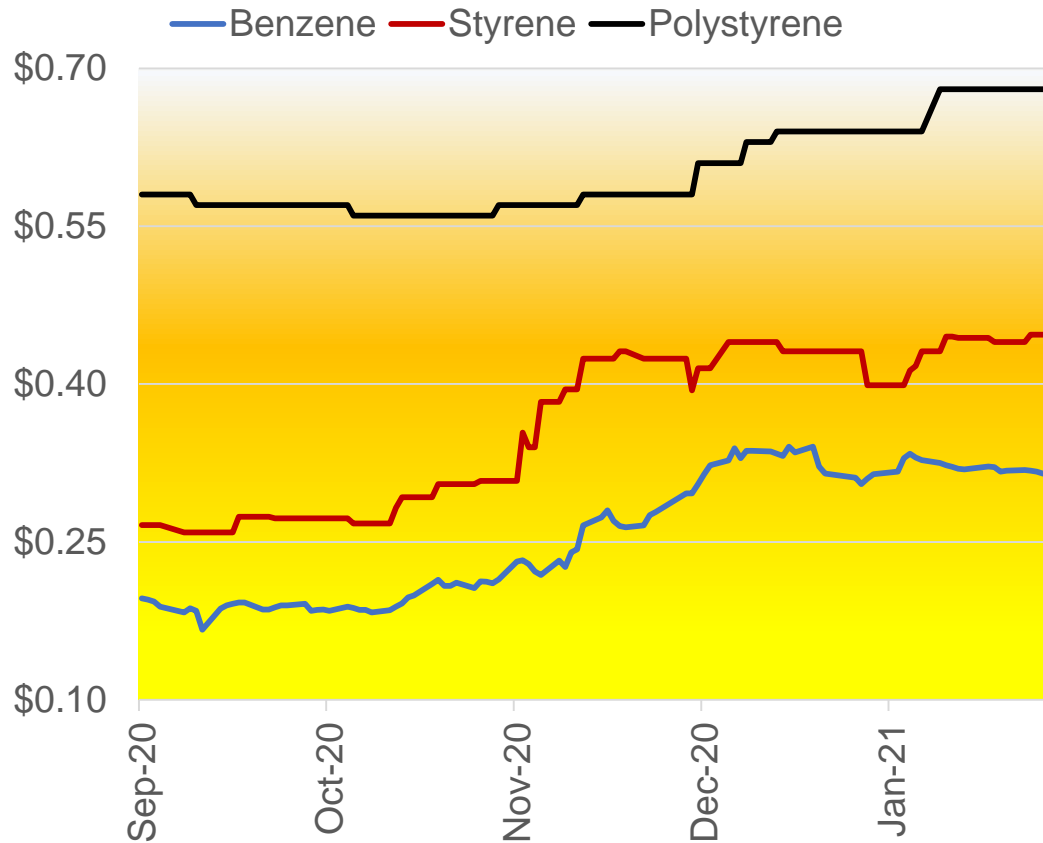


Some pipe order backlogs became so severe that producers stopped taking orders entirely and froze pricing or reverted to old pricing



	WIN	LOSE	DRAW
1Q 2020	PVC PRODUCERS	PVC PIPE PRODUCERS	PVC EXPORTERS
2Q 2020	PVC EXPORTERS		PVC PRODUCERS PVC PIPE PRODUCERS
3Q 2020	PVC EXPORTERS PVC PRODUCERS	PVC PIPE PRODUCERS	
4Q 2020	PVC EXPORTERS PVC PRODUCERS	PVC PIPE PRODUCERS	
1Q 2021		PVC PIPE PRODUCERS	PVC PRODUCERS PVC EXPORTERS

Polystyrene: Slow, Delayed Moves Echo Upstream



- Polystyrene demand steadies, prices also drift into steady and normal end-year patterns. Production is nearly untouched by the hurricanes in August.
- Demand is not strong enough to support price increase initiatives in 4Q despite surging styrene and benzene prices.
- Resin restocking initiatives gave polystyrene producers enough leverage to raise prices and restore margins in January.

