STATE OF NEW HAMPSHIRE

BEFORE THE

PUBLIC UTILITIES COMMISSION

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Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty	**)**
Distribution Service Rate Case	**) Docket DG 23-067**
Cost of Capital and Customer Care	**)**
	)

Direct Testimony of

Marc Vatter

Director of Economics and Finance
Office of the Consumer Advocate

February 21, 2024

Q. Please state your name, position, and business address.

A. My name is Marc H. Vatter. I am the Director of Economics and Finance for the Office of the Consumer Advocate (OCA).

Q. How long have you worked for the OCA?

A. I have been employed by the OCA since August 25th of last year.

Q. Is a summary of your experience attached to this testimony?

A. Yes. Attachment MV-1 is my resume.

Q. Have you previously testified before utility regulatory commissions?

A. Yes. I have sponsored testimony before the FERC, the Mississippi PSC, the Michigan PSC, and the Energy Facilities Siting Board of the Rhode Island PUC. I testified before the New Hampshire Commission in Docket DG 23-087, and I sponsored testimony before the New Hampshire Commission in Docket DE 23-039.

Q. What is the purpose of your testimony in this docket?

A. I am testifying on capital market conditions, whether they imply modifications to the results of financial models used by Liberty Witnesses Ann E. Bulkley and Christopher M. Wall and OCA Witness Aaron Rothschild to estimate Liberty's minimized cost of equity. I also suggest modifications to the fee free transactions program described in the direct testimony of Lauren A. Preston.

Q. Please summarize the arguments you make in your testimony.

A. My testimony is mainly a critique of and update to the direct testimony of Ms. Bulkley and Mr. Wall, especially as regards capital market conditions. I disagree with their argument that persistent inflation now and during the rate period will create significant risk of increases in nominal (not adjusted for inflation) interest rates by the Federal Reserve, which would cause investors to require a higher nominal rate of return on stock issued by Algonquin Power and Utilities (Algonquin), Liberty's holding company. Partly, I disagree with their argument on its own terms; in this sense, my testimony is a critique of theirs. I also draw on information that did not exist at the time they filed their testimony; in this sense, my testimony is an update to theirs. I argue that inflation has been in decline since well before they filed their testimony, and that it is expected to continue to decline, so the Federal Reserve has raised real (adjusted for inflation) rates of interest without any increase in nominal rates of interest, which further reduces inflation, enabling the Fed to then reduce nominal rates of interest, implying that investors will require a lower nominal rate of return from Algonquin. Liberty's allowed rate of return on equity is set on a nominal basis.

I point out that Liberty's real allowed rate of return on equity from December 2022 through September 2023 was 4.75% p.a., with year-over-year inflation at 4.55%, while the monthly average price of Algonquin's stock on the New York Stock Exchange was stable, and the volume of its stock traded was much higher than during the preceding three years. Though this was not a long period of time, capital markets are quick to respond to information, and Algonquin could clearly sell, or have sold, its stock, as indicated by a high volume of trade in 2023. If inflation during October 2023 through September 2026 is 2.68%, a nominal return on equity of 7.44% would yield the same real rate of return, somewhat lower than OCA Witness Aaron Rothschild's recommended range of 7.88% - 8.43%; the inflationary expectations of investors underlying his recommendation may be somewhat higher than my forecast of 2.68%.

Regarding Ms. Preston's testimony, I agree that Liberty should be allowed to socialize payment fees for debit cards and direct withdrawals from bank accounts to customers not making those payments, but I do not think socialized cost recovery is appropriate for fees for credit card payments, partly because the fees for credit cards are high, unduly burdening the other customers, and partly because rates of interest on credit cards are high, and customers should be encouraged to seek assistance through the utility and other resources, rather than pay those high rates of interest.

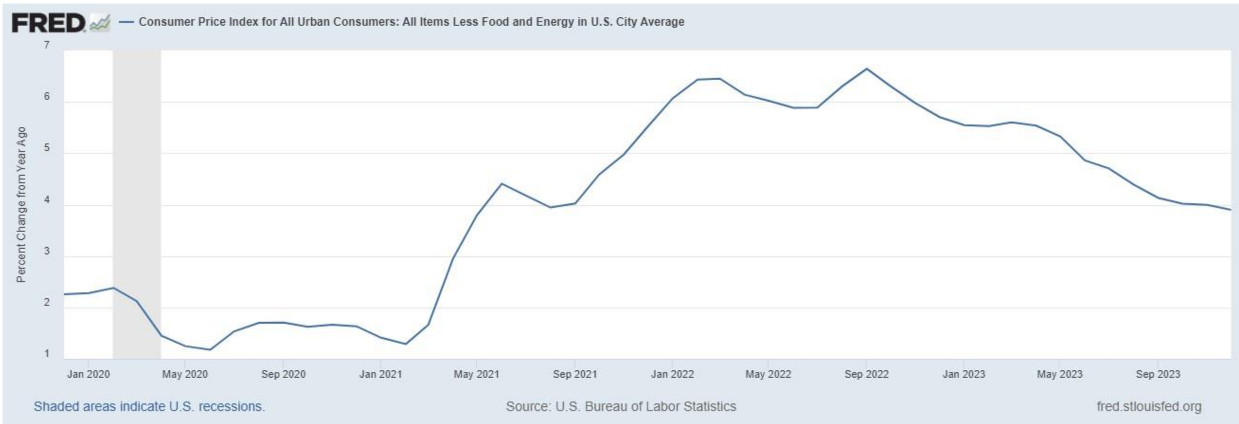
Q. What do Ms. Bulkley and Mr. Wall say about recent and expected inflation?

