

With natural gas futures pricing falling more than 60% since mid-December and economic conditions expected to improve, ethane cracking margins have recovered in turn, leading to much more favorable conditions than in recent months, according to analysts.

The fourth quarter of 2022 saw cracker operating rates average around 69% of design capacity, the lowest estimated levels since 2008, according to Energy Strategies International, LLC. But the firm expects rates will recover from here amid a reopening of Chinese businesses, receding fears of a global recession and, ultimately, the comparatively low cost of U.S. ethane.

“The current conditions of lower natural gas prices and [Brent] crude prices at \$80/bbl and higher create a genuinely sweet spot for the U.S. petchem industry as a global competitor,” EnSI said in a report on Monday. This will help not only ethane, but also ethylene, propane and normal butane “price at a level needed to cover the price arb into foreign markets, mainly Asia.”

Natural gas price weakness has also maintained the ethane fractionation spread, a bellwether indicator that helps gas processors decide if they should recover or reject ethane, in positive territory.

The frac spread for March ethane on Thursday was positive by 6.5cts/gal.

Forward curve indications showed a similar level for April at 6.3cts/gal. From there, the implied frac spread ranged from 1.4-5.2cts/gal through November before turning slightly negative for the winter.

Ethylene prices were lower at the Enterprise hub, putting Mar at 21.5 cpp (63.9 cpq), Apr at 21 cpp (62.4 cpq) and the 2Q 2023 strip at 20.5 cpp (60.9 cpq).

Propylene prices were higher, putting Mar at 71 cpp (308.9 cpq), Apr at 51 cpp (221.9 cpq) and the 2Q 2023 strip at 47.917 cpp (208.4 cpq).

OPIS-PCW spreads:

Cents per pound/Cents per gallon

Ethylene-Ethane

Mar 12.91 / 38.36

Apr 12.50 / 37.12

2Q 11.98 / 35.58

Polyethylene-Ethane

Mar 34.91 / 103.70

Apr 35.00 / 103.95

2Q 35.27 / 104.76

Propylene-Propane

Mar 50.22 / 218.48

Apr 30.91 / 134.48

2Q 24.93 / 108.44

TABLE OF CONTENTS

NGL Forwards Commentary	1
Ethane C2 (Mont Belvieu)	2-3
Propane C3 (TET)	3-4
Propane C3 (Conway In-Well)	5-6
Normal Butane NC4 (Non-TET)	6-7
Isobutane IC4 (Non-TET)	8-9
Natural Gasoline C5 (Non-TET)	9-10
Ethylene Forward Cash Cost	11-14
Editorial Staff	15
Methodology	15

NYMEX at Settlement

MONTH	WTI CRUDE \$/bbl		NATURAL GAS \$/mmbtu	
	PRICE	CHANGE	PRICE	CHANGE
Apr 23	78.16	0.47	2.765	-0.046
May 23	78.31	0.48	2.899	-0.044
Jun 23	78.29	0.49	3.092	-0.034
Jul 23	78.08	0.51	3.270	-0.029
Aug 23	77.74	0.54	3.312	-0.029
Sep 23	77.31	0.57	3.276	-0.025
Oct 23	76.85	0.61	3.353	-0.027
Nov 23	76.38	0.63	3.720	-0.020
Dec 23	75.90	0.63	4.101	-0.011
Jan 24	75.42	0.65	4.295	-0.006
Feb 24	74.95	0.66	4.173	-0.002
Mar 24	74.51	0.66	3.812	0.016
Apr 24	74.10	0.67	3.456	0.035
May 24	73.72	0.68	3.430	0.036
Jun 24	73.32	0.66	3.538	0.039
Jul 24	72.90	0.65	3.641	0.045
Aug 24	72.48	0.63	3.671	0.044
Sep 24	72.08	0.61	3.624	0.042
Oct 24	71.71	0.59	3.694	0.041
Nov 24	71.38	0.59	4.018	0.039
Dec 24	71.04	0.58	4.407	0.033

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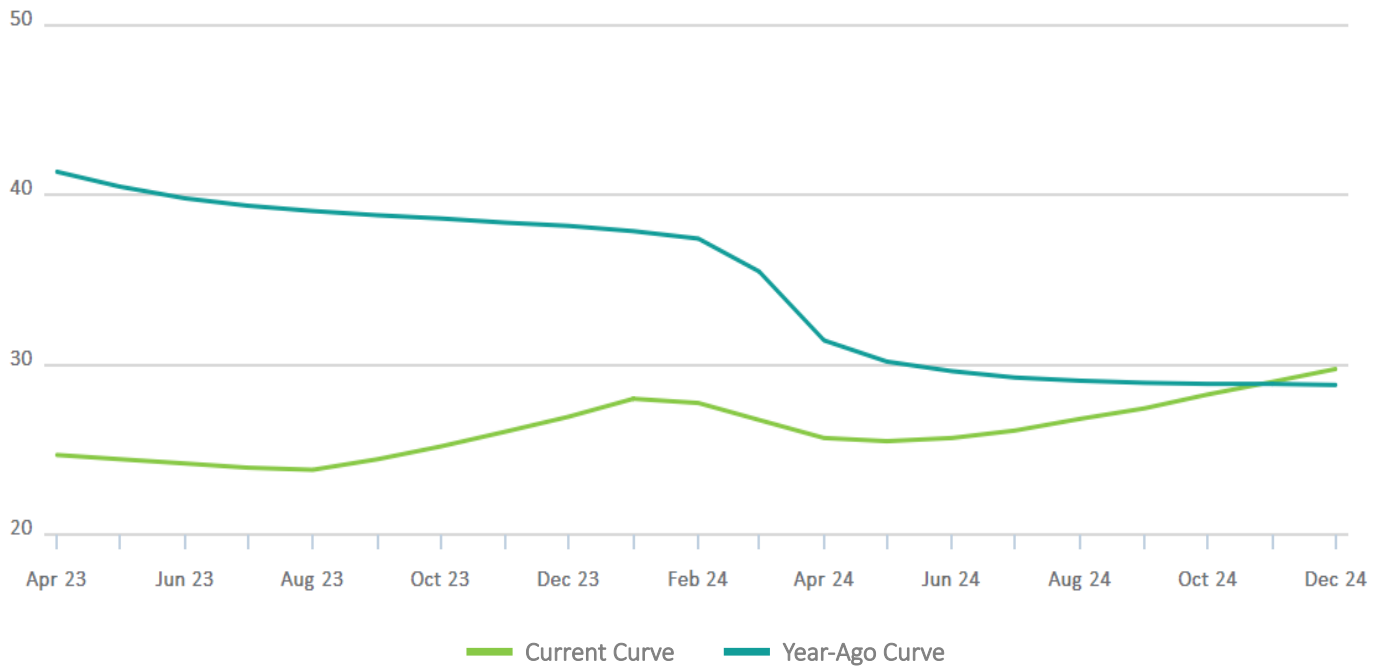
ETHANE C2 (MONT BELVIEU) cts/gal

