WUTC DOCKET: UE-200900 UG-200901 UE-200894
EXHIBIT: MTT-7
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BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-200894

DOCKET NO. UE-200900

DOCKET NO. UG-200901

(Consolidated)

EXH. MTT-7

MARK T. THIES

REPRESENTING AVISTA CORPORATION

AVISTA CORPORATION

INTEREST RATE HEDGING PLAN EVALUATION REPORT

ISSUED IN ACCORDANCE WITH:

PUBLIC UTILITY COMMISSION OF OREGON ORDER 19-331

DECEMBER 28, 2020

CEADVISORS.COM

December 28, 2020

Jason Lang
Director of Finance, Risk & Assistant Treasurer
Avista Corporation
1411 E. Mission Avenue MSC-19
Spokane, WA 99202

Dear. Mr. Lang,

Concentric Energy Advisors, Inc. ("Concentric") is pleased to submit this Report that provides the summary of the evaluation ("Evaluation") of the interest rate hedging program (the "Plan") at Avista Corporation ("Avista") current as of August 2020.

As per the direction of the Public Utility Commission of Oregon (the "Commission") in its Order 19-331,[1] the Evaluation examines the mechanics of the Plan to understand whether the objectives of the Plan are being met and whether those objectives are still appropriate in the current interest rate environment. The Evaluation also seeks to evaluate how the Plan benefits customers, and whether any proposed changes and/or modifications are recommended.

In summary, **the results of the Evaluation show that the Plan is well structured, executed and has the appropriate internal control structure to monitor its performance and its continuation is therefore endorsed. While we have found opportunities for improvement, we did not find areas with meaningful deficiencies**. The recommendations will therefore improve the efficiency of the Plan but will not materially change its current form. In fact, we find most of the features of the Plan to be at the best practice level and some of the features of its implementation actually exceed such standards.

We appreciate the opportunity to serve Avista on this important project.

Sincerely,

Ruben Moreno
Project Manager to the Assignment
Assistant Vice President for Concentric Energy Advisors, Inc.

1 Final Order 19-331, Docket UG 366, October 8, 2019 before the Public utility Commission of Oregon. In the matter of Avista corporation, DBA Avista Utilities, Application for a General Rate Revision.

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SECTION 1:

EXECUTIVE SUMMARY

Concentric Energy Advisors ("Concentric) performed an evaluation (the "Evaluation") of the interest rate hedging program (the "Plan") at Avista Corporation ("Avista") current as of August 2020. The Evaluation is in accordance with the direction of the Public Utility Commission of Oregon (the "Commission") in its Order 19-331. The Evaluation examines the mechanics of the Plan to understand whether the objectives of the Plan are being met and whether those objectives are still appropriate in the current interest rate environment.

The methodology used by Concentric is consistent with the audit standards recommended by the Public Company Accounting Oversight Board ("PCAOB") and borrows from many established sources for industry best practices. Based on our experience of more than 20 years performing similar studies, Concentric adapted its methodology and the best practice standards to fit the assignment and Avista's business model and regulatory framework.

In summary, the results of the Evaluation show that the Plan is well structured, executed and has the appropriate internal control structure to monitor its performance and its continuation is therefore endorsed. When compared to the option of not hedging, the Plan has paid 12% on average in excess of the option of do not consider this to be an outlier result. While we have found opportunities for improvement, we did not find areas with meaningful deficiencies. The recommendations will therefore improve the efficiency of the Plan but will not materially change its current form. In fact, we find most of the features of the Plan to be at the best practice level and some of the features of its implementation actually exceed such standards.

Within a scale of 1 to 5 where 1 is negative and 5 is positive, Concentric evaluated 134 different risk elements to determine the risk and the capabilities associated with the Plan and calculated the difference between these two concepts to determine a gap for improvement. When the different risk elements are aggregated into 12 different categories, the unfavorable aggregate gap was 0.1 (Figure 1). This means that there are no obvious flaws in the Plan and any recommendations for changes will not change its character, but mostly improve in its efficiency.

Figure 1: Evaluation Summary Score

	Capability	Risk	Unfavorable Gap
Aggregate	**4.3**	**1.6**	**0.1**
Governance	4.6	1.6	0.1
Policy	4.5	1.7	0.0
Procedures	4.6	1.4	0.0
RMC	4.6	1.7	0.1
Monetary Limits	4.8	1.3	0.0
Strategic	4.9	1.3	0.1
Transactional Controls	4.0	1.0	0.0
Audit	4.0	1.0	0.0
Credit Risk	4.5	1.0	0.0
Risk Metric Methodology	3.6	2.0	0.2
Risk Metric Implementation	3.3	1.8	0.1
Infrastructure	2.8	1.9	1.9

Source: Concentric

The following is a statement of opinions by Concentric based on the Evaluation. It includes recommended improvements to the Plan.

- Opinion 1: The interest rate risk is significant and merits having Plan to contain the risk
- Opinion 2: The Plan as it currently stands is well structured, executed and has the appropriate internal control structure to monitor its performance
- Opinion 3: The objective of the Plan to reduce volatility of interest rates is appropriate
- Opinion 4: The Plan provides reasonable protection for rate payers by controlling for potential price increase at a reasonable cost
- Opinion 5: Recommend enabling the model used to implement the Plan so that it runs an outlier test to avoid obvious errors in the price feed and inconsistencies in price movements
- Opinion 6: Recommend changing the method used to calculate volatility to a method that yields volatility estimates that are more reasonable for long-dated volatility estimation
- Opinion 7: Once the new method to estimate volatility is implemented, ensure that it is used throughout the model used to implement the Plan

- Opinion 8: The performance of the Plan should not be exclusively measured as a comparison between the scenario of hedging or not hedging. It should be based on the reasonableness of the interest rate to support the investment and a comparison to the cost of debt of peer companies
- Opinion 9: The Plan is structured as a prudent effort to control the cost of debt on behalf of customers
- Opinion 10: The Plan provides a reasonable, prudent strategy benefiting the customers and should be continued.

There are elements of the Plan that are either at, or above industry best practices. This includes the design and implementation of the dynamic hedge window, the actual implementation of the model and the involvement of Senior Management.

The character of the Report is written for a non-technical audience in mind, but the subject at hand is very technical in nature. Concentric has had extensive conversations with Avista's staff to address the technical details of the Evaluation and the recommended changes. We are committed to revisit how these changes are implemented within three months of this Report to ensure that the Opinions are still valid and that the recommended changes are being implemented.

At the end of the Report we provide a summary of the questions and the answers Concentric received during the review of the draft Report to Avista's and the Commission's staff on November 30th, 2020.

SECTION 2:

CONTEXT OF THE EVALUATION

The Public Utility Commission of Oregon (the "Commission") in its Order 19-331[2] requested Avista Corporation ("Avista") to perform an evaluation (the "Evaluation") of the interest rate hedging program in compliance with the Partial Settlement Stipulation for the General Rate Revision, whereby Avista's interest rate risk management plan (the "Plan") should be reviewed by an independent third party. Avista issued a competitive procurement process under RFP #4-42876 and Concentric Energy Advisors, Inc. ("Concentric") was awarded the contract.

The Evaluation examines the mechanics of the Plan to understand whether the objectives of the Plan are being met and whether those objectives are still appropriate in the current interest rate environment. The Evaluation also seeks to evaluate how the Plan benefits customers, and whether any proposed changes and/or modifications are recommended.

In the writing of the Order, the Commission expressed its interest in recommendations based on the results and findings of the Evaluation and to summarize them in the form of a Final Report (the "Report"). As stated by the Commission, these findings will only apply prospectively and will not apply to any prior Avista interest rate hedging activity. Avista, at its discretion, has agreed to use the Report to make modifications to, or to discontinue, its Hedging Plan after consultation with the parties involved in the proceeding. The recommendations of the Report shall not be binding on any Party, but such Party shall have the burden of proof in any subsequent proceeding at which interest rate hedging is at issue, to demonstrate why the Report recommendations are unreasonable.

Per the language in the RFP issued by Avista, the Report assesses and provides an opinion on the following elements of the Plan:

- Review the overall Hedging Plan;
- Determine if Avista's current hedging strategy is the appropriate risk mitigation tool;
- Determine if the objectives of the Plan are still appropriate;
- Determine if and how the Plan benefits customers;
- Provide recommendations on how to improve the Plan, if appropriate;
- Provide an opinion to appropriately measure the performance of Avista's hedging Plan;
- Effectiveness of the Plan to mitigate interest rate risk;

2 Final Order 19-331, Docket UG 366, October 8, 2019 before the Public utility Commission of Oregon. In the matter of Avista corporation, DBA Avista Utilities, Application for a General Rate Revision.

- Provide an opinion on the prudency of the Plan;
- Identify changes to the Plan that can be made;
- Provide an opinion on whether the Plan should be continued, suspended, or terminated.

SECTION 3:

THE NEED TO HEDGE

Avista's future borrowing requirements are driven, primarily, by Avista's significant capital expenditure program and maturing debt which creates exposure to interest rate risk. Avista usually issues long-term debt (with maturities exceeding one year) approximately once a year. To mitigate interest rate risks, Avista hedges interest rates for a portion of forecasted debt issuances over several years, leading up to the date Avista anticipates each issuance.

Avista also manages interest rate risk exposure by limiting the extent of outstanding debt that is subject to variable interest rates rather than fixed rates. In addition, Avista issues fixed rate, long-term debt with varying maturities to manage the amount of debt required to be refinanced in any period (looking ahead to the debt's future maturity), and to obtain rates across a broader spectrum of prevailing terms which tend to be priced at different interest rates.

Avista's Plan is designed to provide a certain level of stability to future cash flows and the associated retail rates related to future interest rate variability. The Plan provides guidelines for hedging a portion of interest rate risk with financial derivative instruments. Avista settles these hedge transactions for cash, simultaneously, when a related new fixed-rate debt issuance is priced in the market. The settlement proceeds (which may be positive or negative) are amortized over the life of the new debt issuance. The Hedging Plan provides that hedge transactions are executed, solely, to reduce interest rate uncertainty on future debt that is included in Avista's five-year forecast. The hedge transactions do not involve speculation about the movement of future interest rates.

SECTION 4:

NATURE OF THE RISK

Having established that interest rate hedging is needed given the relevance of long-term debt, this section explores if the risk itself is meaningful. Logic dictates that hedging of interest rates is meaningful if the actual volatility of interest is significant. The uncertainty of interest rates affects the company in its ability to issue debt at competitive levels and in its ability to reduce cash flow volatility and the associated retail rate impacts given changes in interest rates.[3] In the case of Avista, the nature of the risk is therefore an interaction of the following exposures:

- **Uncertainty of Cost of Debt**. The risk that the interest rate at the time of issuing the debt will increase significantly from current levels.
- **Concentration Risk**. The risk of pricing the debt on one single day, instead of spreading the pricing of the debt to reduce single-day risk.
- **Competitiveness**. The risk that the uncertain interest rate to be fixed when the debt is priced is not competitive.

In this section we will explore the nature of each of these risks and provide a perspective as to their relevance. We first start with a small description as to the origin of the debt requirement needs.

Debt Requirements as the Starting Point of the Evaluation

Utilities routinely prepare a capital expenditure plan to invest in infrastructure and projects to address the load needs of their customers and will typically file a detailed plan of how the needs of the customers will evolve, how the utility will adjust its operations, a capital investment plan to indicate how these capital investments will be structured, and a schedule for their implementation.

In the case of most utilities, these plans are typically filed in the form of an Integrated Resource Plan ("IRP") and have an outlook of several years into the future that is updated periodically as the schedule for IRP filings mandates. The IRPs present a set of assumptions, including debt cost assumptions as of the drafting of the respective IRPs, including assumptions as to the cost of debt and how this cost will affect the viability of the investments and the impact to the customers.

For the specific case of Avista, it files an electric IRP with a rolling five-year outlook in odd years with the public utility commissions in Washington and Idaho, while in even years it files a natural gas IRP with a 20-year outlook with the public utility commissions in Washington, Idaho, and Oregon.[4] Both the electric and the natural gas IRP processes include public involvement in the form of a Technical Advisory Committee ("TAC") and public comment period.

3 Avista Corp. (January 2019). Interest Rate Risk Management Plan

4 https://www.myavista.com/about-us/integrated-resource-planning

The investment requirements associated with the interest rate hedging program therefore come from a comprehensive and transparent process that has gone through rigorous and transparent process for its approval and out of which several specific investments and capital requirements are outlined. The perspective on the cost of debt at the time when the IRP is approved is directly linked to the financial viability of the investments to be implemented. For the purpose of this Evaluation, the starting point is a requirement for debt issuance that is directly associated with the respective IRP documents.

Uncertainty of Cost of Debt

The capital expenditure plan is drafted and approved many years in advance and the assumptions driving the plans (including cost of debt assumptions) will evolve as the IRPs are updated in subsequent filings. But implementation of the investments, such as the need to build a new plant, may require many years to implement. If cost of debt volatility is significant, the actual cost of the debt as of the time the debt is issued and impact to the financial performance of the approved investments will be at risk.

To understand if the volatility[5] of long-term interest rates and the impact to the rates is meaningful we look at historical Forward rates for 30-year interest rates as reported by Thomson Reuters® for different expiration years ("FY"). For instance, the curve for FY7 in Figure 2 represents the 30-year interest rate Forward[6] contract expiring seven years into the future with respect to the trade date, whereas FY1 represents the 30-year interest rate Forward contract expiring within the next year and FY0 represents the interest rate as priced on a daily basis for next day contracting.

Using the cost of interest rates in Figure 2, we proceed to calculate volatility to understand how much the price of debt can change in the future. The most traditional way to calculate this volatility is originally expressed as a potential one-day [7]movement (Figure 3), while volatility is typically reported for comparative purposes as an annualized number.

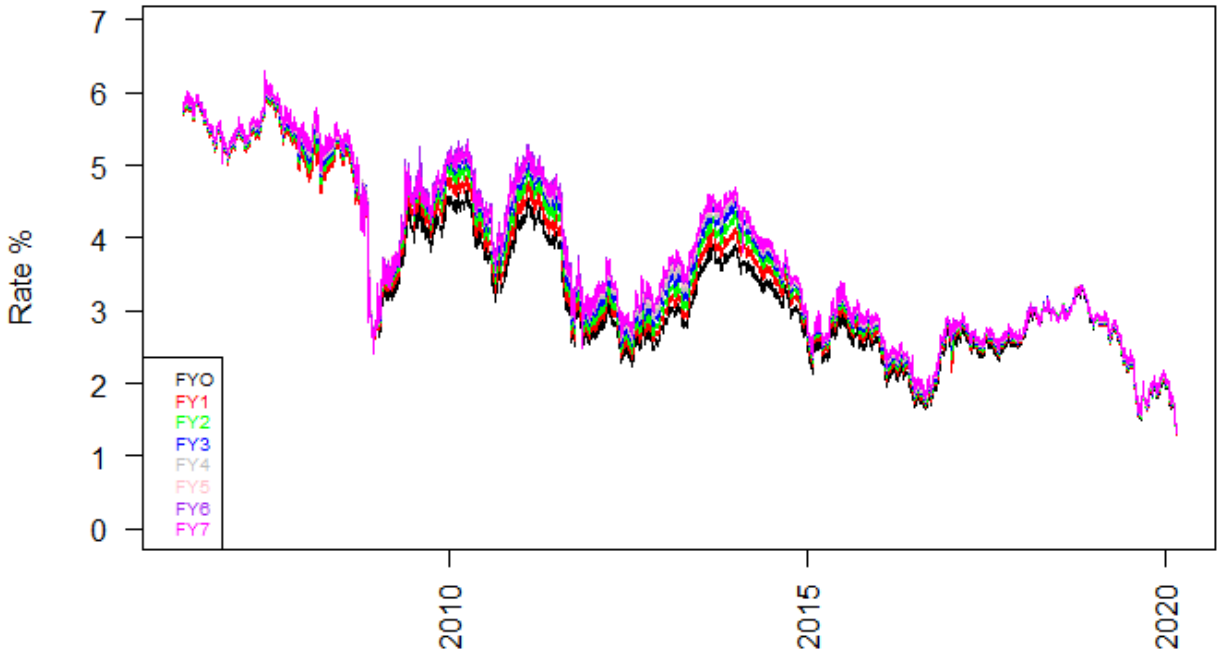
The impact of the volatility for interest rates is significant because it affects decision to fix the price for the duration of the debt issuance (in this case 30 years). While hedging decisions for natural gas for instance are for delivery for one specific month, the volatility of interest rates will have an impact of 30 years because the debt is issued at a fixed rate.