A. On page 7, lines 6-7 of their direct testimony, Ms. Bulkley and Mr. Wall write: "Inflation is expected to persist over the near term, which increases the operating risk of the utility during the period in which rates will be in effect." They argue that this is because the Fed may continue to raise interest rates in order to lower the inflation, and higher rates of interest mean that investors will require higher rates of return on utility stocks in order to choose them over government bonds and other financial instruments.

Q. Do you agree that inflation is "persistent"?

A. No. Ms. Bulkley and Mr. Wall were wrong about "persistent inflation." Total inflation, including prices for food and energy, peaked at 8.56% in June 2022, over a year before they filed their testimony, and core inflation, which excludes prices for food and energy, peaked at 6.45% in March 2022. Total inflation has been stable since last summer, but core inflation has continued to decline, as shown in Figure I. Ms. Bulkley and Mr. Wall correctly observe on page 15, lines 8-10 that "core inflation … is the preferred inflation indicator of the Federal Reserve for determining the direction of monetary policy."

Figure I: Core annual inflation since December 2019



Total annual inflation, including prices for food and energy, is shown in Figure II. It has been stable since June, but was in steep decline for a year before that, and the document[1] issued by the Federal Open Market Committee (FOMC) cited by Ms. Bulkley and Mr. Wall shows that the members of the committee expected greater declines in total inflation than in core inflation over the next few years. Table 1 in the FOMC document shows core inflation being 0.1 percentage points higher than total inflation in 2024 and 2025, meaning that the FOMC expected food and energy prices to have a downward impact on the rate of inflation. Food and energy prices are more volatile than other prices, this is why they are excluded from core inflation, and their deviation from the downward trend since last summer reflects that volatility. Inflation has, for some time, been, continues, and is expected to continue to, decline. It is not “persistent.”

[1] Federal Reserve, Summary of Economic Projections, June 14, 2023, https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20230614.pdf.

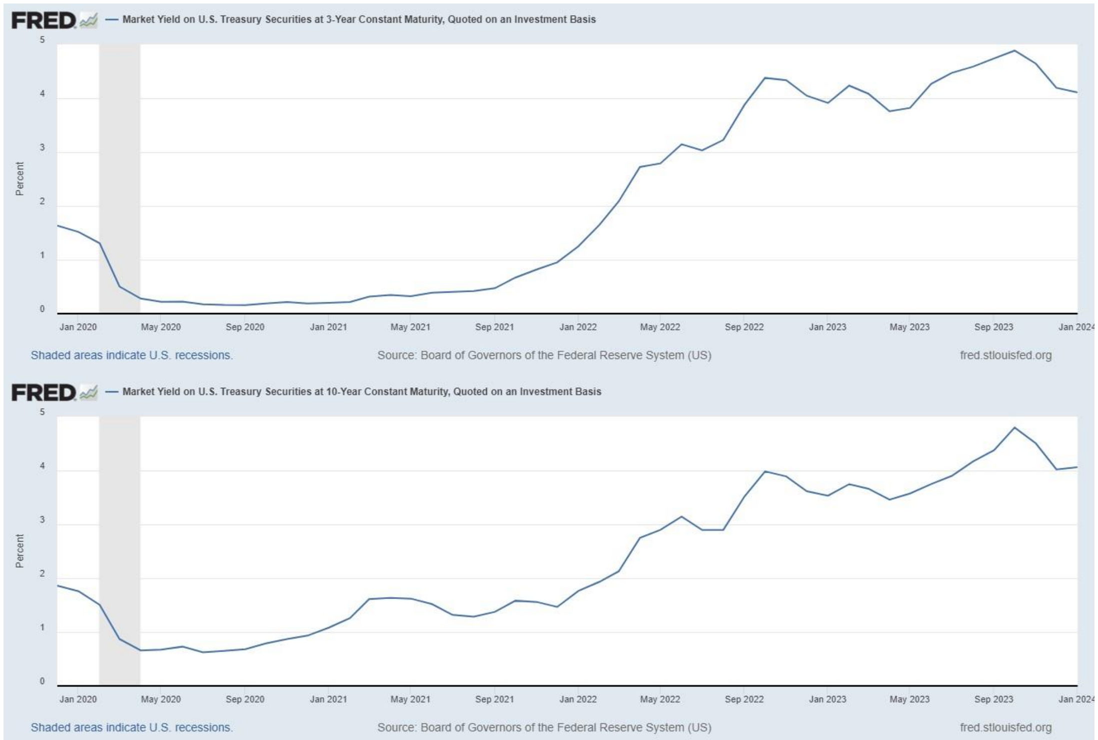
Figure II: Total annual inflation since December 2019

