MISSOURI PUBLIC SERVICE COMMISSION

STAFF REPORT

COST OF SERVICE

APPENDIX 2

KANSAS CITY POWER & LIGHT COMPANY
CASE NO. ER-2018-0145

and

KCP&L GREATER MISSOURI OPERATIONS COMPANY
CASE NO. ER-2018-0146

Jefferson City, Missouri
June 2018

** Denotes Confidential Information **

MISSOURI PUBLIC SERVICE COMMISSION

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APPENDIX 2

Detailed Direct Testimony of
Jeffrey Smith

and

Support for Staff
Cost of
Capital Recommendations

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DETAILED DIRECT TESTIMONY OF

JEFFREY SMITH

KANSAS CITY POWER & LIGHT COMPANY (KCPL)
CASE NO. ER-2018-0145

and

KCP&L GREAT MISSOURI OPERATIONS COMPANY (GMO)
CASE NO. ER-2018-0146

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Rate of Return (Capital Structure, Cost of Debt, Cost of Equity)

A. Summary

Staff's financial analyst, Jeffrey Smith, estimated KCPL's and GMO's cost of common equity ("COE") by applying well-respected and widely-used methodologies to data derived from a carefully-assembled proxy group of comparable companies in the electric utility industry. Staff compared a current COE estimate for the electric proxy group to a COE estimate for that same group using data from the timeframe during KCPL's last rate case to provide a relative estimate of a reasonable allowed ROE for KCPL's and GMO's current rate cases.[1]

Staff's multi-stage DCF analysis for the electric utility industry shows the COE, when using the long-term electric utility growth rate, and expected long-term nominal growth rate in gross domestic product ("GDP") as the perpetual growth rates, is between 7.46% - 8.26%, which represents an approximate 25 basis point increase in the COE since KCPL's last rate case.

Staff also weighed the Commission's most recent decision in the Spire Missouri cases, Case Numbers GR-2017-0215 and GR-2017-0216, to maintain consistency/predictability in Commission decisions, and recommend an ROE that fairly balances industry risks with historically allowed ROEs. KCPL's and GMO's allowed ROE should be based near the

[1] ***In the matter of Kansas City Power & Light Company***, Case No. ER-2016-0285 (***Report & Order,*** issued May 3, 2017) at p.22.

mid-point of the upper-half of Staff's recommended allowed ROE range of 9.00% to 10.00%, with a point estimate of 9.85%. This results in a ROR range of 6.94% to 7.43%, with a point estimate of 7.36% for KCPL, and a ROR range of 6.96% to 7.44%, with a point estimate of 7.37% for GMO. Staff's results are shown in the following table:

KCPL

Capital Component	Percentage of Capital	Embedded Cost	Allowed Rate of Return Using Common Equity Return of: 9.00%	**9.85%**	10.00%
Common Stock Equity	49.45%		4.45%	**4.87%**	4.95%
Long-Term Debt	50.55%	** ____ **	2.49%	**2.49%**	2.49%
Total	100%		6.94%	**7.36%**	7.43%

GMO

Capital Component	Percentage of Capital	Embedded Cost	9.00%	**9.85%**	10.00%
Common Stock Equity	48.15%		4.33%	**4.74%**	4.82%
Long-Term Debt	51.85%	** ____ **	2.62%	**2.62%**	2.62%
Total	100%		6.96%	**7.37%**	7.44%

The details of Staff's analysis and recommendations are presented in Schedules JS-d 1 – JS-d 15 in Appendix 2.

B. Analytical Parameters

The determination of a fair rate of return is guided by principles of economic and financial theory and by certain minimum Constitutional standards. Investor-owned public utilities such as KCPL and GMO are private property that the state may not confiscate without

appropriate compensation. The United States Supreme Court has described the minimum characteristics of a Constitutionally-acceptable rate of return in two frequently-cited cases:[2] ***Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia***, and ***Federal Power Commission v. Hope Natural Gas Co***.

From these two decisions, Staff derives and applies the following principles to guide it in recommending a fair and reasonable ROR:

1. A return consistent with returns of investments of comparable risk;
2. A return sufficient to assure confidence in the utility's financial integrity; and
3. A return that allows the utility to attract capital.

Embodied in these three principles is the economic theory of the opportunity cost of investment. The opportunity cost of investment is the next best return that investors forego, in order to invest in similar risk investment opportunities that vary depending on market and business conditions.

Methodologies of financial analysis have advanced greatly since the ***Bluefield*** and ***Hope*** decisions.[3] Additionally, today's utilities compete for capital in a global market rather than a local market. Nonetheless, the parameters defined in those cases are readily met using current methods and theory. The principle of commensurate return is based on the concept of risk. Financial theory holds that the return an investor may expect is reflective of the degree of risk inherent in the investment, risk being a measure of the likelihood an investment will not perform as expected. Any line of business carries with it its own risks and it follows, therefore, that the

[2] ***Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia,*** 262 U.S. 679, 43 S.Ct. 675, 67 L.Ed. 1176 (1923); ***Federal Power Commission v. Hope Natural Gas Co.,*** 320 U.S. 591, 64 S.Ct. 281, 88 L.Ed. 333 (1943).

[3] Neither the Discounted Cash Flow ("DCF") nor the Capital Asset Pricing Model ("CAPM") methods were in use when those decisions were issued.

return KCPL and GMO shareholders may expect is equal to that required for comparable-risk utility companies.

The COE is a market-constructed artifact; Commission-Authorized ROEs are regulatory constructed artifacts. The COE, theoretically, is the minimum return investors are willing to accept for their investment in a company compared to returns on other available investments. An authorized ROE is an adjudicated return granted to monopoly industries, allowing them the opportunity to earn fair and reasonable compensation for their investments. I intentionally differentiate between the market-determined COE and the allowed ROE because financial officers and stock investment analysts use market-determined COEs, which are much lower than average allowed ROEs, when making capital allocation decisions and valuing utility stocks.