OPIS 14:30 ET SNAPSHOT: 24.750

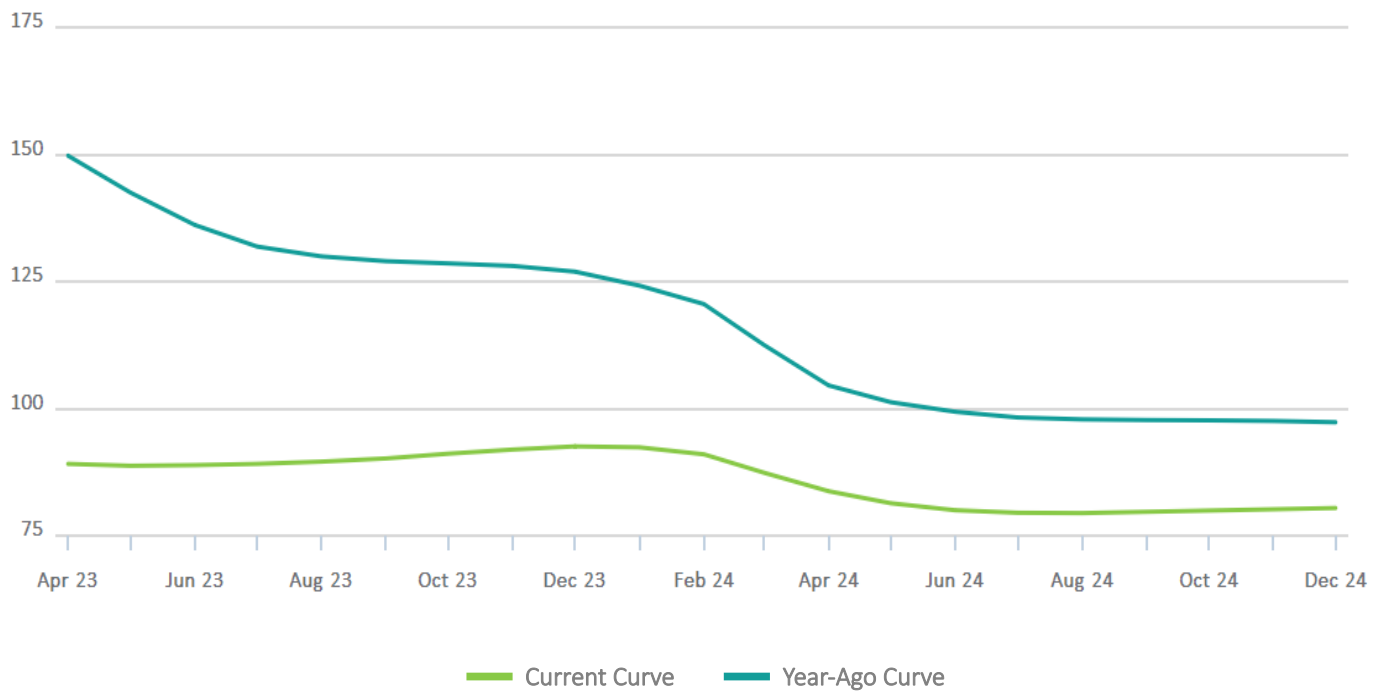
FORWARD MONTH	LOW ASSESSMENT	HIGH ASSESSMENT	AVG PRICE	NET CHANGE	FRAC SPREAD	% OF CRUDE
Apr 23	24.125	25.250	24.6875	0.6250	6.3445	13.26
May 23	23.875	25.000	24.4375	0.6250	5.2055	13.11
Jun 23	23.625	24.750	24.1875	0.6875	3.6752	12.99
Jul 23	23.500	24.375	23.9375	0.6875	2.2443	12.89
Aug 23	23.375	24.250	23.8125	0.6250	1.8407	12.89
Sep 23	24.000	24.875	24.4375	0.7500	2.7045	13.30
Oct 23	24.750	25.625	25.1875	0.7500	2.9437	13.79
Nov 23	25.625	26.500	26.0625	0.8750	1.3840	14.36
Dec 23	26.500	27.375	26.9375	0.9375	-0.2685	14.94
Jan 24	27.375	28.625	28.0000	0.8750	-0.4930	15.63
Feb 24	27.250	28.250	27.7500	0.6250	0.0663	15.58
Mar 24	26.375	27.125	26.7500	0.6875	1.4612	15.11
Apr 24	24.250	27.125	25.6875	0.5000	2.7604	14.58
May 24	23.500	27.500	25.5000	0.5000	2.7454	14.55
Jun 24	23.375	28.000	25.6875	0.5000	2.2164	14.74
Jul 24	23.750	28.500	26.1250	0.4375	1.9706	15.08
Aug 24	24.500	29.125	26.8125	0.5625	2.4591	15.57
Sep 24	25.125	29.750	27.4375	0.6250	3.3959	16.01
Oct 24	26.125	30.375	28.2500	0.5000	3.7440	16.57
Nov 24	26.875	31.125	29.0000	0.5000	2.3446	17.09
Dec 24	27.625	31.875	29.7500	0.5625	0.5140	17.62
2Q 2023	23.875	25.000	24.4375	0.6250	5.0751	13.12
3Q 2023	23.625	24.500	24.0625	0.7500	2.2632	13.03
4Q 2023	25.625	26.500	26.0625	0.8750	1.3531	14.36
1Q 2024	27.000	28.000	27.5000	0.8125	0.3448	15.44
2Q 2024	23.750	27.500	25.6250	0.5000	2.5741	14.63
3Q 2024	24.625	29.125	26.8750	0.6250	2.6085	15.55
4Q 2024	26.750	27.250	27.0000	0.6875	2.2009	17.09
CAL 2024	25.500	26.125	25.8125	0.5000	2.5870	14.47

21-Month Forward Curves

ETHANE C2 (MONT BELVIEU) cts/gal



PROPANE C3 (MONT BELVIEU TET) cts/gal



PROPANE C3 (MONT BELVIEU TET) cts/gal

OPIS 14:30 ET SNAPSHOT: 89.750

FORWARD MONTH	LOW ASSESSMENT	HIGH ASSESSMENT	AVG PRICE	NET CHANGE	FRAC SPREAD	% OF CRUDE
Apr 23	88.750	89.500	89.1250	3.5000	63.8078	47.86
May 23	88.375	89.125	88.7500	3.2500	62.2059	47.60
Jun 23	88.375	89.375	88.8750	3.1250	60.5637	47.72
Jul 23	88.500	89.750	89.1250	3.1250	59.1839	48.01
Aug 23	89.000	90.125	89.5625	3.1250	59.2368	48.48
Sep 23	89.875	90.500	90.1875	2.8750	60.1915	49.09
Oct 23	90.750	91.500	91.1250	2.7500	60.4239	49.90
Nov 23	91.375	92.500	91.9375	2.6250	57.8761	50.66
Dec 23	91.625	93.500	92.5625	2.7500	55.0125	51.33
Jan 24	91.625	93.125	92.3750	2.6250	53.0487	51.55
Feb 24	90.125	91.875	91.0000	2.5625	52.7908	51.09
Mar 24	86.250	88.500	87.3750	2.6875	52.4712	49.34
Apr 24	81.875	85.625	83.7500	2.5000	52.1058	47.55
May 24	79.875	82.875	81.3750	2.1250	49.9689	46.45
Jun 24	79.125	80.875	80.0000	1.3125	47.6050	45.91
Jul 24	79.125	79.875	79.5000	0.7500	46.1619	45.89
Aug 24	78.750	80.125	79.4375	0.6250	45.8247	46.12
Sep 24	79.000	80.375	79.6875	0.6250	46.5051	46.51
Oct 24	79.250	80.625	79.9375	0.6250	46.1141	46.89
Nov 24	79.500	80.875	80.1875	0.6250	43.3975	47.26
Dec 24	79.750	81.125	80.4375	0.6250	40.0857	47.65
2Q 2023	88.500	89.375	88.9375	3.3125	62.1925	47.73
3Q 2023	89.125	90.125	89.6250	3.0625	59.5374	48.53
4Q 2023	91.250	92.500	91.8750	2.6875	57.7708	50.63
1Q 2024	89.625	91.125	90.3750	2.6875	52.7702	50.66
2Q 2024	80.750	83.125	81.9375	2.1250	49.8932	46.64
3Q 2024	79.000	80.125	79.5625	0.6875	46.1639	46.17
4Q 2024	80.375	80.875	80.6250	1.3750	43.1991	47.27
CAL 2024	82.625	82.875	82.7500	1.5625	54.1375	48.09