POLYSTYRENE PRICES   

STYRENE PRICES 

POLYSTYRENE PRICES   

POLYSTYRENE MARGINS  

STYRENE MARGINS 

DOWNSTREAM PRICES   

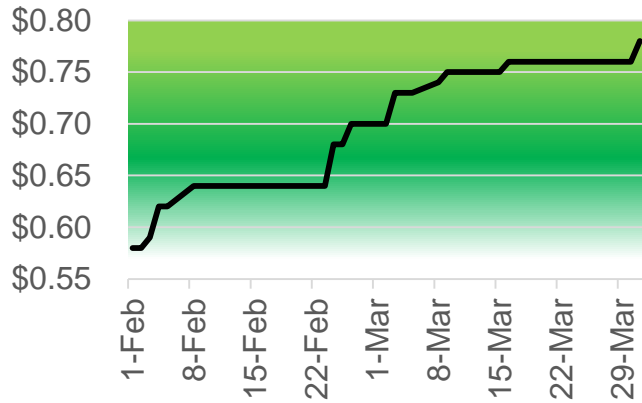
	WIN	LOSE	DRAW
1Q 2020	POLYSTYRENE PRODUCERS	STYRENE SELLERS	DOWNSTREAM
2Q 2020	POLYSTYRENE PRODUCERS		STYRENE SELLERS DOWNSTREAM
3Q 2020	POLYSTYRENE PRODUCERS	STYRENE SELLERS	DOWNSTREAM
4Q 2020		POLYSTYRENE PRODUCERS	DOWNSTREAM STYRENE SELLERS
1Q 2021	POLYSTYRENE PRODUCERS	STYRENE SELLERS	DOWNSTREAM