I have relied on my analysis of a comparable group of companies to estimate the COE of KCPL and GMO, applying both the Discounted Cash Flow ("DCF") method and the Capital Asset Pricing Model ("CAPM") to the comparable group of companies. Properly used and applied in appropriate circumstances, both the DCF and the CAPM can provide accurate estimates of utilities' COE. It is well-accepted economic theory that a company that earns its cost of capital will be able to attract capital and maintain its financial integrity; therefore, a return on common equity based on the *cost* of common equity, derived from comparison of peer companies, is consistent with the principles set forth in ***Hope*** and ***Bluefield***. It is common for utility regulatory commissions to allow ROEs higher than the COE for utilities because of constraints imposed on utilities' capital appreciation, i.e. regulatory lag, a consequence of operating within a regulated monopoly paradigm. As such, my recommended allowed ROE for KCPL and GMO is higher than my estimate of the market-driven COE.

C. Current Economic and Capital Market Conditions

Determining whether a cost of capital estimate is fair and reasonable requires a good understanding of economic and capital market conditions, with the former having a significant impact on the latter. With this in mind, Staff emphasizes that an estimate of a utility's COE should pass the "common sense" test when considering broader economic and capital market conditions.

1. Economic Conditions

Real GDP growth in 2016 and 2017 increased by 1.5% and 2.3%, respectively. In the first quarter of 2018, GDP grew 2.2%. Annualized real GDP growth over the last four-quarters (Q2-2017 – Q1-2018) was 2.9%. Projections for real GDP growth in 2018 are within the range of 2.7% - 3.3%. Long-run projections for real GDP range from 1.7% - 2.5%.

Inflation, measured by Personal Consumption Expenditures ("PCE") for 2016 and 2017 averaged 1.2% and 1.7%, respectively. As of April 2018, annualized year-over-year PCE was 1.9%. Long-term, inflation should be expected to be near the Federal Reserve ("FED") 2% target. The unemployment rate has continued to decline from 4.9% in January 2016 to 3.9% in April 2018.[4]

The Federal Open Market Committee ("FOMC") has initiated six rate increases since December 2015, when it began increasing the FED target Funds Rate ("Funds Rate"). Uncertainties about Funds Rate increases stemming from the low global growth economic environment of 2016, when Funds Rates were projected to increase four times, but did so only once, have been allayed by sound economic growth domestically, increased economic growth globally, and recent actualization of FOMC guidance. Expansionary fiscal policy increases

[4] Economic consensus places the natural rate of unemployment between 4% – 5%.

the likelihood of FOMC guidance being realized because it accelerates growth and the ability of the U.S. economy to tolerate higher interest rates without contracting. Markets anticipate that the FOMC will raise the Funds Rate three more times in 2018. Gradual ratcheting up of short-term rates by the FOMC, lagging effects of transmission mechanisms in monetary policy, and downward pressure on long-term rates has compressed spreads between short and long-term rates.

In December 2015, when the FOMC increased the Funds Rate from 0.25% to 0.50%, yields on the 10-year and 30-year Treasuries were 2.25% and 3.00%, respectively. In March 2018, when the FOMC raised the Funds Rate from 1.50% to 1.75%, yields on the 10-year and 30-year Treasuries were 2.84% and 3.09%, respectively. In December 2015, the spread between the Funds Rate and yields on 10-year and 30-year Treasuries were approximately 175 basis points and 250 basis points, respectively; and the spread between the 10-year Treasury and the 30-year Treasury was approximately 75 basis points. By March 2018, the spread between the Funds Rate and 10-year and 30-year Treasuries had compressed to 109 basis points and 134 basis points, respectively; and the spread between the 10-year and 30-year Treasuries had compressed to 25 basis points. Compressing spreads are known as a flattening of the yield curve, indicating an increase in convenience yield, a reduction in term premiums, or both.[5] All else constant, the flattening of the yield curve implies that each increase in the target Funds Rate leads closer to an inversion of the yield curve,[6] a strong indicator of recessions.[7] Recessions lead

[5] Convenience yield refers to the premium required by investors for holding a contract rather than a physical good. Term premiums measure the extra compensation investors require to hold a long-term government bond instead of buying a sequence of short-term government bonds.

[6] An inversion of the yield curve occurs when short-term interest rates are higher than long-term interest rates.

[7] Recessions have followed inversions of the yield curve in 8 of the last 9 occurrences since 1955. The one time when a recession did not occur, the inversion was followed by an economic slowdown.

to an overall depression in equity prices, and are accompanied by a flight to safety which buoys safety sectors in equities, i.e. utilities, healthcare, consumer staples, and defense.

An important consideration in assessing the relationship between short-term and long-term Treasury rates is the amount of U.S. Treasuries held by the FED. According to the May 2018 Federal Reserve statistical release, H.4.1, the FED held approximately $2.26 trillion in U.S. Treasury notes and bonds, composing approximately 55% of FED assets. This is noteworthy because in October 2017 the FED initiated balance sheet normalization and began reducing its holding of Treasuries. The path to normalization planned by the FED began by allowing $6 billion of Treasury securities and $4 billion of mortgage backed securities ("MBS") to mature each month. Gradual increases of $6 billion to Treasuries and $4 billion to MBSs are to occur each quarter until capped at $30 billion for Treasuries and $20 billion for MBSs maturing each month. The cap will be reached in the fourth-quarter of 2018.

The FED has yet to state what the size or asset allocation of a normalized balance sheet will look like. Guidance on FED balance sheet normalization was discussed by the FED in the March 2018 Quarterly Report on Federal Reserve Balance Sheet Developments where the FED stated, "[o]nce the caps have reached their respective maximums, they are anticipated to remain in place so that the Federal Reserve's securities holdings will continue to decline in a gradual and predictable manner until the Committee judges that the Federal Reserve is holding no more securities than necessary to implement monetary policy efficiently and effectively." Considering the composition of the FED's balance sheet prior to QE, the ratio of the FED's three-year average holding of Treasuries to GDP was approximately 4.8%. Currently that ratio stands at 13.1%. If the FED intends to bring its ratio of Treasuries held to GDP close to pre-QE levels it

will need to reduce its holdings of Treasuries to near $840 billion, at current GDP. Given the FEDs projections, this will be accomplished mid-year 2022.

Exercises conducted by economists at the Federal Reserve Bank of Kansas City estimate that if the FED reduced its balance sheet by $675 billion through 2019, term premiums would increase between 25-75 basis points by the end of 2019.[8] The FED will reach a $675 billion reduction in the first quarter of 2020. Current spreads along with the anticipated increases in term premiums from balance sheet unwinding may provide the FED with sufficient headroom to realize its monetary policy guidance of 5-6 more interest rate increases by the end of 2019, without inadvertently forcing an inversion in yields. However, looming increases in fiscal deficits require the issuance of increasing amounts of Treasuries.