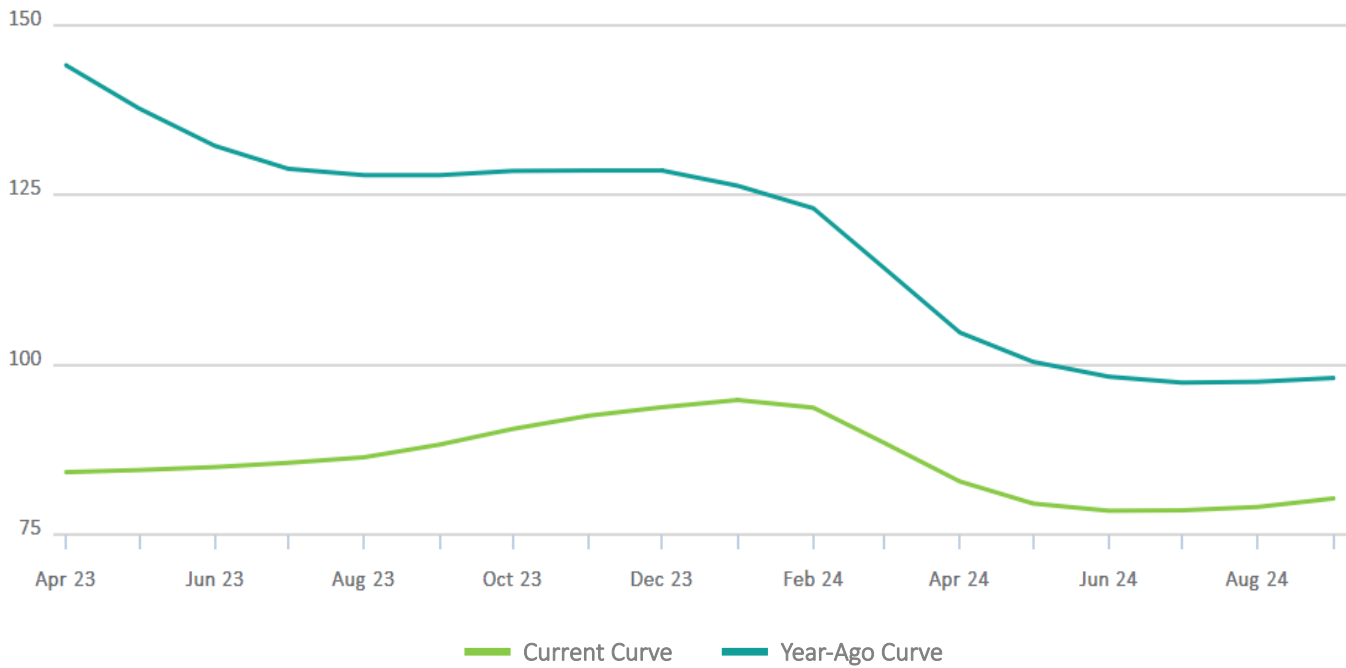
PROPANE C3 (CONWAY IN-WELL) cts/gal

OPIS 14:30 ET SNAPSHOT: 83.375

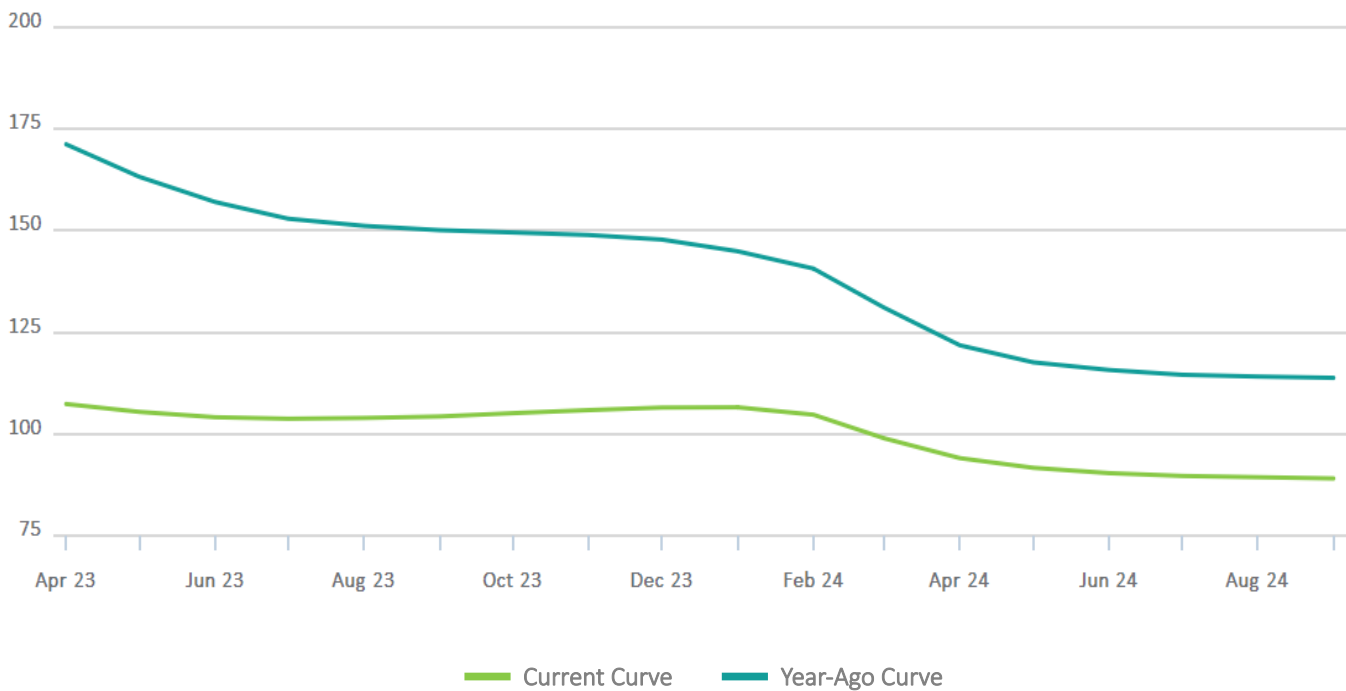
FORWARD MONTH	LOW ASSESSMENT	HIGH ASSESSMENT	AVG PRICE	NET CHANGE	FRAC SPREAD	% OF CRUDE
Apr 23	83.500	84.875	84.1875	2.6875	58.8703	45.21
May 23	83.625	85.375	84.5000	2.4375	57.9559	45.32
Jun 23	84.000	85.875	84.9375	2.5625	56.6262	45.61
Jul 23	84.625	86.500	85.5625	2.6875	55.6214	46.09
Aug 23	85.500	87.250	86.3750	2.5625	56.0493	46.75
Sep 23	87.625	88.875	88.2500	2.6875	58.2540	48.04
Oct 23	90.125	91.000	90.5625	2.5625	59.8614	49.60
Nov 23	91.875	93.125	92.5000	2.4375	58.4386	50.97
Dec 23	93.375	94.125	93.7500	2.2500	56.2000	51.99
Jan 24	94.625	95.000	94.8125	2.5000	55.4862	52.91
Feb 24	92.875	94.500	93.6875	2.0625	55.4783	52.60
Mar 24	87.750	89.250	88.5000	1.9375	53.5962	49.98
Apr 24	82.250	83.375	82.8125	1.8750	51.1683	47.02
May 24	79.000	80.125	79.5625	1.4375	48.1564	45.41
Jun 24	77.875	79.125	78.5000	1.5000	46.1050	45.05
Jul 24	77.500	79.625	78.5625	1.5625	45.2244	45.35
Aug 24	77.750	80.375	79.0625	1.6250	45.4497	45.90
Sep 24	79.000	81.625	80.3125	1.8125	47.1301	46.88
2Q 2023	83.875	85.250	84.5625	2.5625	57.8175	45.38
3Q 2023	86.000	87.375	86.6875	2.5625	56.6416	46.96
4Q 2023	91.750	92.625	92.1875	2.3750	58.1667	50.85
1Q 2024	92.250	92.875	92.5625	2.3125	54.8535	51.83
2Q 2024	80.000	80.375	80.1875	1.6250	48.4766	45.83
3Q 2024	78.125	79.250	78.6875	1.5000	45.9347	46.04
CAL 2024	83.250	83.500	83.3750	1.9375	54.6895	47.14

