



**Massachusetts Bay
Transportation Authority**

Energy Hedge – FY23

MBTA Audit & Finance Committee

May 12, 2022

Finance Team

Diesel Fuel Hedge Background

- MBTA has historically hedged the costs of its diesel fuel to minimize expenditure volatility and to provide greater certainty in budgeting.
- Since 2001, the hedging of fuel costs has been through the use of derivative contracts rather than a cap within the vendor contract.
- To diversify risk among counterparties and ensure competitive bids, the MBTA has historically put in place a master hedge for specific amounts and terms.

Past counterparties include

JP Morgan
 Citibank
 Bank of America – Merrill Lynch
 Morgan Stanley
 Goldman Sachs
 Wells Fargo

WHAT A FUEL HEDGE IS	WHAT A FUEL HEDGE IS NOT
<p>✓ A method of reducing budgetary uncertainty</p> <p>✓ A tool to protect MBTA finances from fuel price volatility</p> <p>✓ A win-win (<i>If fuel prices go down, we win at the pump. If fuel prices go up, we win on the hedge.</i>)</p>	<p>✗ An opportunity for MBTA to outsmart the market</p> <p>✗ A tool to take advantage of market conditions</p> <p>✗ A gamble with the banks</p>



How a Hedge Works

PHYSICAL DELIVERY



\$4 a gallon
Price falls to \$3.85



\$0.05 Distribution Cost



\$4.05 a gallon
Price now \$3.90
(\$0.15 savings)

Price drops \$0.15 at pump



$$-\$0.15 + \$0.15 = \$0$$

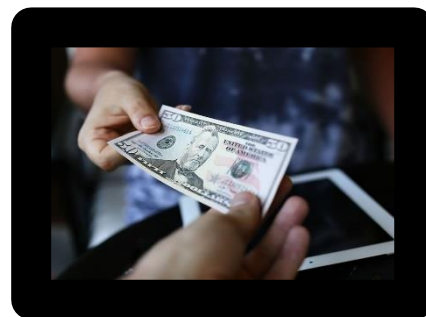


The result of changes in the price of Oil Futures

HEDGE



Lock in rate at \$4 a gallon



If price goes up, Bank pays MBTA
If prices go down, MBTA pays Bank



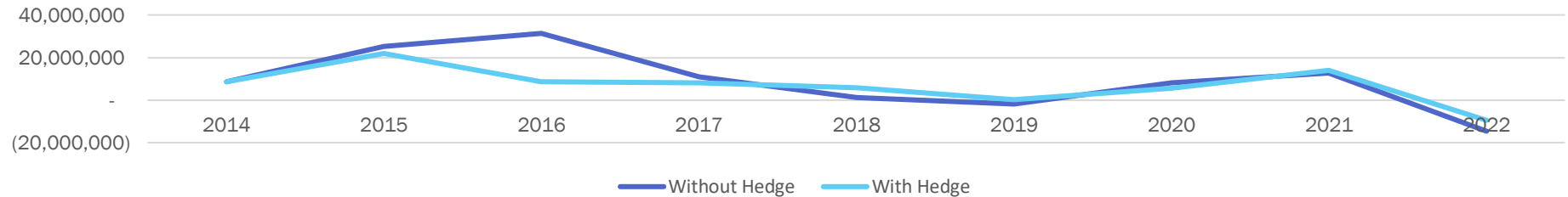
Futures decline to \$3.85
(MBTA pays difference)

Recent Hedging

	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
Targeted percentage hedged	90%	75%	50%	37%	50%	50%	50%
Gallons hedged	18.7 million	15.7 million	10.3 million	8.1 million	8.8 million	9.9 million	8.8 million
Providers	Bank of America, Citi, Morgan Stanley	Citi, JP Morgan	Citi, Morgan Stanley	Goldman	Goldman	Wells Fargo	Morgan Stanley
Hedged Price Per Gallon	\$2.50	\$1.79	\$1.51	\$1.71	\$1.85	\$1.29	\$1.99

- The MBTA hedges its diesel usage every year. The amount hedged varies each year, but the hedge has to be for a specific volume of fuel for a specific term.
- In some years, the MBTA enters into agreements with multiple providers.