Q. Did this decline in inflation not result from increases in the rate of interest promulgated by the Federal Reserve?

A. It did. Between June 2022 and June 2023, the Fed brought down the rate of total inflation from 8.93% to 3.09% by raising the rate of interest on three year Treasuries (and other instruments) from 0.67% in October 2021 to 4.38% in October 2022, an "outside lag"[2] of eight months, typical of monetary policy. Since October 2022, both rates on three and ten year Treasuries have been stable at around 4%; on October 28, 2022, the rate on ten year Treasuries was 4.02%, and 4.08% on January 29, 2024, as shown in Figure III. The rate of total inflation has been stable at a little over 3% since June 2023, as shown in Figure II, with the same eight month outside lag after the rates of interest stabilized. Thus, we now have greater benefit of hindsight regarding the effect of the Fed's monetary tightening on the rate of inflation than did Ms. Bulkley and Mr. Wall at the time they were compiling their testimony.

[2] "Inside lag" is the time it takes to put a policy in place, while "outside lag" is the time it takes for a policy to take effect. Fiscal policy, which requires legislation, has a long in:side lag, while monetary policy has a long outside lag.

Figure III: Nominal rates of interest since December 2019



That said, the main argument they made in their testimony regarding market conditions was contradictory on its own terms. On lines 17-19, they wrote: "Equity analysts have noted the increased risk for the utility sector as a result of rising interest rates and expect the sector to underperform over the near term." On lines 11-12, they wrote that "interest rates are expected to remain near current levels for the next year." Since interest rates had been stable since October 2022, and Ms. Bulkley and Mr. Wall expected them "to remain near current levels for the next year", it was contradictory to also claim that "rising interest rates" were causing "increased risk for the utility sector", at least where nominal interest rates were concerned, and Liberty's allowed rate of return on equity is set on a nominal basis. On page 14, lines 14-20, Ms. Bulkley and Mr. Wall write:

> Since there is a strong historical inverse correlation between interest rates (i.e., yields on long-term government bonds) and the share prices of utility stocks (i.e., share prices of utility stocks typically fall when interest rates rise and vice versa) and the yields on long term government bonds currently exceed the dividend yields of utilities when historically long-term government bond yields have been lower than the dividend yields of utilities, it is reasonable to expect that utility investors' required return is increasing.

Nominal rates of interest had been stable for nine months. On July 26, 2023, the day before they filed their testimony, the rate on ten year Treasuries was 3.86%, lower than its previous daily peak of 4.25% on October 24, 2022. Core inflation had been declining steadily since September 2022. Market conditions even at that time did not indicate exceptional uncertainty or upward pressure on nominal returns on equity coming from monetary policy. Nominal rates of interest have now been stable for fifteen months.

Figure IV shows the stock price for Algonquin since December 2019. Algonquin is Liberty's source of equity capital. On pages 61-67, Ms. Bulkley and Mr. Wall discuss risk associated with Liberty's small size, but do not mention that they are a holding of Algonquin. In the immediately following discussion of flotation costs, Liberty's relationship with Algonquin is emphasized.

A large and rapid decline in Algonquin's share price did, in fact, begin in mid-2022, when the rate of total inflation peaked in response to the Fed's preceding increases in rates of interest, but the decline was completed in December 2022, at which time the nominal rate of interest had stopped rising and gotten two months into its current period of stability, and after which the price of Algonquin's stock proceeded to rise and fall within a normal range of variability. Table I shows that Algonquin's dividend yield on the New York Stock Exchange has risen by 1.59 percentage points since before the large decline in price, but it did not change much from 2022 to 2023. The downward adjustment of Algonquin's stock price, and corresponding upward adjustment of its rate of return, including both dividends and appreciation, as shown in Figure IV, to the Fed's tightening of monetary policy was completed over a year ago, so this adjustment process gives no reason to allow further increases in Liberty's allowable rate of return on equity (ROE), only increases reflecting changes in market conditions as of December 2022.

Figure IV: Stock price for Algonquin Power and Utilities, December 2019 – January 2024

Source: **https://investors.algonquinpower.com/stock-information/stock-quote/default.aspx**, accessed February 1, 2024

Table I: Returns on stock in Algonquin Power and Utilities

Year	Price	Dividend ($)	Dividend (%)	Annual RoR (%)
2020	14.44	0.61	4.23	
2021	15.48	0.66	4.26	11.83
2022	12.83	0.70	5.45	-12.59
2023	7.34	0.43	5.86	-39.43
2023 less 2021:			1.59	

Source: **https://investors.algonquinpower.com/stock-information/dividend/default.aspx** accessed February 1, 2024

If dividend yields were to remain at the recent rate, holding appreciation constant, one could add 1.59% to the 9.30% ROE The Commission approved in 2021 to get an allowed ROE of 10.89% in 2023, which is higher than the 10.35% Ms. Bulkley and Mr. Wall recommend for the new rate period. The OCA's cost-of-capital expert argued for an ROE of 8.90% in DG 20-105.[3] Adding 1.59% to that gives 10.49% in 2023, which is still a little higher than 10.35%.