18-Month Forward Curves

PROPANE C3 (CONWAY IN-WELL) cts/gal



NORMAL BUTANE NC4 (MONT BELVIEU NON-TET) cts/gal



NORMAL BUTANE NC4 (MONT BELVIEU NON-TET) cts/gal

OPIS 14:30 ET SNAPSHOT: 107.750

FORWARD MONTH	LOW ASSESSMENT	HIGH ASSESSMENT	AVG PRICE	NET CHANGE	FRAC SPREAD	% OF CRUDE
Apr 23	107.250	107.500	107.3750	0.6250	78.6909	57.66
May 23	104.875	106.000	105.4375	1.8125	75.3633	56.55
Jun 23	103.500	104.750	104.1250	2.1250	72.0486	55.91
Jul 23	103.500	104.000	103.7500	1.4375	69.8270	55.89
Aug 23	103.750	104.125	103.9375	1.1875	69.5788	56.26
Sep 23	103.750	104.875	104.3125	0.8125	70.3273	56.78
Oct 23	104.500	105.750	105.1250	0.6875	70.3410	57.57
Nov 23	105.375	106.375	105.8750	0.5625	67.2837	58.34
Dec 23	106.250	106.750	106.5000	0.8750	63.9562	59.06
Jan 24	106.375	106.750	106.5625	1.0625	62.0062	59.47
Feb 24	104.250	105.250	104.7500	1.3125	61.4593	58.81
Mar 24	98.000	99.875	98.9375	1.6875	59.3918	55.87
Apr 24	91.750	96.375	94.0625	1.5625	58.2100	53.41
May 24	89.250	94.125	91.6875	2.0000	56.1047	52.33
Jun 24	88.625	92.125	90.3750	2.0625	53.6718	51.87
Jul 24	89.000	90.375	89.6875	1.5625	51.9158	51.77
Aug 24	88.875	89.875	89.3750	1.2500	51.2920	51.89
Sep 24	87.875	90.250	89.0625	0.6250	51.4671	51.98
2Q 2023	105.375	106.125	105.7500	1.6250	75.3676	56.71
3Q 2023	103.750	104.375	104.0625	1.2500	69.9110	56.31
4Q 2023	105.375	106.250	105.8125	0.6250	67.1936	58.32
1Q 2024	102.875	104.000	103.4375	1.3750	60.9524	58.05
2Q 2024	89.875	94.250	92.0625	1.7500	55.9955	52.54
3Q 2024	89.000	89.875	89.4375	1.2500	51.5583	51.88
CAL 2024	93.125	93.625	93.3750	1.6875	66.4465	55.82

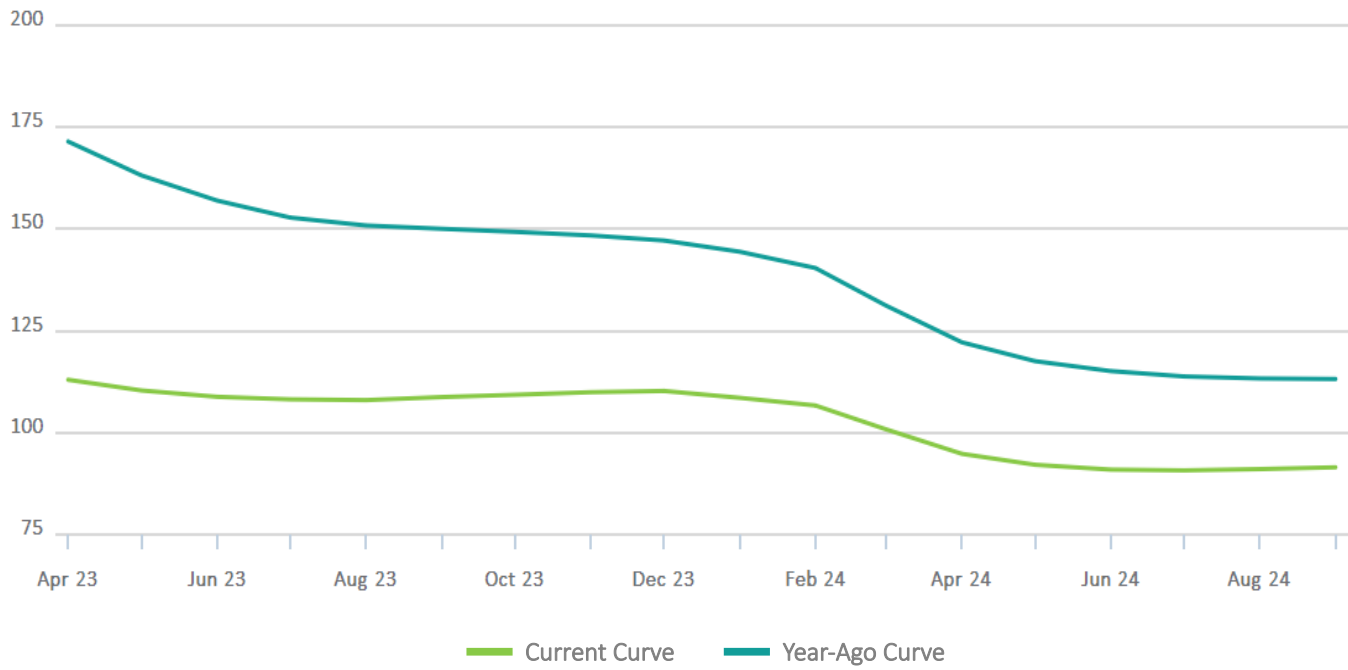
ISOBUTANE IC4 (MONT BELVIEU NON-TET) cts/gal