The proposed approach to finance deficits seems to place the FED and the Treasury in the precarious situation of having to concede independence to work together to prevent inversion and prolong economic expansion.[9] The Treasury Borrowing Advisory Committee's May 2, 2018 report to the Secretary of the Treasury suggests increasing the offerings of shorter-term Treasuries three-fold compared to longer-term Treasuries.[10] The anticipated increases in the Funds Rate, coupled with increases in the Treasury Department's issuances of shorter-term Treasuries could accelerate increases in short-term borrowing costs, precipitating an inversion of

[8] David, T. Smith, L., *Forecasting the Stance of Monetary Policy under Balance Sheet Adjustments*. Federal Reserve Bank of Kansas City, May 10, 2017 https://www.kansascityfed.org/~/media/files/publicat/research/macrobulletins/mb17davigsmith0510.pdf.

[9] Sproul, A., *The "Accord" – A landmark in the First Fifty Years of the Federal Reserve System*. Federal Reserve Bank of New York Monthly Review, November 1964.

[10] Cummins, J., *Report to the Secretary of the Treasury from the Treasury Borrowing Advisory Committee of the Securities Industry and Financial Markets Association.* U.S. Department of the Treasury May 2, 2018 https://home.treasury.gov/news/press-releases/sm0379.

the yield curve. Historically, recession occurs 6-24 months after an inversion of the yield curve.[11]

Another important factor to consider in the paradigm of long-term and short-term interest rate relationships is foreign central bank ("CB") policies. Research by economist at the Federal Reserve Bank of Chicago finds that "10-year interest rates display a positive and significant response to the foreign CBs announcements."[12] Recent trends show increases in foreign holdings of U.S. Treasuries, likely a consequence of the comparably low interest rates offered by other governments; meanwhile, the U.S. has some of the highest yields in the developed world. Low yields in other developed markets stem from low policy rates and QE at other central banks.

Minutes of the March 8 and 9, 2018 Monetary Policy Meeting at the Bank of Japan ("BOJ") highlight the BOJs stance toward monetary policy, noting that, the bank continues to "take the stance of persistently pursuing the current powerful monetary easing" and that the Japanese economy has not "reached a phase in which the Bank should consider the timing and measures of its so-called exit from monetary easing." As such, the BOJ has agreed to maintain short-term policy interest rates at -0.1% and to continue to purchase Japanese Government Bonds ("JGB") with the intent to keep the 10-year JGB near 0%.

The European Central Bank ("ECB") began tapering its QE program in January 2018 by reducing the amount of assets purchased through its asset purchase program ("APP") from €60 billion a month to €30 billion a month. The ECB anticipates that its APP will continue until the end of September 2018, but maintains that the program may run beyond, if necessary. Short

[11] Bauer, M., Mertens, T., *Economic Forecasts with the Yield Curve.* Federal Reserve Bank of San Francisco, March 5, 2018.

[12] Anene, D., D'Amico, S., *A tale of Four Tails: Inflation, the Policy Rate, Longer-Term Rates, and Stock Prices.* Federal Reserve Bank of Chicago, December 2017.

term policy rates at the ECB remain near 0%.[13] ECB or BOJ signaling Bond or APP cessation or unwinding would lead to relief for long-term interest rates, signaling higher yields. Lacking indications of higher rates abroad, continued downward pressure on U.S. long-term interest rates will likely persist.

Other issues to consider in assessing the low long-term yields environment include effects of Dodd-Frank on commercial banks, asset allocations of the baby-boomer generation, and increased liquidity in Treasury securities. For example, since the passage of Dodd-Frank in 2010 commercial banks have "more than doubled their holdings of U.S. Treasuries."[14] Furthermore, a classic well known investment rule dictates that the closer an individual is to retirement the less risk their portfolio should incur, meaning that their asset allocation should progress to becoming weighted in lower risk assets. Looking at 30-Year Treasury auction allotments by class of investor shows that investment funds have accounted for a growing number of allotments since 2010.[15]

Finally, economist at the St. Louis Federal Reserve note that, "[g]overnment bonds have become easier to exchange and are a favorite option for corporations wanting to hold liquid assets. In other words, government bonds now resemble cash, which naturally implies low interest rates."[16] This has become increasingly important since passage of the Tax Cut and Jobs Act ("TCJA") in December 2017, because corporate and individual savings, resultant of tax cuts,

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[13] European Central Bank., *Monetary policy decisions,* December 14, 2017, https://www.ecb.europa.eu/press/pr/date/2017/html/ecb.mp171214.en.html.

[14] Calabria, M., (2016), *Did Dodd-Frank Increase Bank Capital*, Alt-M https://www.alt-m.org/2016/03/18/did-dodd-frank-increase-bank-capital/.

[15] Arias, M., Restrepo, P., (2016), *Does the Pullback in the Bond Market Matter?,* Federal Reserve Bank of St. Louis, December 2, 2016. https://research.stlouisfed.org/publications/economic-synopses/2016/12/02/does-the-pullback-in-the-bond-market-matter/.

[16] Martin, F., *A Perspective on Nominal Interest Rates*, Federal Reserve Bank of St. Louis, December 12, 2016. https://research.stlouisfed.org/publications/economic-synopses/2016/12/16/a-perspective-on-nominal-interest-rates/.

may be invested in Treasuries, putting downward pressure on yields. Supply side economic theory describes the higher after-tax returns that accompany business tax cuts as incentive to stimulate investment in capital stock.[17] However, current excess capacity may retard investment. Similarly, uncertainties about economic policies may lead companies to take less risk, reducing the amount of investment in capital stock, increasing the amount of investment in risk free assets.

Under the FED's mandate of maximum sustainable employment and price stability, the unemployment rate and inflation rate are primary considerations when assessing the Funds Rate specifically and longer-term interest rates in general. Although unemployment has come down 1% percentage point since 2016, to a rate below what many economist consider the natural rate, inflation has not been persistent. Recent data hints to inflation moderation, leading to confidence that the FED can continue to gradually reduce accommodative monetary policy. Subtleties in the perceptions of economic activity and policy responses have important consequence on longer-term bonds. For example, researchers at the Federal Reserve Bank of Chicago "find that a ten-percent increase in the probability of a very low/negative policy rate can reduce the 10-year nominal yield by about 40 – 50 basis points.[18] This was likely an affect in the first few months of 2018 when economic data supported the view of increasing inflation, leading to a reduction in the probability of lower policy rates, and increased 10-year yields. The TCJA increases the likelihood that the FED continues rate increases in step with an expanding economy, while simultaneously increasing hysteretic risks of an overheating economy, unsustainable reductions in unemployment, and accelerated increases in inflation. Consequences could speed the celerity

[17] Entin, S., (2018), *Tax Reform Bill Will Raise Interest Rates. Good or Bad?*, Tax Foundation, March 7, 2018. https://taxfoundation.org/tax-reform-bill-interest-rates/.

