



RBN U.S. Propane Billboard

# U.S. Propane Market Update & Outlook

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## U.S. PROPANE SUPPLY &amp; DEMAND

Table A:	MM gal / month							M bbl / day						
	EIA MONTHLY		ESTIMATED		FORECAST			EIA MONTHLY		ESTIMATED		FORECAST		
	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24
Production	3,000	3,083	2,907	2,821	3,135	3,057	3,167	2,381	2,368	2,233	2,316	2,408	2,426	2,432
Gas Plants	2,670	2,715	2,558	2,511	2,780	2,699	2,796	2,119	2,085	1,965	2,061	2,135	2,142	2,148
Refinery	330	368	349	310	356	358	371	262	283	268	255	273	284	285
Imports	155	190	173	166	148	89	81	123	146	133	137	114	71	62
<b>TOTAL SUPPLY</b>	<b>3,155</b>	<b>3,273</b>	<b>3,081</b>	<b>2,987</b>	<b>3,284</b>	<b>3,146</b>	<b>3,248</b>	<b>2,504</b>	<b>2,514</b>	<b>2,366</b>	<b>2,453</b>	<b>2,522</b>	<b>2,497</b>	<b>2,494</b>
Demand (Prod. Supplied)	1,206	1,286	1,713	1,129	1,093	828	709	957	988	1,316	927	839	657	544
Exports	2,276	2,428	2,182	2,273	2,311	2,097	2,171	1,806	1,865	1,676	1,866	1,775	1,664	1,667
Stock Change	(328)	(441)	(815)	(415)	(120)	221	368	(260)	(339)	(626)	(341)	(92)	176	283
<b>TOTAL DISPOSITION</b>	<b>3,154</b>	<b>3,273</b>	<b>3,080</b>	<b>2,987</b>	<b>3,284</b>	<b>3,146</b>	<b>3,248</b>	<b>2,503</b>	<b>2,514</b>	<b>2,366</b>	<b>2,452</b>	<b>2,522</b>	<b>2,497</b>	<b>2,494</b>
<b>TOTAL INVENTORY*</b>	<b>3.8</b>	<b>3.3</b>	<b>2.5</b>	<b>2.1</b>	<b>2.0</b>	<b>2.2</b>	<b>2.6</b>	<b>90.2</b>	<b>79.7</b>	<b>60.3</b>	<b>50.5</b>	<b>47.6</b>	<b>52.9</b>	<b>61.7</b>

\* Inventories are shown in billion gallons and million barrels respectively.

## MONTHLY HIGHLIGHTS

- U.S. propane inventories drew by 9.9 MMbbl in February, which was above the 8-MMbbl decline in February 2023 and the 9.1 MMbbl 5-year average decline for the month. It wasn't cold weather driving the above-average draw as total U.S. heating degree days (HDDs) reported by the National Oceanic and Atmospheric Administration (NOAA) for February were 12% below the 10-year average for the month and about 1% than last year. We project propane inventories for the 2023-24 heating season to fall by 54.2 MMbbl, compared to a 26.2 MMbbl draw for last year's winter season and the 5-year average decline of 38.2 MMbbl. We look at the 2023-24 winter season HDDs in more detail in our Market Spotlight section.
- Despite the above-average draw in stocks Mont Belvieu propane prices retreated, falling by 8.1%, or 8.7 c/gal, in February. The decline in prices pushed the propane-to-WTI Cushing ratio down to 43% in early March, which is 10 percentage points lower than on February 1.
- The EIA reported on February 29 that total U.S. propane exports for December hit an all-time high of 1,865 Mb/d, which was 59 Mb/d, or 3.3%, more than the prior record high in November and 365 Mb/d, or 26.9%, above December 2022.
- The U.S.-Asia propane export arb remained closed (uneconomic) at the end of February as higher freight rates more than offset a slightly wider spread between Asia FEI and Mont Belvieu propane prices.
- The LPG shipping market partially recovered from the January collapse in rates but remained weak, with the key Houston-Chiba freight rate (via Panama Canal) rising to \$110.5/MT as of February 29, up 50% from the beginning of the month but still down \$113/MT, or 51%, from the start of the year.

## MARKET OVERVIEW

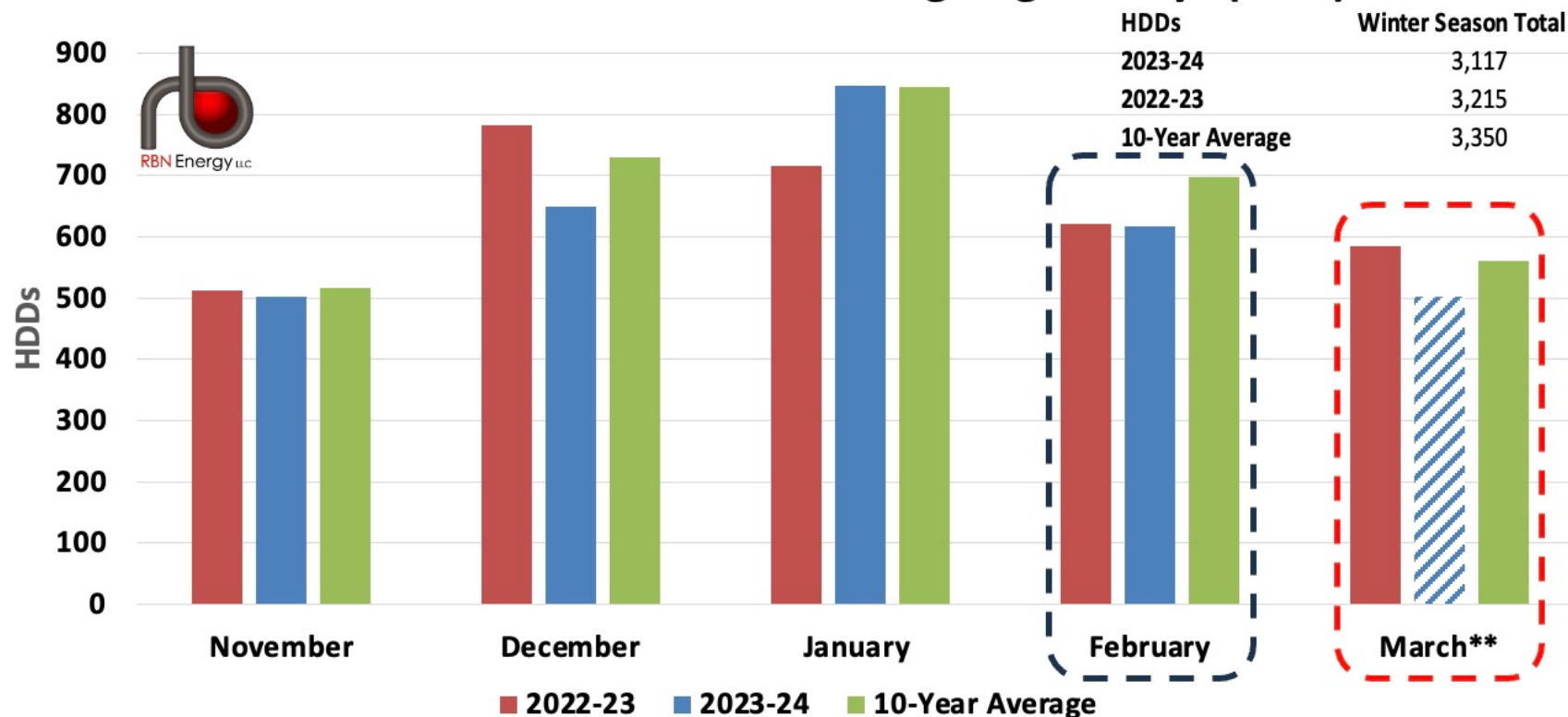
The headline of this month's report is the torrid pace of propane exports, which has dramatically pulled down U.S. propane inventories during the winter heating season. Total U.S. propane export volumes set a record high in February, which drove the above-average stock draw despite warmer-than-normal winter weather. The key theme of the market continues to be the battle between production growth and exports. Gas plant production partially recovered from the weather-related curtailments in January but has been unable to keep up with exports. The propane-to-WTI ratio was weaker, falling to 43%, below the level at this time last year. Despite weaker Mont Belvieu propane prices, the arb to Asia remains closed but it doesn't look like exports have slowed at this point.

## MONTHLY PROPANE MARKET SPOTLIGHT

## WARM WINTER WEATHER UNABLE TO OFFSET STRONG PROPANE EXPORTS

Cold weather wasn't the cause for the above-average stock draw in February as total U.S. heating degree days (HDDs) reported by the National Oceanic and Atmospheric Administration (NOAA) were 12% below the 10-year average for the month and slightly below last year (see dashed black box in chart below). With March also forecast to be warmer than normal, the 2023-24 winter heating season is wrapping up with 7% less HDDs than the 10-year average and 3% below the 2022-23 heating season (dashed red box in chart below). We project that stocks will decline by 54.2 MMbbl for this winter season, compared to only 26.2 MMbbl during the 2022-23 winter season and the 5-year average of 38.2 MMbbl.

## U.S. Winter Season Heating Degree Days (HDD)



\*\*March 2024 HDD forecast based upon NOAA outlook

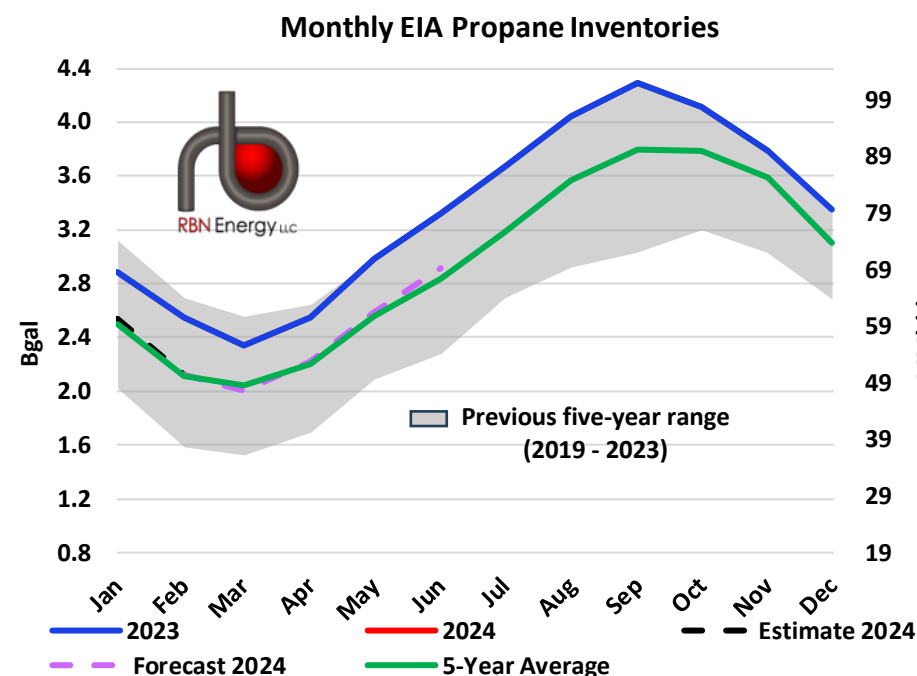
Sources: EIA, NOAA

With residential & Commercial ("ResCom") heating demand for propane weak, exports have been the primary culprit pulling inventories lower, with February shipments up 314 Mb/d, or 20%, compared to the month last year. But it remains to be seen if exports can remain at the robust levels seen over the last several months with the U.S.-Asia arb closed.

## U.S. PROPANE INVENTORIES

Table B:	MM gal							M bbl					
	MONTHLY EIA			ESTIMATED		FORECAST		MONTHLY EIA			ESTIMATED		FORECAST
	Nov-23	Dec-23	M/M	Jan-24	Feb-24	Mar-24		Nov-23	Dec-23	M/M	Jan-24	Feb-24	Mar-24
PADD 1 (East Coast)	409	325	(84)	269	189	179		9,747	7,736	(2,011)	6,402	4,488	4,268
PADD 2 (Midwest)	1,067	922	(145)	618	505	427		25,404	21,948	(3,456)	14,703	12,023	10,163
PADD 3 (Gulf Coast)	2,066	1,881	(185)	1,455	1,262	1,245		49,191	44,797	(4,394)	34,649	30,059	29,649
PADD 4 (Rocky Mountains)	133	129	(3)	113	105	109		3,160	3,082	(78)	2,681	2,496	2,598
PADD 5 (West Coast)	114	91	(23)	80	58	39		2,715	2,172	(543)	1,899	1,392	934
TOTAL PROPANE	3,789	3,349	(440)	2,534	2,119	2,000		90,217	79,735	(10,482)	60,334	50,459	47,612
Propylene	64	38	(26)	27	19	25		1,526	909	(617)	647	446	587
TOTAL INVENTORIES	3,853	3,387	(466)	2,561	2,138	2,024		91,743	80,644	(11,099)	60,981	50,904	48,199

Figure 1.1



Source: EIA, RBN Forecast

## ANALYSIS &amp; INSIGHTS

Total U.S. propane inventories fell by 9.9 MMbbl in February, which was above the 8-MMbbl decline last year and the 9.1-MMbbl 5-year average (2019-23) draw for the month. Total U.S. propane stocks at month-end were 50.9 MMbbl (2.1 Bgal), which is 10.1 MMbbl, or 16%, below last February and just 132 Mbbl, or 0.3%, above the 5-year average. PADD 3 had a large draw of 4.6 MMbbl for the month, which was well above the 1.6-MMbbl decline for the period in 2023. Gulf Coast inventories are now 7.4 MMbbl, or 19.8%, below February 2023. PADD 2 inventories declined by 2.7 MMbbl, which was well below the 4.9 MMbbl average draw for the month. Midwest stocks are now 0.5 MMbbl, or 4%, higher than the 5-year average. PADD 1 inventories drew by 1.9 MMbbl, which is slightly above the 5-year average decrease of 1.5 MMbbl. PADD 4 stocks declined by 185 Mbbl to 2.5 MMbbl, which is 599 Mbbl (32%) higher than the 5-year average. PADD 5 inventories fell by 507 Mbbl to 1.4 MMbbl, which is 585 Mbbl, or 72%, above the 5-year average.