Budgetary variance - Dampening effect of Fuel Hedge



Without the fuel hedge, standard deviation is 1.5x higher (\$12.17M vs. \$7.98M)



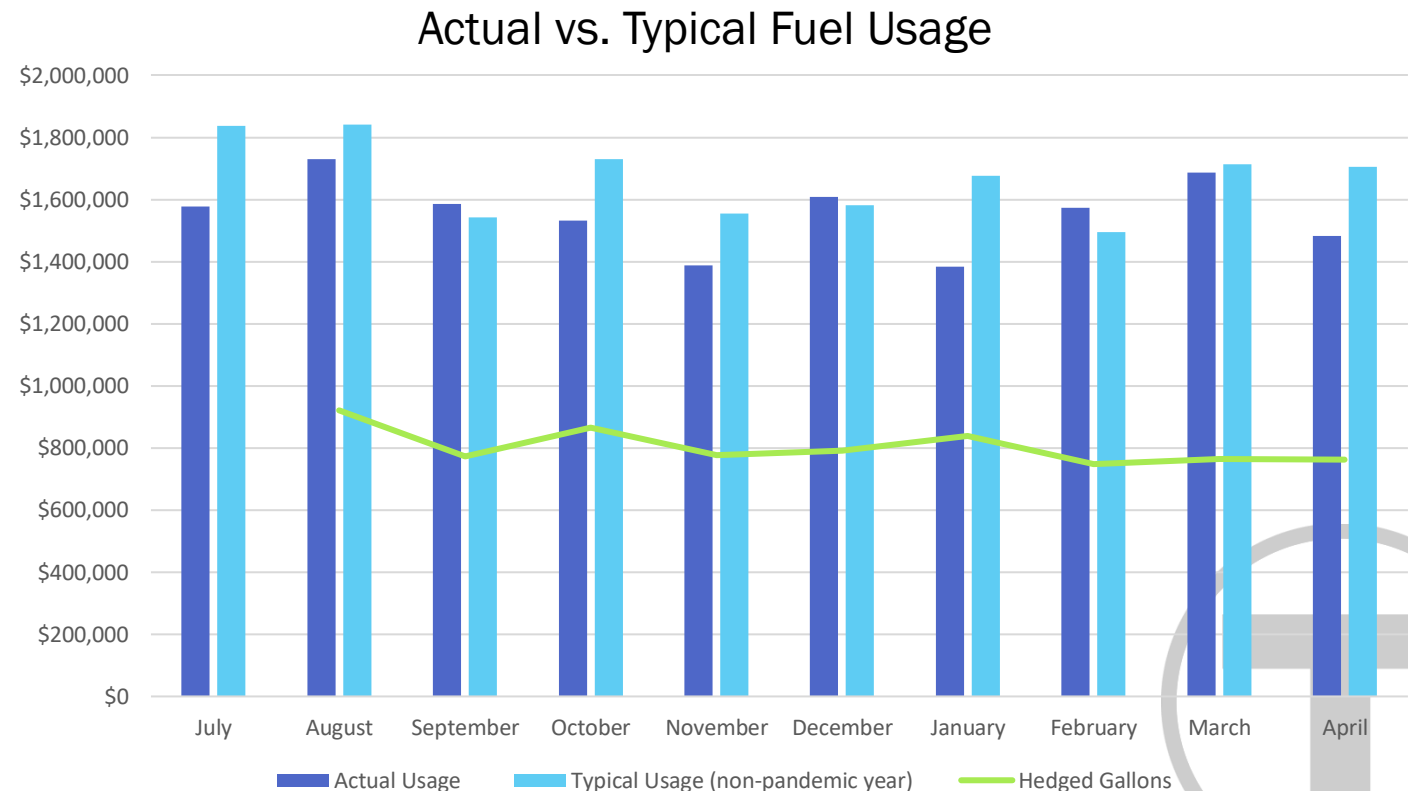
Variation in the Quantity of Gallons Hedged

In FY22, we chose to hedge fifty percent (50%) of fuel usage during a typical year with the understanding that, given the decline in fuel usage as a result of the pandemic, more than 50% of our fuel program would likely be hedged.

Our fuel program averaged 52% hedged through January (see left chart).

Typical fuel usage versus actual usage is shown in the chart on the right.