[18] Anene, D., D'Amico, S., *A tale of Four Tails: Inflation, the Policy Rate, Longer-Term Rates, and Stock Prices.* Federal Reserve Bank of Chicago, December 2017.

and enlarge the magnitude of Funds Rate increases, causing shocks to the U.S. economy, which could cascade over to the global economy, inciting a negative feedback loop.

The relationship between trend GDP growth and estimates of the natural interest rate demarcates how high the Funds Rate needs to increase before shifting from accommodative to restrictive.[19] Economists at the San Francisco FED estimate a natural interest rate equal to the trend growth rate of output, at the time 2.2%.[20] Given the FOMC's Summary of Economic Projections, FOMC members currently believe the natural rate to be between 2.3% – 3.5%.[21] Estimates of the natural interest rate imply that if the FOMC continues with 0.25% increases, it will begin to enter restrictive space after 2 – 3 more rate increases. The degree to which the FED's unwinding of its balance sheet affects long-term rates may also temper economic expansion and inflation. If the FED's balance sheet unwinding leads to increases in term premiums, increased yields may incentivize saving, reducing consumption, dampening inflation, and mitigating risks of unleashing shocking monetary policy.

Economic dynamics are important in setting an allowed ROE because they help assess the trajectory of FED Funds Rates, as well as the path of longer-term interest rates. Interest rates determine utilities' debt costs, a major input in their overall cost of capital. The interplay of interest rates and their expected effects on capital markets further assists in evaluating how utility stocks behave relative to other assets. Utility stock prices relative to other assets determines their

[19] The natural interest rate is the real short-term interest rate that allows for GDP to grow at its trend rate, while allowing for stable inflation. Short-term rates below the natural rate are thought of as expansionary; meanwhile, short-term rates above the natural rate are thought of as contractionary.

[20] Holston, K., Laubach, T., & Williams, C., (2016). *Measuring the Natural Rate of Interest: International Trends and Determinants*. Finance and Economics Discussion Series 2016-073. Washington: Board of Governors of the Federal Reserve System, https://www.federalreserve.gov/econresdata/feds/2016/files/2016073pap.pdf.

[21] Federal Open Market Committee. *Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents under their individual assessments of projected appropriate monetary policy, March 2018*. March 21, 2018.

COE, the other major component in the cost of capital. Understanding these mechanics when taking into account a utility's anticipated capital expenditures in an evolving economy helps guide the decision of what a proper ROE should be going forward.

Sustained economic growth in the U.S. and abroad increase the likelihood of continued Funds Rate increases in the short to mid-term. Augmenting growth, the TCJA heightened risks of yield curve inversion because of Treasury financing requirements and an unsustainable growth trajectory. If an inversion occurs, risk aversion will increase, and asset price depreciation in broader equities will likely follow, increasing the COE. Although continued increases to short-term interest rates in the short to mid-term will lead to higher borrowing costs, higher short-term borrowing costs will likely be tamped by continued lower longer-term interest rates, which will help mitigate increases in the COE. ** _____

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2. Capital Market Conditions

a. Utility Debt Markets

Short-term interest rate increases in the Funds Rate have materialized in utilities short-term capital costs. The Funds Rate was set between .25% - .50% for most of 2016, as of March 2018, the Funds Rate was set between 1.50% - 1.75%. ** _____

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Compression between short-term and long-term Treasury yields has been mirrored by utility bonds in utility debt markets. Schedule JS-d 4-5 shows the average yields for utility bonds and 30-year Treasuries, and Schedule JS-d 4-6 shows spreads and the long-run average spread between utility bonds and 30-year Treasuries. The average public utility bond yields, reported by Mergent Bond Record, for 2016, 2017, and the first four-months of 2018 were 4.11%, 4.07%, and 4.13%, respectively. Average spreads between 30-year Treasuries and utility bonds were 1.51%, 1.17%, and 1.09% in 2016, 2017, and the first four-months of 2018, respectively. Since the end of the Great Recession, public utility bonds have had a .91 correlation with 30-year Treasuries and a .76 correlation with 10-year Treasuries. Thirty-year Treasury yields have risen since KCPL's last rate case. While average public utility bond yields have also risen, they have not risen as quickly as 30-year Treasury yields, leading to compressing spreads between Treasuries and utility bond yields.[22] A similar situation has occurred with 'BBB'-rated utility bonds. However, BBB-rated utility bonds have shown slightly more compression, indicating reduced risk premiums.

S&P rates both KCPL and GMO senior unsecured debt 'BBB+'.[23] Moody's rates KCPL senior unsecured debt 'Baa1', one notch higher than the 'Baa2' ratings it gives GMO senior unsecured debt. Schedule JS-d 4-7 shows the average yields on 'BBB'-rated utility bonds compared to 30-year Treasuries. The average 'BBB'-rated utility bond yields reported by Mergent Bond Record for 2016, 2017, and the first four-months of 2018 were 4.68%, 4.38%, and

[22] The historical average spread is 1.39%. Treasury yields will have to come down, or utility bond yields will have to rise for spreads to come in line with historical averages. Historical spreads will gradually decline if the current situation persists.

[23] On June 4th, S&P upgraded GPE and its subsidiaries to A- due to the imminent merger.

4.43%, respectively. Average spreads between 30-year Treasuries and 'BBB'-rated utility bonds were 2.08%, 1.48%, and 1.38% in 2016, 2017, and the first four-months of 2018, respectively. The historical average spread between 30-year Treasuries and 'BBB'-rated utility bonds is 1.83%.[24] Coinciding with increased risk aversion in equity markets, reduced risk premiums in bonds are likely to reverse and begin expanding towards historical levels.