OPIS 14:30 ET SNAPSHOT: 114.750

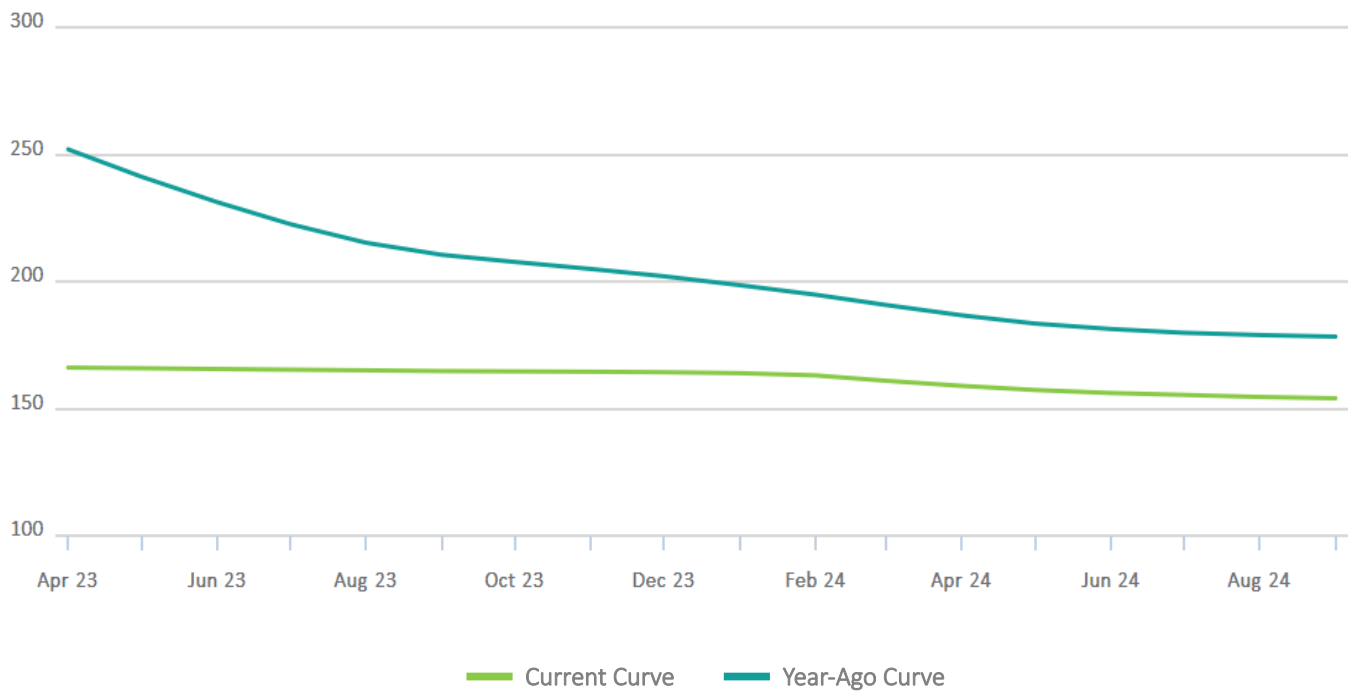
FORWARD MONTH	LOW ASSESSMENT	HIGH ASSESSMENT	AVG PRICE	NET CHANGE	FRAC SPREAD	% OF CRUDE
Apr 23	112.500	113.500	113.0000	1.6250	85.4523	60.68
May 23	110.250	110.500	110.3750	3.2500	81.4923	59.20
Jun 23	108.625	109.000	108.8125	2.8125	78.0069	58.43
Jul 23	107.625	108.750	108.1875	2.2500	75.6085	58.28
Aug 23	107.125	108.875	108.0000	1.7500	75.0025	58.46
Sep 23	108.000	109.500	108.7500	1.9375	76.1112	59.20
Oct 23	108.875	109.750	109.3125	2.0625	75.9066	59.86
Nov 23	109.375	110.500	109.9375	2.0000	72.8751	60.58
Dec 23	109.625	110.875	110.2500	1.8750	69.3917	61.14
Jan 24	107.875	109.250	108.5625	1.4375	65.7714	60.58
Feb 24	105.875	107.500	106.6875	1.7500	65.1119	59.90
Mar 24	99.500	102.125	100.8125	0.7500	62.8335	56.93
Apr 24	93.250	96.375	94.8125	0.6250	60.3804	53.83
May 24	90.750	93.500	92.1250	0.5625	57.9519	52.58
Jun 24	90.125	91.750	90.9375	0.6875	55.6884	52.19
Jul 24	90.500	91.000	90.7500	0.8125	54.4747	52.38
Aug 24	90.875	91.250	91.0625	1.4375	54.4883	52.87
Sep 24	91.250	91.750	91.5000	1.5625	55.3941	53.41
2Q 2023	110.625	110.875	110.7500	2.6875	81.6505	59.44
3Q 2023	107.625	109.000	108.3125	2.0000	75.5741	58.64
4Q 2023	109.250	110.375	109.8125	1.9375	72.7245	60.53
1Q 2024	104.375	105.375	104.8750	1.1875	64.5723	59.14
2Q 2024	91.375	92.625	92.0000	0.1875	58.0069	52.87
3Q 2024	90.875	91.125	91.0000	1.2500	54.7857	52.89
CAL 2024	94.375	94.875	94.6250	0.6250	71.2341	57.67

18-Month Forward Curves

ISOBUTANE IC4 (MONT BELVIEU NON-TET) cts/gal



NATURAL GASOLINE C5 (MONT BELVIEU NON-TET) cts/gal



NATURAL GASOLINE C5 (MONT BELVIEU NON-TET) cts/gal

OPIS 14:30 ET SNAPSHOT: 164.750

FORWARD MONTH	LOW ASSESSMENT	HIGH ASSESSMENT	AVG PRICE	NET CHANGE	FRAC SPREAD	% OF CRUDE
Apr 23	166.000	166.250	166.1250	0.4375	134.0648	89.21
May 23	165.750	166.000	165.8750	0.5625	132.2611	88.97
Jun 23	165.375	165.750	165.5625	0.6875	129.7108	88.90
Jul 23	165.125	165.500	165.3125	0.6875	127.3969	89.05
Aug 23	164.875	165.250	165.0625	0.6875	126.6599	89.34
Sep 23	164.500	165.000	164.7500	0.5625	126.7648	89.68
Oct 23	164.375	164.875	164.6250	0.7500	125.7470	90.15
Nov 23	164.250	164.750	164.5000	0.9375	121.3666	90.65
Dec 23	164.000	164.625	164.3125	1.0000	116.7614	91.12
Jan 24	163.750	164.125	163.9375	0.8125	114.1370	91.48
Feb 24	162.750	163.375	163.0625	0.6875	114.6766	91.56
Mar 24	160.625	161.250	160.9375	0.5000	116.7374	90.88
Apr 24	158.625	159.250	158.9375	0.4375	118.8652	90.24
May 24	157.000	157.625	157.3125	0.3125	117.5417	89.79
Jun 24	155.750	156.500	156.1250	0.3750	115.1019	89.60
Jul 24	155.000	155.750	155.3750	0.8125	113.1576	89.69
Aug 24	153.875	155.250	154.5625	1.0000	111.9973	89.73
Sep 24	153.375	154.750	154.0625	1.0000	112.0422	89.92
2Q 2023	165.750	166.000	165.8750	0.5625	132.0122	89.03
3Q 2023	164.875	165.250	165.0625	0.6875	126.9405	89.36
4Q 2023	164.250	164.750	164.5000	0.9375	121.2917	90.64
1Q 2024	162.375	162.875	162.6250	0.7500	115.1836	91.31
2Q 2024	157.125	157.750	157.4375	0.6250	117.1696	89.88
3Q 2024	154.125	155.250	154.6875	1.0625	112.3990	89.78
CAL 2024	156.625	156.750	156.6875	0.7500	123.7782	89.74