5 In finance, Volatility is an estimate to characterize the degree of how prices may have big swings in either direction. Technical, it is a statistical measure of the dispersion of the change in prices (i.e. returns) for a given period of observation.

6 In finance, a Forward contract is a non-standardized contract between two parties to buy or sell an asset (in this case interest rate debt) at a specified future time at a price agreed on at the time of conclusion of the contract (expiration date) or before the expiration of the contract if the price is locked-in before expiration of the contract (i.e. hedged).

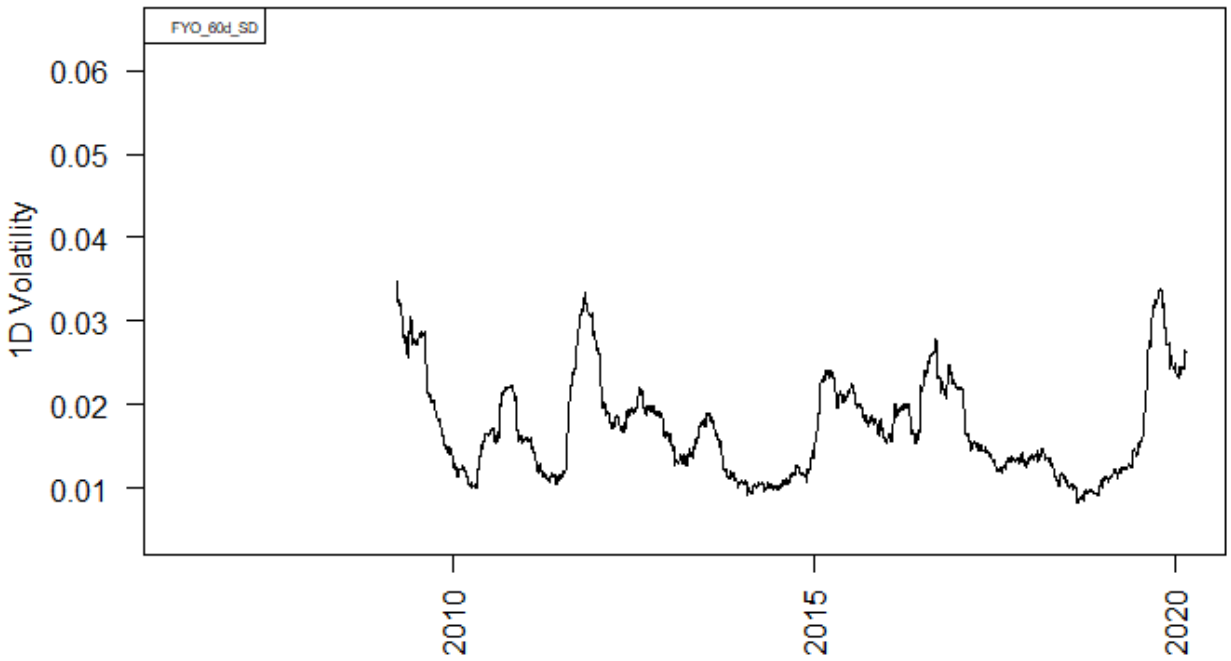
7 Volatility is typically calculated as the ln (Pt/Pt-1) where Pt represents the price as of today, Pt-1 is the price as of the previous date and ln represents the natural logarithm. Volatility is typically expressed in terms of standard deviation or variance of the returns over a period of time of choice.

Figure 2: Historical 30-Year Forward Curves for Rolling Forward Year Expiration ("FY")



Source: Concentric using data from Thomson Reuters as provided by Avista

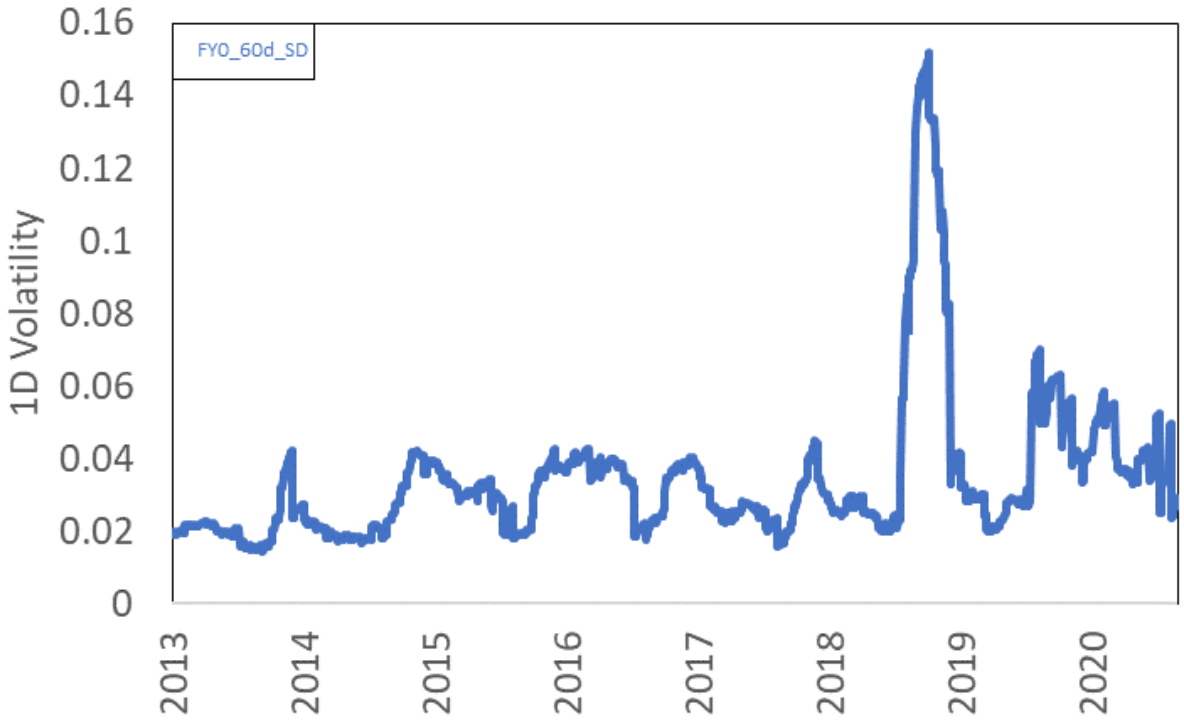
Figure 3: One-Day Volatility of 30-Year Spot Interest Rates



Source: Concentric using data from Thomson Reuters as provided by Avista

For comparative purposes, the one-day volatility in natural gas Forwards for delivery into the border of Washington States ("Sumas") is shown in Figure 4. Ignoring the specific issues of volatility at the end of 2019 when a pipeline interruption exacerbated volatility, the volatility from 2013 through 2018 shows levels very similar to those in interest rates. Therefore, just as it is meaningful to hedge the exposure to natural gas on behalf of the customers, the volatility in interest rates is comparable under normal circumstances. It is large enough to meaningfully affect the rates to customers and therefore a significant cost to be hedged.

Figure 4: Volatility of One-Month Forward for Natural Gas Delivered to the Washington Border



Source: Concentric using data from SNL

For illustrative purposes, assume today is February 28, 2020 and Avista is scheduled to issue debt for $160 million on October 2020 and we are evaluating the decision to hedge or not to hedge. As of the date of evaluation the 30-year interest rate with an approximate expiration of October 2020 is 1.294%. If Avista decides to wait to fix the price of the debt, the interest rate could be between 0.642% and 2.608% on the day the debt is issued. When considering the size of the debt, the expected interest payment from the debt at current levels is $2.07 million per year, but it could fluctuate between $1.03 and $4.17 million if the decision to hedge is made at the day of debt issuance.

Given the level of volatility in interest rates and the cost impact to the rate payers, hedging interest has enough volatility to warrant hedging decisions in advance of the day when the debt is issued.

Concentration of Risk

In the previous section we concluded that the level of volatility (i.e., risk) in interest is large enough to hedge, and it is comparable to the volatility in natural gas markets in the Northwest during normal times. In this section we will address the decision all hedgers face in terms of hedging in advance of actual needs (in this case the date when the debt is issued). Just as any hedging decision, Avista has the opportunity to fix the price before the expiration of the contract or fix it in advance through a series of decisions that will "smooth" the final outcome.

If Avista decides to postpone fixing the price of the debt at the time the debt is issued, it implicitly has ignored the risk that the cost of debt will increase from "now" through the day of when the debt is issued. If on the contrary, Avista decides to hedge (or to hedge a portion) of the debt requirements before the day the debt is issued, it has avoided (or partially avoided) the risk that rates may increase, but it has inevitably created a risk that the interest rate may decrease through the date when the debt is issued.

The essential choice for Avista under the interest rate hedging Plan is to decide to fix the price of the debt at the time the debt is issued or to fix the price (or a portion) before its expiration to avoid the possibility that the interest rate may change significantly from the current level to when the debt will be issued ("concentration risk"). Postponing the price of the debt for when the debt is issued is relying on a single day as the determinant of the price of the debt and therefore is the proverbial issue of putting all eggs in one basket.

To avoid this concentration risk and following best practices, hedgers tend to make incremental decisions well before the expiration of the contract. By spreading out the decisions to hedge, the hedger will reduce the risk of having made a poor decision. It is also true that this behavior of averaging out the hedge decisions will not be able to achieve the lowest level possible but trying to achieve the very best is speculative and contrary to the purpose of a hedger that is trying to control the cost.

Given the level of volatility and how the market dynamics change, separating the decision to execute the hedges in increments diminishes the risk that the rate will turn out to be non-competitive.

Competitiveness

A company trying to control cost (such as debt) is making a choice of hedging now to avoid prices increasing or not hedging to avoid the possibility that the price hedged may turn out to be a poor one. Since the hedger is not able to know for a fact what debt prices will do in the future or what prices will be at the time of expiration, the decision to hedge to protect cost versus the cost of engaging in

non-competitive hedges is inevitable. It is a delicate balance. To address this, companies structure hedging plans that make decisions to hedge in a measured way by either limiting the amount to hedge through time, limiting the total amount to hedge and closely monitoring both the upside and the downside risk.

Avista's interest rate hedging plan has numerous elements to manage the risk of interest rates increasing and decreasing from the current levels. The unfavorable comparison of the hedged price versus the unhedged price that we have experienced is not a result of failures in decision making, but rather is the result of a falling interest rate market that is a reflection of the government's interest rate policy.

In the context of the Evaluation, Concentric observes that the unfavorable comparison between the cost of debt unhedged versus the cost of debt hedged is not a function of deficiencies in the Plan, but it is a result of unpredictable monetary policy changes.

This is consistent with an earlier finding in 2017 in the context of the Washington Utilities and Transportation Commission ("WUTC") when the hedging programs of the gas utilities operating in the state of Washington were being reviewed in the context of more than $1 billion in unfavorable hedge settlements over the previous decade for the four gas utilities in the state. [8] RiskCentrix (a consultancy) reviewed the program at the time and concluded the following:

> *"…The reason for hedging is to reduce customer pain in severe upside markets and thereby create marginal utility for customers. Customers derive greater value from upside cost mitigation than they forego from hedge losses because upside cost outcomes tend to require them to make painful adjustments relative to prior expectations, but hedge losses, while still painful, occur in declining markets when the net costs are more favorable than prior expectations, thus moderating the pain. This statement is not meant to understate the real value foregone by high-cost hedges; it is meant to put a proper perspective on the relative pain associated with whatever unfavorable outcomes are realized. Unless hedges are always made at market troughs there will always be some degree of unfavorable outcomes relative to retrospective opportunities…"*[9]

8 Docket UG-132019. Washington Utilities and Transportation Commission. March 13, 2017.

9 Gettings, Michael. (2014). Washington State Attorney General's Office, Public Counsel. (2014). Comments of Michael A. Getting

SECTION 5:

HEDGING OBJECTIVES

The objective of the Plan is to maintain a competitive cost of debt while reducing cash flow volatility and the associated retail rate given future interest rate variability. The Company typically pays interest rates on long-term debt that are derived by hedging the benchmark rate. The Plan's goal to reduce the impact of uncertainty inherent in future interest benchmark rates through active management and uses of interest rate derivative ("IRD") transactions. The Company has designed and executes the Plan but does not benefit any gains nor does it profit from the cost of running the program. All costs and benefits are transferred to the customers.

SECTION 6:

HEDGING APPROACH

Avista's Interest Rate Hedging Plan was implemented in 2011-2012 and modeled after the Company's natural gas and electricity hedging programs. This plan utilizes a combination of strategies to reduce the impacts of changing interest rates in a volatile interest rate environment. A portion of hedges will be focused on the concentration risk of pricing debt issuances by utilizing Dynamic Hedge Windows, another portion of hedges will target reducing risk in a volatile interest rate environment by utilizing Risk Responsive Hedging methods.

The approach is documented in the Interest Rate Risk Management Plan[10] and provides guidelines regarding the use, procurement and execution of IRDs and outlines strategies or combinations of strategies to reduce the impacts of changing interest rates in a volatile interest rate environment. While the Evaluation included a detailed review and validation of the information contained in the Plan and its execution, a summary of the approach in its current form of the writing of this report is follows:

- **A combination of programmatic and risk-sensitive approach**. The execution of the Plan is structured around two basic protocols that accumulate hedges on a scheduled basis (i.e. programmatic) and another protocol that accumulates hedges based on the observed risk in the market (i.e. risk sensitive). The programmatic approach is called the Dynamic Hedge Window, and the risk-based approach is the Risk Responsive Hedging method. The Plan also allows discretion for decision making as market conditions warrant under a controlled and documented manner.

- **Dynamic Hedge Window**. A portion of the hedges are geared to mitigate the concentration risk of pricing debt issuances. The Dynamic hedge window procures a targeted amount (currently set at 40%) of the interest rate needs in a programmatic way divided into four different windows of opportunity. Instead of paying the interest rate at the date of issuance, the Plan dollar-cost-averages 40% of financing costs in advance of the issuance date.

- **Risk Responsive Hedging**. The risk-responsive element of the Plan targets up to a maximum incremental hedge ratio of 60% using an industry-standard measure of risk commonly known as Value at Risk or ("VaR")[11] thresholds of the applicable interest rate risk. If the risk-responsive tolerance is not reached, no incremental hedges take place and the unhedged financing costs are fixed on the day of debt issuance.

10 Avista. Version January 2019.

11 Value at Risk ("VaR") is a statistical measure that quantifies the level of financial risk over a specific time frame and a confidence level. It is used to measure and control the level of risk control and the level of risk exposure. It determines the potential for loss and the probability of occurrence for the defined loss. One measures VaR by assessing the amount of potential loss, the probability of occurrence for the amount of loss, and the timeframe.

- **Senior Oversight**. The Plan is supervised in its design, execution and evaluation by a Risk Management Committee that is responsible for periodic review of this Plan to ensure that the principles continue to provide adequate guidance, protection and direction for managing interest rate risks.