## INVENTORY OUTLOOK

U.S. propane stocks are projected to fall by 2.5 MMbbl in March, compared to a 4.8 MMbbl draw last year and the 5-year average decline of 1.6 MMbbl. This will leave total U.S. stocks at the end of the winter heating season at 47.9 MMbbl (2 Bgal), which is 7.9 MMbbl, or 14%, less than last year and 0.8 MMbbl, or 1.6%, below the 5-year average.



## PROPANE MARKET UPDATE

### U.S. PROPANE PRICES MOVE LOWER IN FEBRUARY

West Texas Intermediate (WTI) crude oil prices strengthened during February, approaching \$80/bbl, as the market focused on the supply impacts of the ongoing turmoil in the Middle East and improved global economic data. WTI closed at \$78.26/bbl on February 29, up \$4.44/bbl, or 6%, from February 1.

U.S. propane prices weakened during the month, mainly attributed to the approaching end of the winter heating season. The OPIS non-TET (Enterprise) price was down 8.1 c/gal, or 8.7%, from the beginning of the month to 85.4 c/gal as of February 29, while OPIS TET (Energy Transfer) propane fell by 6 c/gal, or 6.5%, to 85.8 c/gal over the same period. As a result, the non-TET vs. TET price spread narrowed, with non-TET trading at a 0.4 c/gal discount on February 29. The February OPIS monthly average price was 90.7 c/gal for non-TET and 89.7 c/gal for TET, which was 8.9 c/gal and 9.2 c/gal above the January averages, respectively. Conway propane (OPIS) averaged 84.1 c/gal for the month, which represented a 6.6 c/gal discount to the average non-TET price. The Conway spread to Mont Belvieu was at a 5.6 c/gal discount as of March 7.

The benchmark non-TET propane-to-WTI Cushing ratio (Figure 1.2) was at 46% as of February 29, down 7 percentage points from the beginning of the month. The ratio has dropped to 43% as of March 7. The current forward curves project the propane-to-WTI ratio to average ~44% through May, which is 5 percentage points lower compared to the forward curves at the beginning of February. As shown in Figure 1.3, the current forward curve for March (red line) is down 1-3 c/gal in the short term (April-May) compared to the forward curve in early February (yellow line).

Figure 1.2

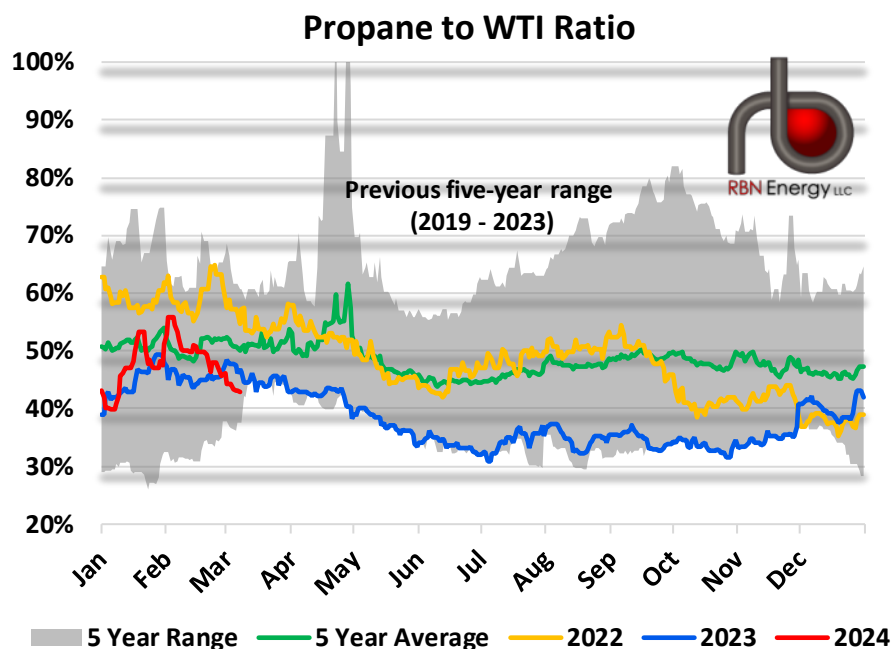
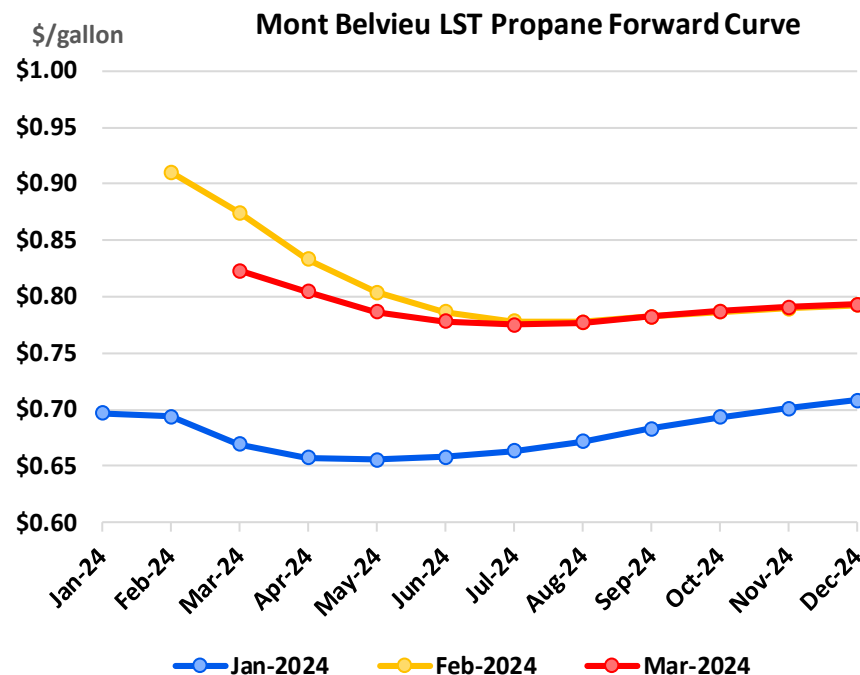


Figure 1.3



## CONWAY VS. MONT BELVIEU PROPANE PRICES

### CONWAY PRICE DISCOUNT TO MONT BELVIEU WIDENS

Conway spot propane's (OPIS) discount to Mont Belvieu Non-TET (Figure 2.5) averaged 6.6 c/gal during February, compared to a 4.2 c/gal discount in January and a 3.8 c/gal discount in December. In February 2023, Conway was at an average discount of 4.3 c/gal while in 2021 it was at a premium of 13.5 c/gal. The 5-year average (2019-23) Conway discount to Belvieu for February is 0.7 c/gal.

As of March 6, the Conway spot propane (OPIS) discount to Mont Belvieu Non-TET had declined to 5.6 c/gal, down from 6.6 c/gal on February 29.

### CONWAY - BELVIEU PROPANE FORWARD CURVE ANALYSIS

Figure 2.6 shows the propane forward price curves for Conway (blue line) and Mont Belvieu (red line) on the left-hand axis. The gray area is the differential or spread between the two prices on the right axis. The Mont Belvieu-Conway price spread is a good indicator whether the market is incenting barrels to flow from PADD 2 to PADD 3 (export demand pull) or keep barrels in the Midwest for domestic demand.

The current forward curves are now projecting Mont Belvieu prices to trade 5.6 c/gal above Conway for April, which is a signal of the strong export demand pull from the Gulf Coast.

For 2024, the forward curves expect Gulf Coast propane prices to trade at ~2.6 c/gal above Conway through October but then flip to a small discount in November-December, with Mont Belvieu averaging 1.9 c/gal over Conway for the year compared to a 2.1 c/gal premium in 2023.

Figure 2.5

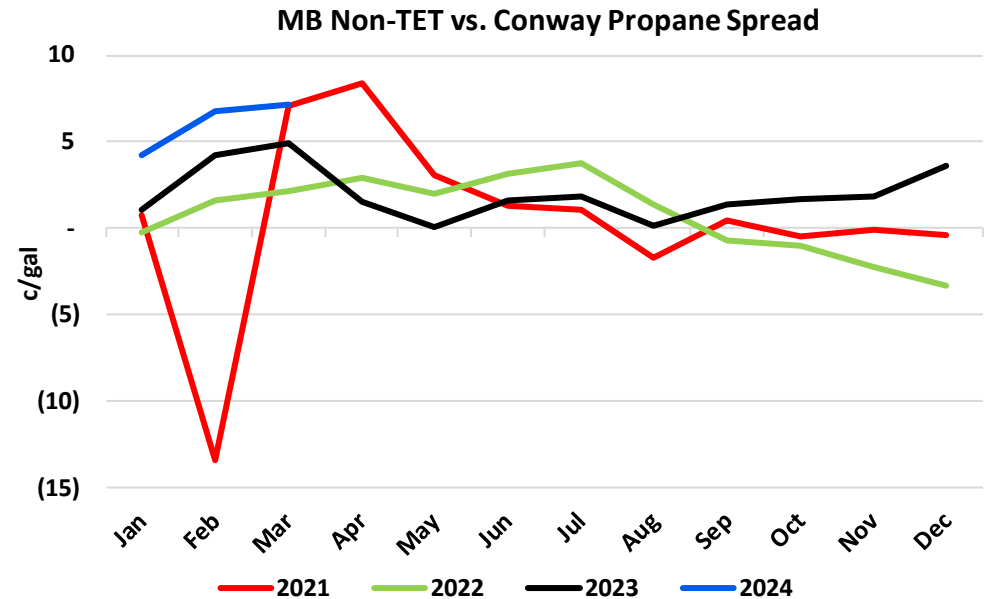
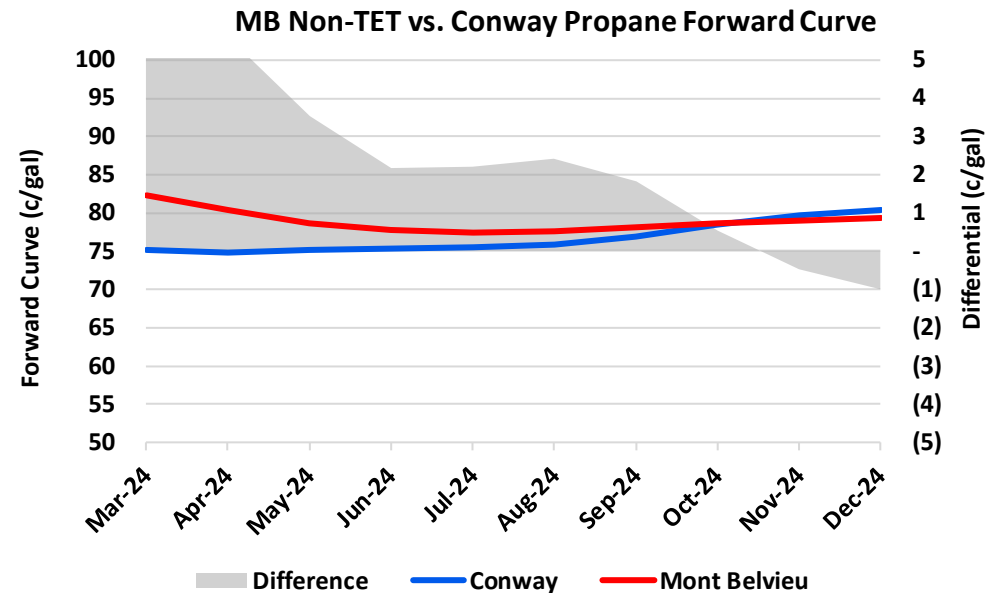


Figure 2.6



## U.S. PROPANE DEMAND

Table C:	MM gal / month						M bbl / day					
	MONTHLY			ESTIMATED		FORECAST	MONTHLY			ESTIMATED		FORECAST
	Nov-23	Dec-23	M/M	Jan-24	Feb-24		Nov-23	Dec-23	M/M	Jan-24	Feb-24	
ResCom	580	736	155	901	698	634	461	565	104	692	573	487
Crop Drying	177	127	(50)	74	56	39	140	98	(43)	57	46	30
Industrial	94	113	19	129	112	101	74	87	12	99	92	77
Petrochemicals	259	279	19	241	225	235	206	214	8	185	185	181
PDH	88	91	3	104	110	130	70	70	-	80	90	100
Balancing	7	(59)	(66)	264	(71)	(307)	6	(45)	(51)	203	(58)	(236)
<b>TOTAL PROPANE</b>	<b>1,206</b>	<b>1,286</b>	<b>81</b>	<b>1,713</b>	<b>1,129</b>	<b>832</b>	<b>957</b>	<b>988</b>	<b>31</b>	<b>1,316</b>	<b>927</b>	<b>639</b>
Propylene	352	406	55	343	289	327	279	312	33	264	237	251
<b>TOTAL DEMAND **</b>	<b>1,557</b>	<b>1,693</b>	<b>135</b>	<b>2,056</b>	<b>1,418</b>	<b>1,159</b>	<b>1,236</b>	<b>1,300</b>	<b>64</b>	<b>1,579</b>	<b>1,164</b>	<b>890</b>
Weekly***	1,412	1,772	360	2,021	1,432		1,121	1,361	240	1,553	1,176	
Variance	(145)	79	224	(35)	14		(115)	61	176	(27)	11	

\* EIA reports propane product supplied in monthly data, while weekly data includes propylene.