However, appreciation was negative. Moreover, inflation was 4.55% p.a. December 2022 through September 2023, so Liberty's *real* allowable ROE was 9.30% - 4.55% = 4.75%, as shown in Table II. The table also shows how stable Algonquin's share price was, with a coefficient of variation in 208 daily prices of only 0.08, which is not statistically different from zero at the 95% level. Capital markets are quick to respond to information, and Algonquin could clearly sell, or have sold, its stock, as indicated by a high volume of trade in 2023, shown in Table III. If inflation declines smoothly to 2.00% by March 2028, it will average 2.68% October 2023 through September 2026, so an allowable nominal ROE of 7.44% would give

[3] **https://www.puc.nh.gov/Regulatory/Docketbk/2020/20-105/TESTIMONY/20-105_2021-03-18_OCA_TESTIMONY_CHATTOPADHYAY.PDF**, p. 7, line 19, accessed February 1, 2024.

Liberty the same real allowable ROE as it had during 2023, and the real rate of return is what investors care about. Rate of return regulation should allow an ROE just high enough to attract buyers of equity, and Algonquin did that at a real ROE of 4.75% throughout 2023, indicating that it could attract buyers with an allowable ROE of 7.44% during the new rate period, assuming 2.68% inflation. This is somewhat lower than OCA Witness Aaron Rothschild's recommended range of 7.88% - 8.43%.; again, the inflationary expectations of investors underlying his recommendation may be somewhat higher than my forecast of 2.68%. In his Chart 3, inflation stabilizes a little above 2.0% after five years, while I have it stabilizing just at 2.0% in March 2028.

Table II: Inflation and Liberty's real allowable ROE (%)

			Algonquin share price ($)		
Time period	Annual CPI inflation	Real allowable ROE	Mean	Standard deviation	Coefficient of variation
Dec 22 - Dec 23	4.55	4.75	7.76	0.65	0.08
Oct 2023 - Sep 2026	2.68	7.44			

Sources: **https://fred.stlouisfed.org** and **https://investors.algonquinpower.com/stock-information/dividend/default.aspx**, accessed February 1, 2024.

Table III: Algonquin Power and Utilities' share price and volume of trade on the NYSE

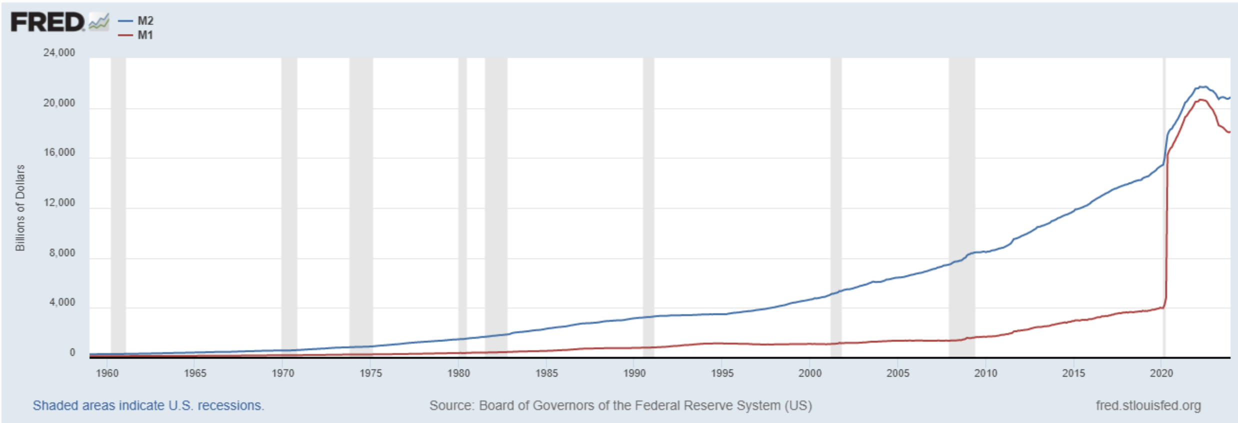
Year	Price ($)	Average daily volume of trade
2020	14.44	802,205
2021	15.48	1,811,897
2022	12.83	3,060,082
2023	7.34	4,943,404
2024	6.21	4,188,281

Source: **https://investors.algonquinpower.com/stock-information/dividend/default.aspx**, accessed February 16, 2024

Q. Was the real allowable ROE of 4.75% during 2023 wholly unintended by the Commission?

A. The Commission can answer that question better than I, but it approved permanent rates, and a nominal allowable ROE of 9.30% in DG 20-105 July 30, 2021, at which time year-over-year CPI inflation was running at 5.09%. At that rate, the real allowable ROE would have been 4.21%. Figure V shows the unprecedented monetization of the Covid lockdown, using the two conventional definitions of the money supply, in May 2020 and afterward, of which the Commission was surely aware. The 5.09% inflation clearly resulted from the unprecedented expansion of the money supply, the lion's share of which occurred in May 2020, over a year earlier, and the "unwinding" of which had not yet begun. It would be difficult for me to argue that The Commission did not take then-current and expected inflation into account when setting Liberty's allowable ROE in DG 20-105. As to investors, Liberty's allowed ROE was public knowledge, as were the rate of inflation and the supply of money, and they purchased stock in Algonquin in large quantities, at stable prices.