This Report is written with a non-technical audience in mind and therefore tries to address the Evaluation and the recommendations from a non-technical approach. Below is a broader description of each one of these approaches.

Dynamic Hedge Window

The Dynamic Hedge Window goes into effect three years prior to the time of debt issuance and is broken down into segments (called Windows). Within each Window, the Dynamic Hedge Protocol establishes an Upper Control Limit ("UCL") and a Lower Control Limit ("LCL") that represent confidence thresholds of a probabilistic estimate of interest rate swap rates relative to a "Set Rate," which is equal to the prior day's closing interest rate. As time evolves from the beginning of the Window, the UCL and the LCL are adjusted (i.e. "tightened") if the current interest rate moves above the Set Rate, the LCL will move up proportionally. If the current interest moves below the Set Rate, the UCL will move down proportionally. If the current rate goes above the UCL or below the LCL a hedge trigger is indicated. If the UCL or LCL do not trigger a transaction during the window period a transaction will be triggered at the end of the window period.

A programmatic approach such as the Dynamic Hedge Window places hedges through a formulaic process and may sometimes create undesirable risk of placing hedges (or too many hedges) that turn out to be non-competitive if market prices decrease. To control this, Avista has set a maximum level of hedges to accumulate under this protocol, and this limit is evaluated on a yearly basis to ensure that there is effective protection against the price of debt increasing, but that the potential risk that the programmatic risk may be non-competitive. Risk parameters are reviewed once a year and this includes an assessment of both upside and downside risks.

Risk Responsive Hedging

The risk-responsive protocol goes into effect two years prior to the debt issuance and only triggers a hedge if the risk exceeds a specified risk threshold. The intent is for the trigger to be a response to very high interest rate volatility and serves to mitigate excess losses where risk is extreme. The protocol is not intended to be triggered under normal market conditions. Executed hedge volumes under the Plan should not exceed the maximum incremental hedge ratio of 60%. The thresholds for this element of the Plan are reviewed on a yearly basis and are also a function of risk measurement and implementation of Value at Risk metrics.

Complementarity of Protocols

These two protocols are complementary to each other and the total amount of risk hedged under one protocol will influence the other. For instance, if the Risk Responsive protocol drives hedges up to 60% of the total needs without activity in the Dynamic Hedge Window protocol, then there would be no room to hedge incrementally in the Dynamic Hedge Window protocol. Consequently, the Risk Responsive protocol that is triggered by encroaching on the threshold will be informed by any hedges triggered by the Dynamic Hedge Window. If the Dynamic Hedge Window protocol triggers 40% of the hedges needed for a particular issuance, then the risk that the Risk Responsive protocol will trigger hedges for the remaining 60% only if the risk prior to the date of issuance is significant. The risk-responsive element of the Plan therefore limits the risk of hedging at a higher price, while the dynamic hedge portion of the Plan allows us to create a certain degree of certainty of what the debt rate will be.

Senior Oversight

Avista has established several levels of oversight for the design, execution and validation of the Plan based on the following structure:

- The Finance Committee of the Board of Directors provides oversight and ensures that management has in place the proper strategies, budgets, forecasts, and financial plans and programs to enable achievement of objectives.
- The Risk Management Committee ("RMC") approves the Interest Rate Risk Mitigation Plan and review updates to this Plan, review periodic reports on interest rate risk and hedges from Treasury Management.
- Treasury Management (CFO, Treasurer and the Director of Finance) implement the Plan and provide ongoing oversight of the interest rate strategy to ensure compliance with the Plan. Additionally, it negotiates, directs, organizes, executes, amends, interprets and administers any contracts or agreement necessary to hedge interest rate risk.
- Risk and Credit Management is in charge of counterparty risk and market rate validation. It determines the creditworthiness of the counterparties, analyzes the performance of the hedges (commonly known as mark-to-market or "MtM") and manages collateral requirements with the counterparties.

With this control structure in place, reporting on the Plan is done on a weekly basis by reviewing position reports regarding associated derivative transactions to the RMC and Risk and Credit Management.

SECTION 7:

BEST PRACTICES

The majority of utilities do not actively manage interest rate exposure through a risk management program, but instead fix the financing costs of new debt issuances on the date of the debt issuance. The reason why most regulated utilities do not hedge interest rates is influenced by utility concerns that engaging in risk management for a cost that is already explicitly recovered through rates, may subject it to increased risk of regulatory disallowance. In other words, most utilities don't hedge interest rates because they are typically guaranteed recovery of the interest rate cost regardless of the interest rate paid.

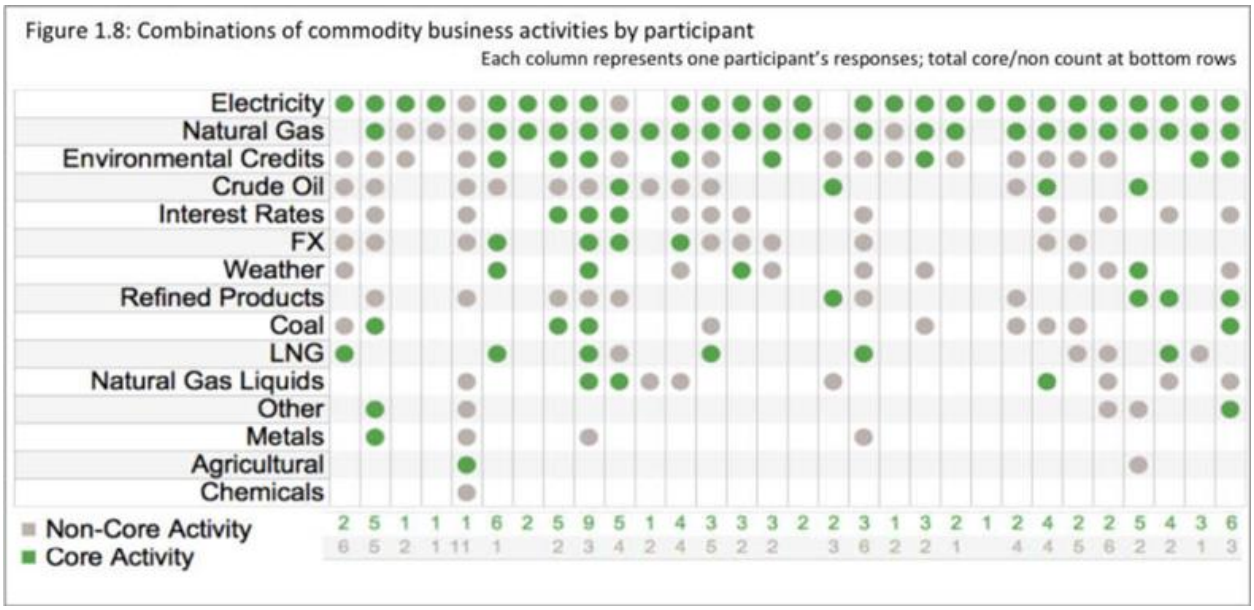
The decision on the part of a regulated utility to hedge or not to hedge regulated activities is often dictated by its regulatory cost recovery process and the risk tolerance toward rate variability.[12] Utilities' hedging decisions are motivated at least in part by the cost recovery risk of unmanaged volatility borne by utility shareholders. In its 2019 Peer Survey of Energy Industry Practices in Risk Management, the Committee of Chief Risk Officers ("CCRO"), an independent non-profit corporation of member companies dedicated to promoting best practices for risk management in the energy industry, found that 10 of 14 regulated utilities do manage the risk associated with regulated activities,[13] implying that the remaining 4 of 14 respondents (roughly 30%) transfer the risk of regulated activities directly to customers through rates.

Though the same survey found that interest rate risk management was generally not considered to be a core risk management activity, it noted that participants often still considered interest rate risk in their management of overall risk exposure. It is interesting to note that as shown in Figure 5, interest rate exposure was considered to be a core activity for respondents that also listed natural gas risk management as a core activity.

12 Committee of Chief Risk Officers, Guidelines on Establishing a Risk Management Framework and Policy (Feb. 2005) Section 3.1 [paraphrased]. Committee of Chief Risk Officers, Guidelines on Establishing a Risk Management Framework and Policy (Feb. 2005) Section 3.1 [paraphrased].

13 Committee of Chief Risk Officers, 2019 Peer Survey of Energy Industry Practices in Risk Management, Detailed Study Report April 2019, 2nd Edition

Figure 5: Core and Non-Core Risk Activities from Energy Industry Respondents



Source: Committee of Chief Risk Officers, 2019 Peer Survey of Energy Industry Practices in Risk Management, Detailed Study Report April 2019, 2nd Edition

The Prudency Standard

Utilities are generally allowed recovery of prudent costs and will earn a return on prudent investment. According to the National Regulatory Research Institute ("NRRI") 1985 paper, the Prudent Investment Test, the concept of prudent investment under public utility law is a standard for regulatory oversight that attempts to serve as a legal basis for judging whether utilities meet their public interest obligations.[14] It's application by state regulatory commissions suggests that there are four primary guidelines for application of the test: 1) there should be a presumption of prudence; 2) to be prudent, a utility decision must have been reasonable under the circumstances that were known or could have been known at the time the decision was made; 3) proscription against the use of hindsight in determining prudence; and 4) assessment of prudence is made through a retrospective factual inquiry, i.e., the evidence must relate to the time the decision was made.[15]

The NRRI paper goes on to state that "the concept of prudence provides commissions with a principle that does not necessarily require an "all or nothing" decision in favor of one side, but can allow some sharing of the risks between investors and ratepayers. The prudent investment test is a tool that regulators are using to provide an answer to the question of who should bear which risks and associated costs."[16] In this context, prudence can be thought of as a construct that is often negotiated between the regulatory commission and the utility to arrive at a reasonable and fair allocation of risk.

14 Burns, Poling, Whinihan and Kelly, The National Regulatory Research Institute, The Prudent Investment Test in the 1980s (April 1985) at iv

15 Ibid.

16 Id., at vi.

In Oregon, utilities have a duty to furnish adequate and safe service at 'reasonable' rates. Specifically ORS 757.020 states, "Every public utility is required to furnish adequate and safe service, equipment and facilities, and the charges made by any public utility for any service rendered or to be rendered in connection therewith shall be reasonable and just, and every unjust or unreasonable charge for such service is prohibited." In this case, what constitutes reasonableness is agreed upon by the utility and the regulator which occurred with the regulatory approval of Avista's interest rate hedging plan.

At a 2010 NARUC meeting, the topic of prudence standards for utility hedging was examined. In that meeting the presenters posited, "…*[t]o offer a real chance of mutual acceptance, a regulatory compact would need to preserve the regulator's right to scrutinize the prudence of a utility's hedging decisions, yet it would also establish clear hold-harmless standards that could be relied on by the utility*…"[17] It also found that "risk mitigation programs deployed by investor-owned utilities on behalf of customers are often weaker than they could be, and the reason is substantially tied to the regulatory interface. Investor-owned utilities ("IOUs") fear prudence findings, and they also shy away from complicating regulatory relationships with complex proposals to improve risk mitigation. So typically, IOUs hedge customer exposures in the simplest way, minimizing market-responsive decisions because hedge decisions are subject to retrospective scrutiny."[18]

It is in this context that we consider Avista's interest rate hedging plan. Avista is somewhat unique in its decision to hedge interest rates for the purpose of protecting its customers from financing cost increases. It is true that in periods of low interest rates and low volatility, hedged rates may be higher than what can be obtained in the market, but this is the trade-off for robust protection against interest rate increases. To reduce this downside risk would necessarily weaken the upside protection against the risk of interest rate increases. This could be enacted through stop loss features of the Plan, where hedging would stop entirely when prices, hedge losses, and/or volatility reached certain low thresholds, but ultimately this type of feature would result in less hedging in the extreme low-cost environment, which would weaken the protection against interest rate increases when rates do rise.

Sources for Best Practices

Concentric has consulted a framework of industry publications and resources to develop a standardized set of principles and reasonable practices that collectively form a basis to assess best practices across the spectrum of elements of Avista's interest rate hedging plan. In our evaluation of best practices, we consider how Avista's interest rate hedging plan compares to best practices and whether there is a better approach to mitigate interest rate risk.

Below, we list the industry resources which define best practices for evaluating interest hedging functions. It is important to note, that in determining best practices, it is necessary to reflect Avista's structure, culture and corporate governance and adapt practices to reflect best practices for Avista.

17 Michael Getting, Risk Centrix, LLC, Clarity in a World of Uncertainty, Prudence Standards for Utility Hedging (NARUC Winter Committee Meetings) (Feb. 2010)

18 Ibid.

- **Committee of Chief Risk Officers** - Founded in 2002, the CCRO is an independent nonprofit corporation of member companies dedicated to promoting best practices for risk management in the energy industry. The CCRO has produced a series of documents starting with its six-chapter volume addressing the merchant energy business risks, commercial business risks, and enterprise risk management for utilities.
- **Ad-hoc reports from Credit Rating Agencies** - The Credit Rating Agencies incorporate risk management parameters in their routine rating process and from time to time provide documents that describe the methodology that they use to evaluate the companies' creditworthiness. Those documents tend to concentrate on how the risk management practices affect (positively or negatively) the creditworthiness of the company.
- **Extrapolated Guidelines from the Bank of International Settlements** - The Bank of International Settlements provides central banks guidance as they pursue financial stability. Although the Bank's guidance focuses on financial entities (such as counter-parties), its writings are also a source of some of the principles and practices that companies use to evaluate improvements to their risk-management profile.
- **Guidelines from Professional Trade Organizations** - Some of the professional trade organizations (such as the Professional Risk Management International Association, "PRMIA") are starting to provide certain guidelines.
- **Board of Governors of the Federal Reserve** - The Fed published a "Trading and Capital Markets Activities Manual" that provides a consensus perspective on issues such as liquidity risk and the nature of trading activities.
- **Committee of Sponsoring Organizations of the Treadway Commission (COSO)** - Although less applicable to the Energy industry, COSO takes an Enterprise Risk Management ("ERM") approach as updated in the 2017 Enterprise Risk Management report. COSO provides thought leadership through the development of comprehensive frameworks and guidance on enterprise risk management, internal control and fraud deterrence designed to improve organizational performance and governance and to reduce the extent of fraud in organizations.
- **Avista's Policies and Procedures** - The Policies and Procedures within Avista represent aspirational guidelines to how the interest hedging process should perform, and therefore are part of the best practice for this interest hedging Evaluation.
- **Reports and presentations by other Risk Management Experts** - Risk management experts in the energy utility sector provide a corroborating perspective for best practices assessments.

- **Whitepapers and Presentations by Regulatory Research Labs** – Regulatory associations often review risk management and the need for hedging in the utility sector. Associations like NARUC and NRRI provide valuable insight into the regulatory perspective of utility hedging practices.
- **Regulatory Orders and Decisions** – Regulatory commissions often must decide cases on the reasonableness of hedging plans, whether hedge transactions were prudent, or whether utilities should hedge or discontinue hedging. Each of these cases provide important insights into the regulatory perspective of hedging, and of prudence, as well as identifying the pitfalls of certain types of hedging protocols.
- **Articles in Trade Journals on Risk Management Trends and Utility Hedging Practices** – provide important perspectives of utility hedging trends and practices.

While all of these sources are commonly referred to as best practices, none of these should be taken as an engineering metric for comparison because they need to be adjusted to the busines model, regulatory framework, culture and market dynamics of the particular entity being evaluated or compared. A synthesis of the above best practices that addresses the identified pitfalls, ensures adequate supervision and oversight by both the utility and the regulator, and provides enhanced protection against increases in financing costs, while striving to minimize costs of the hedging program drives our best practices evaluation. For the purpose of the Evaluation, Concentric started with the sources of best practices for the industry and adjusted them to fit Avista's business model and the purpose of the Evaluation. In the following section we provide a summary of the most meaningful best practices appropriate for the assignment.