\*\* Total Demand\*\* is the equivalent of product supplied as reported by the EIA.

\*\*\* EIA monthly product supplied through Dec 2023, weekly through the week of March 1, 2024.

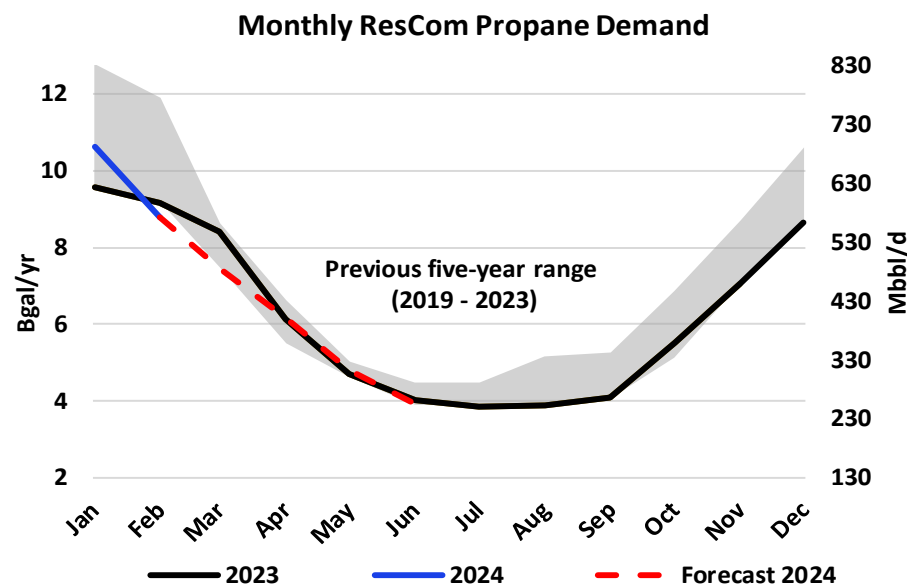
Figure 3.1

## RESIDENTIAL &amp; COMMERCIAL DEMAND BELOW NORMAL

Figure 3.1 shows our current forecast for Residential & Commercial (“ResCom”) demand through June. ResCom demand was weaker in February at 573 Mb/d (698 MMgal/m), 119 Mb/d below January and 25 Mb/d less than February 2023. Weather was warmer than normal in February with 16% less HDDs versus the 10-year average (2014-23) and 7% below the same month last year. For March, our propane population-weighted weather forecast data shows 8% less HDDs in the U.S. compared with March 2023 and ~5% below the 5-year average (2019-23) for the month. ResCom demand for March is projected at 487 Mb/d, down 86 Mb/d from February and 61 Mb/d lower than for the same month last year.

## PETCHEM STEAM CRACKER DEMAND REMAINS WEAK

Petchem cracker demand for propane remained weak in February at 185 Mb/d as margins down for propane cracking averaged minus 1.8 c/lb for the month. We expect cracker demand for propane to remain weak in March as ethane remains the most economical feedstock. PDH demand increased to ~90 Mb/d due to higher operating rates as lower propane and higher propylene prices increased margins.



Source: RBN Estimate

## U.S. PROPANE EXPORTS

Table D: U.S. Propane Exports Monthly and Weekly*						
(Mbb/d)	MONTHLY EIA			ESTIMATED		FORECAST
	Nov-23	Dec-23	M/M	Jan-24	Feb-24	Mar-24
Gulf Coast	1,651	1,605	(46)	1,527	1,663	1,550
East Coast	132	216	84	118	171	180
West Coast	20	42	22	28	29	40
Other	3	2	(1)	3	3	5
<b>TOTAL EXPORTS</b>	<b>1,806</b>	<b>1,865</b>	<b>59</b>	<b>1,676</b>	<b>1,866</b>	<b>1,775</b>
Weekly	1,698	1,826	128	1,708	1,765	
Variance	(108)	(39)	69	32	(101)	

\*Monthly data from EIA through December 2023, weekly through the week of March 1, 2024.

See [RBN's NGL Voyager Report](#) for additional details on propane exports.

## EAST COAST EXPORTS REBOUND

East Coast propane exports (green bars in Figure 4.1) from Energy Transfer's Marcus Hook terminal in Pennsylvania increased sharply to 171 Mb/d, up 53 Mb/d from January and 64 Mb/d above February 2023. East Coast volumes are expected to grow at a healthy rate in 2024, averaging 174 Mb/d, up 15 Mb/d,

or 9%, from 2023. No propane cargoes were delivered into Blackline's Newington, NH, or Providence, RI, terminals during the month. Four cargoes have been imported into the region during the 2023-24 winter heating season.

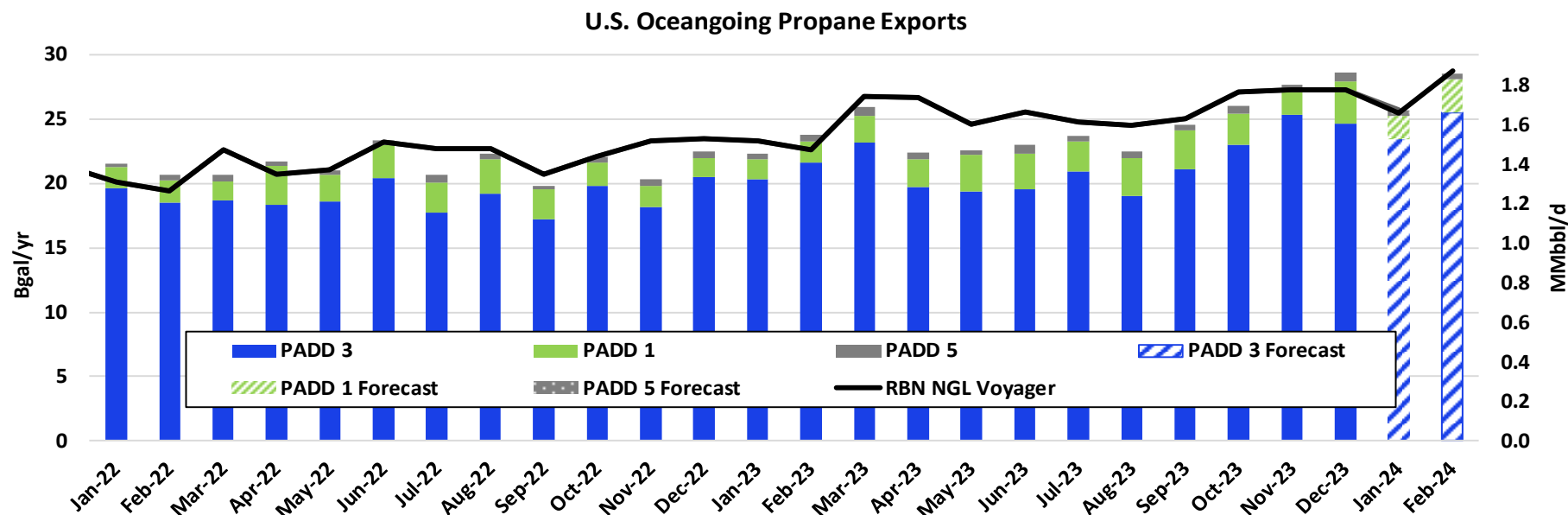
## GULF COAST PROPANE EXPORTS REMAIN ROBUST

Gulf Coast propane exports (blue bars in Figure 4.1) were stronger at 1,663 Mb/d, up 136 Mb/d from January. We estimate volumes in March to weaken to 1,550 Mb/d with the export arb to Asia currently closed. For 2024, exports are estimated to average 1,495 Mb/d, which is up 95 Mb/d, or 7%, from 2023.

## WEST COAST EXPORTS MODESTLY STRONGER

Propane exports out of the AltaGas terminal in Ferndale, WA, on the West Coast were modestly stronger at 29 Mb/d for the month, up 1 Mb/d from January. We expect March shipments to strengthen to 40 Mb/d, which is 8 Mb/d above last year's average but 5 Mb/d less than March 2023. All West Coast exports are shipped to Asia (via the AltaGas Ferndale, WA, terminal) or to Mexico (via railcars/trucks).

Figure 4.1



Source: EIA, RBN Forecast



## INTERNATIONAL PROPANE

Figure 4.2

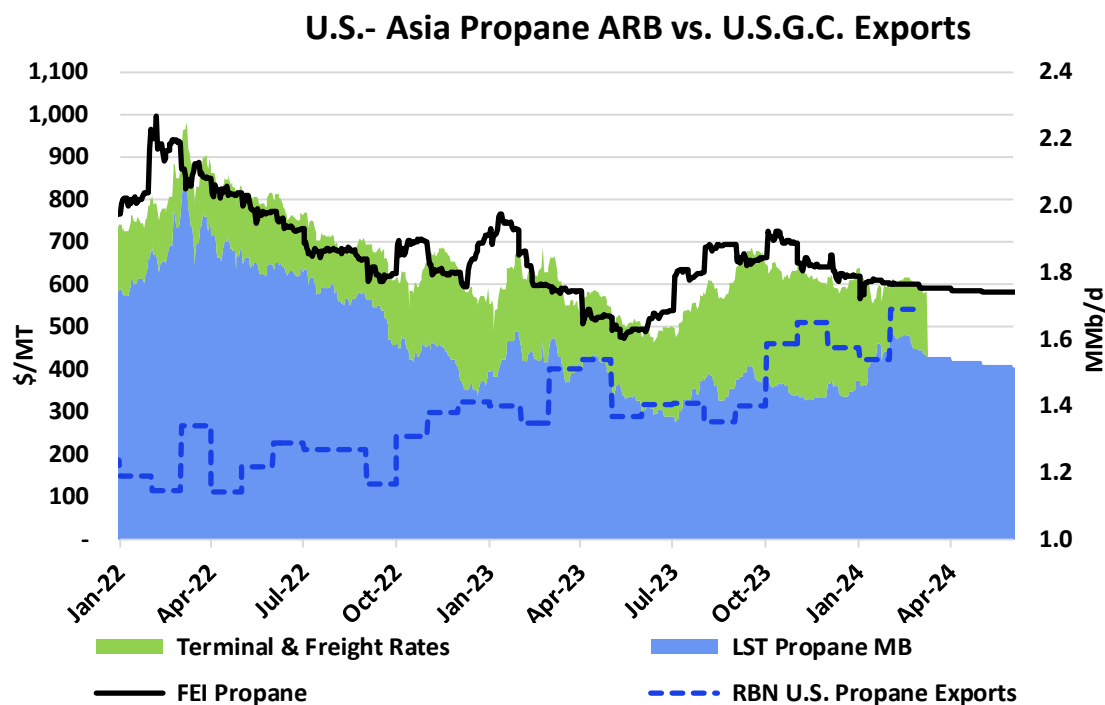
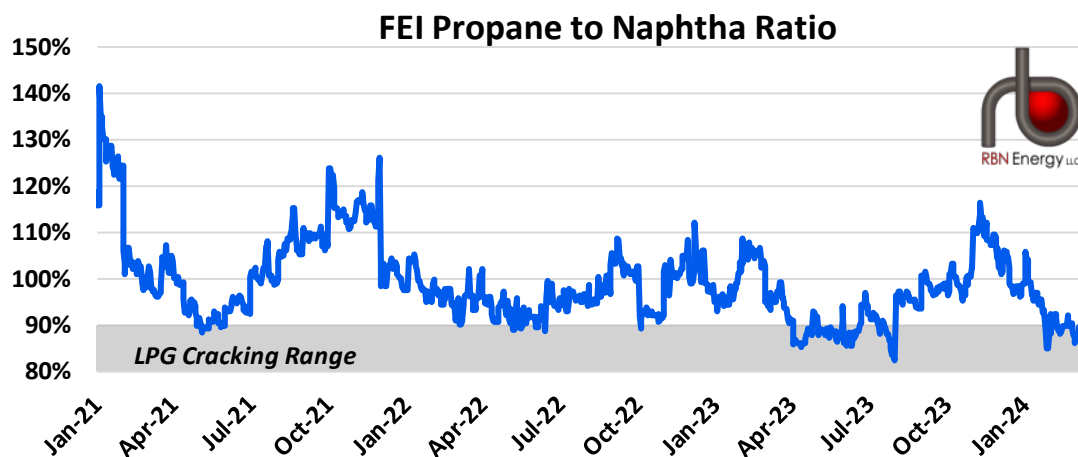


Figure 4.3



## U.S.-ASIA PROPANE EXPORT ARB CLOSED

Saudi Aramco left its March LPG contract prices (CP) unchanged from the February CPs at \$630/MT (121 c/gal) for propane and 640/MT (141 c/gal) for normal butane.