Figure V: Supply of money



Q. How does Algonquin's dividend yield compare to yields on long term government bonds?

A. On pages 22-24, Ms. Bulkley and Mr. Wall compare dividend yields of utility stocks on the S&P 500 to yields on ten year Treasuries, noting an extraordinarily low yield spread of -0.53 percentage points in 2023H1. They conclude that investors would "rotate back into government bonds, particularly as the yields on long-term government bonds remain elevated, thus resulting in a decrease in the share prices of utilities." (Bulkey and Wall Testimony at 24, lines 9-11.) As shown in Figure II, though, the average yield on ten year Treasuries during all of 2023 was 3.96%, which, combined with the dividend yield for Algonquin on the fourth line of Table I of 5.86%, gives a yield spread of +1.90%, which is not at all extraordinary. The standard deviation from the mean of 1.30% in their thirteen year sample of yield spreads is 0.89, so the spread between Algonquin's 2023 dividend yield and the yield on ten year Treasuries was less than one standard deviation above the mean in 2023, which is far from statistically significant by any conventional criterion; while the *z*-score for the yield spread for S&P utilities calculated by Ms. Bulkley and Mr. Wall [p. 23, line 11] for 2023H1 was -2.05, it was only +0.67 for Algonquin for 2023 as a whole.

Q. Will the Federal Reserve raise the rate of interest until its target rate of inflation obtains?

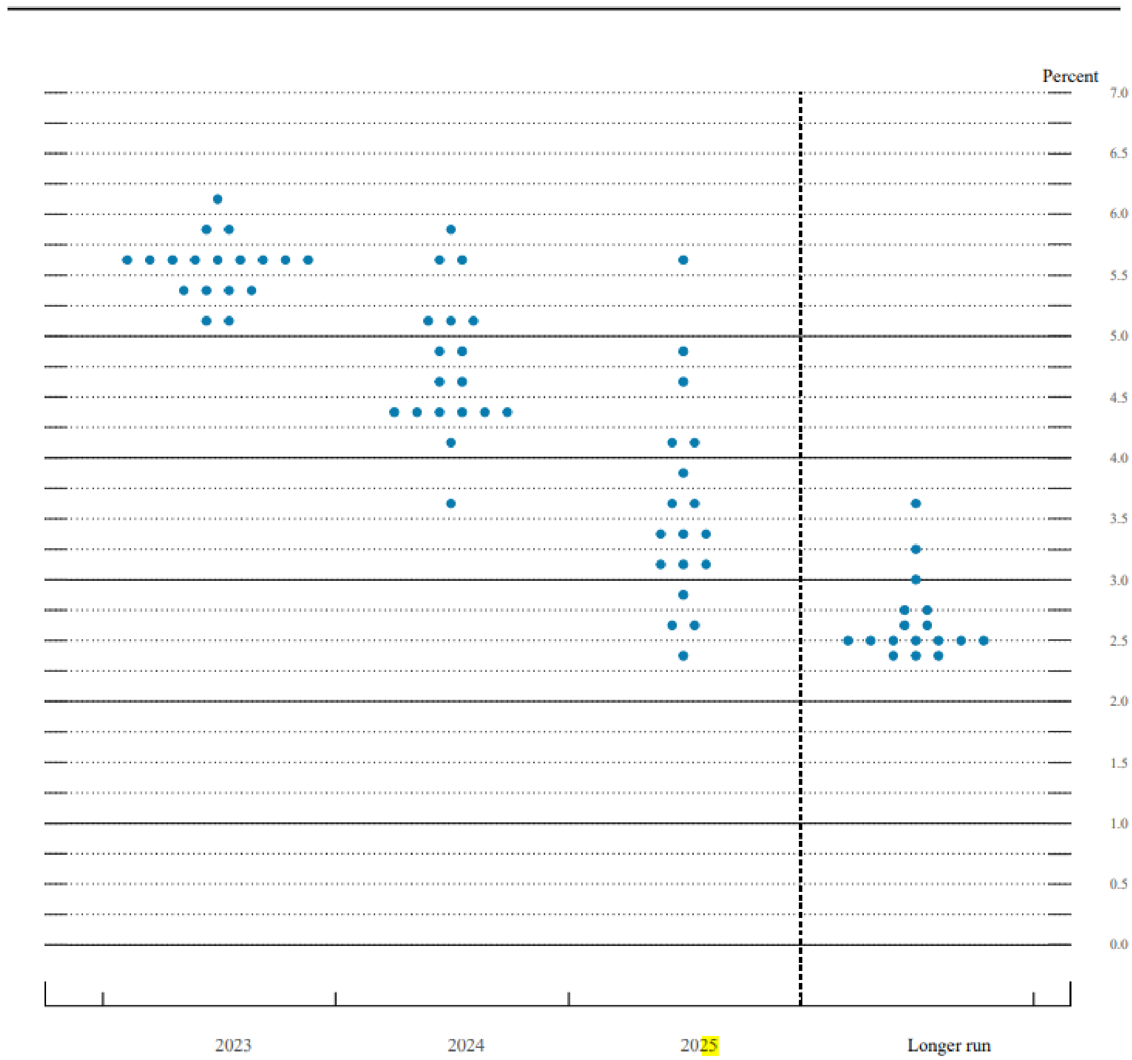
A. No. Inflation has been in decline since October 2022, and nominal rates of interest will decline as the inflation premium added to the real rate of interest to arrive at the nominal rate of interest declines correspondingly. I expect that real rates of interest will be stable and positive going forward, in contrast to the negative real rates of interest observed in 2020 and 2021. It is the real rate of interest that investors consider in comparison to real rates of return when deciding whether to borrow funds to invest in real capital, including inventory; in general, inflation is added to both the real benefits and real costs. Therefore, it is a high or increasing real rate of interest that slows real investment, real economic activity, and, therefore, inflation. Since nominal rates of interest stabilized in October 2022, and inflation continued to decline, real rates of interest increased.