Summary of Best Practices

For the case of Avista, we have synthesized our expertise and the best practices we have reviewed to arrive at a framework for assessing risk management practices in the energy sector. That framework is comprised of the following eight key areas: Governance; Oversight; Segregation of Duties; Established Processes and Controls; Risk Metrics; Sensitivity Analysis; Credit Analysis, Management and Reporting; and Reporting and Disclosure.

- **Governance**. Governance follows a top-down approach whereby senior management discusses policies with respect to risk assessment and risk management, followed by the development of strategic policy development and oversight by senior management-level risk oversight committee.
- **Oversight**. The oversight function follows a strategic, tactical, and operational corporate hierarchy.

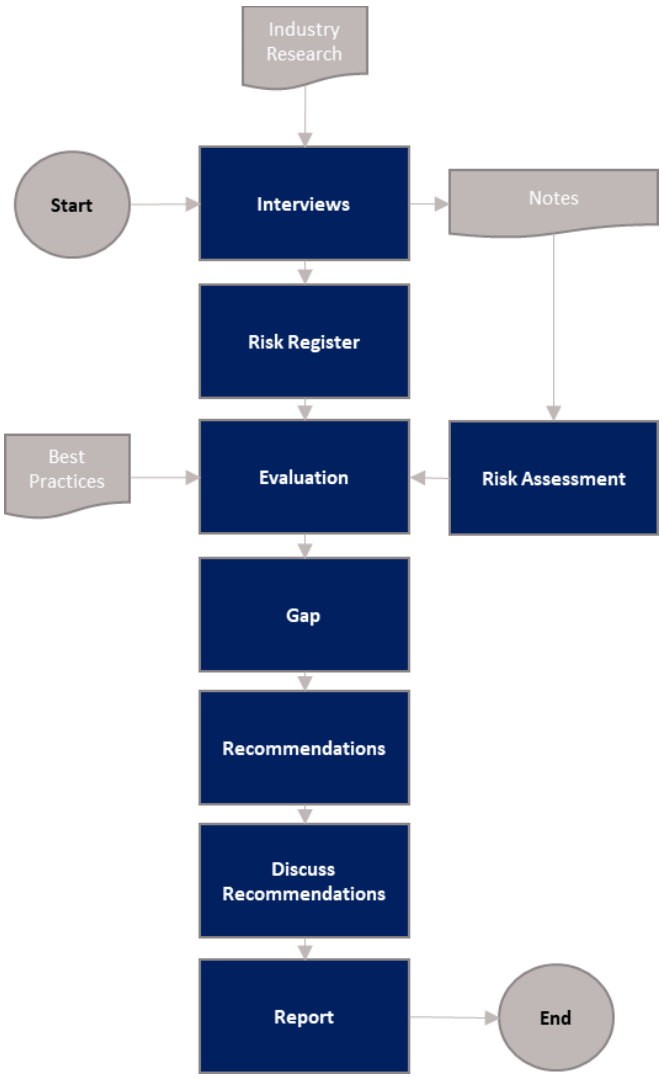
- **Segregation of Duties**. Typically known as the separation of front-middle-back office, it ensures independence of functional execution activities from its oversight, reporting and settlement roles
- **Established Processes and Controls**. Clear and concise directives for processes. Not meant to be prescriptive, but rather to serve as high-level guidelines.
- **Risk Metrics.** Metrics to value and measure the risk in a consistent, theoretically grounded, and subject to replication and audit.
- **Sensitivity Analysis.** Sensitivity analysis, scenario analysis and stress-testing conducted to assess appropriateness of metrics and inform management.
- **Credit Analysis, Management and Reporting.** Practices and procedures to assess, monitor, report and maintain credit risk exposure measurement and management.
- **Reporting and Disclosure.** Processes and checks to ensure that information presented to senior management and regulators is accurate, consistent and has a way to audit its accurateness.

SECTION 8:

METHOD FOR EVALUATION

Concentric has a well-developed process we use to review or evaluate risk management programs, and we have adapted such methodology to fit this assignment. It is summarized in Figure 6 and further described below.

Figure 6: Approach for Evaluation



Source: Concentric

Interviews

Concentric gathered information and reviewed documents to understand the Plan by interviewing several individuals with different perspectives as to how the Plan is structured, its execution, performance, and implementation. Figure 7 shows a summary of the topics discussed.

Figure 7: Context for Interviews

:a	Discussion Points
Context	• Future challenges of the Plan and of cost to serve the load • Perspective on measurement of risk created/mitigated by the Plan • Upside/downside risk relevance • Perspective on risk and tolerance • Ability/desire to enter and exit hedges • Could changing/terminating the Plan affect hedging activities elsewhere? • What is the cost/benefit/risk of terminating the program? • What has the Commission and/or Customer approved? and has formally or informally approved? • Desirable results from Plan • Reputation impact • Cross-subsidiary transactions and integration • Relationship with Commission and main interveners • Perspective on how other regulated utilities manage fiduciary concerns on behalf of Customers • Approach to managing fiduciary concerns on behalf of the Customers • Perspective on how Customers and Commission's view the Plan • Overall strategic objectives and concerns
Design and Plan	• What are the guiding principles that the Model is incorporating? • How is risk and tolerance being incorporated? • What are the limitations in modeling? • What are the resources (technology and people) available to design and execute the Plan? • Allocation of hedge costs across states and Customers • Metrics and performance goals • Ability/desire to soften the monthly impact by some kind of a reserve • How does the Plan learn from ongoing performance? • Alternative strategies considered • Perspective on the hedging of interest rate and other elements of the cost to serve • How important is cost of debt in the entire cost of service? • Roles and responsibilities surrounding the Plan
Monitoring	• KPIs and KRIs associated with the execution of the Plan • How do you know the Plan and the model supporting it is doing what it is supposed to be doing? • Allowable/tolerable deviations in performance of Plan • Impact of load variations to performance and cost of Plan • Consequences of changing collateral of counterparts providing hedges. • Evolution of regulatory oversight
Cost Recovery	• Do customers have a say in participation of the Plan? • Perspective on current and future cost recovery dynamics • Communications protocols inside Avista, with the Customer and with the Commission

Source: Concentric

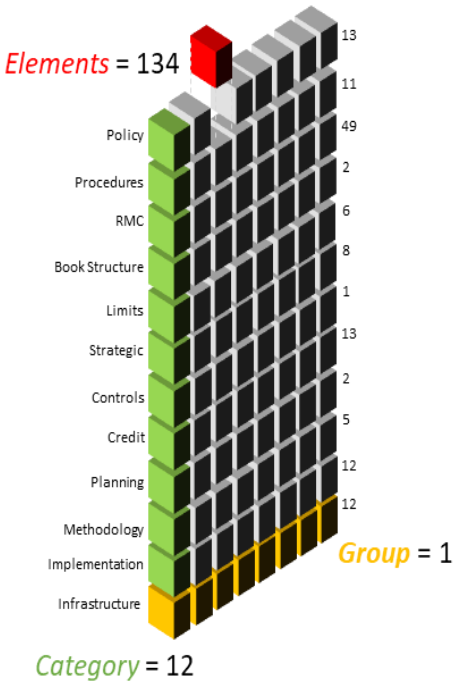
Following is a list of the individuals that were interviewed for this Evaluation and the primary focus of the interview. The interviews were conducted over video conferences and in general they lasted 1.5 hours each. Some of the individuals were interviewed more than once, contingent on the level of detail of the conversation.

- **Jason Lang, Director of Finance, Assistant Treasurer**. Interview focused on gathering information on the guiding principles and context behind the Plan.
- **Karrie Wilson, Treasury Manager**. Day-to-day implementation of the Plan.
- **Mark Thies, Executive Vice President, Treasurer and Chief Financial Officer**. Context of how the Plan was originally structured, current performance and reporting.
- **Megan Thilo, Manager of Treasury**. Oversight of the inputs and outputs of the model used to implement the Plan. Reporting on performance and oversight.
- **Pat Ehrbar, Director of Regulatory Affairs**. Regulatory aspects of the Plan and historical filings.
- **Ryan Krasselt, Vice President, Controller and Principal Accounting Officer**. Information on the guiding principles and context behind the interest rate hedging program.
- **Todd Bryan, Manager of Resource Optimization**. Implementation of the hedging strategy and the Excel model used to execute it.

Parameters for the Evaluation

The categories identified for Best Practices as listed above were expanded into each individual risk element for a total of 134 unique risk elements and 9 interviews of Avista's staff formed the basis of our analysis (Figure 8). The evaluation itself was implemented through what is commonly called a Risk Register that has been filed with the Company as a confidential document. A sample view of the Risk Registered is offered in Figure 910. For each element of applicable best practices, we have provided a "capability" score from 1 to 5, with 5 indicating a high capability to address the risk, i.e., that the company is following best practices; and we also have identified a "risk" score from 1 to 5, with 1 indicating low risk. To the extent that the risk score exceeds the capability score, we identified a gap.

Figure 8: Evaluation Criteria



1. **Leveraged the Enterprise Risk Management Framework from COSO*** that associates risk elements to categories within different business unit groups.

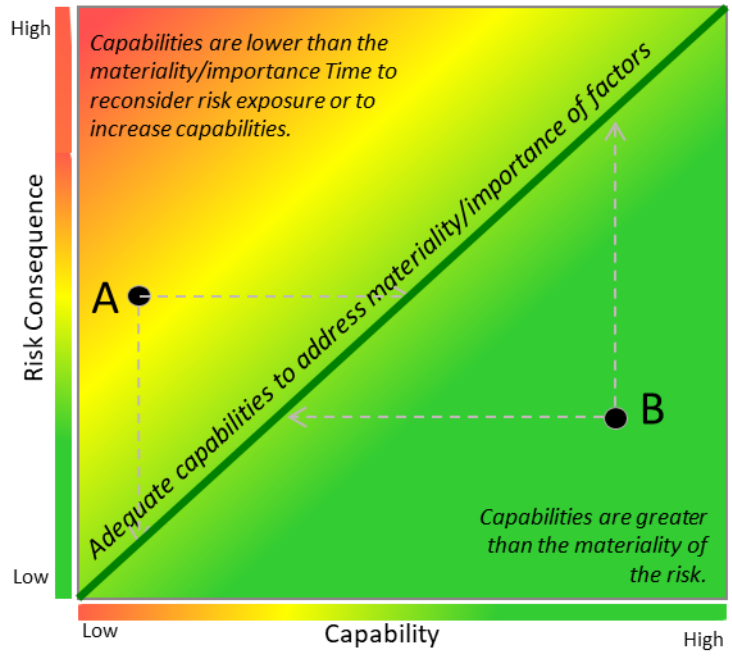
2. **Assessment of 1 Functional Group :** Interest Rate Hedging Plan

3. **12 risk Categories were identified.**

4. **Identified 134 risk elements** to evaluate the risk and the capabilities. Evaluation based on **9 Interviews** and numerous documents reviewed.

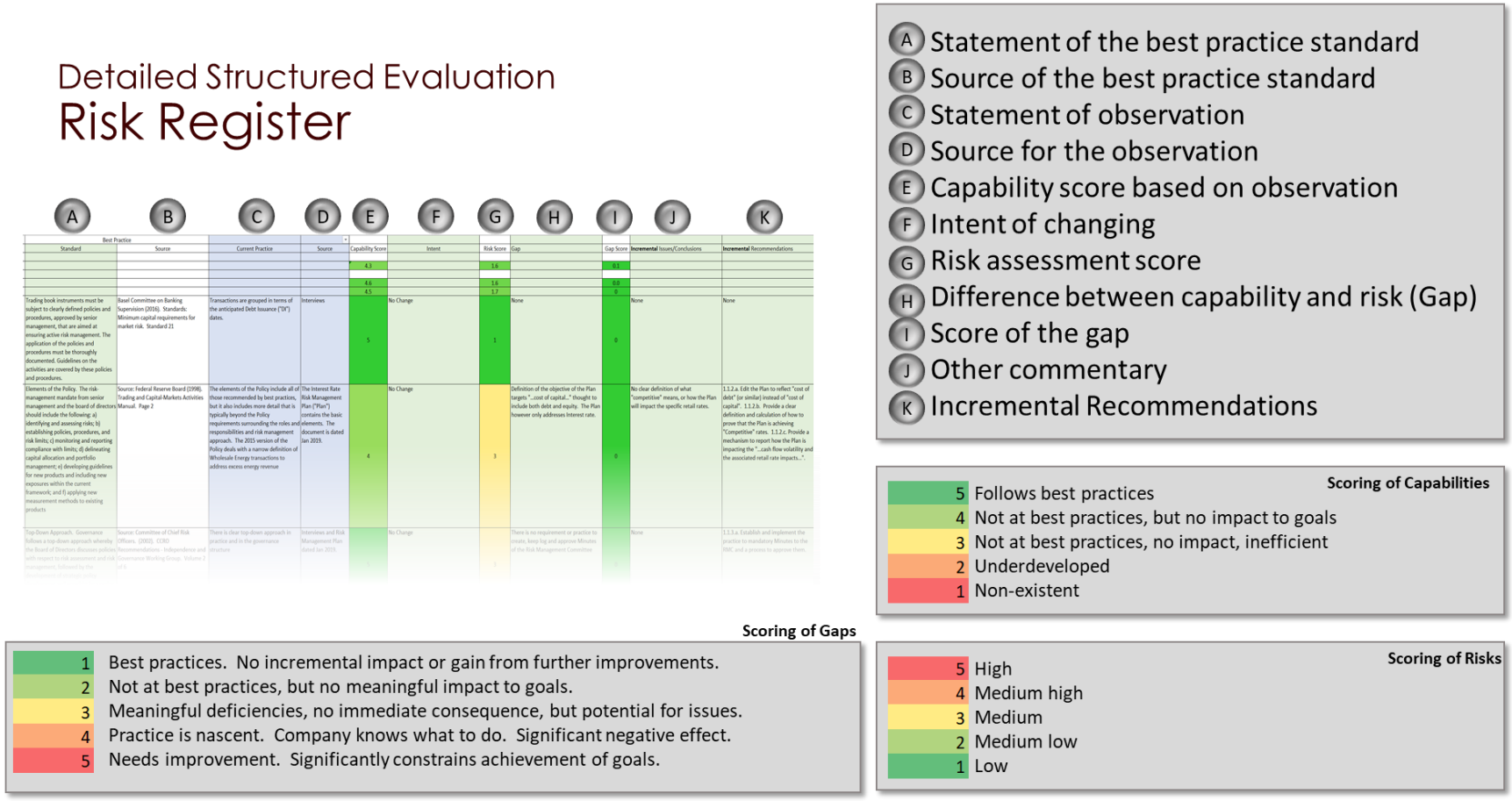
Source: Concentric
*COSO: Committee of Sponsoring Organizations of the Treadway Commission.

Figure 9: Capability/Risk and Gap Map



Source: Concentric

Figure 10: View of the Risk Register



Source: Concentric

The Risk Register is able to summarize existing capabilities and the risk exposure. For the purpose of summarizing these findings Concentric made use of a traditional Capability/Risk Gap Analysis chart that associates Risks with Capabilities (Figure 9).

The Gap Assessment diagram in the same Figure summarizes the comparison of the existing capabilities against the materiality or importance of a particular risk factor. The diagonal (green) represents an area where the capabilities are commensurate to the materiality or importance of the risk. Points above the diagonal (such as "A") represent risk factors with higher materiality or importance than what the company has the capability to address. Management has a decision to either invest and increase capabilities (move right) or reduce the materiality or importance by actions such as contracting out (move down).