Ethylene Forward Cash Cost

ETHANE (MONT BELVIEU) cts/lb

FORWARD MONTH	CASH COST
Apr 23	9.9036
May 23	9.9213
Jun 23	9.8227
Jul 23	9.6971
Aug 23	9.6518
Sep 23	9.9347
Oct 23	10.2142
Nov 23	10.4927
Dec 23	10.7656
Jan 24	11.2035
Feb 24	11.1543
Mar 24	10.8410
Apr 24	10.4531
May 24	10.3732
Jun 24	10.4170
Jul 24	10.5883
Aug 24	10.8792
Sep 24	11.1536

PROPANE (TET) cts/lb

FORWARD MONTH	CASH COST
Apr 23	24.2415
May 23	25.0254
Jun 23	25.3730
Jul 23	25.5569
Aug 23	25.8550
Sep 23	26.2268
Oct 23	26.5086
Nov 23	26.6936
Dec 23	26.7606
Jan 24	26.8169
Feb 24	26.3990
Mar 24	25.0018
Apr 24	23.3094
May 24	22.1140
Jun 24	21.3796
Jul 24	21.1392
Aug 24	21.1243
Sep 24	21.2697

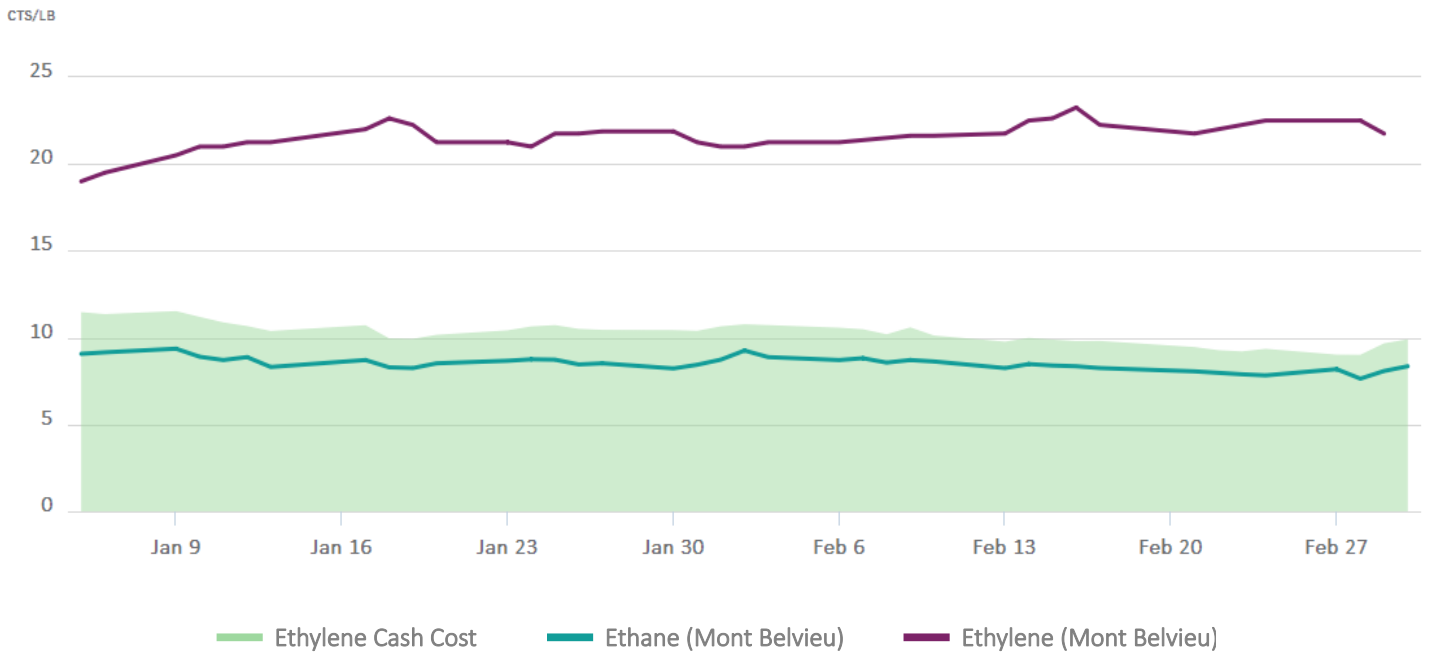
NORMAL BUTANE (NON-TET) cts/lb

FORWARD MONTH	CASH COST
Apr 23	26.0268
May 23	26.0482
Jun 23	25.7925
Jul 23	25.6955
Aug 23	25.8265
Sep 23	26.0193
Oct 23	26.1793
Nov 23	26.2544
Dec 23	26.2647
Jan 24	26.3712
Feb 24	25.9291
Mar 24	24.1887
Apr 24	22.5649
May 24	21.6982
Jun 24	21.1748
Jul 24	20.9254
Aug 24	20.8297
Sep 24	20.7517