On page 18, lines 1-3, Ms. Bulkley and Mr. Wall write that "while the Federal Reserve did not increase the federal funds rate at the June 2023 meeting, the Federal Reserve did project two additional 25 basis point increases in the federal funds rate in 2023."[4] The Federal Funds Rate averaged 5.08% in June, and 5.33% in December, an increase of 25 basis points. The witnesses did not mention the FOMC's projections for 2024 and 2025, also shown in Figure VI, reprinted from the FOMC document they cited. The members of the FOMC anticipated a declining Federal Funds Rate, settling at 2.5% some time after 2025.

[4] Federal Reserve, Summary of Economic Projections, June 14, 2023, https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20230614.pdf.

On page 18, lines 12-15, Ms. Bulkley and Mr. Wall write: “As shown in Figure 3, since the Federal Reserve’s December 2021 meeting, the yield on 10-year Treasury bonds has more than doubled, increasing from 1.47 percent on December 15, 2021, to 3.81 percent on June 30, 2023.” They did not mention the obvious fact that the doubling occurred between December 2021 and October 2022, and that the rate had been stable between then and July 2023, when they filed their testimony.

Figure VI: FOMC participants' assessments of appropriate monetary policy: midpoint of target range or target level for the federal funds rate



Source: **https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20230614.pdf**, p. 15, accessed January 31, 2024

On page 19, lines 8-10, they wrote: "It is reasonable to expect that if government bond yields remain elevated, the cost of equity will be increasing above the levels experienced in 2020 and 2021 when interest rates were much lower." Figure VI makes it clear that the FOMC did not see the federal funds rate remaining elevated for long; by 2025, the median expectation was 3.33%.

Q. What does this indicate regarding whether (long term) government bond yields will remain elevated?

A. Rates for instruments of different terms are positively related. Assume that inflation stabilizes at the Fed's target value of 2.0% in March 2028[5], and that the Federal Funds rate simultaneously stabilizes at the FOMC's long term expected value of 2.5%, shown in Figure VI. Then, historical and forecast values of nominal and real market yields on ten year Treasuries and the Federal Funds Rate are shown in Figure VII.[6]

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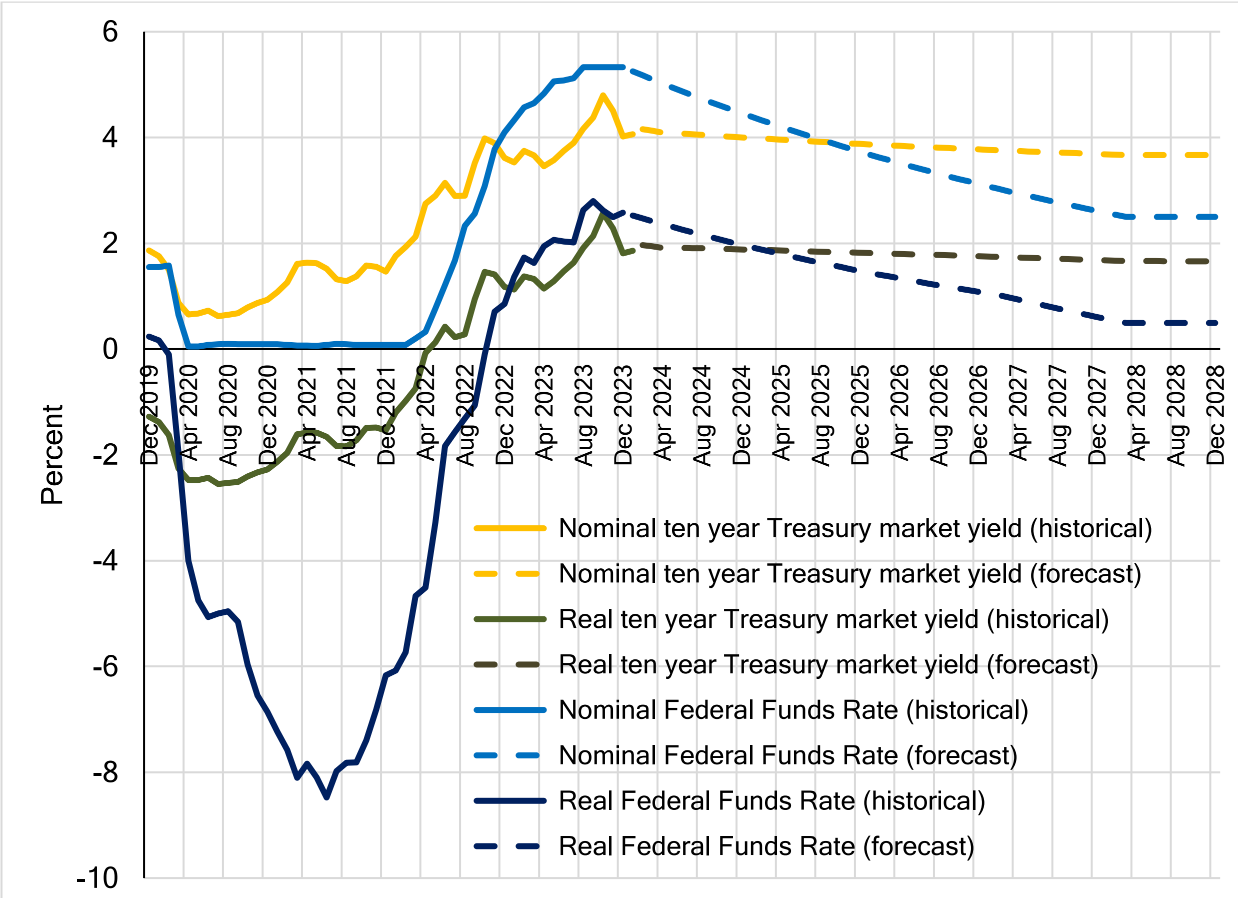
[5] I arrive at this timing by extrapolating the decline in total inflation since in peaked in June 2022.