To the extent Missouri's utilities or their parent companies have outstanding bonds traded in the secondary markets, it is relevant to analyze this company-specific data to determine a reasonable estimate of the cost of capital, and a reasonable allowed ROE. Although this company-specific debt yield information is helpful because it informs the Commission as to the yield investors are currently requiring on Missouri utilities' and/or their parent companies' debt capital, Staff notes that some of the bonds are thinly traded, if they are traded at all. Additionally, the terms of some of these bonds may differ, such as the time to maturity, secured/unsecured, callable or not, date it is callable, etc. Staff specifically analyzed bonds that had maturities of approximately 20 years or greater and those that had at least four trades during August, September, and October 2016 (the general period evaluated by ROR witnesses in the KCPL rate case) and four trades for the three months through April 30, 2018 (the period analyzed in the current case).

GMO does not have any outstanding bonds traded in secondary markets; all its debt has been issued through private placements or intercompany loans. KCPL has one bond with a maturity of 20 years or more that met Staff's trading criteria.[25] This bond matures in 2041, has a 'BBB+' rating from S&P and an 'Baa1' rating from Moody's, and is unsecured. The bond

[24] Lower than average spreads between average public utility bonds and BBB-rated utility bonds corroborates reduced bond risk premiums. This echoes a similar reduction in risk premiums seen when comparing Treasury bond yields to average utility bond yields.

[25] Symbol-GXP.HD, CUSIP-485134BM1.

traded at an average yield-to-maturity of 4.20% the three months ended October 31, 2016. During the three months through April 30, 2018, this bond had an average yield-to-maturity of 4.45%. Based on the data related to KCPL's bond yields, its longer-term bond costs have increased approximately 25 basis points since fall 2016.

Unfortunately, no Spire Missouri[26] outstanding bonds met the liquidity criteria necessary for comparative purposes. However, assessing Spire Missouri's credit ratings and reports gives insight to the different risk profiles between the utilities. Substantially all of Spire Missouri's debt is secured debt. Moody's rates Spire Missouri's secured debt 'A1', one notch higher than its rating for KCPL's secured debt, 'A2'. S&P rates Spire Missouri's and KCPL's secured debt, 'A'. GMO does not have a secured debt rating from either Moody's or S&P.

Factors identified by the rating agencies help contrast differences in general industry risk, as well as specific company risks. In its July 21, 2017 credit opinion of Laclede Gas Company (Spire Missouri), Moody's describes the difference in general industry risk between regulated natural gas distribution utilities ("LDC") and vertically integrated regulated electric utilities:

> [LDCs] are viewed as having a business profile that is of lower risk compared to vertically integrated regulated electric utilities… LDCs do not encounter the many operating risks related to power generation and the higher capital expenditures that such generation usually entails.

Although Spire Missouri serves approximately 1.1 million customers compared to KCPL's and GMO's combined 867 thousand customers, S&P estimates Spire Missouri's capital spending at $200 million annually compared to KCPL's and GMO's combined estimate of roughly $550 million annually.

[26] Spire Missouri's relevance as a comparison stems from its rate cases, Case Nos. GR-2017-0215 and GR-2017-0216, being the most recent cases in which the Commission decided ROR.

Broader market data shows long-term borrowing costs have increased in recent months. Data for KCPL's and GMO's long-term bonds compared to Spire Missouri's bond data indicates higher capital costs for KCPL and GMO. Better credit metrics, reduced industry risk, and less company specific risk lead to more secure cash flows at Spire Missouri compared to KCPL and GMO. Increased risk associated with cash flows to debt investors at KCPL and GMO translate into added risk to equity investors, because equity payments are subordinate to debt payments. Additions of greater industry risk and company specific risk imply that the electric utility industry, and KCPL and GMO, specifically, have a higher COE than Spire Missouri.