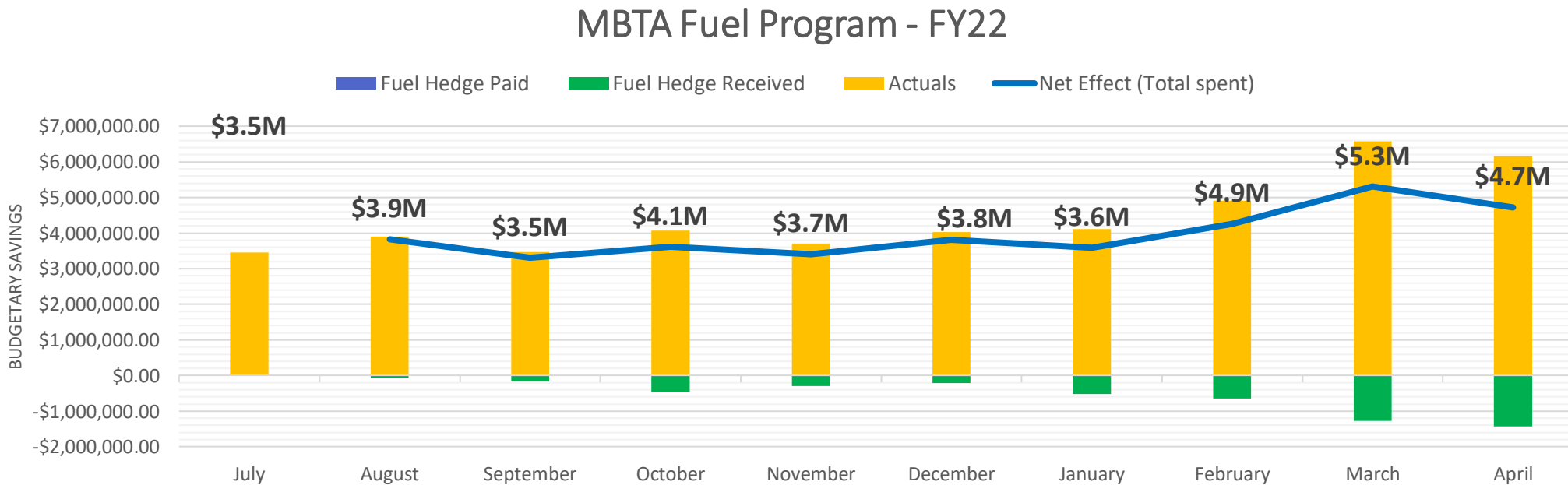
Month	Percentage
August	54%
September	48.60%
October	56.50%
November	56.00%
December	49.10%
January	60.60%
February	47.54%
March	45.34%
April	51.35%



FY22 Fuel Hedge

- August 2021 through June 2022 fuel hedge contract
- Hedged roughly 50% of projected usage during normal times during 9-month period (8.84M Gallons)
- Entered a hedge with Morgan Stanley for \$1.9868 per gallon
- **Energy hedge has resulted in a net payments from our counterparty YTD of \$5 million.**

MBTA Fuel Hedge VS Pump Price Variance (August 2021- May 2022)



Yellow is what was paid at the pump (actual)
 Red/green represents fuel hedge. Red is a payment we made to the counterparty. Green is a payment we received from the counterparty.
 Blue line represents what MBTA actually paid on fuel (hedge and pump prices combined)

FY22 Projected Diesel Fuel Costs

The Authority budgeted \$35.4 million for fuel in FY22. Due to market conditions causing the price of oil to rise, the Authority projects a total FY22 year-end cost of \$48 million.

The MBTA realized some savings through under-usage of projected gallons (\$0.7 million).

Additional fuel savings resulted from the fuel hedge, which netted \$5 million through April and is expected to net \$7.6 million by year-end.