Points below the diagonal (such as "B") represent capabilities that are in excess of what is needed to address the materiality or importance of the risk factor or that they reflect industry's best practice. Management requires a decision to leave this capability as is or use it as a basis to gauge the convenience of further investments to improve the practice. The coloring of the risk, capability and gap is multidimensional. The capability or the risk are evaluated as isolated variables in the horizontal or vertical access, but since the gap is the intersection of risk and capabilities, it is read as the color inside the graph.

SECTION 9:

EVALUATION AGGREGATE SCORE

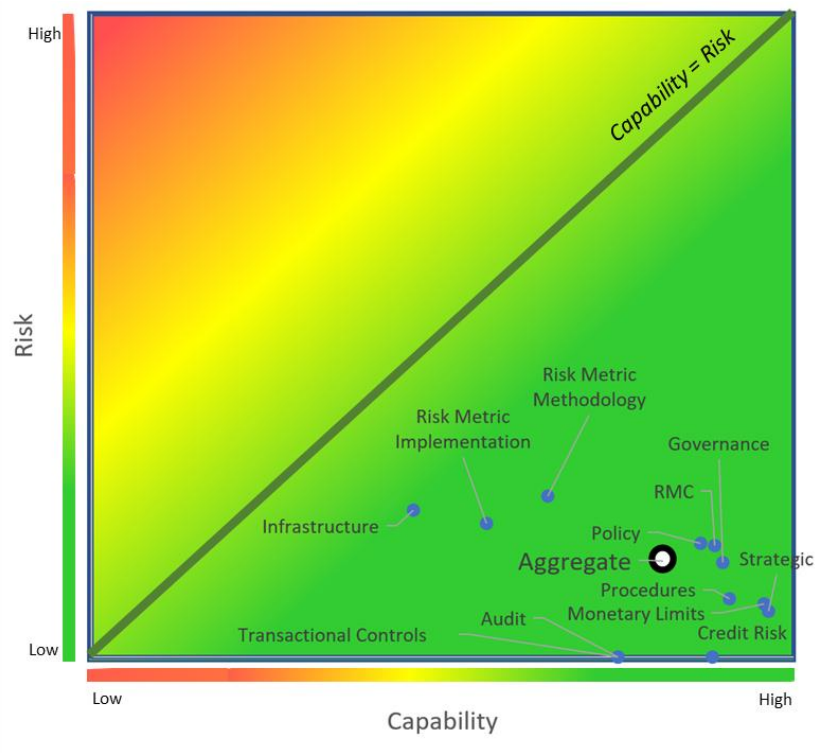
Aggregate Score

The Program as it currently stands is well-structured, executed and has the appropriate internal control structure to monitor its performance. Continuation of the Program is encouraged because there is evidence that it adds value to Avista's customers by reducing the uncertainty around the cost of debt acquired on behalf of Customers. The overall capability score was 4.3, the company is aligned with best practices and when it isn't the deficiencies do not affect the goals of the Program; the overall risk score was 1.6, which is low to medium-low risk; and the gap score was identified as 0.1 (materially non-existent). A gap of 1.0 or less indicates that the company follows best practices as adapted to the organization; there is no obvious gain from implementing further improvements; and the current practices fully support the achievement of Program goals.

Figure 11: Evaluation Summary

	Capability	Risk	Unfavorable Gap
Aggregate	**4.3**	**1.6**	**0.1**
Governance	4.6	1.6	0.1
Policy	4.5	1.7	0.0
Procedures	4.6	1.4	0.0
RMC	4.6	1.7	0.1
Monetary Limits	4.8	1.3	0.0
Strategic	4.9	1.3	0.1
Transactional Controls	4.0	1.0	0.0
Audit	4.0	1.0	0.0
Credit Risk	4.5	1.0	0.0
Risk Metric Methodology	3.6	2.0	0.2
Risk Metric Implementation	3.3	1.8	0.1
Infrastructure	2.8	1.9	1.9

Unfavorable — Favorable



Source: Concentric

At-or-Above Best Practices

Beyond the areas of improvement that will be covered in the Opinions section of this Report, there are numerous aspects of the Plan that we find to be either at the best practice threshold or exceeding it. The following represents a summary of those areas of outstanding performance:

- **"Dynamic" Hedge Window**. The dynamic nature of this protocols is quite unique and effective. It starts defining a threshold to the upside and to the downside to trigger the hedge. As the market evolves it tightens this band in a noose format so that even within this programmatic protocol the risk of interest rates increasing is considered. By tightening the lower end of the threshold, it allows for low interest rates to be locked in. Effectively, even though this is a programmatic protocol that accumulates hedges by a rule, it has an embedded risk logic within it that is quite unique and worthy of repeating elsewhere. It is a progression from the traditional dollar-cost-averaging approaches because it has a smart and dynamic decision logic within it that limits the risk of interest rates increasing or the risk of locking-in a rate too soon.
- **Model to Implement the Strategy**. The model to implement the strategy is based on Microsoft Excel ® and it is very efficient in its implementation. The model therefore runs very efficiently, and the hedging logic of the Dynamic Hedge Window and the Risk Responsive protocols are implemented in a very efficient manner. There are a few elements of this Excel model that can be improved, but the talent behind its implementation is noteworthy.
- **Senior Management Involvement and History**. The original idea of the Plan and its implementation was authored by staff that is still at Avista but has not migrated to a Senior Management role. This level of institutional memory and knowledge of the detail is quite unique in the industry and allows for more fluid and transparent oversight of the Plan.

SECTION 10:

RECOMMENDATIONS AND OPINIONS

In this section we summarize the recommendations for changes to the Plan in the form of Opinions and arguments to further clarify the opinions. In compliance with the mandate, the Opinions are organized according to the specific questions that the Commission was interested in the Evaluation producing. While we continue to push for a non-technical approach in the content of this Report, there are some aspects that are unavoidably technical. The full technical detail of the evaluation has already been presented to Avista's staff along with the evidence to support it.

Appropriateness of the Plan

Opinion 1: The interest rate risk is significant and merits hedging

Given the total amount of dollars involved in debt payment, the long-dated consequences of issuing debt and the volatility of interest rates that is commensurate to natural gas in normal conditions, having a Plan that hedges the exposure to interest rates is reasonable and encouraged.

Opinion 2: The Program as it currently stands is well structured, executed and has the appropriate internal control structure to monitor its performance

The process detailed in this Report for the Evaluation evidence finds that there are no significant gaps in any of the areas. The gaps identified were minimal and improvements to the Plan (see below) will largely increase the efficiency of the Plan, but not its character.

Opinion 3: The Objective of the Plan to reduce volatility of interest rates is appropriate

The objective of the plan is to maintain a competitive cost of debt by reducing cash flow volatility and the associated retail rate impact. While it is true that fixing the price in advance of the day when debt is issued may (and has) created the possibility that the hedges will be non-competitive, the risk for cost upside is significant. The unfavorable hedge settlements to date have been a function of the changing monetary policy of the government and not the function of a deficient Plan.

Opinion 4: The Plan provides reasonable protection for rate payers by controlling for potential price increases at a reasonable cost

The Hedging Plan was put in place to protect customers from rising interest rates associated with financing the company's significant capital plan. Financing requirements are known well in advance of debt issuances, and by progressively locking in rates in advance of the issuance, customers are protected against what may be significant rate impacts due to interest rate fluctuations. Avista management considers it its fiduciary responsibility to manage this cost on behalf of its customers to reasonable levels and the interest rate hedging program is an effective contributor to this goal.

Notwithstanding the Plan does not have significant gaps, there are areas where it can be improved. These are as follows.

Opinion 5: Enable the model to run an outlier test to avoid obvious errors in the price feed and inconsistencies in price movements

The model used to execute the strategy is an implementation in Microsoft Excel that pulls data to calculate the risk and estimate the value of the hedges based on automatic links and some data that is entered by the analyst. Given the number of transactions and the number of instruments involved in the Plan, we do not recommend investing in a more sophisticated platform to execute the Plan. But even within Microsoft Excel there are statistical tests that can be implemented to detect potential errors in the data feed or in the manual input. This entails a routine after each day the data is entered to test for the existence of an outlier at the price level and another test for an outlier at the daily return level. It also includes a test for inconsistency in the price movement of one Forward curve with respect to others.

In the Evaluation we detected at least four data entry errors in historical numbers that had no impact to the performance of the Plan, but they clearly indicate an area for improvement to automatically check for obvious outliers.

Opinion 6: Change the method to calculate volatility to a method that yields volatility estimates that are more reasonable for long-dated volatility estimation

The model used to implement the Plan uses a method called Exponential Weighted Moving Average ("EWMA") to calculate all volatility metrics. But a statistical analysis and simulation of results shows that this method overstates the value of volatility for long-dated estimations. Instead, we recommend using a method that controls for this deficiency based on a method called Generalized Autoregressive Conditional Heteroscedastic ("GARCH") model. The result is that all measures of risks for long-dated estimations will be within a more reasonable and theoretically consistent framework. The technical details as to why this is a better method is beyond the character of this Report but has already been discussed with Avista staff.

Opinion 7: Once the new method to estimate volatility is implemented, make sure that it is used throughout the model, including in the determination of tolerances, sensitivity analysis and yearly reviews of the parameters of the Plan

As a consequence of updating the core metric for volatility, the calculation of the tolerances and reporting of the risk exposures will change. Senior Management should therefore request a review and comparison of the changes affecting the risk measurement and impacting the reporting structure.

Opinion 8: The performance of the Plan should not exclusively be a comparison between the scenario of hedging or not hedging. It should be based on the reasonableness of the interest rate to support the investments and a comparison to cost of debt of peer companies

It is tempting to measure the competitiveness of rates by comparing the price hedged versus the price without hedges, but this parameter of competitiveness fails to recognize that decisions to hedge and the outcome of not hedging happen at very different points in time and it is therefore unfair. If we knew (for certain) that interest rates will be lower in the future than today, nobody would hedge. Alternatively, if we knew that interest rates will be higher in the future, then everybody would hedge completely. Unfortunately, we do not know the future and therefore competitiveness should not be exclusively measured in terms of the outcomes from hedging or not to hedging.

Instead, performance needs to be framed in the context of how the interest rate hedged supports (or not) the investment decisions for which the debt was issued; how the decisions to hedge interest rates achieved by the company compare against its peers; and by examining if the parameters driving the hedging decisions include both perspectives of the risk of interest rates increasing and decreasing. Finally, the comparison of the hedged price versus the price unhedged should be treated more as a metric of performance of the program and used to inform and test if the parameters of the program should be adjusted or improved.

Opinion 9: The Plan is structured as a prudent effort to control the cost of debt on behalf of the customers

Based on the criteria of Prudency discussed in this Report, we believe the structure, execution, control, and review of the Plan is prudent. Furthermore, there are elements of the Plan that are either at or above industry best practices as discussed earlier in the Report.

Opinion 10: The Plan provides a reasonable, prudent strategy benefiting the customers and should be continued

Interest rates are at historical lows and even though they could go to zero, it is reasonable to expect that they will rise from current levels. Over time interest rates will go up and we will likely be in the opposite position whereby the hedged price will be less than the market price. If the Company were to stop hedging in today's low interest rate environment, the customers will (likely) be negatively impacted in the future because interest rates are extremely low and are likely to rise. Given where interest rates are currently, it is possible that the Plan is more important today than when it was initiated.

SECTION 11:

ABOUT CONCENTRIC

Concentric Energy Advisors was founded in 2002 by a small group of executive-level consultants who were committed to establishing a mid-sized energy consulting firm with capabilities and a reputation unsurpassed by any firm in North America. Since its inception, Concentric has grown more than eight-fold and has significantly expanded its service offerings, while remaining focused on achieving the highest standards of consulting excellence in the energy field.

Currently, Concentric has approximately 60 employees who work out of the corporate headquarters in Marlborough, Massachusetts, or in offices in Washington, DC, Chicago, Illinois, and Calgary, Alberta, Canada. Our team specializes in management consulting and financial advisory services with a focus on the North American energy industry. Our energy industry experts have held positions with utility companies, regulatory agencies, integrated energy companies, regional transmission organizations, retail marketing companies, and utility management consulting firms. Many members of our team have been working together for more than 30 years.

The team assigned to this Evaluation is listed below:

- **Dan Dane, Senior Vice President. Officer in charge for the Evaluation**. More than 20 years of experience in the energy and financial services industries providing advisory services to power companies, natural gas pipelines, and local gas distribution companies in the areas of regulation and ratemaking, litigation support, generating asset divestitures, valuation, financial statement evaluations and analysis, and the examination of financial reporting systems and controls. He also has provided expert testimony on regulated ratemaking matters for investor- and provincially owned utilities, including revenue requirements, the cost of capital, capital structure, lead-lag studies/cash working capital, and rate base development.

  Mr. Dane is a certified public accountant and is a licensed securities professional (NASD Series 7, 28, 63, 79, and 99). In addition to his consulting work, he serves as the Financial and Operations Principal of CE Capital Advisors, a FINRA-Member firm and a subsidiary of Concentric Energy Advisors. CE Capital is a securities firm that provides services relating to corporate mergers and acquisitions, the valuation of securities, and capital market support. In his role at CE Capital, Mr. Dane has developed fairness opinions to Boards of Directors of companies entering into asset purchases and sales. He has led valuation modeling on multiple energy-related valuation assignments using the Income Approach, Cost Approach, and Sales Comparison Approach.

- **Ruben Moreno, Assistant Vice President and Project Manager for the Evaluation**. is a recognized expert in risk management in the U.S and Canada in both administrative and civil proceedings. He has been helping large consumers or producers of energy optimize expenditures, revenues, and investments for the past 22 years. He is a specialist in risk management, quantitative methods, and statistical analysis. He has advised on the exposures of a US$10 billion portfolio and has broad experience in management consulting and teaching. His experience includes a broad range of interests (oil, natural gas, coal, wind, solar and hydro), differing generating technologies and extensive transactional experience supporting clients in the design and implementation of energy procurement practices to identify how much to purchase, when and why.
- **Julie Lieberman, Senior Project Manager and Best Practices Expert for the Evaluation**. Ms. Lieberman is a financial and economic consultant with more than 25 years of experience in the energy industry. Her broad base of expertise includes financial and economic consulting in the energy sector, utility ratemaking, regulatory policy and compliance, due diligence, mergers and acquisitions, litigation support and analysis, risk management, asset valuation and modeling, nuclear decommissioning, wholesale and retail energy trading and operations, energy procurement and scheduling, and utility hedging strategies.
- Ms. Lieberman is a testifying expert on utility cost of capital and has performed a variety of economic analyses, extensive regulatory research, and developed testimony and research reports in both regulatory and non-regulatory proceedings. Most recently She has studied the importance of Environmental, Social, and Governance (ESG) practices to utility investors and has assisted in the development of a risk-based approach to ESG strategic planning for Concentric clients. Additionally, she has co-authored articles published in Public Utilities Fortnightly on utility hedging practices and utility cost of capital and is a regular contributor to the Concentric Connection.

SECTION 12:

QUESTIONS AND ANSWERS

On November 30, Avista coordinated a conference call with staff from the Commission and Concentric to present the Report and summarize the evaluation of the Plan. The following is a summary of the list of questions and answers as presented by Concentric, including answers that were submitted after the conference call. Whenever possible, and in the spirit of this being a non-technical Report, the answers continue with the same style of prose. Whenever the answer requires a more technical description, these are offered in the form of footnotes. Finally, the questions are numbers to facilitate cross-referencing.