VLGC freight rates moved higher during the month, partially recovering from the collapse in the market in January. Spot LPG freight rates from the U.S. Gulf Coast to Chiba, Japan, (via Panama Canal) increased by \$37/MT (7.1 c/gal) to \$110.5/MT (21.2 c/ga) as of February 29, which is 50% above the rate on February 1. Spot terminal fees (resale differentials) were weaker over the period, as values fell by 1.5 c/gal with a 6.8 c/gal fee for H2 March / H1 April loadings as of February 29.

Figure 4.2 compares the Asian arb to U.S. propane exports. The arb is open (economic) when the forward month of FEI propane (black line) is higher than the sum of the terminal and freight rates (green area) and the price of Lone Star (LST) propane at Mont Belvieu (blue area). Since February 1, the LST propane price at Mont Belvieu declined by \$38/MT to settle at \$448/MT, or 85.9 c/gal, on February 29, while the FEI propane forward curve fell by only \$29/MT, which resulted in a slightly wider spread between U.S. and Asian prices. Hence, the arb for March-April increased to \$139/MT, or 26.7 c/gal, as of February 29. **Taking into consideration terminal fees and freight costs, the arb for March-April was closed (positive, thus uneconomic) at positive \$6/MT, or positive 1.2 c/gal.**

Figure 4.3 shows the ratio of the Asian FEI propane price to the naphtha price in the same region. As of March 7, the ratio stood at 87%, which implies that steam crackers in Asia will tend to favor propane feedstock over naphtha.

## U.S. PROPANE PRODUCTION

Figure 5.1

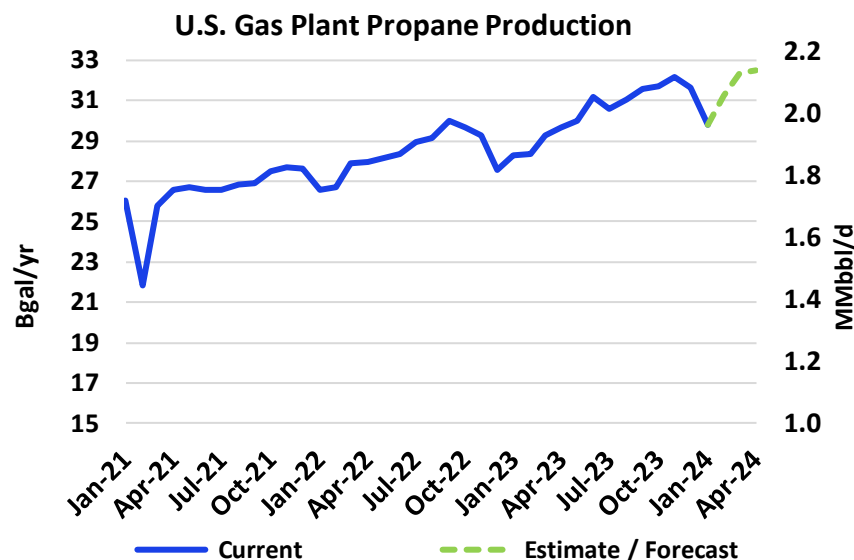


Figure 5.2

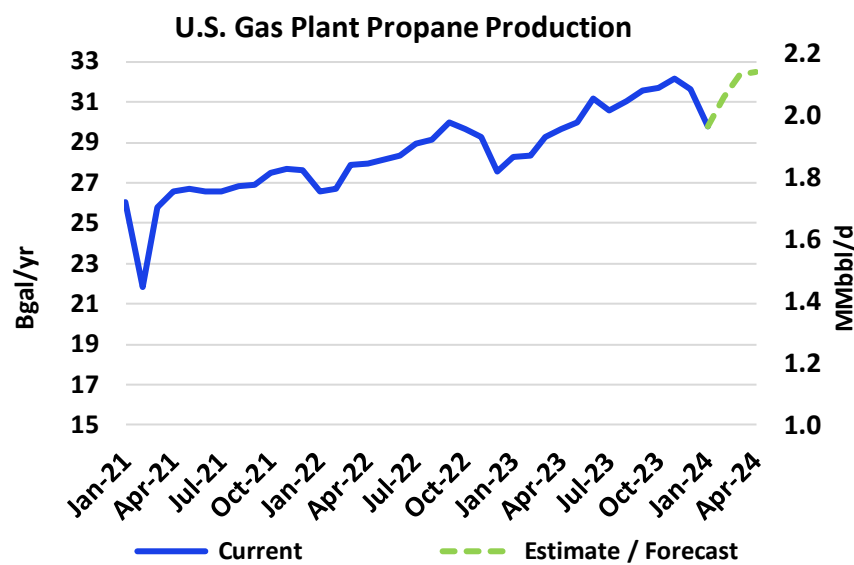


Table E: U.S. Propane Production Monthly and Weekly*						
(Mbbbl/d)	MONTHLY EIA			ESTIMATED		FORECAST
	Nov-23	Dec-23	M/M	Jan-24	Feb-24	Mar-24
Gas Plant	2,119	2,085	(34)	1,965	2,061	2,135
Refinery	262	283	21	268	255	273
<b>TOTAL PROPANE</b>	<b>2,381</b>	<b>2,368</b>	<b>(13)</b>	<b>2,233</b>	<b>2,316</b>	<b>2,408</b>
Propylene	273	275	2	242	217	239
<b>TOTAL PRODUCTION</b>	<b>2,654</b>	<b>2,643</b>	<b>(11)</b>	<b>2,475</b>	<b>2,533</b>	<b>2,647</b>
Weekly**	2,609	2,630	21	2,478	2,482	
Variance	(45)	(13)	32	3	(51)	

\* EIA reports propane production separately in monthly data, while weekly data includes propylene.

\*\* Monthly production from EIA through December 2023, weekly through the week of March 1, 2024.

## GAS PLANT PRODUCTION DECLINES FROM ALL-TIME HIGH

December propane gas plant production, as reported in the EIA Petroleum Supply Monthly on February 29, declined to 2,085 Mb/d, which was 34 Mb/d, or 2%, lower than the November all-time high. We estimate that February gas plant production partially recovered to 2,061 Mb/d after the weather-related curtailments in January. Based upon our production forecast model we estimate 2024 volumes at ~130 Mb/d above 2023. With Gulf Coast LPG export facilities operating near terminal capacity, increasing propane and butane production will need to find outlets other than exports to balance the market until the terminal expansion projects come online in mid-2025.

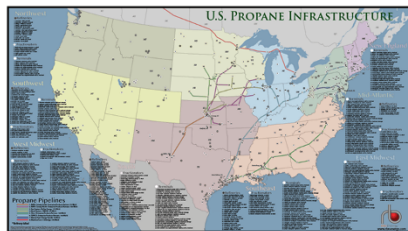
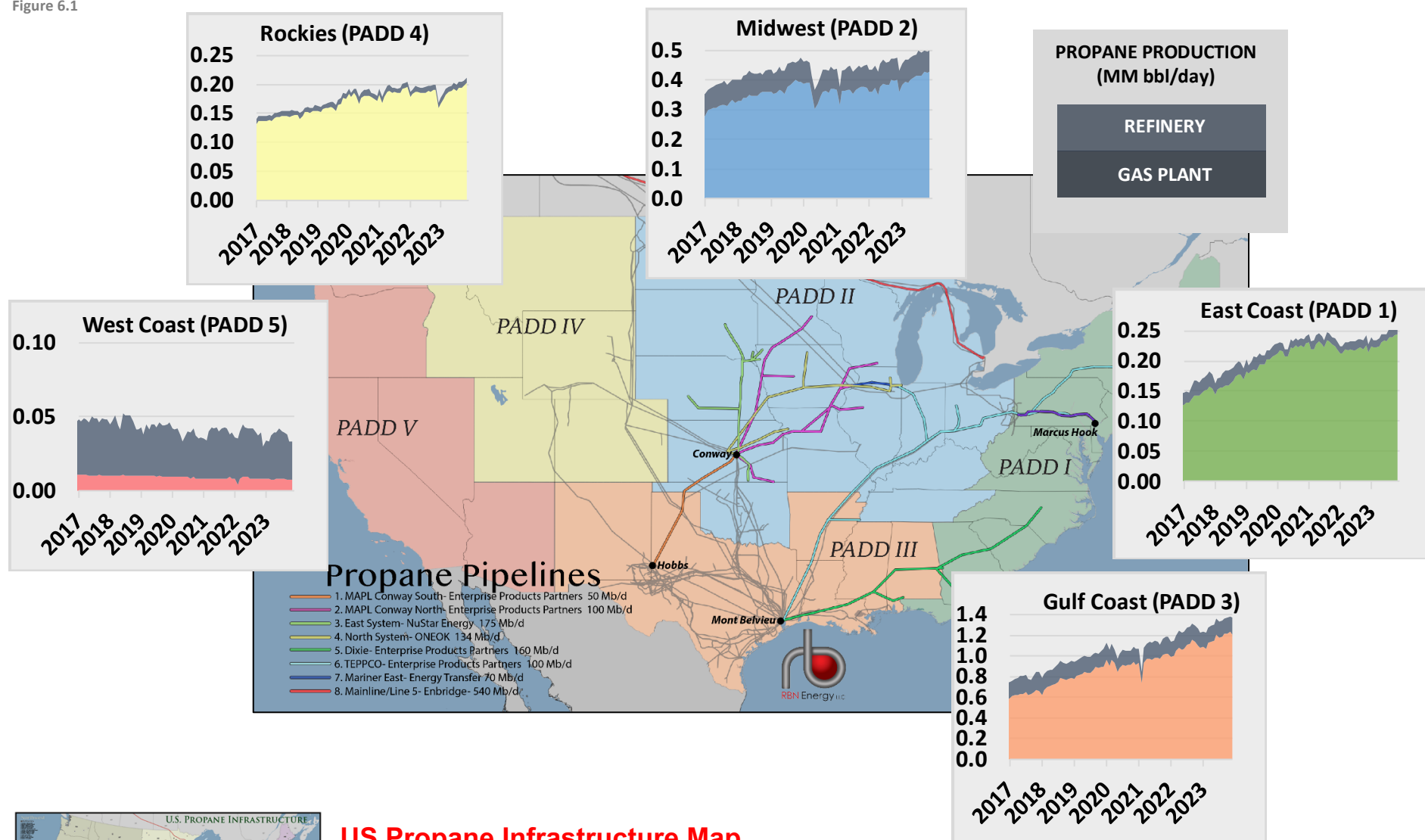
## REFINERY PRODUCTION DECLINES AS UTILIZATION FALLS TO 82%

Refinery propane production was weaker in February with volumes down by 13 Mb/d to 255 Mb/d as capacity utilization fell by 4 percentage points to 82%. We estimate that production in March will recover partially to 273 Mb/d as refinery operating rates increase to ~87%. For 2024, we forecast refinery propane production to average 278 Mb/d for the year, down 1 Mb/d from 2023, primarily due to slightly lower capacity utilization.

Source: EIA, RBN Forecast

## U.S. PROPANE INFRASTRUCTURE MAP

Figure 6.1

**US Propane Infrastructure Map**

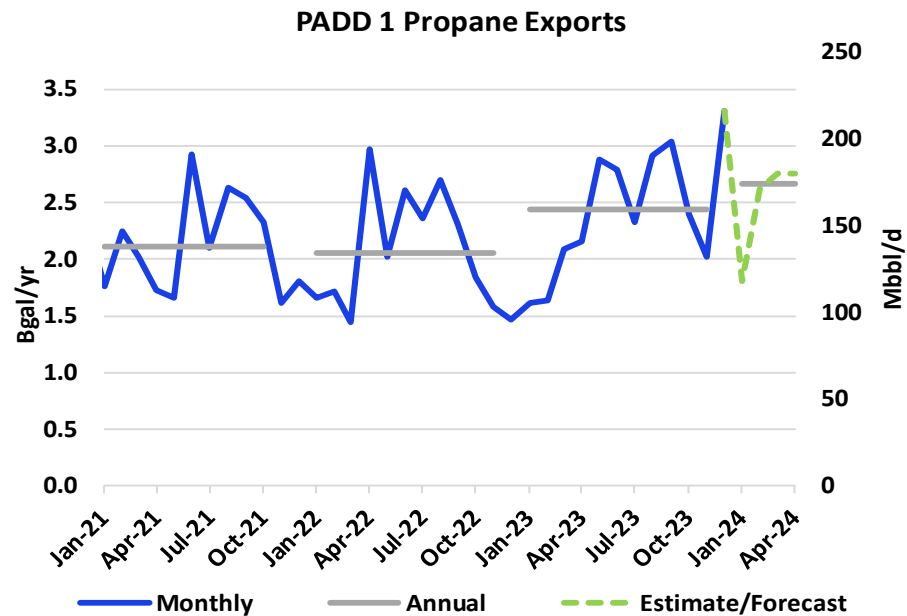
Click on the link above for RBN's U.S. Propane Infrastructure Map, which fits together all the pieces of an opaque and regionally fragmented propane market to reveal the extensive domestic propane network in a clear, concise map.