February 13, 2021: Winter Storm Uri

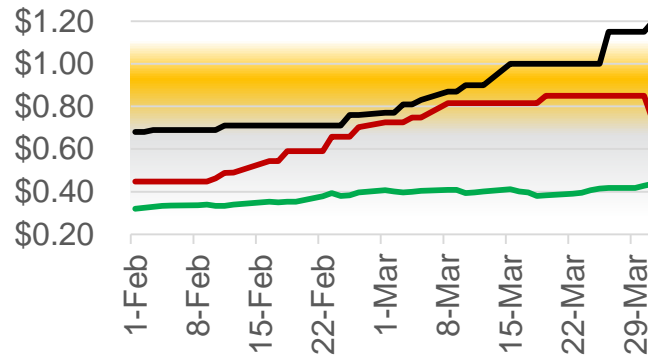


Every chemical and plastics plant in Texas shut

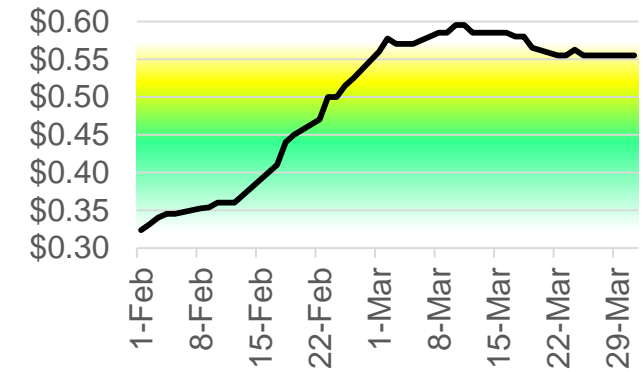
HD Polyethylene



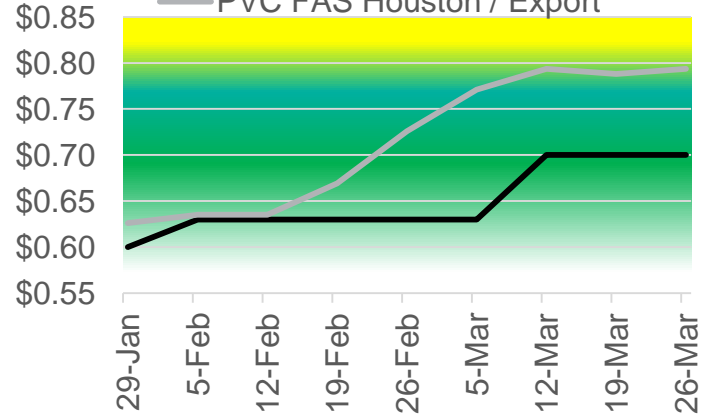
— Benzene — Styrene — Polystyrene



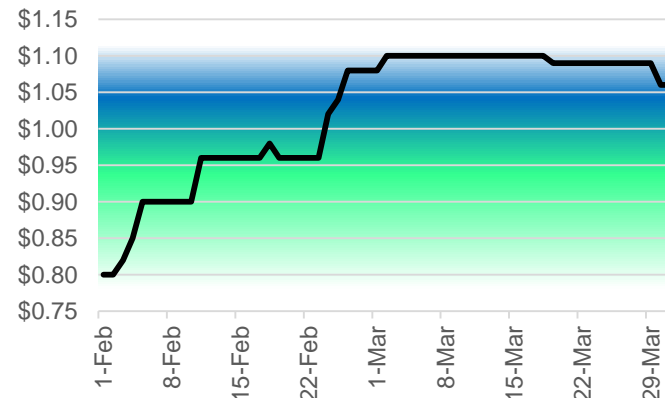
Ethylene



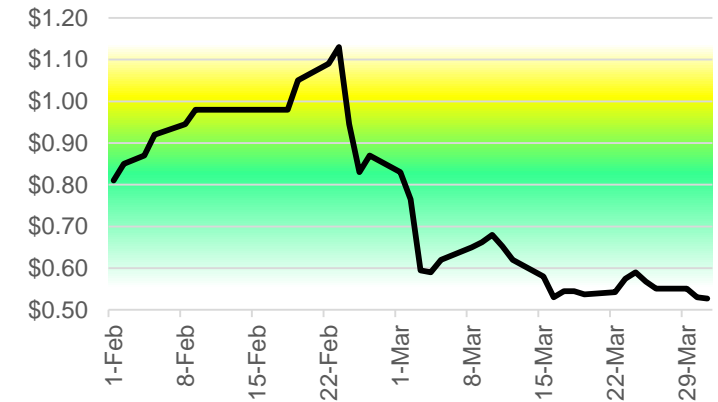
— PVC Pipe Grade Domestic US
— PVC FAS Houston / Export



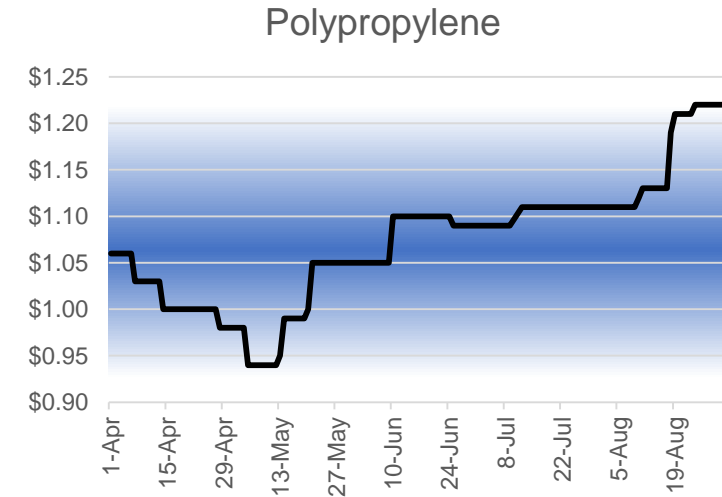
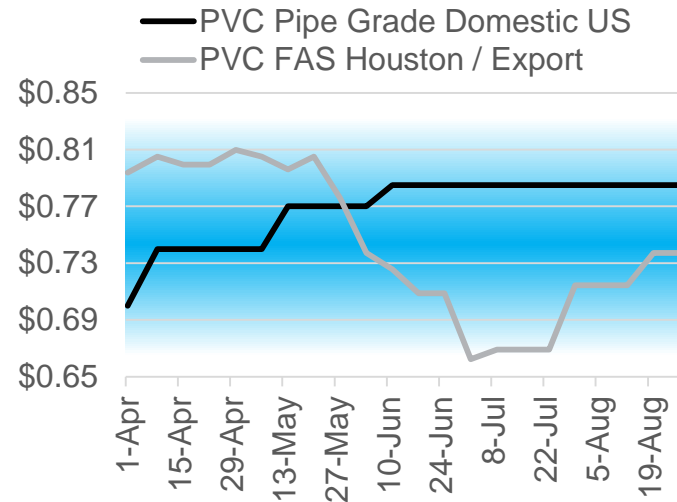
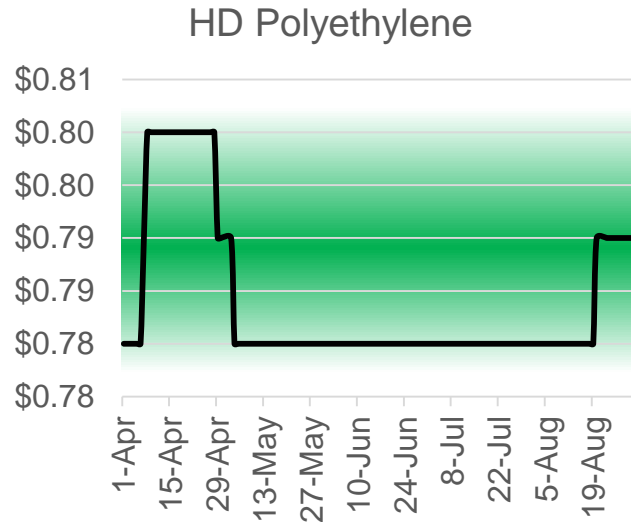
Polypropylene