To facilitate the presentation of the concepts in the answers, let us make the following overarching remarks:

1. **Essential Elements of a Hedging Strategy**. A hedging program is designed as a tool to manage risk to an acceptable level, and consequently consider three basic elements: First, it has mechanisms to become aware of risk; second, it measures the impact of risks on meaningful objectives, and third, it makes decisions as a response to the risk exposure and a tolerance level. In alignment with best practices, if the purpose of the Plan is hedging, it needs to be centered around risk. If the strategy does not identify, measure, or make decisions based on risk, then it is not a hedging strategy consideration.
2. **Perspective Vs. Risks**. Some of the questions refer to a perspective such as what monetary policy may do in the future or alternative approaches to the hedging strategy that are normally used for investment purposes. For an economist, it is very tempting to go into a discussion surrounding these topics, but discussion or an agreement of a perspective is beyond the practice of risk management. Risk management by its own virtue is a discipline where a perspective does not exist. Risk management is a discipline that concerns itself with the uncertainty of perspectives. This does not mean that a hedging strategy dismisses market expectation. The key difference is that risk drives decisions, not the perspectives.

Q1: Is hedging interest rates equivalent to betting against what the Federal Reserve will do?

A1: No, Avista's Plan is designed to hedge against the uncertainty of long-term interest rates which in turn is a function of current monetary policy, uncertainty of how monetary policy will evolve in the future, and by the international demand for U.S. government debt. The Plan therefore does not take a perspective to make decisions to hedge or not to hedge, it is making decisions based on the embedded uncertainty in long-term interest rates.

It is not the purpose of this Report to go in-depth in terms of how the Federal Reserve ("Fed") makes decisions nor to assume that the reader is an expert in monetary policy. In brief though, the Fed influences short-term interest rates to slow/spur economic activity and control inflation.[19] As the economic activity evolves, the Fed adjusts the monetary policy through its Federal Open Market Committee ("FOMC") that holds eight regularly scheduled meetings per year. In contrast, long-term interest rates are partially influenced by current monetary policy, but they are also influenced by the uncertainty of future monetary policy changes and the auction of government debt by the U.S. Treasury Department.[20]

At the risk of being repetitive, the key feature in the distinction between short and long-term interest rates is that the relationship between monetary policy and long-term interest rates is well documented and "…shows that the relationship between policy and long-term interest rates appears much looser and more variable…" than for short-term interest rates.[21] Long-term interest rates, such as those being addressed by the Plan, are not only influenced by current FOMC actions, but also by market expectations about the future direction of the monetary policy and international demand for debt.

It is also not the purpose of this Report to present, debate or agree on a particular economic perspective, for trying to do so would be a kind of apostasy. Without question, the world economy is emerging from the health pandemic with a public debt of 125% of GDP which would logically lead to an expectation of an inflation less economic recovery and therefore very low interest rates. But on the other hand, and as the Economist points out in its briefing of December 12, 2020, we could also emerge from the pandemic into an era of higher inflation as people that have been cooped-up at home may go on a spending spree that outpaces the ability of firms to restore and expand their capacity, causing prices [and interest rate] to rise.[22]

This ongoing debate between economists highlights that it is feasible to create scenarios where interest rates may stay low or they may begin to rise. Having a perspective is extremely useful for

19 Strictly speaking, the FOMC affects the interest rate at which depository institutions lend reserve balanced to other depository institutions overnight on an uncollateralized basis (known as the federal funds rate). The changes to the federal funds rates then influence overall monetary and credit conditions, aggregate demand and the entire economy. For further reading on how the FOMC specifically targets short-term interest rates visit the FOMC description at the Board of Governors of the Federal Reserve System (https://www.federalreserve.gov/aboutthefed/structure-federal-open-market-committee.htm).

20 For a more in-depth presentation of how long-term interest rates are determined visit https://www.thebalance.com/how-are-interest-rates-determined-3306110

21 Roley, Vance V and Gordon H. Sellon, Jr. (1995). Economic Review. Fourth Quarter. Federal Reserve Bank of Kansas City. Pp. 73-89.

22 The Economist (2020). After the pandemic, will inflation return? December 12, 2020 Edition. The Economist (2020). Tail Risk: A surge in inflation looks unlikely, but it is still worth keeping an eye on. December 12, 2020 Edition.

planning or investment purposes. But from the risk perspective, if a company decides to remain unhedged on the expectation that interest rates will remain low it is accepting the risk and economic consequences that interest rates may rise. Conversely, as a company hedges to avoid undesirable upside risk, it is implicitly acknowledging the risk of being wrong.

In general, a risk management plan aims to control the risk associated with an expectation (i.e., a perspective). When tied to a perspective, a risk management plan manages against the possibility that a perspective may be wrong. Both the perspective and the plan to manage the risks around the expectation are equally valuable, but not interchangeable. Rather than ignoring the risks, companies take action to insure themselves against the risk that a particular perspective may turn out to be wrong.

Q2: Insurance at what cost? Insurance in advance of possibly catastrophic events is great – but is there a point at which the cost of protection exceeds the cost of 90 percent likely outcomes of the current financial marketplace? Please discuss how the cost to ratepayers of Avista's hedging program compares to a no-hedging alternative. Includes estimates of cost comparison if possible.

A2: If the difference between the cost hedged and unhedged is systematically and unreasonably unfavorable, then the structure and execution of the Plan should be reviewed to ensure that it does not have a systemic flaw or bias. This includes ensuring that the Plan has a balanced perspective of interest rates increasing and decreasing. The potential for up/down movement should therefore be an integral part of the design of the hedging strategy. Avista's Plan shows such a balance.

According to the position reports reviewed by Concentric between 2014 and 2020, the average unfavorable hedge settlements generated by the Plan when compared to the option of not having hedged is 12%.[23] Throughout this Report we have made the case that comparing the cost hedged versus the cost unhedged is not a useful metric because hedging decisions are made in advance of the settlement and are therefore done in the context of an asymmetric risk. We have also stressed the point that hedging is done to curtail upside risk and not as a decision to avoid being wrong if interest rates drop. For the purpose of this question, let us focus exclusively on the basic comparison between the hedged and the unhedged interest rate. Is the 12% historical result a reasonable result? Is the amount paid to settle the hedges significantly higher than what should be consider "normal" or "reasonable"?

23 Avista has issued a $91,600,000 million on behalf of Oregon customers from 2014 and 2020 and the total unfavorable hedge settlements is $11,172,260 million for an unfavorable settlement of 12.197%. Results prior to 2014 are not considered in this Report because the current hedging strategy differs from the earlier years. If the results from 2009 through 2019, the average unfavorable settlement is 10.127%.

This question suggests establishing a reasonableness in terms of the 90 percent likely outcomes of the current financial marketplace. This type of analysis is conceptually similar to what Avista performs every January and we can leverage to establish a framework to gauge the reasonableness (or not) of the hedge settlements. The 90 percent likely outcome range[24] is not a static number and there are several variables that affect the result:

- Parameters to estimate the potential range. The 90 percent distribution is a function of two parameters (mean and standard deviation) and an assumption as to the distribution of interest rates (log-normal).[25]
- Volatility. Interest rates change on a daily basis and volatility estimate changes accordingly.
- Market Value. In risk, the current market is equivalent to the average because this is the value at which both buyers and sellers of interest rate Futures are willing to transact. Since this value changes on a daily basis, the estimate of the distribution of cost will also change. For the purpose of the comparison, we use daily interest rate as the best unbiased estimator of interest when the debt is issued.
- Time to Debt Issuance. The number of days until the debt is issued changes. The current hedge program establishes hedges up to three years in advance. The tradeoff is that as the time increases the uncertainty grows, but volatility tends to grow as the time to issue the debt gets near.

Based on these assumptions, the 90 percent distribution is shown in

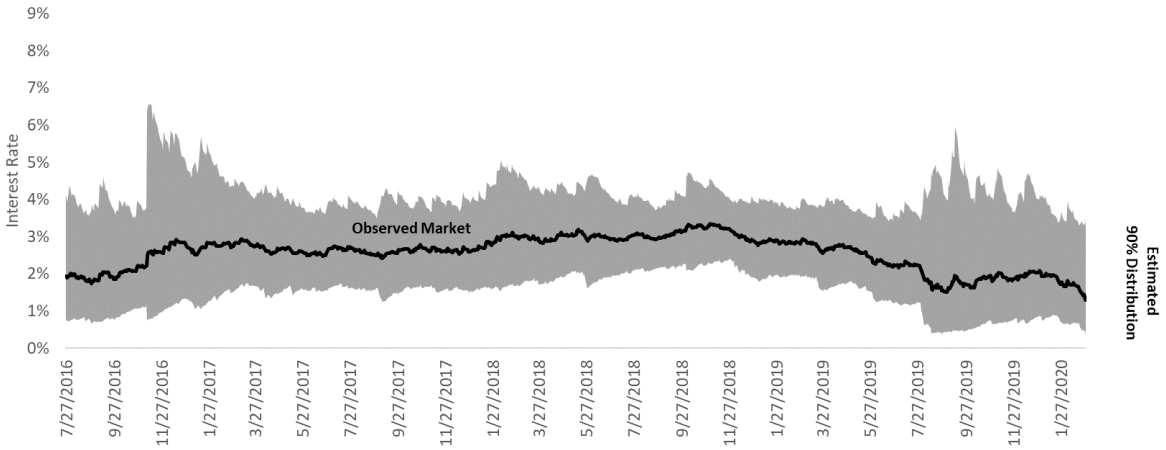
Figure 12. In alignment with the considerations identified above, the upper and lower value of the 90 percent distribution is updated on a daily basis as the interest and volatility changes. The Figure shows the asymmetric nature of the risk and how it evolves over time. For comparative purposes, we can standardize the distance between the lower end of the confidence level and the upper end and express is in terms of the percent above or below the market quote. The results are shown in Figure 13.[26]

24 The test involves a two-tailed distribution to accommodate both upside and downside risk. The 90 percent distribution should therefore be defined around the 5th and 95th percentile. But for the purpose of A2, we have selected a more restrictive definition of the distribution between the 10th and the 90th percentile (effectively an 80 percent cost distribution).

25 This can be implemented in excel by using the formula *lognorm.inv(probability, mean, Standard Deviation)*. This distribution provides an asymmetric characterization of risk whereby the absolute upside movement is greater than the downside movement.

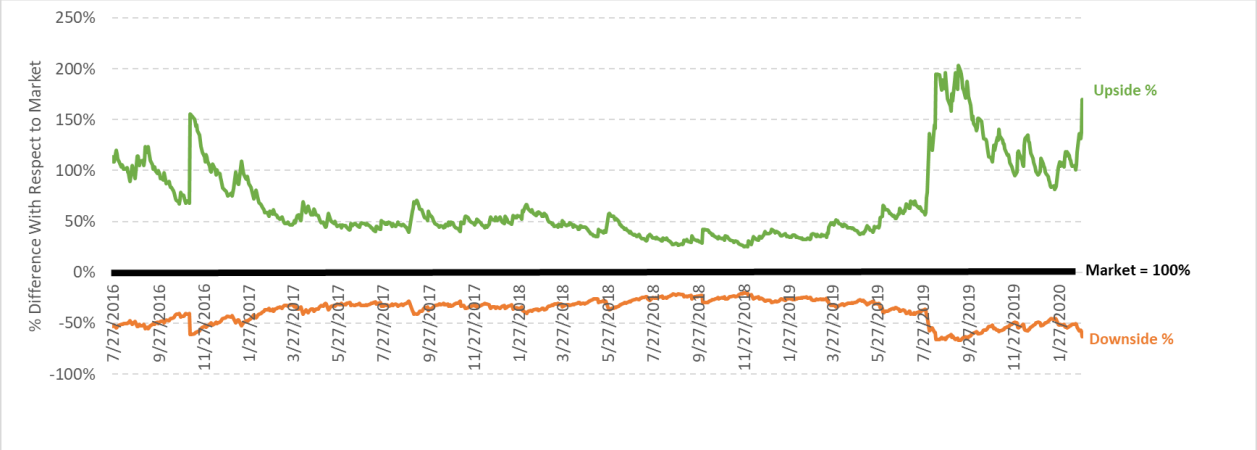
26 For instance, the last data point of the Evaluation shows an interest rate at market of 1.294%, the one-day volatility of 3.4% and an average time to debt issuance of two trading years (520 calendar days). With these assumptions in mind, the estimated upside interest is 3.495% (lognorm.inv(0.90,ln(0.01294),0.034*sqrt(520)). With an interest rate of 1.294%, 3.495% is a potential increase of 2.201% or 170% percent when compared to current interest rate (0.0201/0.01294).

Figure 12: 90 percent Estimated Interest Rate Range



Source: Concentric using data from Avista and Thompson Reuters®

Figure 13: Downside/Upside for the 90th Percentile as a Percentage of Market

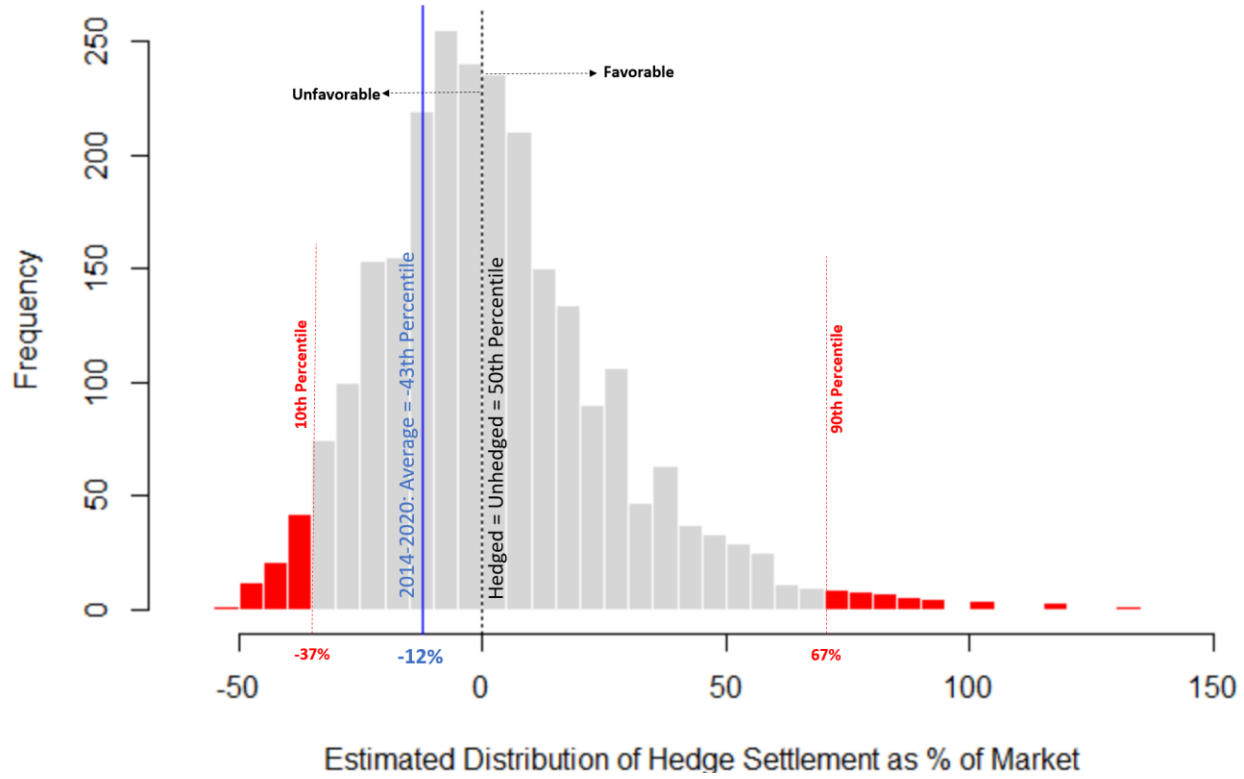


Source: Concentric using data from Avista and Thompson Reuters®

Every single dollar paid by the customer in excess of the theoretical optimum on a look-back basis is important, but the average 12% unfavorable settlements is well within the distribution of normal results. Figure 14 shows a visual comparison whereby the historical results are compared against a 90th percentile distribution.