**Note:** RBN will be updating the Propane Infrastructure Map in March 2024. If you would like to order an updated RBN Propane Infrastructure Wall Map, please email [tjbrazil@rbnenergy.com](mailto:tjbrazil@rbnenergy.com).

## PADD 1: PROPANE SUPPLY &amp; DEMAND

Table F:	MM gal / month							M bbl / day						
	EIA MONTHLY		ESTIMATED		FORECAST			EIA MONTHLY		ESTIMATED		FORECAST		
	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24
Production	325	335	338	319	337	328	341	258	257	260	262	259	261	262
Gas Plants	309	315	319	303	318	309	320	245	242	245	249	244	245	246
Refinery	16	20	19	16	20	20	20	13	15	14	13	15	16	16
Imports	53	76	61	60	38	13	13	42	58	47	50	30	10	10
Net Inter-PADD Transfers	222	275	311	180	264	230	201	176	211	239	148	203	183	155
<b>TOTAL SUPPLY</b>	<b>600</b>	<b>685</b>	<b>710</b>	<b>559</b>	<b>639</b>	<b>571</b>	<b>555</b>	<b>476</b>	<b>526</b>	<b>545</b>	<b>459</b>	<b>491</b>	<b>453</b>	<b>426</b>
Demand (Prod. Supplied)	404	487	613	431	414	333	293	321	374	471	354	318	264	225
Exports	166	281	153	209	234	227	247	132	216	118	171	180	180	190
Stock Change	29	(85)	(56)	(80)	(9)	12	15	23	(65)	(43)	(66)	(7)	9	11
<b>TOTAL DISPOSITION</b>	<b>600</b>	<b>684</b>	<b>710</b>	<b>559</b>	<b>639</b>	<b>571</b>	<b>555</b>	<b>476</b>	<b>525</b>	<b>545</b>	<b>459</b>	<b>491</b>	<b>453</b>	<b>426</b>
<b>TOTAL INVENTORY</b>	<b>409</b>	<b>325</b>	<b>269</b>	<b>189</b>	<b>179</b>	<b>191</b>	<b>206</b>	<b>9,747</b>	<b>7,736</b>	<b>6,402</b>	<b>4,488</b>	<b>4,268</b>	<b>4,545</b>	<b>4,896</b>

Figure 7.1



Source: EIA, RBN Forecast

## INSIGHTS &amp; ANALYSIS

PADD 1 (East Coast) had an above-average stock draw of 1.9 MMbbl in February, compared to the 0.7-MMbbl decline last year for the month and the 5-year average drop of 1.5 MMbbl. This puts PADD 1 inventory at 4.5 MMbbl (189 MMgal), which is 1.2 MMbbl (20.5%) below February 2023 and 69 Mbbl (1.5%) below the 5-year average. Exports were stronger at 171 Mb/d, up 53 Mb/d from January and 64 Mb/d higher than February 2023. PADD 1 exports (Figure 7.1) are projected to average 174 Mb/d for 2024, an increase of 15 Mb/d from 2023. Gas plant production in the Northeast increased to at 249 Mb/d, up 4 Mb/d from January and 16 Mb/d higher than the 2023 average.

## PADD 1 OUTLOOK

Our propane model projects East Coast inventories will decline by 0.2 MMbbl in March to 4.3 MMbbl (179 MMgal), leaving stocks 0.7 MMbbl, or 14%, below last year but 0.1 MMbbl, or 3%, above the 5-year average. As shown in Figure 7.1, East Coast exports are expected to remain strong in March at 180 Mb/d as winter heating demand declines, which is 44 Mb/d higher the 2023 average rate and 17 Mb/d higher than last March.



## PADD 2: PROPANE SUPPLY &amp; DEMAND

Table G:	MM gal / month							M bbl / day						
	EIA MONTHLY		ESTIMATED		FORECAST			EIA MONTHLY		ESTIMATED		FORECAST		
	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24
Production	629	652	570	565	647	630	653	499	501	438	464	497	500	501
Gas Plants	542	556	473	480	558	541	561	430	427	363	394	428	430	431
Refinery	87	96	97	85	89	88	91	69	74	75	70	69	70	70
Imports	49	46	48	51	51	25	25	39	35	37	42	40	20	20
Net Inter-PADD Transfers	(408)	(458)	(490)	(421)	(540)	(466)	(429)	(324)	(352)	(376)	(345)	(415)	(370)	(330)
<b>TOTAL SUPPLY</b>	<b>270</b>	<b>240</b>	<b>128</b>	<b>196</b>	<b>159</b>	<b>189</b>	<b>248</b>	<b>214</b>	<b>184</b>	<b>98</b>	<b>161</b>	<b>122</b>	<b>150</b>	<b>191</b>
Demand (Prod. Supplied)	338	381	428	305	230	113	65	268	293	329	250	177	90	50
Exports	4	3	3	4	7	6	7	3	2	3	3	5	5	5
Stock Change	(72)	(145)	(304)	(113)	(78)	70	176	(57)	(111)	(234)	(92)	(60)	55	136
<b>TOTAL DISPOSITION</b>	<b>270</b>	<b>240</b>	<b>128</b>	<b>196</b>	<b>159</b>	<b>189</b>	<b>248</b>	<b>214</b>	<b>184</b>	<b>98</b>	<b>161</b>	<b>122</b>	<b>150</b>	<b>191</b>
<b>TOTAL INVENTORY</b>	<b>1,067</b>	<b>922</b>	<b>618</b>	<b>505</b>	<b>427</b>	<b>496</b>	<b>673</b>	<b>25,404</b>	<b>21,948</b>	<b>14,703</b>	<b>12,023</b>	<b>10,163</b>	<b>11,820</b>	<b>16,021</b>

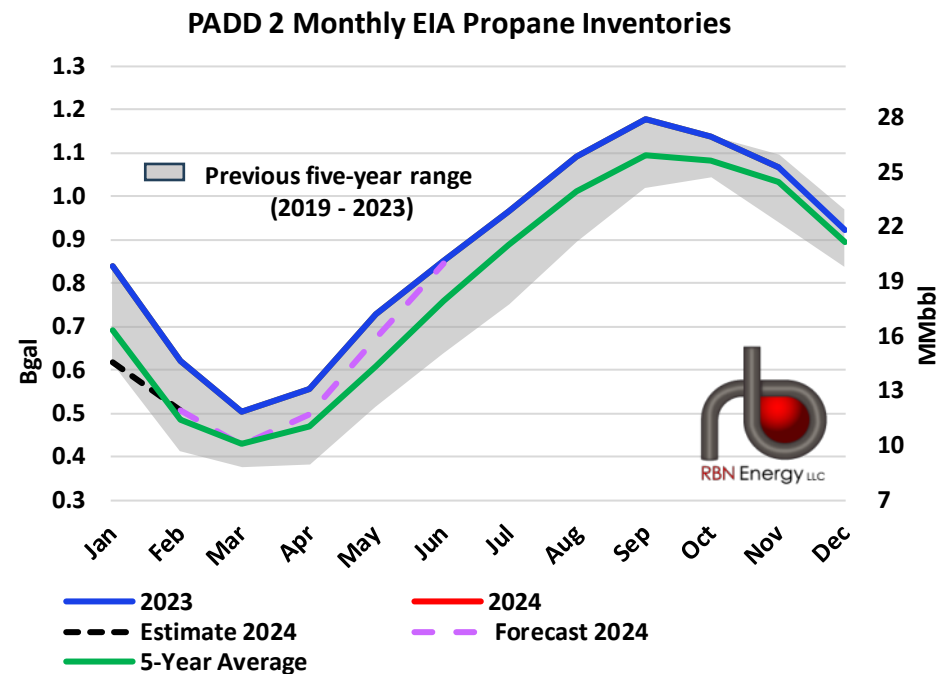
## INSIGHTS &amp; ANALYSIS

PADD 2 (Midwest) inventories fell by 2.7 MMbbl during February, which was below the 5.2-MMbbl decline last year and the 5-year average draw of 4.9 MMbbl, leaving stocks at 12 MMbbl (505 MMgal). With the below-average draw, the Midwest market is now in a slightly better supply position with 0.5 MMbbl more in storage versus the 5-year average. Gas plant production partially recovered to 394 Mb/d, up 31 Mb/d from the weather-related curtailments in January. Imports were stronger at 42 Mb/d, which was 5 Mb/d higher than January but 18 Mb/d less than February 2023.

## PADD 2 OUTLOOK

Midwest inventories are forecast to draw by 1.8 MMbbl in March compared to a 5-year average (2019-23) decline of 1.4 MMbbl, bringing ending inventories to 10.2 MMbbl (427 MMgal), 1.8 MMbbl, or 15%, lower than last year but on par with the 5-year average. Gas plant production is expected to stay relatively flat around 430 Mb/d. Canadian imports into the Midwest are projected to average 29 Mb/d in 2024, down 5 Mb/d from last year.

Figure 7.2

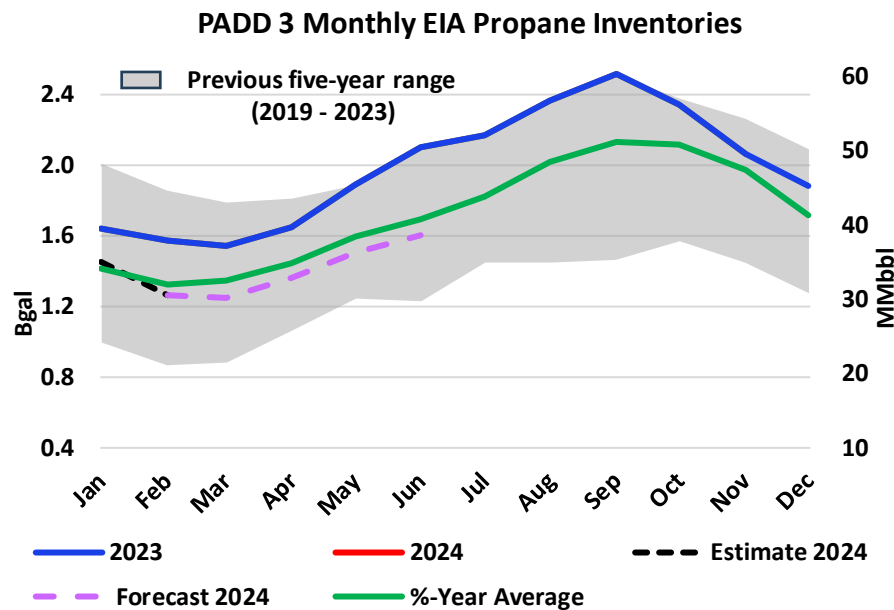


Source: EIA, RBN Forecast

## PADD 3: PROPANE SUPPLY &amp; DEMAND

Table H:	MM gal / month							M bbl / day						
	EIA MONTHLY		ESTIMATED		FORECAST			EIA MONTHLY		ESTIMATED		FORECAST		
	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24
Production	1,740	1,780	1,702	1,656	1,829	1,786	1,850	1,381	1,367	1,308	1,360	1,405	1,418	1,421
Gas Plants	1,556	1,573	1,513	1,487	1,630	1,584	1,640	1,235	1,208	1,162	1,221	1,252	1,257	1,260
Refinery	184	207	189	170	199	202	209	146	159	145	139	153	160	161
Imports	-	-	(1)	(0)	-	-	-	-	-	(1)	(0)	-	-	-
Net Inter-PADD Transfers	386	395	364	433	474	428	431	306	303	279	355	364	340	331
<b>TOTAL SUPPLY</b>	<b>2,126</b>	<b>2,174</b>	<b>2,065</b>	<b>2,089</b>	<b>2,304</b>	<b>2,215</b>	<b>2,281</b>	<b>1,687</b>	<b>1,670</b>	<b>1,586</b>	<b>1,715</b>	<b>1,769</b>	<b>1,758</b>	<b>1,752</b>
Demand (Prod. Supplied)	325	272	503	257	303	271	252	258	209	387	211	233	215	194
Exports	2,080	2,090	1,988	2,025	2,018	1,827	1,888	1,651	1,605	1,527	1,663	1,550	1,450	1,450
Stock Change	(280)	(185)	(426)	(193)	(17)	116	141	(222)	(142)	(327)	(158)	(13)	92	108
<b>TOTAL DISPOSITION</b>	<b>2,126</b>	<b>2,177</b>	<b>2,065</b>	<b>2,089</b>	<b>2,304</b>	<b>2,215</b>	<b>2,281</b>	<b>1,687</b>	<b>1,672</b>	<b>1,586</b>	<b>1,715</b>	<b>1,769</b>	<b>1,758</b>	<b>1,752</b>
<b>TOTAL INVENTORY</b>	<b>2,066</b>	<b>1,881</b>	<b>1,455</b>	<b>1,262</b>	<b>1,245</b>	<b>1,361</b>	<b>1,502</b>	<b>49,191</b>	<b>44,797</b>	<b>34,649</b>	<b>30,059</b>	<b>29,649</b>	<b>32,416</b>	<b>35,769</b>

Figure 7.3



Source: EIA, RBN Forecast

## INSIGHTS &amp; ANALYSIS

PADD 3 had a stock draw of 4.6 MMbbl for the month, which was significantly above the 1.6-MMbbl decline in February 2023 and the 2.1 MMbbl 5-year average drop for the month. This pulled Gulf Coast inventories down to 30.1 MMbbl (1.3 Bgal) at month's end, 7.4 MMbbl, or 19.8%, lower than last year and 1.5 MMbbl, or 4.6%, below the 5-year average. Propane exports from the Gulf Coast remained strong at 1,663 Mb/d, up 136 Mb/d from January and 219 Mb/d higher than in February 2023. PADD 3 gas plant production rebounded to 1,221 Mb/d in February, up 59 Mb/d from January but 14 Mb/d below the November 2023 all-time high.