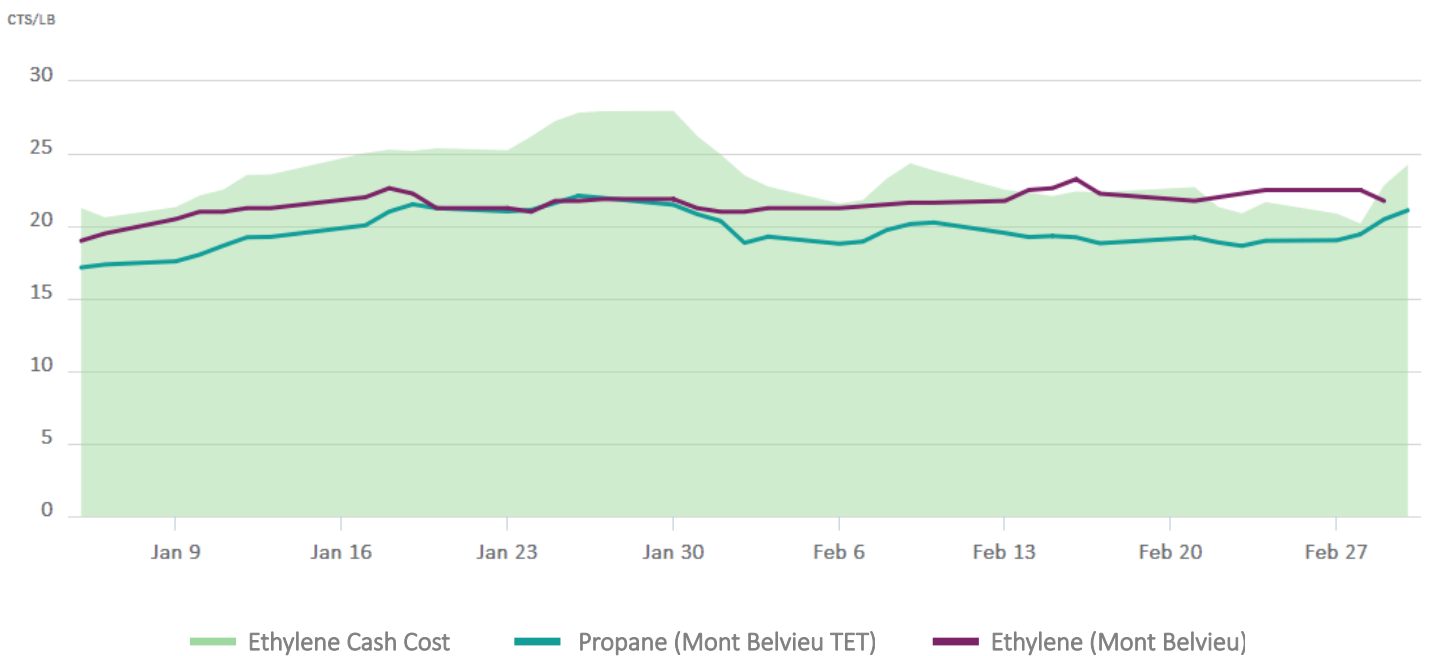
NATURAL GASOLINE (NON-TET) cts/lb

FORWARD MONTH	CASH COST
Apr 23	44.5829
May 23	46.4021
Jun 23	46.7821
Jul 23	46.8139
Aug 23	46.9144
Sep 23	46.9842
Oct 23	46.8189
Nov 23	46.4277
Dec 23	45.9506
Jan 24	46.0539
Feb 24	46.0487
Mar 24	45.4496
Apr 24	44.0682
May 24	43.0650
Jun 24	42.1596
Jul 24	41.8057
Aug 24	41.4023
Sep 24	41.3101

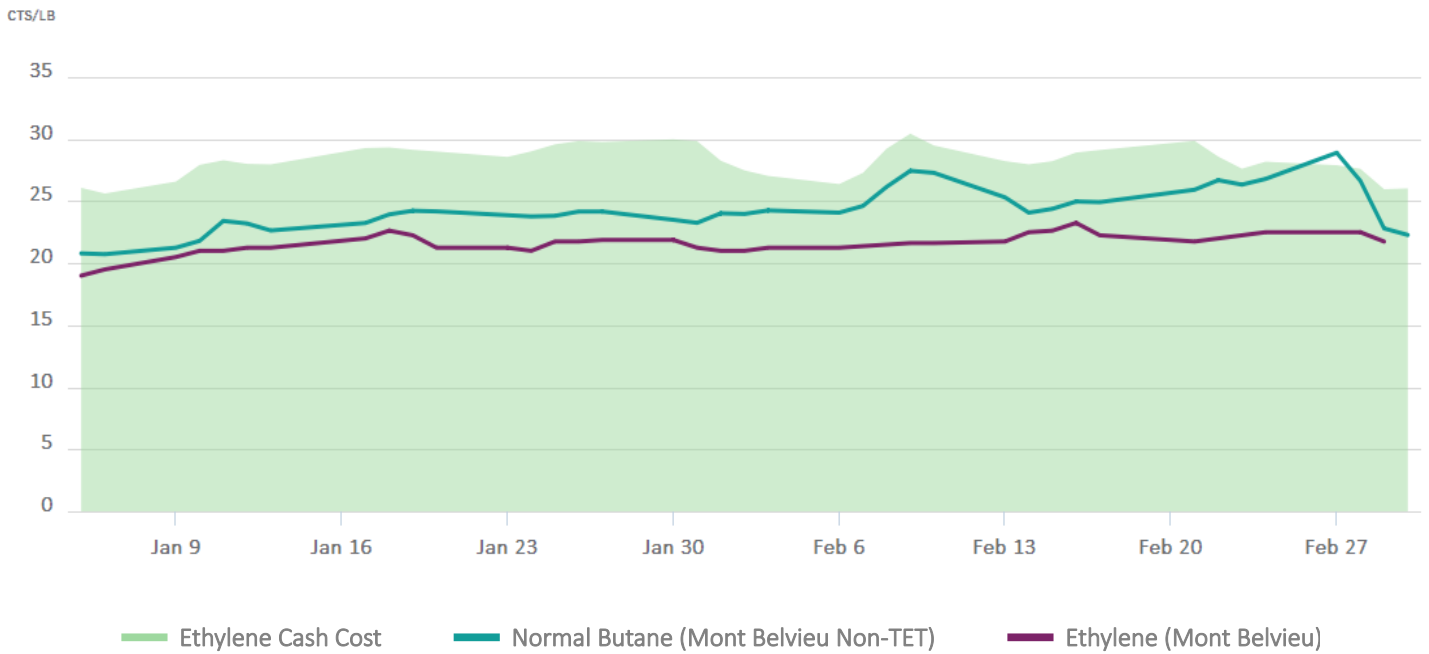
C2 Ethylene Cash Cost (Mont Belvieu) cts/lb