[6] The estimated equation relating them, based on monthly data beginning January 1962, is

$$TY_t - TY_{t-1} = \underset{0.0092}{-0.0003} + \underset{0.0197}{0.1450}\left(FF_t - FF_{t-1}\right) + \underset{0.0379}{0.2883}\left(TY_{t-1} - TY_{t-2}\right) - \underset{0.0372}{0.2407}\left(TY_{t-2} - TY_{t-3}\right) + \underset{0.0357}{0.0707}\left(TY_{t-3} - TY_{t-4}\right),$$

where TY_t is the rate on Treasuries in Month t, and FF_t is the rate on federal funds, and the numbers below the coefficients are their standard errors. The *p*-value on a null in a Bartlett Test that the residuals are white noise is 0.28, and the *p*-value on a null in a Robinson Test that they are stationary is 0.89.

Figure VII: Rates on ten year Treasuries and Federal Funds, December 2019-2028



The "yield curve" shows the relationship between the maturity of securities and the rate of interest that they pay. Normally, long term securities pay a higher rate because they render their holders less liquid. The nominal yield curve inverted (the, short term, Federal Funds Rate began to exceed the ten year yield) in November 2022 because short term inflation was seen as exceeding long term inflation. The real yield curve inverted in January 2023. This somewhat unusual circumstance often precedes recessions, but it now appears that 2024 will see slow, but not negative, real economic growth; a "soft landing." In this forecast, I have the real yield curve reverting to its normal contour in March 2025, and the nominal yield curve reverting in September 2025.

Q. What does this forecast say about Liberty's allowed rate of return on equity?

A. Liberty's allowed rate of return on equity is set on a nominal basis, and the declining forecasted nominal rates of interest undermine Ms. Bulkley and Mr. Wall's argument that rising rates of interest will justify a higher allowed rate of return than those derived from financial models, like the discounted cash flow (DCF) and capital asset pricing model (CAPM). If anything, falling nominal rates of interest suggest that results from financial models should be adjusted downward.

On page 8, line 14, Ms. Bulkley and Mr. Wall also used "increasing interest rates" to justify Liberty's capital structure. In Figure VII, neither nominal nor real rates of interest are forecasted to increase.