PG Propylene



2Q 2021 = RECOVERY FROM URI; 3Q 2021 = RESTOCKING



	WIN	LOSE	DRAW
2Q 2021	SELLERS	BUYERS	DOWNSTREAM
3Q 2021	SELLERS	BUYERS EXPORTERS	DOWNSTREAM

Surviving Hurricane Season 2021

- August: Hurricane Ida washes over Louisiana – largely sparing Lake Charles, but some plants (Geismar, Taft, Norco areas) are still shut or struggling.
- Plastic buyers (including pipe makers) continue to struggle to get enough product to catch up on backlogs from 2020.
- An ongoing international slowdown of container ships has made importing and exporting plastic an expensive and slow nightmare.
- It's not over yet!

What will the 4Q 2021 Scorecard look like?

	Ethylene	PGP
Oct-21	0.35000	0.76500
Nov-21	0.34250	0.74500
Dec-21	0.34250	0.72250
Jan-22	0.33125	0.71875
Feb-22	0.32250	0.71500
Mar-22	0.31375	0.71125
Apr-22	0.30625	0.70250
May-22	0.29875	0.69375
Jun-22	0.29125	0.68500
Jul-22	0.28625	0.67625
Aug-22	0.28125	0.66750
Sep-22	0.27625	0.65875
Oct-22	0.27250	0.65000
Nov-22	0.26750	0.64250
Dec-22	0.26250	0.63500
Dec-22	0.25125	0.58000

OPIS PCW Forward Curve: Oct 22 , 2021

What could 4Q have looked like?

	Ethylene	PGP
Feb-21	0.32375	0.81000
Mar-21	0.30875	0.77000
Apr-21	0.29125	0.73000
May-21	0.27250	0.69000
Jun-21	0.25375	0.65000
Jul-21	0.25375	0.63250
Aug-21	0.25500	0.61500
Sep-21	0.25750	0.59750
Oct-21	0.26000	0.57250
Nov-21	0.26250	0.54750
Dec-21	0.26375	0.52250
Jan-22	0.26375	0.52250
Feb-22	0.26375	0.52250
Mar-22	0.26375	0.52250
Apr-22	0.26375	0.52250
May-22	0.26375	0.52250
Jun-22	0.26375	0.52250
Jul-22	0.26375	0.52250
Aug-22	0.26375	0.52250
Sep-22	0.26375	0.52250
Oct-22	0.26375	0.52250
Nov-22	0.26375	0.52250
Dec-22	0.26375	0.52250

OPIS PCW Forward Curve: Feb 1, 2021

Risk Management Eliminates WIN, LOSE or DRAW

- Managing risk is the only way to forecast your own future.
- Managing risk protects you from volatility, which is rarely foreseen by even the best forecasters.
- Everyone can win when they manage their risk rather than take their chances.
- Chemicals and plastics can manage risk through active futures contracts for ethylene and propylene.

Thank you!

Please send your

- **Questions**
- **requests for follow-up meetings**
- **requests for free samples of the PCW reports**

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