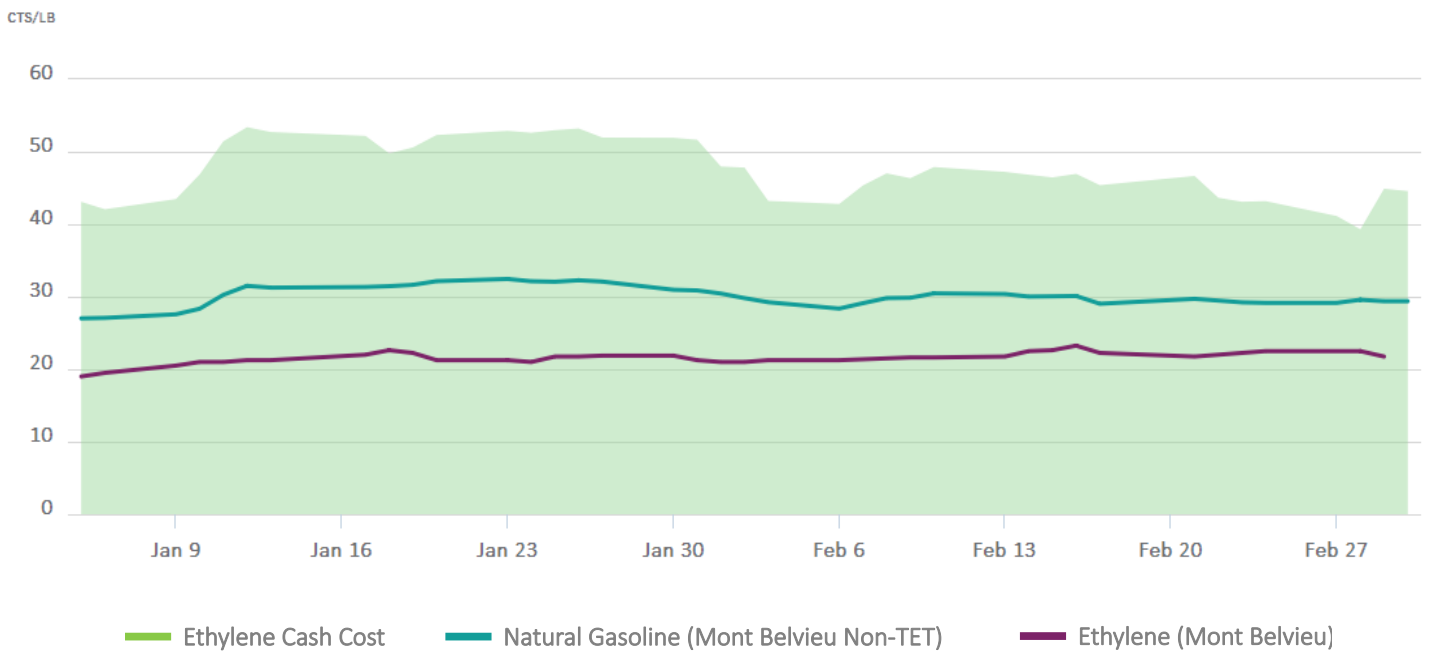
C3 Ethylene Cash Cost (TET) cts/lb



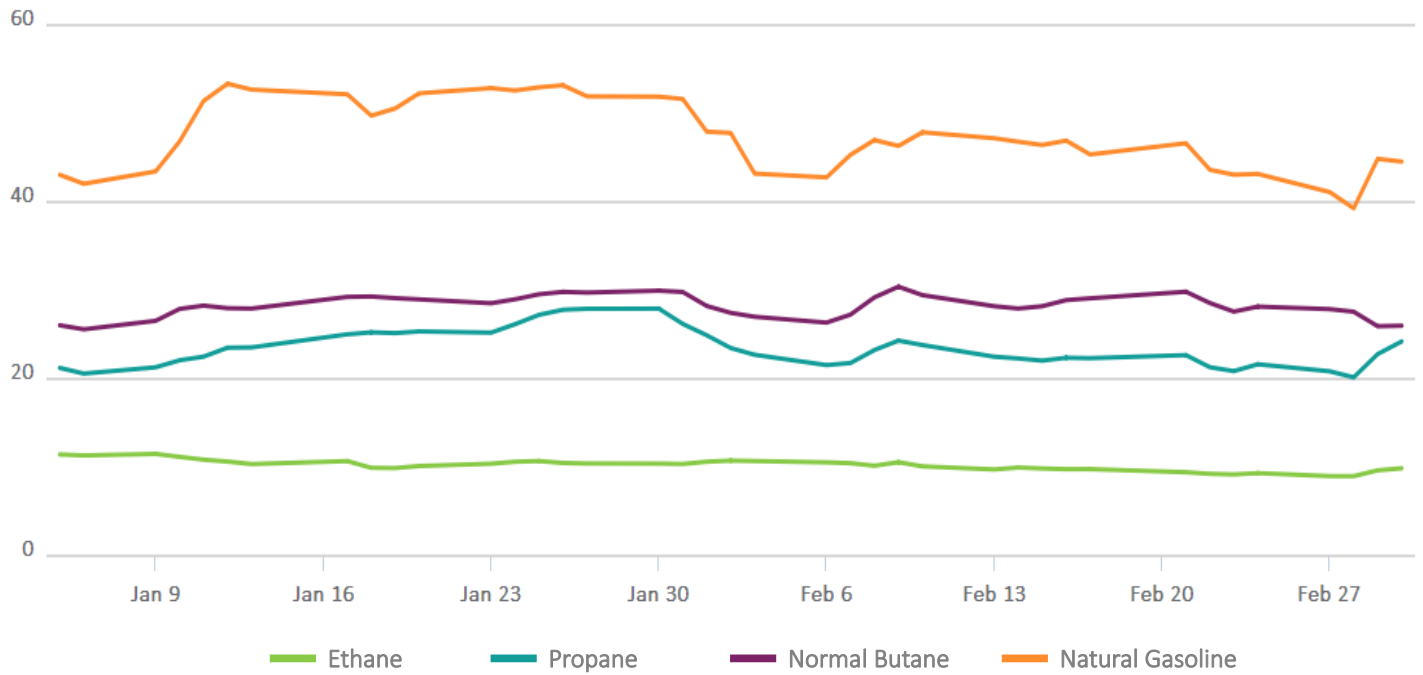
NC4 Ethylene Cash Cost (Non-TET) cts/lb



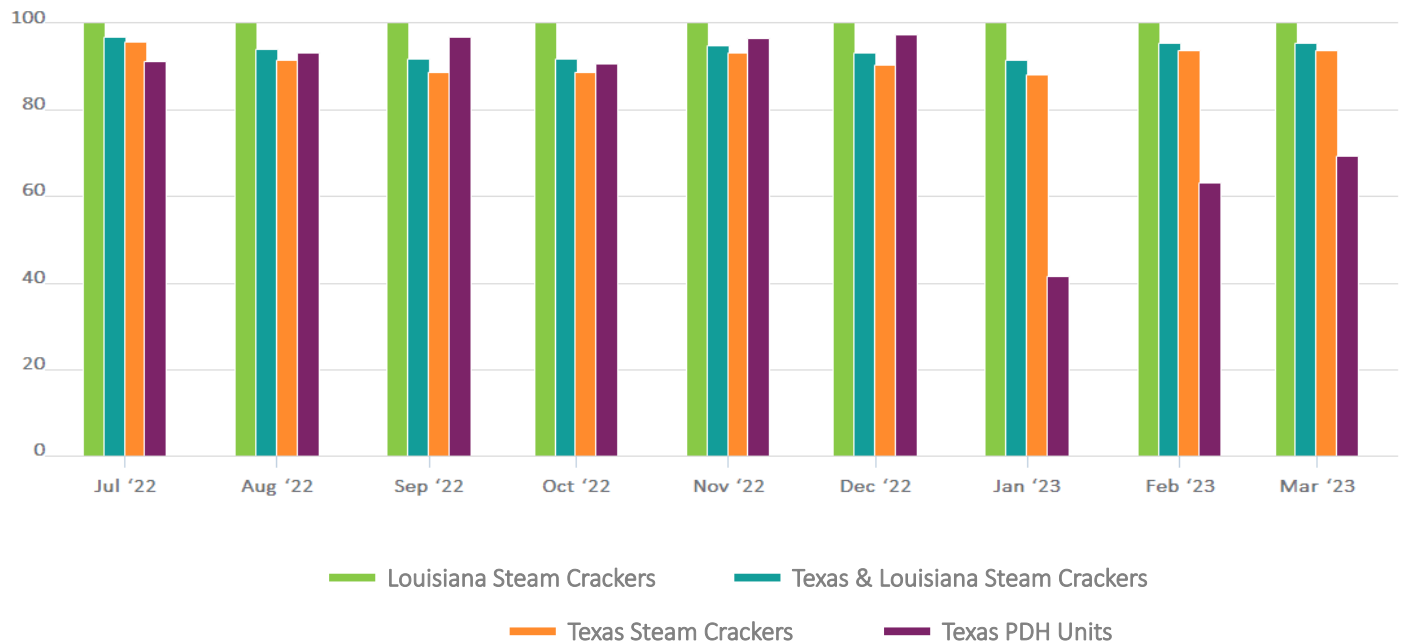
C5 Ethylene Cash Cost (Non-TET) cts/lb



Ethylene Forward Cash Costs cts/lb



US Olefin Plant Estimated Maximum Operating Rates %



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SPECIFICATIONS

Table of physical properties of interest to the natural gas and natural gas liquids industries may be found in the published Gas Processors Association (GPA) Midstream Standard 2145-16

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METHODOLOGY

The OPIS PCW Ethylene Cash Costs are derived using formulas based on practices used within the industry related to product yields per feedstock. Input values include OPIS NGLs data and OPIS PCW Olefins data. For more information, visit www.opisnet.com/about/methodology.aspx.

Methodology used by OPIS PCW to estimate maximum olefins plant operating rates is based on confirmed outages and verified rate reductions. It intends to portray the highest possible rate the industry could operate at using confirmed information.

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Polypropylene-Propane

Mar 37.22 / 161.93

Apr 37.91 / 164.93

2Q 37.55 / 163.36