FY22 Fuel Projection Bus & Commuter Rail
YTD Mar Actual Apr-June Projected



Current Market FY23 Fuel Hedge

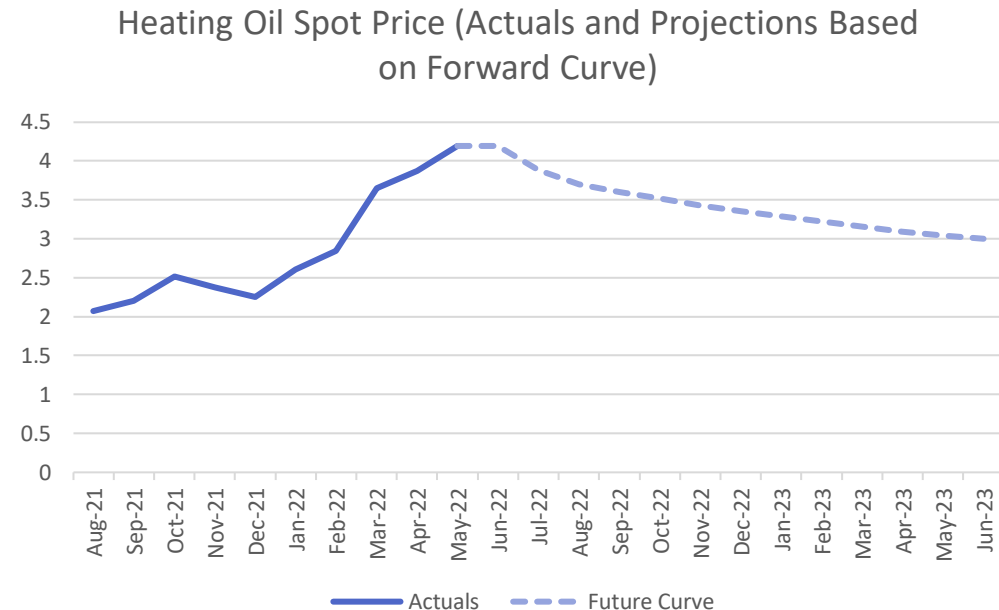
“The current market is unlike anything I have seen in my career. The volatility is intense. The market is disconnected from fundamentals in a way we have not seen before.”

- MBTA Conversation w/Commodities Desk

The ongoing situation in Ukraine and Russia, combined with other global events already in play, has led to steeping diesel prices since January 2022.

Price per gallon on Heating Oil has increased to \$3.87 in April from \$2.07 in August (an 87% increase).

The Forward Curve indicates a market expectation that fuel prices will moderate throughout FY23. The Authority will be monitoring the market closely for opportunities to bid the fuel hedge.



Proposed FY23 Fuel Hedge

Recommendation

- Based on historic usage, adjusted for the pandemic, the MBTA is budgeting for 19.68 million gallons in fuel purchases between its commuter rail and bus in FY23
- The MBTA is proposing to hedge 50% of its budgeted usage (9.8 million gallons). Unhedged the MBTA could be exposed to \$17-\$34 million (one-to-two standard deviations) in budgetary volatility based on an analysis of historic price changes
- A 50% hedge would reduce potential budgetary volatility to \$8.5-\$17 million (one-to-two standard deviations)
- A 50% hedge performs when price per gallon increases. The remaining 50% unhedged portion performs when price per gallon decreases.

Next Step

After MBTA receives board authorization, MBTA will enter into a competitive bid process run by Omnicap (MBTA's swap advisor). The bank will be chosen based on price and the provider's credit rating.



Requested Vote

VOTED:

To recommend that the Board of Directors to authorize the Chief Financial Officer or Treasurer of the Massachusetts Bay Transportation Authority ("MBTA"):

- to enter into one or more hedges, with terms expiring no later than June 30, 2023, as determined to be necessary or appropriate, to hedge the MBTA's financial risks related to the price of diesel fuel, provided that such hedges shall be procured via competitive bid process and shall hedge not more than 10 million gallons; and
- to execute any and all documents, certificates and other instruments necessary or desirable to effectuate the transactions contemplated by the foregoing vote.