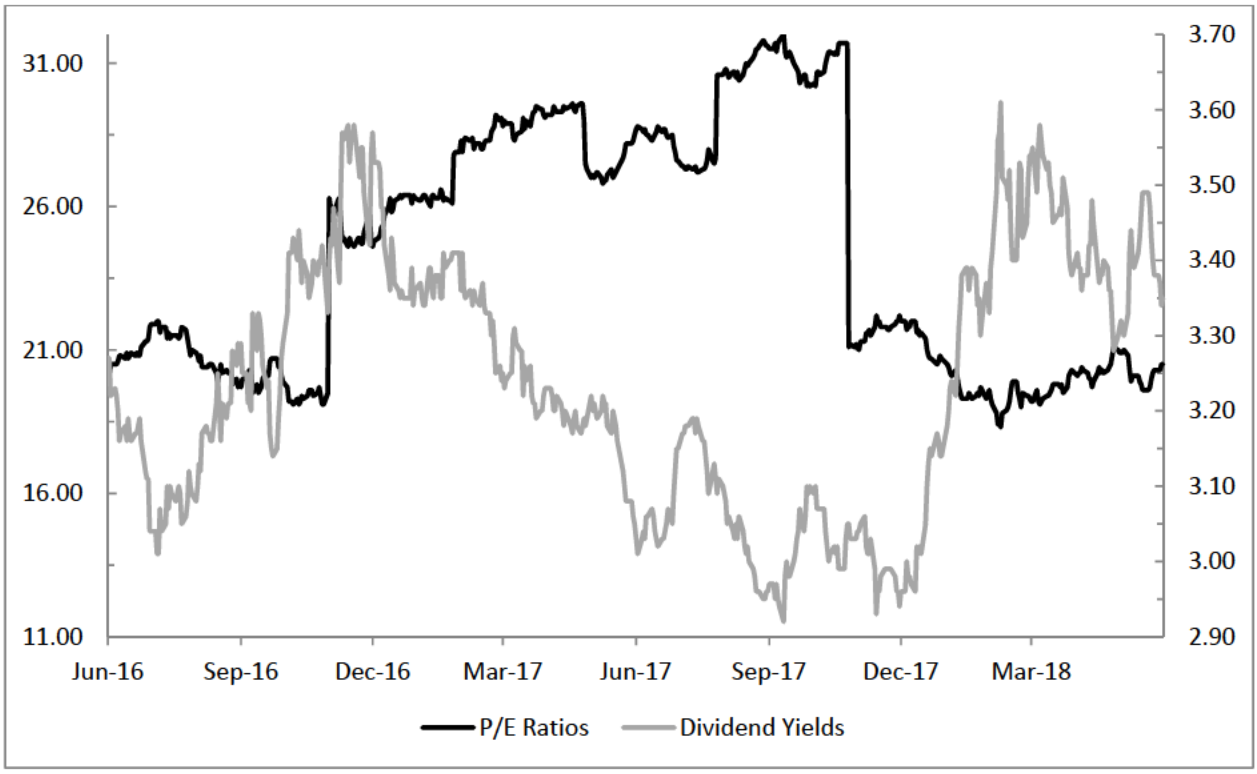
b. Utility Equity Markets

Until recently, sustained low interest rates allowed utility stocks to outperform the S&P 500. Total returns for the S&P 500 and the S&P 500 utilities sector were 13.7%, and 16.6% in 2016, respectively. The S&P 500 utilities sector outperformed the broader market in total returns for most of 2017, until November, when the passage of significant federal tax legislation began to appear likely, boosting earnings outlooks and increasing valuations in the broader market. Passage of the TCJA in December led to ebullient rallies in broader markets ending 2017 and starting 2018. However, after processing information on potential TCJA affects and receiving new economic data, jubilation subsided and markets contracted. For the first four-months of 2018, the utility sector outperformed the broader market; the S&P 500 had a total return of -1.2%; meanwhile, the S&P 500 utilities sector had a total return of -0.4%. The volatility in the broader markets in recent months is symptomatic of increased risk aversion, implying a higher COE.

The utility industry's outperformance of the S&P 500 is largely because of high valuation levels of utility stocks, due to low long-term interest rates, i.e., a low cost of capital. The Commission has agreed that evidence of lower interest rates, lower dividend yields, and higher

price-to-earnings ("P/E") ratios generally supported lower allowed ROEs. Consistency dictates higher interest rates, higher dividend yields, and lower P/E ratios support higher allowed ROEs. However, it is important to remember that utility valuation levels in the middle of 2016 and late 2017 were at all-time highs, meaning the COE was at all-time lows. The Commission's 9.5% ROE for KCPL in its 2016 rate case was based on market conditions at that time. Staff has already elaborated on the interest rate environment. Staff will focus on comparing and contrasting dividend yields and PE ratios of the electric proxy group for the period since the fall of 2016 to describe how general costs of capital have changed, and discern if higher allowed ROEs are justified for KCPL and GMO.

As Staff has explained in recent utility rate case testimonies, the biggest cause for high utility stock P/E ratios have been low long-term interest rates, which resulted in low utility dividend yields. For the three-months ended October 31, 2016, the average dividend yield and average P/E ratio for Staff's electric utility proxy group were 3.27% and 19.94x, respectively. This compares to an average dividend yield and average P/E ratio of 3.45% and 19.69x, respectively, for the three-month period ending April 30, 2018. Increases in electric utility dividend yields of 18 basis points and approximately 1-turn lower valuation levels since KCPL's last rate case provide further support for an increased COE and a higher allowed ROE. The chart below shows average P/E Ratios and dividend yields from June 2016 to May 2018.



Source: SNL Financial

Debt and equity markets show that overall costs have increased and economic and capital market conditions support the notion that those costs will remain elevated in the short to mid-term. Data indicating that utilities' overall costs have increased justify a higher ROE because ** _____ _____ _____ _____. **

D. KCPL and GMO Operations:

The following excerpt from GPE's Form 10-K filing with the United States Securities and Exchange Commission ("SEC") for the 2017 calendar year provides a good description of KCP&L's and GMO's current business operations and GPE's current organizational structure:

> Great Plains Energy, a Missouri corporation incorporated in 2001 and headquartered in Kansas City, Missouri, is a public utility holding company and does not own or operate any significant assets other than the stock of its subsidiaries and cash and cash equivalents… Great Plains Energy's sole reportable business segment is the electric utility segment (Electric Utility)… Electric Utility consists of KCP&L, a regulated utility, GMO's regulated utility operations and GMO Receivables Company. Electric Utility serves approximately 867,100 customers located in western Missouri and eastern Kansas. Customers include approximately 764,200 residences, 100,400 commercial firms and 2,500 industrials, municipalities and other electric utilities. Electric Utility's retail revenues averaged approximately 93% of its total operating revenues over the last three years. Wholesale firm power, bulk power sales and miscellaneous electric revenues accounted for the remainder of Electric Utility's revenues. Electric Utility is significantly impacted by seasonality with approximately one-third of its retail revenues recorded in the third quarter. Electric Utility's total electric revenues were 100% of Great Plains Energy's revenues over the last three years.

E. Rate of Return

In order to arrive at Staff's recommended ROR, Staff specifically examined (1) an appropriate ratemaking capital structure, (2) the Company's embedded cost of debt, and (3) an evaluation of a fair and reasonable allowed ROE.

1. Capital Structure

Staff has consistently recommended the Commission use GPE's capital structure for KCPL's and GMO's ratemaking capital structure. However, events surrounding GPE's merger with Westar and the resultant transient capital structure have caused Staff to change its position. Therefore, Staff recommends using KCPL's capital structure to set its allowed ROR, because it is near the 50/50 ratio at which GPE has stated that it intends to manage its operating companies, reflecting the financial risk GPE has determined is reasonable for purposes of financing its

regulated utility assets.[27] Also, assessing the reasonableness of KCPL's capital structure compared to capital structures of other electric utilities reveals that KCPL's actual capital structure resembles the average capital structure of operating companies included in the proxy group (*see* Schedule JS-d 6-9).

For GMO, Staff recommends using an adjusted capital structure to set its ROR, because it more closely resembles the 50/50 ratio at which GPE has stated it intends to manage its operating companies. Also, the adjusted capital structure more closely resembles the average capital structure of the operating companies subsumed within the proxy. Finally, by removing the goodwill on GMO's financial statements, the adjusted capital structure substantively aligns with the antecedent of the "net original cost rule," described in the *Report and Order* of the GPE/Aquila merger case, Case Number EM-2007-0374, precluding the recovery of transaction costs and acquisition premiums.

The capital structures Staff used represent the company's capital structures, as of March 31, 2018. Schedule JS-d 6-10, attached as Appendix 2 to this report and incorporated by reference herein, presents KCPL's and GMO's capital structures and associated capital ratios. The resulting capital structure for KCPL consists of 49.45 percent common equity, and 50.55 percent long-term debt. The resulting capital structure for GMO consists of 48.15 percent common equity, and 51.85 percent long-term debt.