Similarly, the estimated downside interest rate is 0.479% (lognorm.inv(0.10,ln(0.01294),0.034*sqrt(520)) or a potential downside movement of 63% with respect to current interest rates (0.00815/0.01294). The yearly average in the Table within the Figure averages similar daily calculations within each year.

Figure 14: Percentile Distribution of Hedge Settlements



Source: Concentric using data from Avista and Thompson Reuters®

Q3: Is there wisdom in the herd? If the majority of publicly traded Investor-Owned Utilities (IOU) have not engaged heavily in financial hedging against fluctuation of interest rates in bond issuance, is Avista wise to have a contrary position going in a different direction than the majority of like-situated utilities? Why should the Commission trust the soundness or scope of Avista's hedging program when no other Oregon-regulated utilities have chosen to implement a similar program?

A3: As addressed in Section 7 of the Report (Best Practices), the decision to hedge or not to hedge by most utilities is dictated by the recovery process and the risk tolerance toward rate variability. The "herd" behavior alluded to in the question is therefore not a function of the wisdom from IOUs to

exclude interest rates from their risk management programs. Instead, it is based on the fact that IOUs already have a recovery mechanism of the cost of the debt through the rate cases.

Within the context of a fiduciary role, Avista's interest rate hedging Plan is an effort to manage meaningful cost exposures on behalf of its customers. Overall, hedging practices by IOUs continues to be supported by several public service commissions.[27]

Q4a: Don't business enterprises have to break even? At some point, if an endeavor consistently loses money, does a business have a fiduciary obligation to its investors, and in the case of utilities, their ratepayers to terminate or suspend that activity? Interest rates have been consistently falling for the last decade, which would make an asymmetric hedging contract a losing endeavor. Why should it remain in place when it insulated against upward rate shocks that occurred infrequently in the last decade and likely won't in the next 2 years if the FED is to be believed?

A4a: Hedging decisions are not investment decisions and they are therefore not judged in terms of parameters of "making money". When hedging decisions are made, they are made well in advance of the day that the debt is issued, and they are therefore decisions made with uncertainty. These are decisions are made to avoid the risk of interest rates rising while at the same time being cognizant that interest rates may fall. Once the debt is issued, the risk disappears, but the value hedging provides is not a function of making money or not. The value is in the ability to reduce the uncertainty.

Just as with Avista's Plan, if market participants had knowledge that interest rates would for sure be lower in the future, nobody in the marketplace would hedge. Conversely, if market participants had certainty that interest rates would rise, then everybody would hedge. This means that when hedging decisions are made, they are made with an expected net benefit of reducing the risk on behalf of its customers. They are not decisions to "make money".

Avista is not hedging to make money on behalf of the customers, it is hedging to contain the risk of interest rates. Even though insurance and hedge products are not identical, the convenience of the hedging strategy is not measured in terms of break even.

Hedging decisions made in the past have been made with the expectation that the risk of upside was higher than the risk of downside. Fortunately, interest have continued to decrease, and customers have benefited from a partial hedge position that currently does not exceed 40% of total needs. By the same token, since interest rates today are at a historical low, the risk moving forward for upward

27 See Docket No. 20170057-EI: Analysis of IOUs' hedging practices. Florida Public Service Commission. (http://www.psc.state.fl.us/library/filings/2017/06904-2017/06904-2017.pdf)

shock is, in our opinion higher. It would be unfortunate to suspend the program in the current environment of low interest rates.

Just as highlighted in A1 above, the actions of the Federal Reserve influence short-term interest rates, whereas long-term interest rates are a function of current monetary policy, future monetary policy, and internal demand for government debt. Having an expectation that interest rate "…likely won't…" increase is a perspective, but a perspective is not a hedge and hedges should not be viewed as investments.

Q4b. What constitutes a reasonable cost for the service of mitigating the risk, and what constitutes wasteful expenditure with little or no value returned?

AQ4b. The nature of this question is the same as Q2. Please refer to A2 for its answer.

Q5. Question: What is the comparison to Delayed Draw in Private Placement? If (without timing the market) many utility CFOs perused the financial news and found that UST yields and spreads for A and B rated utility bonds were the lowest they had been in two years, and then locked in that trough in rates in a private placement term sheet allowing for delayed draw on funds a little or no incremental cost for six months, why is that not a superior program based on track record to the Plan? Please compare the approaches, beyond noting that time frames are not overlapping and that the Plan does not preclude the prior addressed approach.

A5. While the question is outside the scope of the Evaluation, we believe that the approach of Delayed Draw in private placement is typically an approach for investment vehicles, and not for hedging programs. We therefore respectfully avoid answering a question that would require a totally different study to appropriately respond. The hedging program does not aim to maximize the profits or to minimize costs, it is based on achieving a balance between the upside and the downside risk. Evaluating the interest rate hedging program in terms of investment vehicles would therefore not satisfy the goal of reducing the risk. Hedging is not investing.

Additionally, private placement transactions and the ability to lock-in an arbitrage opportunity between Treasury yields requires strong assumptions in terms of transaction costs to enter and exit the transaction if needed. Private placement delayed draw is a very short-term mechanism. It takes a view and does not address concentration risk as a single transaction would be done for the full amount of the debt issuance on a single day. There would be fees associated with a delayed draw greater than 3-months and also hinges on investor appetite. Therefore, when viewed from the risk management perspective, delayed draw has the same loss risk inherent in interest rate swaps.

Q5 Follow Up (A). Looking back a decade, had Avista not pursued the Plan and only utilized delayed draw in private placement, how much less money would AVA[28] have lost?

A5 Follow up A. As per A5 above, we respectfully avoid answering the question because it would require a different study to answer. To our knowledge the Company engages in delayed draws but does not view them as an alternative to hedging interest rates. We nevertheless understand that the delayed draw is used by the Company to secure investors funding commitment up to 3-months in advance of funding the debt issuance. While delayed draws do secure pricing 3-months prior to the debt issuance, it does not hedge the debt issuance for the established program time horizon. The comparison of the Plan against a delayed draw in private placement is outside the scope of the Evaluation primarily because the private placement framework is an investment, and not a hedge vehicle. In our opinion, it would be speculative to start treating cost containment strategies as if they were investment opportunities.

Q5 Follow Up (B). Did these funds used to fund program costs and not compete with other utility priorities, including other risk controls such as for wildfire prevention and mitigation? Was the Plan the highest benefit, cost, risk use of funds at Avista, outperforming alternative uses of funds?

A5 Follow Up (B). The question is outside the scope of the Evaluation of the interest rate hedging Plan and would require an Enterprise Risk Management Assessment to complete. The Evaluation did not look at areas beyond the interest rate hedging program. As stated in A2, the "cost of hedging" is unknown until the time of settlement and therefore does not compete with any Company priorities. According to the Evaluation, the cost to administer the Plan is limited to employee time and the hedge transactions do not involve speculation of future interest rates.

Q5 Follow Up (C). Sometimes insanity is said to be performing the same action but expecting different results. If the Plan continues with tweaks but is structurally the same, and if interest rates stay low for the next 4 years, then over that four years, would Avista expect to continue to see the same pattern of Plan losses going into the future in that scenario?

A5 Follow Up (C). As stated earlier, hedging decisions are made under an uncertain scenario: Interest rates may increase, or they may decrease. When the debt is issued, the uncertainty disappears, but this does not mean that the value of decreasing the uncertainty was irrelevant. The

28 For this purpose of this Report, we interpret AVA to mean Avista

unfavorable results of the interest rate hedging Plan have not been a function of the design, execution or control of the interest rate hedging Plan, there have been many economic factors that were uncertain at the time the hedges were placed. For instance, the unconventional forms of monetary policy such as Quantitative Easing ("QE") whereby trillions of new dollars were created and later retired from the system worried many that the stage seemed set for prices and interest rates to surge in a way which had not been seen for a generation. Or alternatively, the surprising effect COVID has had on government debt was clearly unexpected. The fact that QE has not translated into rises in interest rates does not mean that the risk was nonexistent at the time. The uncertainty of how the impact of COVID on inflation and interest rate is yet to be resolved.

The unfavorable results to date are a function of historically low interest rates and not a function of critical deficiencies in the Plan or its execution. The wisdom of the Plan is in the uncertainty it curtails, and not in the return it provides. The Plan is drafted as a hedging practice, not an investment vehicle.

Q6. HILF[29] Risk of Negative Interest Rates. Europe and other parts of the world have moved to negative interest rates on national bonds – understanding that there are A) normal condition probabilities usually focused on a 90 or 95 percent probability, and B) High Impact Low Frequency risks that entail company threatening events – does the potential of negative interest rates pose a HILF risk to AVA under the Plan? European governments have begun offering negative interest rates on national bonds. The December 4, 2020 Wall Street Journal (WSJ) showed for example: 10-year yield on German national debt as minus 0.540% and 10-year yield on French national debt at minus 0.304%. Discuss whether this should be taken into account when forming Avista's hedging strategy. When addressing this question, please discuss both how Avista models the likelihood of a negative interest rate and the impact of a negative interest rate.

A6. In alignment with the answers above, the interest rate hedging Plan is based on a concept of hedging against an asymmetrical behavior of risks. It is not drafted with the point of view of whether a particular investment scenario is more credible or not. Companies hedge because of the uncertainty in these scenarios.

The issue of interest rates potentially going to zero is nevertheless relevant to the Evaluation because traditional quantitative measurements of interest rate risk have a built-in assumption that interest

29 From the context of the question, we interpret "HILF" to mean high-impact, low-frequency

rates will not be negative.[30] Negative interest rates are not only an unconventional monetary policy tool, but they are also a recent one.

As of the period of Evaluation, the statistical expectation that long-term interest rates would go negative territory (in nominal terms) is low,[31] but if the statistical estimate of interest should yield a credible likelihood near or close to 0%, then Avista would have to revise its probability assumptions, especially in light of how permanent such a possibility may be. As of the writing of this Report, that probability of sustained negative interest rates is too small to be a material concern.

Q6 Follow Up (A). In the event of U.S. negative interest rate policy, wouldn't the majority of IOUs ride it out no worse off and possibly with a lower cost of capital, while to Avista and its ratepayers the policy change would be catastrophic? Discuss why Avista's current hedging strategy is prudent when a negative interest rate would necessarily cost ratepayers millions relative to a no-hedging alternative.

A6 Follow Up (A). Providing a perspective or a defense of particular market expectation is outside of the scope and spirit of the Evaluation. As stated in A6, the probability of sustained long-term interest rates going into negative territory is, as of the writing of the Report, small. Evaluating the perspective of negative interest rates is a perspective that exceeds the merits of the risk analysis and should be approached as an investment scenario. Additionally, the impact of sustained negative interest rates is well beyond interest rate hedging considerations.[32] In the same spirit of the question, the balanced discussion of the hedging strategy should also include the possibility of interest rates increasing to avoid the bias in the analysis.

Q7: Success Criteria – Accounting vs. Practical. Please discuss the criteria used to determine the successfulness of the hedging program, including an in-depth description of the metrics used and how those metrics were derived. Also, discuss why these metrics should be used in place of the simple questions: "How much money did this save the ratepayers this year?" and "Based on our assumptions, will ratepayers save money if this plan were in place for the next 10 years?"

30 The assumption that interest rates will not be negative comes from the overwhelming agreement that interest rates (as well as most commodities) follow a log-normal distribution whose domain is only the positive numbers. The log of a negative number is undefined.

31 As of the writing of the report, the risk of interest rates falling into negative territory is less than 0.0001%

32 See for instance https://www.thebalance.com/what-negative-interest-rates-mean-for-investors-1978886

A7. The Plan represents a tool to control for the risk of interest rates is a hedging program (risk mitigation) and not an investment strategy. The performance of a hedging program needs to be framed in the context of how the interest rate hedged supports (or not) the investment decisions for which the debt was issued; how the decisions to hedge interest rates achieved by the company compare against its peers; and by examining if the parameters driving the hedging decisions are well informed and include an unbiased perspective of the risk of interest rates increasing and decreasing. The comparison of the hedged price versus the price unhedged should be treated more as a tool to inform and test if the parameters of the program should be adjusted or improved.

The performance or "return" of the hedging program is therefore a function of how hedging activity curtails upside risk in a measured way. If the risk that was curtailed does not materialize, this does not mean that the protection was useless in a similar way that a life policy is still useful even if the insured individual continues to live.

With this balanced perspective in place, an interest rate hedging plan such as the one being implemented by Avista should represent a net cost in the long run. Just as with insurance products, the absolute level of cost depends on the underlying risk and will therefore change over time. Therein lies the importance of comparing Avista's interest rate costs against peers.

As detailed in A1, the comparison between the hedged interest rate versus the cost without hedging does not provide useful information to evaluate the hedging decisions because the hedges are done in advance of the uncertain interest rate on the day the debt is issued. Once the debt is issued and the uncertainty has disappeared, the comparison between the hedged versus unhedged result is extremely useful to evaluate the parameters of the hedging strategy.

In the case of Avista, the minimum hedge recommendation is a result of an analytical exercise at the beginning of each year of the risk of leaving interest rate needs unhedged versus interest rates hedged. Avista's team measures the risk using a Value at Risk calculation and arrives at a compromise of establishing a minimum level of hedges within the Dynamic Hedge Window protocol. If the concern for downside risk exposure continues, the targeted amount to hedge within the Dynamic Hedge Window protocols will decrease. It currently is set at 40% of needs whereas in the past was 60%. This particular parameter is a critical tool that Avista has incorporated in the design of their Plan.

In practice, the criteria to determine the successfulness of the hedging program is as follows:

1. **Supportive of Investments**. The debt requirements are established in support of diverse investment decisions that have particular investment metrics such as Net Present Value ("NPV") or an Internal Rate of Return ("IRR"). If the base case discount rate used to justify these investments should increase as a function of increased interest rates, the performance

of the investments will deteriorate.[33] If on the other hand the hedged interest rate turns out to be higher than the interest rate without hedging, then the return on the investments on behalf of the customers may have suffered an opportunity cost. Given the asymmetry of interest rates, the likely impact of increases in interest rates is larger than decreased interest rates.

2. **Competitiveness to Peers**. The cost of debt achieved by Avista should be within the average range of interest rates achieved by peer utilities. This is a common metric to benchmark different areas of utilities.
3. **Alignment with Policy**. From the oversight perspective, a successful hedging strategy is one that is in full alignment with its governing structure.
4. **Sensitive to Risk Dynamics**. If and as the risk changes, the successful hedging program should be sensitive enough to become aware of the risk, evaluate the impact of the risk and make decisions based on the balanced risk exposure.

Q8. Annual Cost of Program. A) How much does it cost to administer the hedging program? B) How does this compare to the incremental cost to ratepayers of an interest rate that is at the top range of 90 percent likely outcomes for each of the next two years – informed by Fed guidance and based in part on market forwards posted on Bloomberg and other business data feeds?

A8. As A1 details, the guidance of the Federal Reserve is targeted to influence short-term interest rates, whereas long-term interest rates depend on current monetary policy, future changes to monetary policy and the uncertain international demand for U.S. Government debt. Additionally, the perspectives from various data feeds identified in the question provide a point of view (i.e., a perspective), but this is not a protection against the possibility that the perspective itself being wrong. Perspectives and hedges are not interchangeable and serve very different purposes. For a comprehensive presentation of the cost of the Plan please read A2 above.

Q9. PCAOB. Doesn't the Public Company Accounting Oversight Board (PCAOB) weigh elements like the credit ratings of counterparties in hedging more heavily than financial metrics of program success?

33 Mathematically, the value of the future discounted cash flows will decrease as the discount rate increases while the initial investment is kept constant.