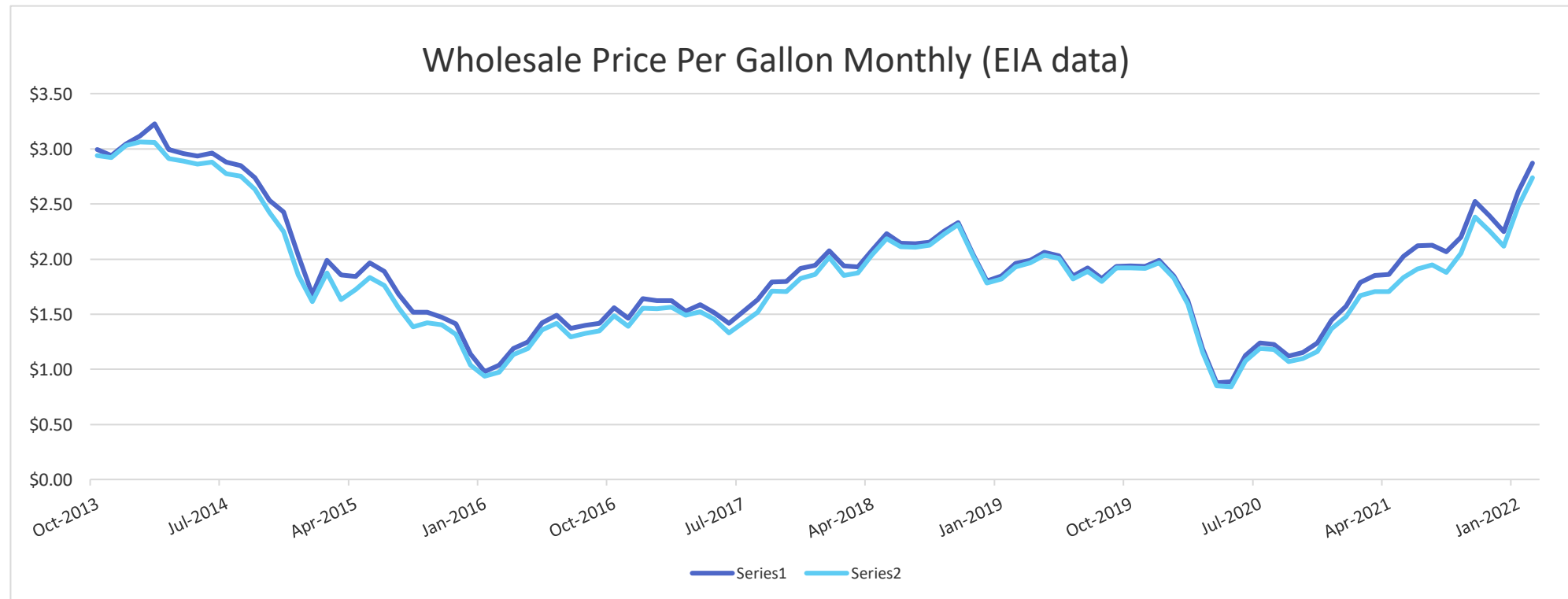


Appendix

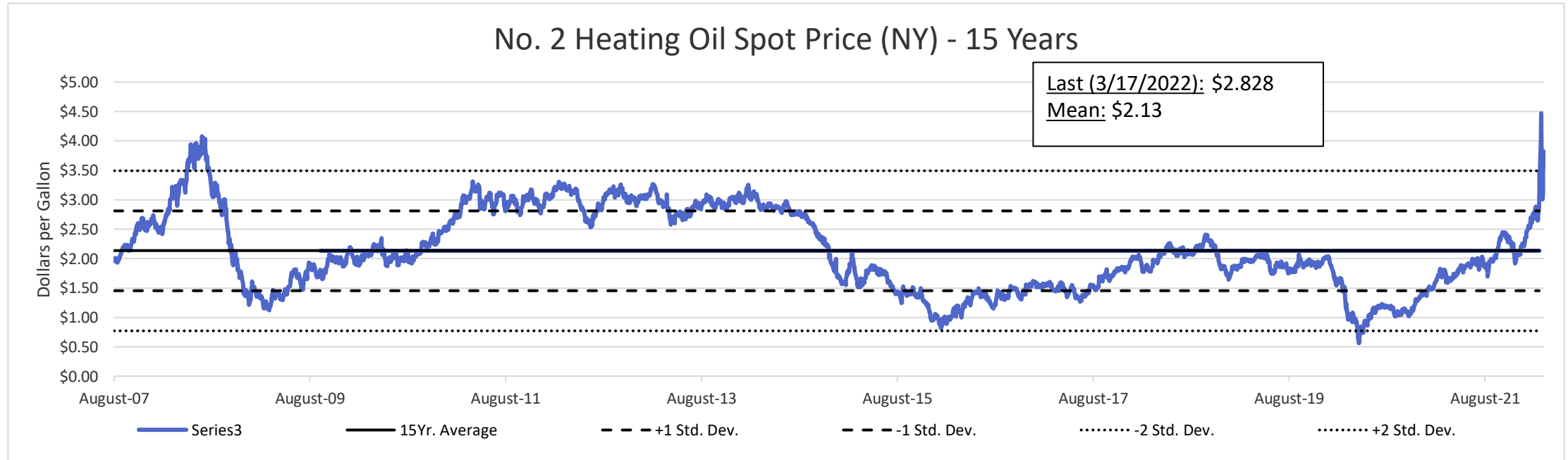


MBTA Uses Heating Oil to Hedge Diesel

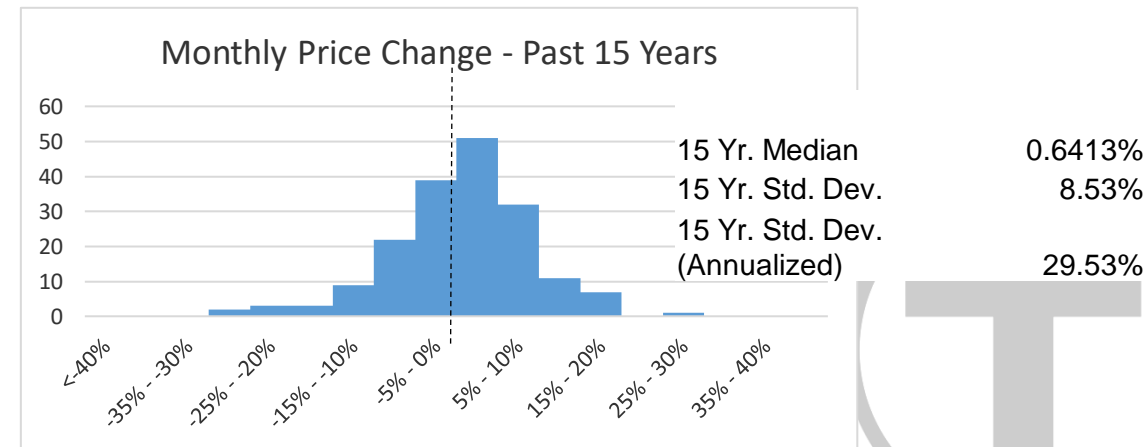
- The industry standard for hedging diesel is using the liquid No.2 Heating Oil futures contract traded on the CME Group Exchange
- Heating Oil and Diesel prices have been highly correlated in the past



Historic Price Change



- Prices have been volatile over the past 15 years with prices ranging from \$0.56 to over \$4.083 per gallon
- Monthly price changes are normally distributed
- The annualized standard deviation of 29.53% can lead to large budget surprises



Fuel Hedge Options

ADJUSTED - Assumes expected future return is accurately priced into forward price. Center point is zero.

Unhedged:

Price Change	Probability	Impact on Op. Budget*
>59%	2%	>\$34M
29.5% - 59%	13%	\$17M - \$34M
0% - 29.5%	35%	\$0 - \$17M
-29.5% - 0%	35%	\$17M - \$0
-59% - -29.5%	13%	\$34M - \$17M
<-59%	2%	>\$34M

75% Hedged:

Price Change	Probability	Impact on Op. Budget*
>59%	2%	>\$8.5M
29.5% - 59%	13%	\$4M - \$8.5M
0% - 29.5%	35%	\$0 - \$4M
-29.5% - 0%	35%	\$4M - \$0
-59% - -29.5%	13%	\$8.5M - \$4M
<-59%	2%	>\$8.5M

50% Hedged:

Price Change	Probability	Impact on Op. Budget*
>59%	2%	>\$17M
29.5% - 59%	13%	\$8.5M - \$17M
0% - 29.5%	35%	\$0 - \$8.5M
-29.5% - 0%	35%	\$8.5M - \$0
-59% - -29.5%	13%	\$17M - \$8.5M
<-59%	2%	>\$17M

100% Hedged

Price Change	Probability	Impact on Op. Budget*
>59%	2%	\$0
29.5% - 59%	13%	\$0
0% - 29.5%	35%	\$0
-29.5% - 0%	35%	\$0
-59% - -29.5%	13%	\$0
<-59%	2%	\$0