## PADD 3 OUTLOOK

March inventories are forecast to fall by 0.4 MMbbl, compared to a 0.8-MMbbl draw last year for the month and the 5-year average build of 0.5 MMbbl. That would leave March ending stocks at 29.6 MMbbl (1.2 Bgal), which is 7 MMbbl (19%) less than last year and 2.4 MMbbl (7.4%) below the 5-year average (2019-23). Gulf Coast propane production is projected to increase in March to 1,405 Mb/d, fully recovering from January's weather-related curtailments in the Permian Basin. Exports are estimated to weaken to 1,550 Mb/d but remain 40 Mb/d above March 2023.

## PADD 4: PROPANE SUPPLY &amp; DEMAND

Table I:	MM gal / month							M bbl / day						
	EIA MONTHLY		ESTIMATED		FORECAST			EIA MONTHLY		ESTIMATED		FORECAST		
	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24
Production	265	271	254	242	275	267	275	210	208	195	199	211	212	212
Gas Plants	255	262	244	233	266	257	266	202	201	187	191	204	204	204
Refinery	10	9	10	9	10	10	10	8	7	7	7	7	8	8
Imports	18	21	20	18	18	16	12	14	16	15	15	14	13	10
Net Inter-PADD Transfers	(231)	(236)	(213)	(204)	(216)	(211)	(225)	(183)	(181)	(164)	(168)	(166)	(168)	(173)
<b>TOTAL SUPPLY</b>	<b>52</b>	<b>56</b>	<b>60</b>	<b>56</b>	<b>77</b>	<b>71</b>	<b>63</b>	<b>41</b>	<b>43</b>	<b>46</b>	<b>46</b>	<b>59</b>	<b>56</b>	<b>48</b>
Demand (Prod. Supplied)	53	60	77	64	73	53	42	42	46	59	52	56	42	32
Exports	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stock Change	(1)	(4)	(17)	(8)	4	18	21	(1)	(3)	(13)	(6)	3	14	16
<b>TOTAL DISPOSITION</b>	<b>52</b>	<b>56</b>	<b>60</b>	<b>56</b>	<b>77</b>	<b>71</b>	<b>63</b>	<b>41</b>	<b>43</b>	<b>46</b>	<b>46</b>	<b>59</b>	<b>56</b>	<b>48</b>
<b>TOTAL INVENTORY</b>	<b>133</b>	<b>129</b>	<b>113</b>	<b>105</b>	<b>109</b>	<b>127</b>	<b>148</b>	<b>3,160</b>	<b>3,082</b>	<b>2,681</b>	<b>2,496</b>	<b>2,598</b>	<b>3,028</b>	<b>3,536</b>

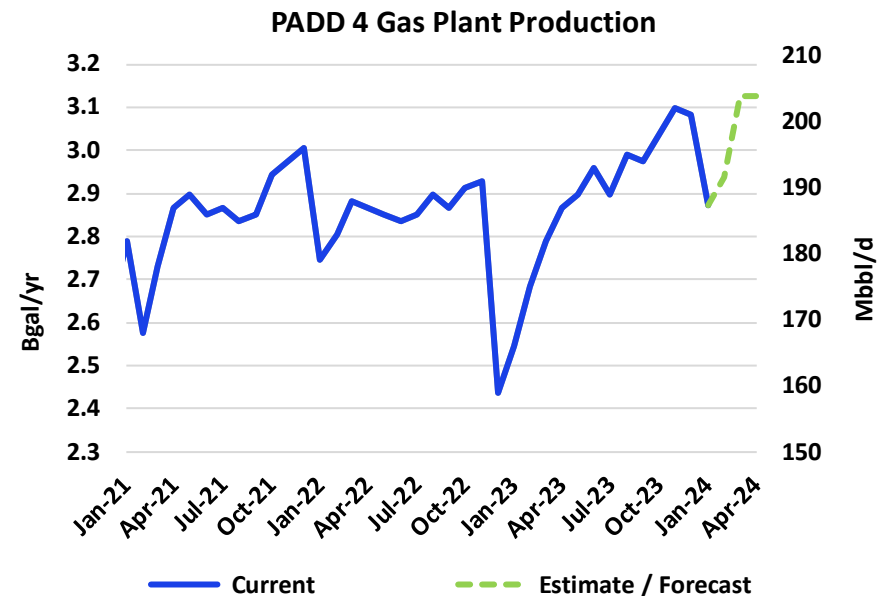
Figure 7.4

## INSIGHTS &amp; ANALYSIS

PADD 4 (Rocky Mountain) stocks declined by 185 Mbbl in February to 2.5 MMbbl (105 MMgal), which is 569 Mbbl, or 29.5%, higher than last year and 599 Mbbl, or 31.6%, above the 5-year average. Gas plant production increased to 191 Mb/d (see Figure 7.4), partially recovering from the weather-curtailements in January. Refinery production and imports were unchanged at 7 Mb/d and 15 Mb/d, respectively.

## PADD 4 OUTLOOK

Rockies propane inventories are projected to build by 102 Mbbl during March, leaving stocks at 2.6 MMbbl (109 MMgal), which is 772 Mbbl, or 42%, higher than March 2023 and 786 Mbbl, 43%, above the 5-year average (2019-23) for the month. March gas plant production in the region is expected to rise to 204 Mb/d, up 13 Mb/d from February and 11 Mb/d above the 2023 average rate. Refinery production is projected at 7 Mb/d as capacity utilization remains around 85%. Imports are forecast at 14 Mb/d, which is 1 Mb/d lower than February and 18 Mb/d below March 2023.

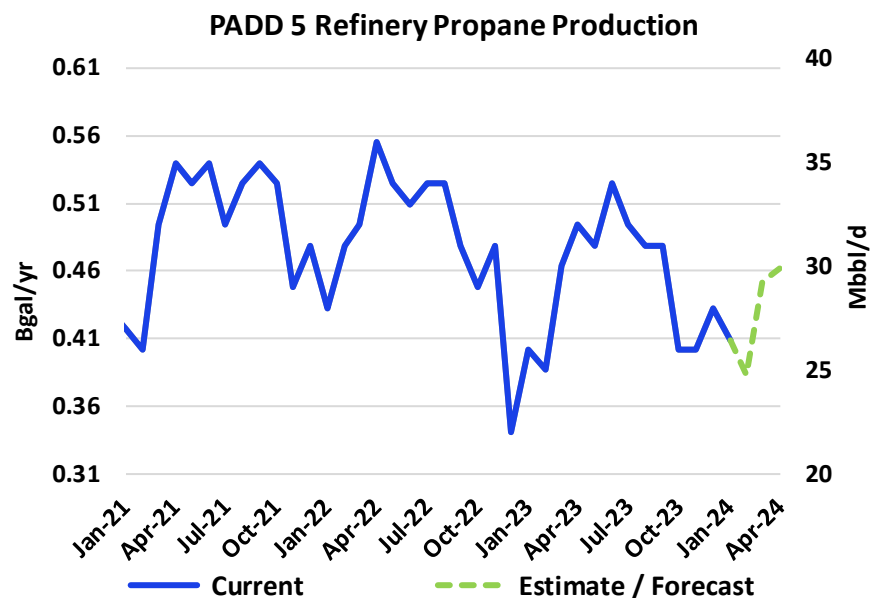


Source: EIA, RBN Forecast

## PADD 5: PROPANE SUPPLY &amp; DEMAND

Table J:	MM gal / month							M bbl / day						
	EIA MONTHLY		ESTIMATED		FORECAST			EIA MONTHLY		ESTIMATED		FORECAST		
	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24
Production	42	46	43	38	47	46	48	33	35	33	31	36	37	37
Gas Plants	9	9	9	8	9	8	9	7	7	7	7	7	7	7
Refinery	33	36	34	30	38	38	40	26	28	26	25	29	30	31
Imports	35	48	45	37	40	36	30	28	37	35	30	31	29	23
Net Inter-PADD Transfers	32	25	28	12	18	19	22	25	19	22	10	14	15	17
<b>TOTAL SUPPLY</b>	<b>108</b>	<b>118</b>	<b>117</b>	<b>87</b>	<b>105</b>	<b>101</b>	<b>100</b>	<b>86</b>	<b>91</b>	<b>90</b>	<b>72</b>	<b>81</b>	<b>80</b>	<b>77</b>
Demand (Prod. Supplied)	86	86	91	73	73	58	57	68	66	70	60	56	46	44
Exports	25	55	37	35	51	37	29	20	42	28	29	40	29	22
Stock Change	(4)	(23)	(11)	(21)	(19)	6	15	(3)	(18)	(9)	(17)	(15)	5	11
<b>TOTAL DISPOSITION</b>	<b>107</b>	<b>117</b>	<b>117</b>	<b>87</b>	<b>105</b>	<b>101</b>	<b>100</b>	<b>85</b>	<b>90</b>	<b>90</b>	<b>72</b>	<b>81</b>	<b>80</b>	<b>77</b>
<b>TOTAL INVENTORY</b>	<b>114</b>	<b>91</b>	<b>80</b>	<b>58</b>	<b>39</b>	<b>45</b>	<b>60</b>	<b>2,715</b>	<b>2,172</b>	<b>1,899</b>	<b>1,392</b>	<b>934</b>	<b>1,077</b>	<b>1,431</b>

Figure 7.5



Source: EIA, RBN Forecast

## INSIGHTS &amp; ANALYSIS

PADD 5 (West Coast) inventories declined by 507 Mbbl in February, ending at 1.4 MMbbl (58 MMgal). This leaves stocks 603 Mbbl, or 76%, higher than in February 2023 and 585 Mbbl, or 72%, above the 5-year average (2019-23). Refinery production (see Figure 7.5) weakened to 25 Mb/d as capacity utilization fell 4 percentage points to 77%. West Coast exports were up 1 Mb/d to 29 Mb/d and 1 Mb/d below imports, which fell to 30 Mb/d.

## PADD 5 OUTLOOK

West Coast inventories are projected to decline by 458 Mbbl in March to 0.9 MMbbl (39 MMgal), leaving stocks 518 Mbbl, or 124%, above March 2023 and 384 Mbbl, 78%, above the 5-year average (2019-23). As shown on Figure 7.5, March refinery production in the region is forecast to increase by 4 Mb/d to 29 Mb/d as capacity utilization remains improves to 88%. Imports are projected to be modestly stronger at 31 Mb/d, which is on par with the 2023 average rate. Exports out of the AltaGas terminal are forecast to strengthen to 40 Mb/d, up 11 Mb/d from the prior month and 8 Mb/d above the 2023 average. For 2024, PADD 5 exports are estimated to average 31 Mb/d, down 1 Mb/d from last year's average.