A9. The nature of the question exceeds the scope of the Evaluation. Concentric did not evaluate how the PCAOB operates. We therefore respectfully avoid answering the question at this time.

Q10. Opinion 1 – Interest Rate Risk [s]ignificant. Did Concentric find that interest rate risk when placed in a comprehensive list of risks Avista faces, find that interest rate risk was one of the greater risks that Avista faces compared to cyber security risks, wildfire risks, natural gas availability, transport and pricing risk, vegetation management risk and so on. [i.e.], Would Interest Rate Risk would [sic] rank higher than other risks Avista faces were risks competing for available cash flows to fund programs?

A10. The question exceeds the scope of the Evaluation because Concentric only looked at the interest rate hedging program. A comparative analysis of the risk exposures for Avista is beyond the scope of the Evaluation and would have to be addressed in the context of an Enterprise Risk Assessment. The current Evaluation identified the risk of interest rates being similar to the risk in natural gas in western markets under normal conditions.

Q11: Opinion 8 – Hedging vs Not Hedging. Please elaborate why hedging vs. not hedging would not be an important control and benchmark in evaluating program cost, risk and benefits against alternatives considered. It is important for Staff and decision makers to understand why a common approach is not employed or not given much weighting in Plan evaluation.

A11. Comparison of the cost hedged versus the unhedged cost is admittedly a very intuitive way to measure performance, but the comparison needs to be done with the appropriate perspective in mind. As stated throughout the Report, the decision to "hedge" or "not to hedge" is done in the context of a meaningful risk exposure and with full knowledge that hedging to protect upside risk by its own virtue creates a risk of being wrong. Hedging is therefore a series of decisions that balance a risk exposure, and not eliminate one or the other.

As hedging decisions are made, a process to actively measure the risk is at the core of the analytical framework of the interest rate hedging program. The information derived from comparing hedged versus unhedged results is an appropriate metric to inform the minimum hedge requirement (currently at 40%). As and if the risk to downside exposure encroaches on the risk for upside, the amount to hedge will decrease. The comparison of hedged versus unhedged cost can therefore be used as a control mechanism to this specific parameter.

Q12. Benefits to Ratepayers. Please further explain why the Plan benefits ratepayers and how. That helps to frame the Plan in context of Commission mission, and applicable laws, administrative rules.

A12. The Plan benefits ratepayers because it reduces the uncertainty of how the interest rates for long-term debt may evolve up until the point when the debt is issued. While it is true that interest rates have followed a downward trend, there have also been significant uncertainties that could have increased the cost. As described above, a risk management strategy for an end-user implies making decisions to limit the upside risk exposure, but by placing hedges the risk of being wrong is created. Hedging is therefore a framework to balance the asymmetric nature of interest rate risk.

The key analytical parameters in the Plan is the minimum hedge target as implemented in the Dynamic Hedge Window. If the downside risk is greater than the upside risk, the minimum hedge will decrease.

Q13. Controlling Interest Rate Uncertainty vs Aggregate Plan Cost. Please explain further how [Concentric] evaluates control of variability in interest rates of new bond issuances against aggregate plan costs.

A13. When evaluating a hedging program, Concentric looks at the existence and implementation of three key elements: Awareness of risk, impact of risk and decisions based on risk. The actual implementation may vary, but these represent basic elements to consider.

- Awareness. The hedging program needs to have systematic mechanisms to become aware of the risks and their evolution. In practice, this means that the plan has some analytical mechanism of routine process whereby the risks are being monitored. The opposite is a hedging program that is consistently being surprised by events.
- Impact. In addition to awareness, the hedging practice needs to have a structured and auditable way to evaluate how the particular risk will impact the goals. This element allows the company to ensure that the capabilities at hand to address the risk are commensurate to the risks it faces.
- Decisions based on risk. As a consequence of the awareness of risk and the measurement of the impact, the decisions that are being made are a logical consequence of risk and that the awareness, impact and decisions are being discussed and communicated broadly.

If a hedging program performs well in the three areas above, it generally means that it has an adequate control of the variability in interest rates. The methodology described in the Report expands these three different areas into 134 individual risk elements grouped into 12 different categories.

Q14. Efficient Markets vs Global Central Bank Activity. Please help readers better understand how Concentric relies on efficient market theory in the context of extraordinary global central bank activity to stimulate economies and help control financial impacts of Covid-19 pandemic.

A14. It is not the purpose of the Evaluation to assess efficient market theory. Amongst economists, this is an often-debated subject that typically does not lead into useful conclusions. It is hard to defend that interest rates are "perfectly" efficient from a conceptual point of view[34], but by the same token it would be naïve to argue that interest rate markets lack any semblance of efficiency. Instead, we view efficiency of market as a degree by which a company can execute a hedging strategy effectively. Given the size of the market, the number of transactions per day, the speed by which trading is cleared and the bid-ask spread, we believe that the market for long-term interest rates is "efficient enough" to support a hedging practice.

Implicit in this definition of "efficient enough" is the notion that information in the market is promptly incorporated in prices and there is no systemic, sustained or repeatable opportunity for one market participant to have better information to make decisions. This means that the "current" market price for interest rate futures represents the average expectation of all market participants. Some market participants may have a perspective that the market is over/under valued, but the quote at which the market settles represents the balance between all perspectives. It represents the fair price at the time the transaction is made.

Furthermore, we support the idea that the market quotes represent an opportunity for market participants to transfer risks across the system. So even if the market quote may be judged by some as being "wrong", the market price is the price at which participants are comfortable transferring risk and it is therefore right. For instance, a market participant may believe that the Future for the 30-year interest rate should be lower than current quotes indicate, but the only price at which the uncertainty can be transferred to somebody else is the market.

Per our observation, as and if information such as the impact of COVID-19 pandemic gets absorbed by the market, the market quotes have efficiently incorporated such information and adjust the price of the underlying asset.

34 Theoretically, the efficient market theory is a hypothesis that states that asset prices reflect all information and consistent arbitrage opportunities are impossible. For further reading on the topic see Fama, Eugene (1970). "Efficient Capital Markets: A Review of Theory and Empirical Work". Journal of Finance. 25 (2): 383–417. doi:10.2307/2325486. JSTOR 2325486.

Q15. AVA 5-Year Debt Forecasting. Please explain further how Concentric looked at and evaluated AVA five-year debt forecasting and data sources and methods used to predict fixed-income market trends five years out – beyond forward market activity and data carried by Bloomberg and other sources. In particular, was Concentric finding that this data was refreshed / not stale due to pandemic disruptions? An example of such delays was Value-Line slowness to update 5-year projections as quickly this year as in recent years. Please further discuss the five-year AVA debt forecasting projections and the three- and two-year Dynamic Hedge and Risk Responsive Protocol Windows respectively of the Plan and how they interact.

A15. The debt requirements were an input to the Evaluation, and we understand that these debt requirements come from an integrated resource planning process that is a result of collaboration between many stakeholders.[35] Per A14 above, we support the notion that quots for interest rates as reported by data providers such as Thompson Reuters® or Bloomberg® efficiently reflect all the relevant information in the market and that there are no systemic opportunities for a market participant to extract a higher return based on better or more up-to-date information.

There are some services, such as Value-Line that incorporate information at a different speed than market prices for debt. It is not the purpose of this Report to make an evaluation of such services, but it is clear that the services such as Value-Line reflect information that is coming from different sources, and the frequency of updates of this information is also different. For instance, while the price of debt is changing constantly, the reports from financial performance of companies typically follow a monthly or a quarterly schedule.

In our analysis we did not find that prices for interest rates exhibited a lag due to issues such as COVID-19. There were no obvious liquidity black holes[36] and the trading pattern of the debt with different maturities was consistent. This means that the relationship of how interest rates of different maturities evolve has no significant change or abnormal change from its historical pattern.

The question also asks to address how the Dynamic Hedge Window and the Risk Responsive protocol are complementary to each other. On the one hand, the Dynamic Hedge Window establishes a (minimum) target amount to hedge based on the balanced risk of interest rates increasing and decreasing and executes these trades well in advance of when the debt is issued (up to 3 years in advance). As the time to issue the debt nears, the Risk-Responsive protocols is enabled to protect against very significant increases in interest rates. If the upside risk does not materialize, the risk-

35 https://www.myavista.com/about-us/integrated-resource-planning

36 In finance, a liquidity black hole is one where the buyers or sellers do not quickly find a counterpart to trade with, or that where the bid-ask spread differs substantially from historical pattern. For more on the subject see Stephen Morris & Hyun Song Shin, 2003. "Liquidity Black Holes," Cowles Foundation Discussion Papers 1434, Cowles Foundation for Research in Economics, Yale University.

responsive hedging protocol will not hedge beyond the 40% established by the Dynamic Hedge Window and the company will fix the remaining 60% of its needs on the day the debt is issued. In fact, there have been no hedges triggered by Avista that are a function of the risk-responsive protocol. If for any reason the risk responsive protocol would recommend a hedge, then the amount hedged would be counted as part of the dynamic hedge window target.

Q16: Risk (Variability) Spread Over Prevailing UST. Please talk about the amount of upward variability AVA uses as a referent amount of upward change and how that is derived in determining the interest rate risk that is to be mitigated.

A16. Avista has implemented a methodology of Value at Risk to determine the amount of asymmetric variability whereby absolute upside risk is higher than absolute downside risk.[37] As detailed in A2 above, the analytics are implemented in an excel file that Concentric had an opportunity to replicate to ensure accuracy of the results. A2 provides an actual example of how to implement Value at Risk, including formulas to implement within excel. Please note that Avista's interest rate Plan is not based on interest rate spreads (i.e., difference of interest rates with different maturity). It is based on the actual spreads themselves.

Q17: UST Yields vs Spread over UST Yields for A and B Rated Utilities. Please talk about Concentric's look at the Plan's consideration of UST yields vs spreads there over for utilities that spiked at times in 2020.

A17. This analysis exceeds the scope of the Evaluation. The current strategy is based on yields and not term spreads because debt placements are done one at a time and not as a portfolio.

Q18. Question: Voluntary vs. Essential. Please talk about Concentric's consideration of whether the Plan is essential hedging like hedging gas to ensure availability and price of an essential input to service customers for AVA vs financial hedging which might be seen as a choice or voluntary decision on AVA's part.

A18. Deciding on the "essential" or "voluntary" nature of the interest rate hedging program is the purview of the Company and the Commission and we respectfully avoid answering the question. As experts in the topic, we provide a perspective to understand it and, hopefully, assist the Commission in its oversight role and Avista in managing the cost on behalf of customers. When compared to the

37 For instance, this means that a decrease in interest rate of 100 basis points carries a smaller probability than an increase in interest rates of 100 basis points.

volatility of natural gas markets in the Northwest under normal conditions, we found that the volatility in interest rate is comparable to natural gas. Additionally, given the long-dated nature of the consequence of the interest rate decisions, the impact of the hedging decisions will have an even greater duration that those for typical electricity or natural gas transactions.

The interest rate hedging Plan does not benefit nor cost Avista or its shareholders. It is being implemented because it has recognized this as a line-item that has significant absolute value and that it embodies meaningful volatility. Avista is therefore implementing the Plan as a fiduciary concern over its customers. Unlike other utilities that will pass the cost of debt to the customers regardless of the interest rate on the day the debt is issued, Avista is proactively contributing to rate stability of the customers. The risk is meaningful, and the absolute exposure is also significant.

Q19. Correlations. Please discuss whether Concentric's review of the Plan found correlations that Plan modeling depended on that were more or less predictive or certain to hold in recent periods than in prior periods.

A19. There were no obvious concerns for bias given correlation effects. Concentric analyzed the cross-temporal correlation of the prices and examined the way the existing model is taking them into account and found that the correlations across time were meaningful, but the model was already making the appropriate adjustments. The correlation across forward curves of different durations was not meaningful because decisions on debt placement are not being made for multiple debt issuances at the same time. This means that decisions on hedges for one debt issuance are not influenced by the decisions or the results of hedging decisions for other debt issuances.

Q20. Sharing of Plan Costs. A) Would the Plan still be effective were the Commission to decide that gains and losses incurred in the plan and amortized over future bond issuances now were split equally 50 percent to investors and 50 percent to ratepayers going forward. B) In that scenario of sharing equally between ratepayers and investors, is the continuance of the Plan equally endorsed by Concentric?

A20. Avista does not benefit or subsidize the cost of the Plan and all costs or results are transferred to the customer. A decision on how to amortize the gains and losses over future bond issuances is a decision that Avista would have to make, particularly because at some point it may imply some kind of a finance vehicle as Avista either owes or is owed a recovery of these expenses. In this particular case the effectiveness of the Plan could probably continue, but the economics to recognize the finance vehicle would probably have to change.

It is also up to Avista to accept if the Commission decides to split gains/losses of the Plan, but since the current economics of Avista are neutral, a change to reflect a potential gain or losses implies a strategic decision by Avista. It is hard to support that sharing in the gains/losses of the Plan will maintain the efficiency of the Plan. As the experience shows, when the utilities are instructed to share in the hedge gains/losses in a cost item where they are cost-neutral, the utilities often opt not to hedge.

Our endorsement of the Program is based on our opinion that it provides effective risk protection, and in an environment of historically low interest rates we believe it would be unfortunate to either suspend or terminate the Plan. As highlighted in our Report, there are some areas of improvements, our Evaluation showed this to be a well-structured, executed, and controlled exercise. The Plan itself is of value to the customers and it is neutral to Avista.

Q21. Senior Oversight of Plan. Given necessary review of other financial oversight at other jurisdictional utilities, did Concentric find senior management oversight of the AVA Plan adequate even in Covid-19 remote working and social distancing conditions?

A21. We found that the oversight of the Plan was not affected by remote working or social distancing. As noted in the Report, senior oversight of the Plan is an area where Avista excels and it is largely driven by individuals who are now in senior management and that at some point had a role in the development or execution of the Plan itself.

Q22. Question: On/Off Switch. Should the Plan incorporate the ability to pause hedging to zero percent given certain inputs inclusive of central bank guidance in contrast to always having a positive floor in the amount of hedging in each of Dynamic Hedge and Risk Responsive Protocol targets?

A22. The program already has a parameter that effectively works like a "switch" or a dial to decrease the hedging activity should it be deemed necessary and it is in the form of the target to hedge under the Dynamic Hedge Window. As stated before, this percentage is reviewed every January and the target that is established is based on a balanced analysis of how much risk for upside exposure is avoided and how much risk may be created should interest rates decrease. Additionally, the Risk Responsive protocol provides a risk-based trigger to protect against the possibility that interest rates increase significantly. Since this risk-based protocol has been created, there has been no risk-based hedges.

If the on/off decision is implemented, it should be implemented based on a risk perspective, and not on the comfort of a perspective of what the central bank may do (see A1 for a broader discussion on

the difference between hedging to protect against a risk and making decisions based on a perspective). There is a significant difference in adjusting the parameters to reduce the downside risk exposure versus suspending or terminating the execution of the Plan. In terms of prudence, decision to reduce the hedging activity based on the risk is very different than a decision to suspend or terminate the Plan based on a perspective.

Q23: Covid-19 Pandemic Study Conditions. Was there anything that Concentric was unable to do in 2020 Covid-19 working conditions that Concentric would have done a year ago, and if so, does that inform the study in any way?

A23. No, the depth or quality of the work did not suffer as a function of COVID-19. The only difference was that Concentric did not have a chance for face-to-face with the client and the Regulator, but we made additional efforts for longer interviews and for efforts such as volunteering for a documented Q&A section within the Report.

Q24. Question: Flexibility. Is the Plan flexible enough to perform well in current and changing financial environments?

A24. Yes, the Plan has sufficient elements to perform under different scenarios. As highlighted in A13, the three core elements of awareness, impact and analysis/reporting provide such flexibility and the senior oversight that meets at least once a month supports it.