Schedules JS-d 6-1 through JS-d 6-9 show several different scenarios for GPE's, KCPL's and GMO's historical capital structures for the last five years, as well as, the historical capital structures for the proxy group of companies and their operating companies for the last five years. The first of the capital structure scenarios (simple capital structure) reflects the amount of

[27] Bryant, K., ER-2016-0285, 2/7/2017, Tr. Vol. 7, at p. 163.

long-term debt and equity on companies' balance sheets. The simple capital structure does not include current portions of long-term debt in the capital structures. The second capital structure scenario reflects the amount of long-term debt, including current portions of long-term debt, and equity on companies' balance sheets. It is important to consider the current portions of long-term debt in companies' capital structure because of high incidences of refinancing or "rolling-over" that debt when it matures. The final scenario includes current portions of long-term debt, and also adjusts the companies' equity portion of the capital structure by removing goodwill.

KCPL's capital structure has slightly more equity than the proxy group average, but remains under 50 percent, appearing reasonable considering its proximity to the proxy group average and GPE's intended management of a 50/50 capital structure for its operating companies. GMO's capital structure, however, has a significantly higher amount of equity compared to the proxy group and is significantly higher than the 50/50 ratio at which GPE intends to manage its operating companies. Goodwill accounts for all of the excess equity in GMO's capital structure. The substantial amount of goodwill in GMO's financial statements is a result of GPE's assets merging with Aquila's assets. GMO's capital structure requires an adjustment to equity to comply with the antecedent of the "net original cost rule," described in the *Report and Order* of the GPE/Aquila merger case, Case Number EM-2007-0374, precluding the recovery of transaction costs and acquisition premiums.[28]

[28] ***In the matter of the Joint Application of Great Plains Energy Incorporated, Kansas City Power & Light Company, and Aquila, Inc.*** Case No. EM-2007-0374, (***Report and Order***, issued June 1, 2008) at p.239.

Prior to the merger, Aquila reported $111 million of goodwill, primarily related to Aquila's purchase of St. Joseph Light & Power Company.[29] ** _____ _____ . ** Staff reviewed details of the merger transaction to determine the amount of goodwill to remove from the equity portion of GMO's capital structure. The merger involved three-parties: Aquila, Black Hills, and GPE. The financial structure of the merger involved 40% cash and 60% equity. The merger transaction was cross-conditioned on the sale of $940 million of Aquila assets to Black Hills and vice-versa, neither the sale of assets nor the merger would occur unless both occurred, with the merger set to immediately follow the asset sale.

Aquila applied for[30] and received regulatory approval[31] to distribute approximately $677 million of proceeds from the sale to fund substantially the entire cash portion of the merger;[32] remaining proceeds from the sale were used to retire portions of Aquila's debt. No debt was used in the transaction; as such, ** _____ _____ . ** The adjustment acknowledges the fungibility of capital, and ensures that rate payers do not pay for the acquisition premium associated with the merger, or premiums related to Aquila's purchase of St. Joseph Light & Power Company. Also this adjustment results in an adjusted capital structure for GMO more closely resembling the 50/50 ratio at which GPE has stated it intends to manage its

[29] SEC Form 8-K/A, Filing Date 2008-08-14, Document ex99-3.htm, GPE FINANCIALS 12/31/07 AND 3/31/08, https://www.sec.gov/Archives/edgar/data/54476/000114306808000062/ex99-3 htm at p.16.

[30] ***In the matter of the Joint Application of Great Plains Energy Incorporated, Kansas City Power & Light Company, and Aquila, Inc.*** Case No. EM-2007-0374, (***Joint Application of Great Plains Energy Incorporated, Kansas City Power & Light Company and Aquila, Inc.***, filed April 4, 2007) at p. 21.

[31] ***In the matter of the Joint Application of Great Plains Energy Incorporated, Kansas City Power & Light Company, and Aquila, Inc.*** Case No. EM-2007-0374, (***Report and Order***, issued June 1, 2008) at p.281.

[32] SEC Form 425, Filing Date 2007-04-05, PRESS RELEASE FOR MO & KS ACQUISITION APP FILED, https://www.sec.gov/Archives/edgar/data/66960/000114306807000118/release040407 htm.

operating companies. Finally, the adjustment more closely aligns GMO's capital structure to the average capital structures of operating companies subsumed within the proxy group (*see* Schedule JS-d 6-9).

2. Cost of Debt

** _____

_____

_____. **

3. Cost of Common Equity

Staff estimated KCPL's and GMO's cost of common equity through a comparable company cost-of-equity analysis using a proxy group of electric utility companies. Additionally, Staff used a CAPM analysis and a survey of other indicators as a check of the reasonableness of COE findings.

a. The Proxy Group

Staff used a proxy group consisting of companies that are predominately vertically integrated, regulated, electric utilities to estimate changes in the cost of equity since KCPL's last rate case. Staff ensured companies in the proxy group are confined to vertically integrated, regulated, electric utility operations by starting with Edison Electric Institute's regulated electric utility index, and then screened these companies further by ensuring that they:

- are publicly traded
- have investment grade credit ratings from two major U.S. credit rating agencies
- have long-term growth coverage from at least 2 analysts
- have no pending merger or acquisitions
- had no pending merger and acquisitions during KCPL's 2016 rate case
- have not reduced dividends since 2015
- have 50% of plant from electric utility

- have at least 25% of plant from electric generation
- generate at least 80% of income from regulated utility operations

(*see* Schedule JS-d 5-1).

b. The Constant-growth DCF

Staff started its evaluation of the electric utility industry's cost of common equity by applying values derived from the proxy group to the constant-growth DCF model. The constant-growth DCF model is widely used by investors to evaluate stable-growth investment opportunities, such as regulated utility companies. It may be expressed algebraically as follows:

$$k = D_1/P_0 + g$$

Where: k is the cost of equity;

D_1 is the expected next 12 months dividend;

P_0 is the current price of the stock; and

g is the dividend growth rate.