## KEY ENERGY PRICES

Table K:		Prices									
Product	Units	Current 7-Mar-24	Prior Week 29-Feb-24	W/W	W/W %	Prior Month 7-Feb-24	M/M	M/M %	Prior Year 7-Mar-23	Y/Y	Y/Y %
Brent Crude	\$/bbl	83.0	81.9	1.1	1.3%	79.2	3.8	4.7%	86.2	(3.2)	-3.7%
WTI Cushing Crude	\$/bbl	78.9	78.3	0.7	0.9%	73.9	5.1	6.9%	80.5	(1.5)	-1.9%
Henry Hub Natural Gas	\$/MMbtu	1.82	1.86	(0.04)	-2.3%	1.97	(0.15)	-7.6%	2.57	(0.75)	-29.3%
Propane											
Mont Belvieu Non-TET	c/gal	80.7	85.9	(5.2)	-6.0%	91.9	(11.2)	-12.2%	88.5	(7.8)	-8.8%
Mont Belvieu TET	c/gal	82.3	85.4	(3.1)	-3.6%	90.5	(8.3)	-9.1%	88.8	(6.5)	-7.3%
Conway	c/gal	75.1	79.4	(4.2)	-5.3%	86.7	(11.6)	-13.4%	81.8	(6.7)	-8.2%
Edmonton	c/gal	44.8	50.6	(5.8)	-11.5%	62.0	(17.2)	-27.7%	63.0	(18.2)	-28.9%
Sarnia	c/gal	99.3	104.1	(4.9)	-4.7%	90.8	8.5	9.4%	107.5	(8.3)	-7.7%
European (ARA)	\$/MT	541.6	539.3	2.4	0.4%	523.4	18.2	3.5%	627.3	(85.7)	-13.7%
Saudi CP	\$/MT	603.9	627.1	(23.2)	-3.7%	617.0	(13.1)	-2.1%	602.8	1.1	0.2%

Figure 8.1

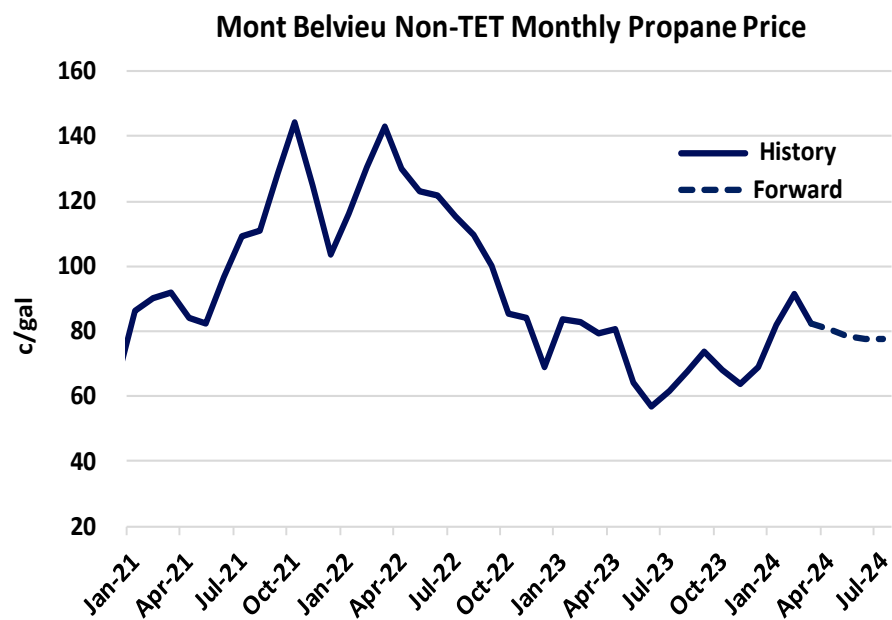
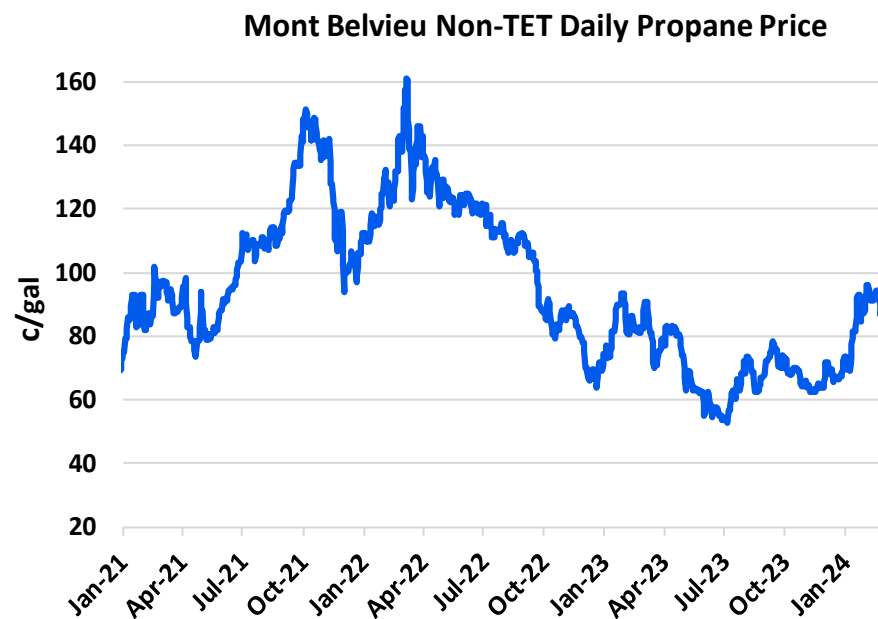


Figure 8.2



## MONTHLY PROPANE PRICE TRENDS

Figure 8.3

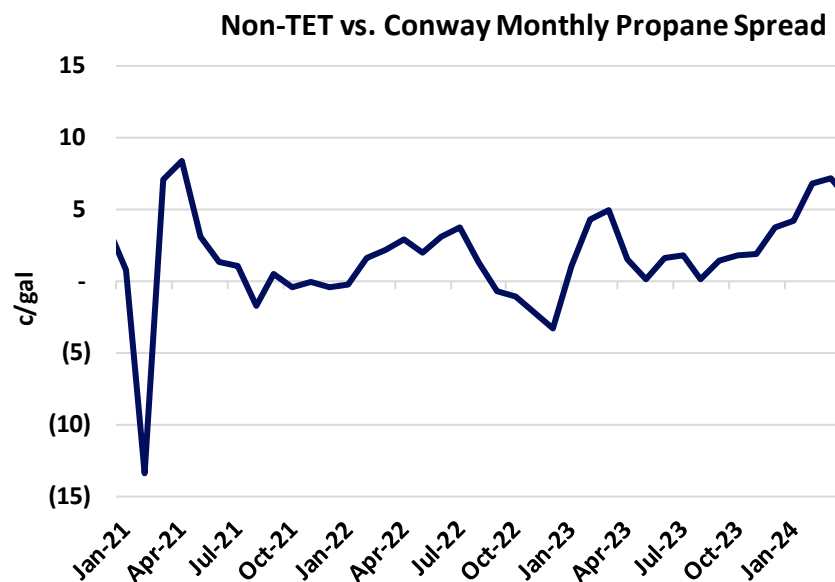


Figure 8.4

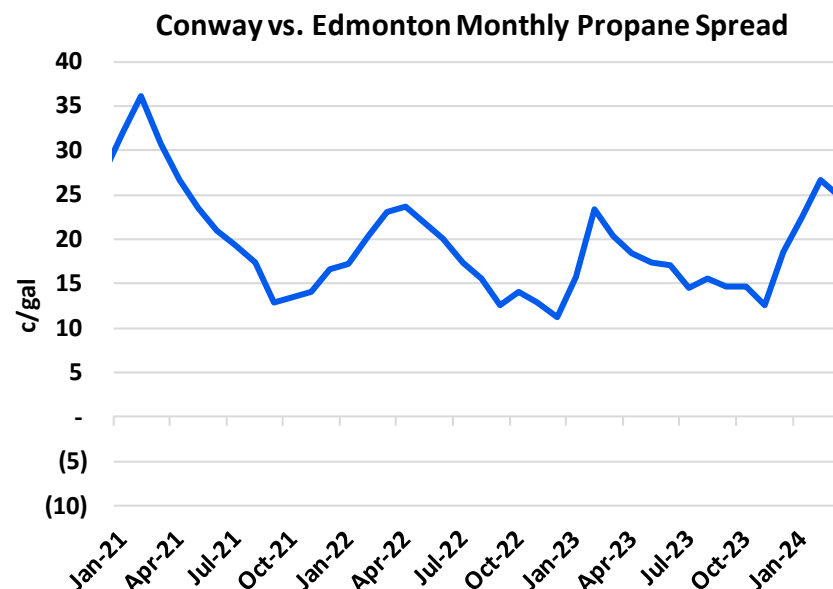


Figure 8.5

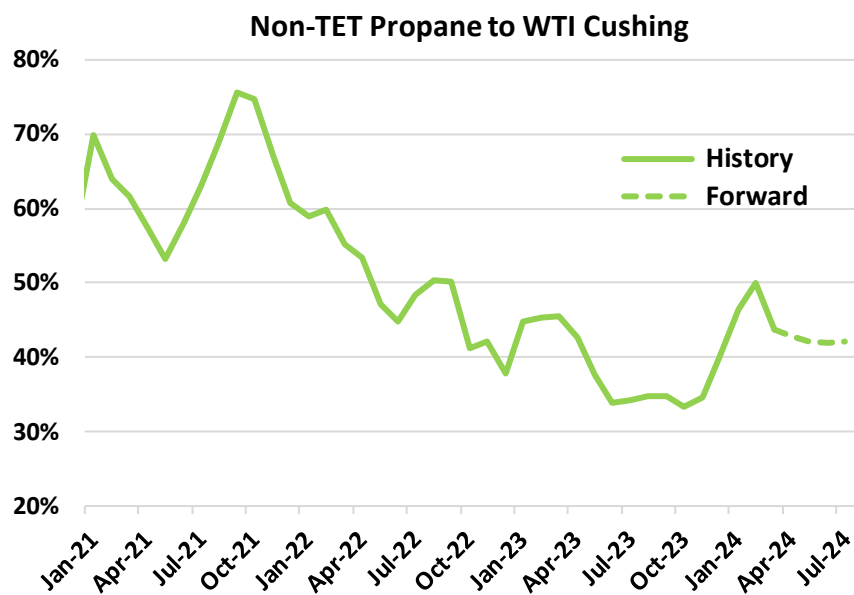


Table L: MB TET Propane / WTI Cushing					
%	2021	2022	2023	2024	Y/Y %
Dec	61.0%	38.2%	39.4%		
Jan	70.4%	59.2%	44.6%		
Feb	65.0%	60.4%	44.7%	49.5%	10.8%
Q1	65.8%	58.3%	45.0%	47.1%	4.7%
Q2	55.5%	48.8%	38.4%		
Q3	69.2%	49.5%	35.1%		
Q4	67.7%	40.8%	35.9%		
Year	64.6%	49.3%	38.6%	47.1%	22.1%

## INTERNATIONAL PROPANE PRICE SPREADS

Figure 9.1

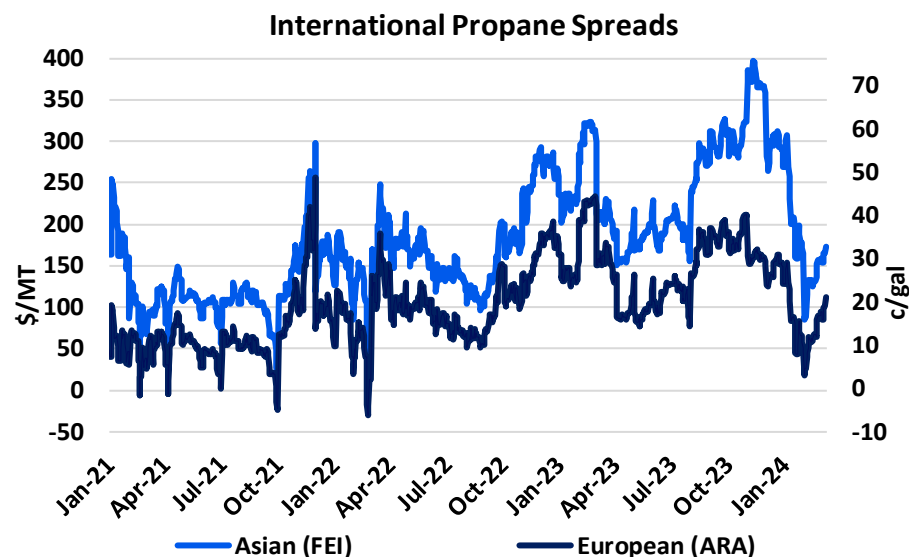


Figure 9.2

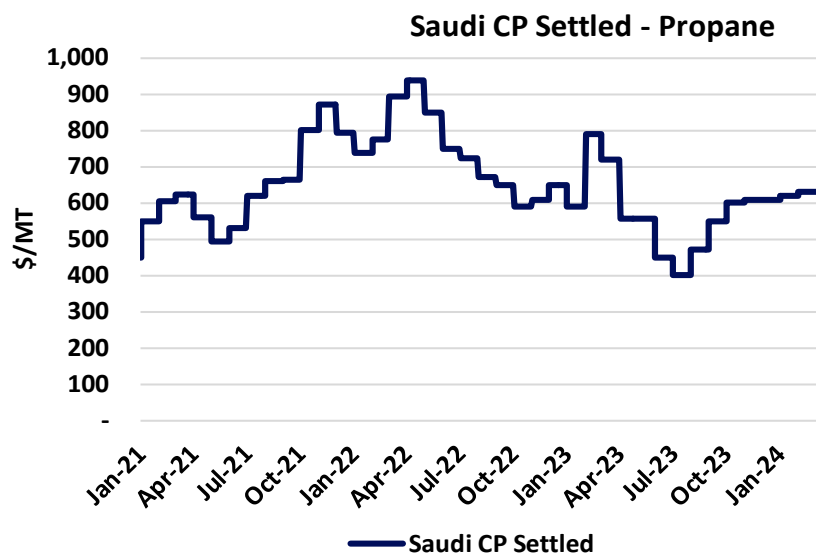


Table M: Asian FEI / MB TET Spread					
\$/MT	2021	2022	2023	2024	Y/Y %
Dec	158.1	268.2	292.8		
Jan	186.5	154.3	228.9	209.7	-8.4%
Feb	96.5	115.0	311.6	131.8	-57.7%
Q1	129.5	151.5	247.9	171.0	-31.0%
Q2	106.1	163.8	181.5		
Q3	101.1	134.0	255.7		
Q4	163.6	232.5	322.4		
Year	125.1	170.6	252.1	171.0	-32.2%