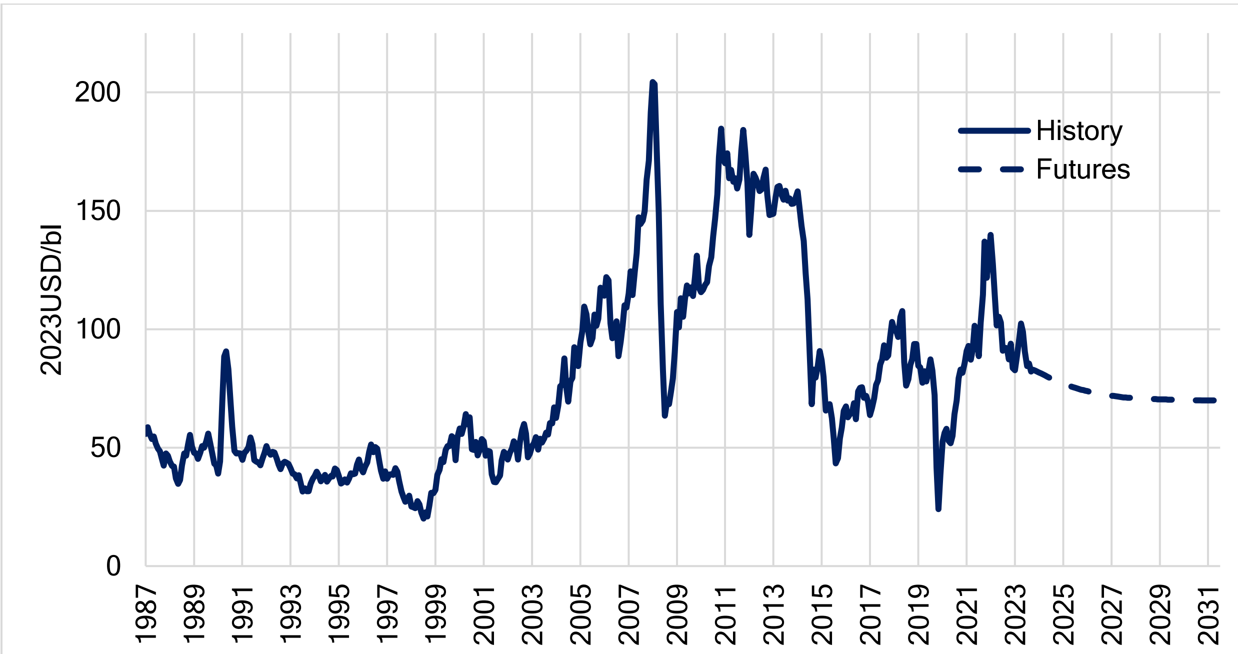
Q. Why might your forecast of interest rates be wrong?

A. Conceivably, the Fed might raise the nominal, and real, rate of interest if total inflation, including food and energy, were to increase, but oil is the prime mover in energy markets, and, although the futures curve at Henry Hub is now in contango, the futures curve for Brent is in backwardation, so the total cost of energy to consumers should not rise much. Table 1 in the FOMC document shows core inflation being 0.1 percentage points higher than total inflation, meaning that the FOMC expected food and energy prices to have a downward impact on the rate of inflation.

Figure VIII shows that the real price of Brent crude oil has been declining since June 2022, and that futures markets reflect the expectation that it will continue to do so, consistent with inflation declining and stabilizing at the Fed's target of 2.0% in March 2028.

Combined with declining core inflation, total inflation should also decline, giving the Fed no reason to raise the rate of interest going forward.

Figure VIII: Real price of Brent crude oil, history and futures; 2023USD/bl



Sources: EIA, **https://www.eia.gov/dnav/pet/hist/rbrteD.htm**, accessed January 31, 2024; CME Group, futures curve for January 30, 2024, **https://www.cmegroup.com/markets/energy/crude-oil/brent-crude-oil.settlements.html**, accessed January 31, 2024.

Q. What do you conclude regarding how market conditions bear on the use of financial models in setting Liberty's allowed rate of return on equity?

A. The upshot regarding market conditions is that we are not in an environment of rising rates of interest, though we are in an environment of declining inflation, and Liberty's allowed ROE is set on a nominal basis, so there is no reason to adjust upward the nominal ROEs coming out of backward looking financial models to reflect the effect of anticipated monetary tightening on the allowed ROE. Since nominal rates of interest have now been stable for over a year, the FOMC expects declining nominal short term rates going forward, and nominal long term rates should decline correspondingly, the argument that rising rates of interest, recently or in the future, justify a higher, nominal, ROE does not hold water anymore, whether it did or not in July, when Ms. Bulkley and Mr. Wall filed their testimony.

Finally, Algonquin Power and Utilities' dividend yield is not currently low in comparison to yields on ten year Treasuries, so, by that measure, its stock is not unattractive to holders of long term government bonds, whatever the outlook for utility stocks as a whole. An allowed ROE should be just high enough to prevent a utility's stock from being unattractive, and Algonquin's stock was not unattractive given Liberty's nominal allowed ROE of 9.30%, and a real ROE of 4.75%. As inflation declines, Liberty's nominal allowed ROE should decline correspondingly.

Q. Do you have any comments on the testimony of Lauren A. Preston?

A. Yes. Regarding fee free transactions, she discusses credit card, debit card, and direct withdrawals from bank accounts without much differentiation. According to pay.com,[7]

> Debit card processing fees are generally lower than credit card fees, as they are considered less risky and also more limited by law. In the US, for instance, the Durbin Amendment limited debit card transaction fees to 0.05% + $.21 for banks with more than $10 million in assets.
>
> Credit cards (and debit cards charged as credit) have higher fees because they are higher risk, and generally have to go through several different financial entities to be authorized, all of which take a cut.

Our position is that fees for debit card payments and direct withdrawals may be socialized across the customer base, but that fees for credit card payments should not. This is both to avoid burdening the customer base with the high credit card fees, and to encourage customers in need

[7] **https://pay.com/blog/credit-vs-debit-transactions#:~:text=Debit%20card%20processing%20fees%20are,than%20%2410%20million%20in%20assets.**, accessed February 19, 2024.

of credit to seek it at lower cost through the arrearage programs discussed in Ms. Preston's testimony.

Q. Does this conclude your testimony?

A. Yes.