Table N: European ARA / MB TET Spread					
\$/MT	2021	2022	2023	2024	Y/Y %
Dec	90.5	183.1	143.6		
Jan	56.6	88.3	141.0	86.3	-38.8%
Feb	46.5	44.4	221.3	63.9	-71.1%
Q1	53.5	90.5	171.3	77.6	-54.7%
Q2	50.7	98.3	101.5		
Q3	48.3	79.3	156.8		
Q4	111.3	147.9	163.5		
Year	66.0	104.1	148.3	77.6	-47.7%

Table O: Saudi CP / MB TET Spread					
\$/MT	2021	2022	2023	2024	Y/Y %
Dec	169.1	212.5	255.2		
Jan	142.7	143.6	230.7	178.7	-22.5%
Feb	116.7	112.8	275.7	142.3	-48.4%
Q1	118.4	136.5	216.9	160.3	-26.1%
Q2	74.8	135.3	142.9		
Q3	77.5	91.6	182.4		
Q4	144.3	178.4	289.2		
Year	103.7	135.4	208.0	160.3	-22.9%

## U.S. PROPANE SUPPLY &amp; DEMAND BALANCE DETAIL

Table P:	MM gal / month							M bbl / day						
	EIA MONTHLY		ESTIMATED		FORECAST			EIA MONTHLY		ESTIMATED		FORECAST		
	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24
Gas Processing	2,670	2,715	2,558	2,511	2,780	2,699	2,796	2,119	2,085	1,965	2,061	2,135	2,142	2,148
Refinery Propane	330	368	349	310	356	358	371	262	283	268	255	273	284	285
Imports	155	190	173	166	148	89	81	123	146	133	137	114	71	62
<b>TOTAL SUPPLY</b>	<b>3,155</b>	<b>3,273</b>	<b>3,081</b>	<b>2,987</b>	<b>3,284</b>	<b>3,146</b>	<b>3,248</b>	<b>2,504</b>	<b>2,514</b>	<b>2,366</b>	<b>2,453</b>	<b>2,522</b>	<b>2,497</b>	<b>2,494</b>
Product Supplied	1,206	1,286	1,713	1,129	1,093	828	709	957	988	1,316	927	839	657	544
ResCom	580	736	901	698	634	505	407	461	565	692	573	487	401	313
Crop Drying	177	127	74	56	39	39	39	140	98	57	46	30	31	30
Industrial	94	113	129	112	101	87	89	74	87	99	92	77	69	68
Petrochemicals	259	279	241	225	235	222	235	206	214	185	185	181	176	181
PDH	88	91	104	110	130	132	137	70	70	80	90	100	105	105
Balancing	7	(59)	264	(71)	(47)	(156)	(199)	6	(45)	203	(58)	(36)	(124)	(152)
Exports	2,276	2,428	2,182	2,273	2,311	2,097	2,171	1,806	1,865	1,676	1,866	1,775	1,664	1,667
<b>Stock Change</b>	<b>(328)</b>	<b>(441)</b>	<b>(815)</b>	<b>(415)</b>	<b>(120)</b>	<b>221</b>	<b>368</b>	<b>(260)</b>	<b>(339)</b>	<b>(626)</b>	<b>(341)</b>	<b>(92)</b>	<b>176</b>	<b>283</b>
<b>TOTAL DISPOSITION</b>	<b>3,154</b>	<b>3,273</b>	<b>3,080</b>	<b>2,987</b>	<b>3,284</b>	<b>3,146</b>	<b>3,248</b>	<b>2,503</b>	<b>2,514</b>	<b>2,366</b>	<b>2,452</b>	<b>2,522</b>	<b>2,497</b>	<b>2,494</b>
<b>TOTAL INVENTORY</b>	<b>3,789</b>	<b>3,349</b>	<b>2,534</b>	<b>2,119</b>	<b>2,000</b>	<b>2,221</b>	<b>2,589</b>	<b>90,217</b>	<b>79,735</b>	<b>60,334</b>	<b>50,459</b>	<b>47,612</b>	<b>52,886</b>	<b>61,653</b>
Last Year Inventory	3,682	3,219	2,882	2,545	2,344	2,551	2,984	87,672	76,642	68,612	60,588	55,812	60,734	71,047
<b>Stock M/M Δ</b>	<b>(328)</b>	<b>(441)</b>	<b>(815)</b>	<b>(415)</b>	<b>(120)</b>	<b>221</b>	<b>368</b>	<b>(7,800)</b>	<b>(10,509)</b>	<b>(19,401)</b>	<b>(9,875)</b>	<b>(2,846)</b>	<b>5,273</b>	<b>8,768</b>
Last Year Stock M/M Δ	39	(464)	(335)	(348)	(201)	208	432	930	(11,036)	(7,967)	(8,294)	(4,774)	4,950	10,292

\* Inventories are shown in billion gallons and million barrels respectively.



## PADD AVERAGE HEATING DEGREE DAYS (HDDs)

Figure 10.1

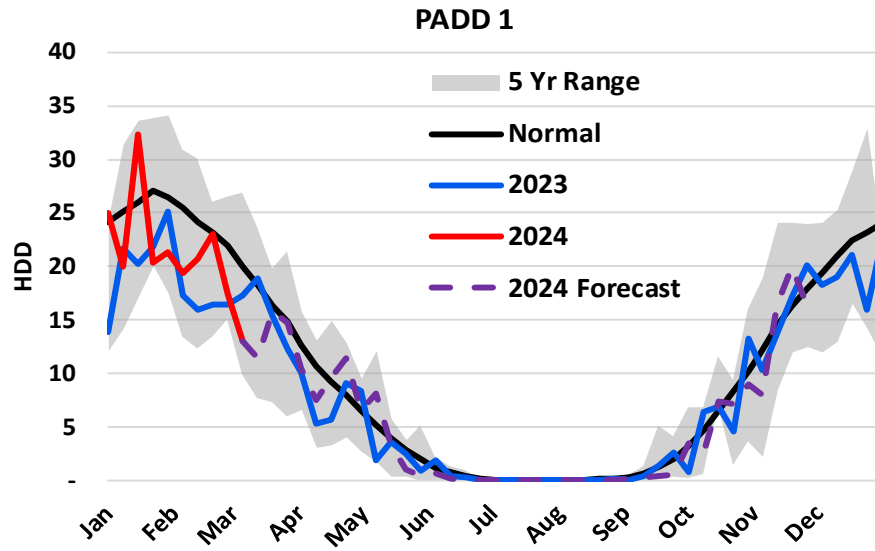


Figure 10.2

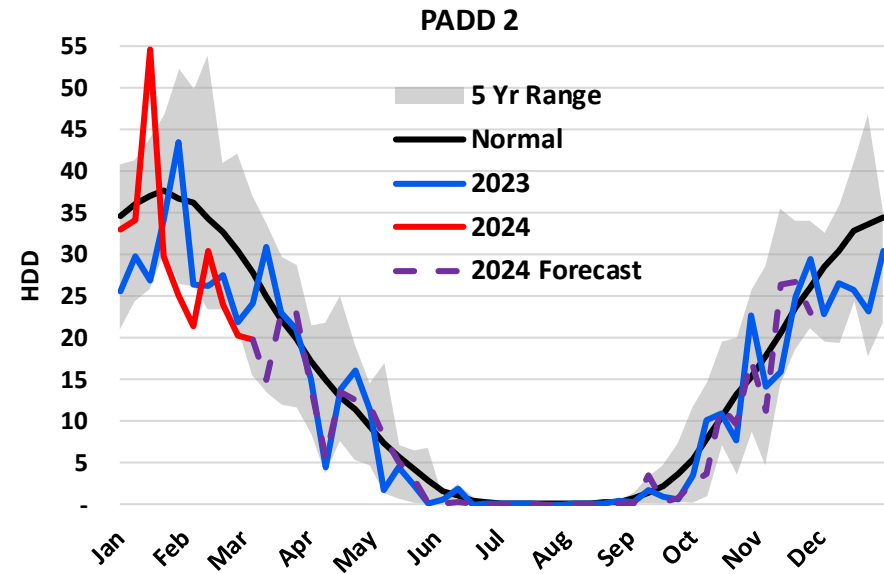


Figure 10.3

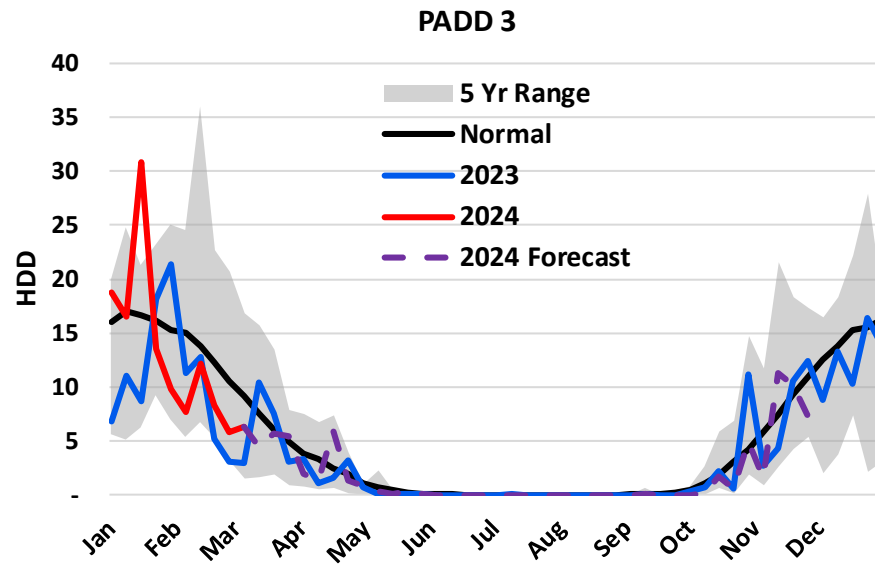


Figure 10.4

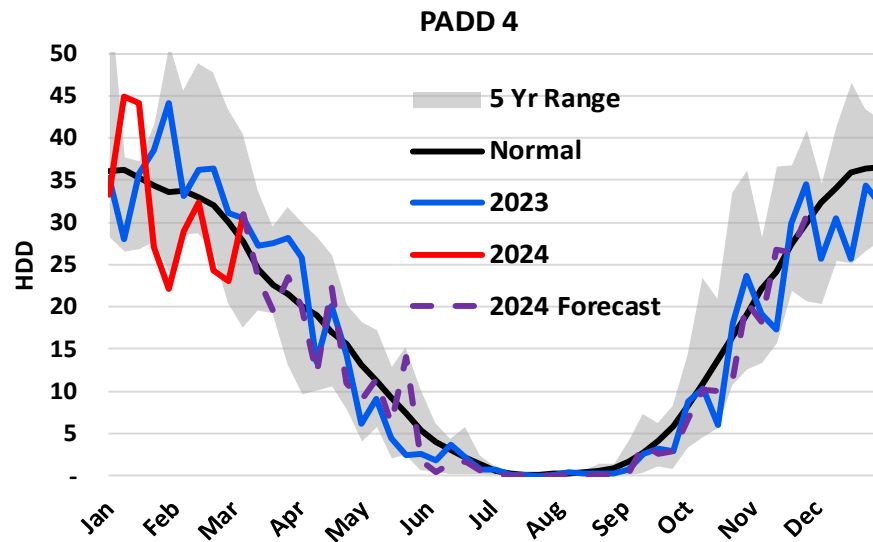
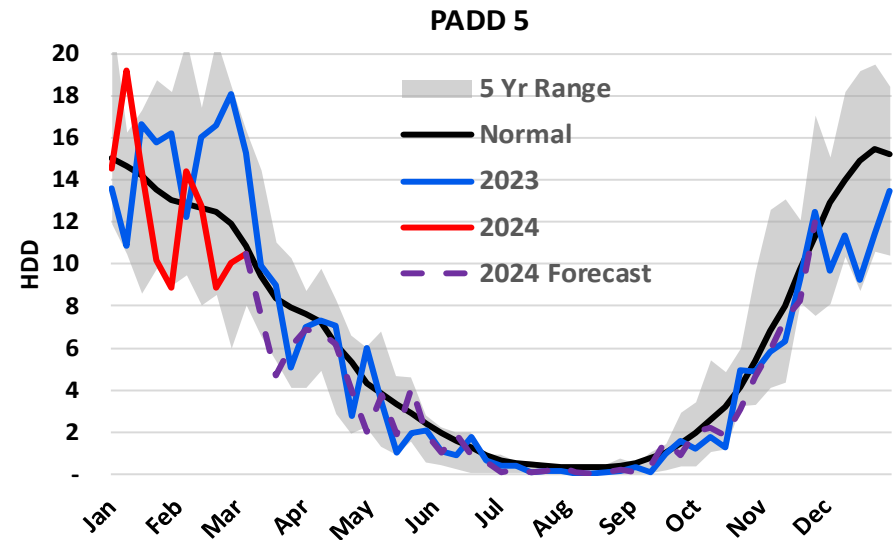


Figure 10.5



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