The term D1/P0, the expected next 12-months' dividend divided by current share price, is the dividend yield. Staff calculated the dividend yield for each of the comparable companies by dividing the weighted average of the 2018 (3/4) and 2019 (1/4) calendar year projected dividends per share from SNL Financial by the monthly high/low average stock price for the three months ending April 30, 2018 (*see* Schedule JS-d 10).[33] The projected average dividend yield for the electric utility proxy group is approximately 3.45%, unadjusted for quarterly compounding.

i. The Inputs

In the DCF method, the cost of equity is the sum of the dividend yield and a growth rate ("g") that represents the projected capital appreciation of the stock. In estimating a

[33] The monthly high/low averaging technique minimizes the effects of short-term stock market volatility on the calculation of dividend yield. P0 is calculated by averaging the highest and the lowest price for each month during the selected period.

growth rate, Staff considered the actual dividends per share ("DPS"), EPS and book value per share ("BVPS") for each of the comparable companies and also the projected DPS, EPS and BVPS. Staff also reviewed equity analysts' consensus estimates for long-term compound annual growth rates in EPS as reported by SNL Financial. The average consensus long-term growth rates in EPS for the proxy group was 4.91% as of April 30, 2018. (*see* Schedule JS-d 8-5). In KCPL's last rate case, Staff estimated an average median growth rate in EPS, DPS, and BVPS of 4.2%.

While Staff may accept the argument that electric utilities' EPS can grow over the next five years at a growth rate of approximately 4.91%, a rate which is higher than consensus nominal GDP long-term growth rate[34] estimates, Staff notes that it would be unreasonable to conclude that this growth rate is sustainable in perpetuity because it does not give consideration to empirical and logical information that suggests that utility companies should grow at a rate less than that of the overall economy. Historical data indicates that companies in the S&P 500 (a proxy for U.S. capital markets) have retained approximately 58% of their earnings for reinvestment since January 1, 2000.[35] During that same time period, the electric utilities proxy group has retained an average 26% of their earnings for reinvestment. A projected long-term nominal GDP growth rate should be conservatively ascribed as an upper constraint when testing the reasonableness of growth rates used to estimate the cost of equity for a regulated electric utility. Staff will provide more detail on economic growth projections when discussing the multi-stage DCF, but a high-end estimate for nominal GDP is no higher than 4.6%, causing an estimated constant growth rate over this rate to be suspect.

[34] The nominal GDP growth rate, contrasted to the real GDP growth rate introduced earlier, is not adjusted for inflation.

[35] http://www.spindices.com/indices/equity/sp-500.

It is important to consider actual experience in dividend growth achieved by electric utility companies and the basic characteristics of electric utility stocks when determining a reasonable expected growth rate for the DCF. It is critical to remember that the growth rate used in the DCF is supposed to represent the expected capital gains (growth in the stock price) of the utility. Considering that over long-term holding periods a majority of utility investors' return from investing in utility stocks have been from the payment of the dividend, it is illogical to expect the growth component of the return to be higher than the dividend yield. Results of the DCF place the electric utility proxy group's dividend yield at 3.45%. Making the assumption that capital gains could equal the dividend yield implies electric utility investors are requiring a return of 7.34% for electric utility stocks. Therefore, even assuming electric utility stocks will achieve 50% of their returns from capital gains over the long-term, a proposition that is not consistent with actual experience over long periods for electric utility stocks, implies a COE lower than average allowed ROEs. Although Staff considers it unlikely that the fundamental characteristics of electric utility stocks will cause returns from capital gains to be much higher than dividend returns, because historical dividend growth has been approximately 4.0% and expected dividend growth over the next five years is expected to be higher, Staff used a constant growth rate of 4% to 5% to arrive at a cost of equity estimate of 7.45% to 8.45%.

c. The Multi-stage DCF

i. Overview

Staff compared its COE analysis of the electric utility proxy group using data from the time frame coinciding with KCPL's 2016 electric rate case to its COE analysis of the electric proxy group using more recent data. Staff's analysis justifies the Commission allowing a higher ROE for KCPL and GMO now, compared to the ROE allowed in the last KCPL rate case.

A multi-stage DCF may use either two or more growth stages, depending on the situation being modeled. In any case, the last stage must use a sustainable rate as it is considered to last into perpetuity. The ability of a multi-stage DCF analysis to reliably estimate the cost of common equity is primarily driven by the analyst using a reasonable growth rate for the final stage because this rate is assumed to last into perpetuity. Where three stages are used, the second stage is generally a transitional phase between the high growth first stage and the constant growth final stage.[36]

In the present case, Staff used a three-stage DCF approach: the stages being years 1-5, years 6-10, and years 11 to infinity.[37] For stage one, Staff gave full weight to analysts' five-year EPS growth estimates. For stage two, Staff linearly reduced the growth rate from the stage one level to the constant-growth third stage level. Although Staff does not subscribe to the notion that the electric utility industry can grow at a steady state equal to the steady state growth rate of the economy, because Staff is using these results as a relative measure, instead of an absolute measure, and because the Commission has shown a preference to GDP in past rate cases, Staff used steady state economic growth rate projections in the third stage. Based on average current long-term sustainable real GDP projections of 2.12%, compounded by the expected long-term GDP price deflator of 2.0% ((1.0212 * 1.02) – 1) = .0416), the midpoint estimate of GDP growth is approximately 4.20%, roughly the same as KCPL's last rate case.

Staff's sources for the range of growth rates include the Congressional Budget Office ("CBO"), the Federal Reserve, the Organization for Economic Cooperation and Development ("OECD"), and the U.S. Energy Information Administration ("EIA"). The CBO projects an

[36] John D. Stowe, Thomas R. Robinson, Jerald E. Pinto and Dennis W. McLeavey, *Analysis of Equity Investments: Valuation*, Association for Investment Management and Research, 2002, p. 71-72.

[37] In practice, Staff extended the third stage only to year 200.

annual compound growth rate in real GDP of approximately 1.93% through 2028;[38] the Federal Reserve projects a central tendency real GDP growth in the range of 1.7% - 2.2% in the longer run;[39] OECD projections estimate real GDP growth of approximately 2.5% through 2028;[40] and EIA projections estimate real GDP growth of approximately 2.10% through 2028.[41]

Based on perpetual growth rate ranges of 3.6% to 4.6%, the absolute value of Staff's cost of equity estimate for the electric utility industry is in the range of 7.46% to 8.26%. This compares to Staff's results of 7.21% to 8.02% using data from KCPL's last rate case. Using the relative COE comparison KCPL's COE appears to have increased approximately 25 basis points since its last rate case.

ii. Stage one

The first stage of a multi-stage DCF is usually quite specific due to the ability to forecast cash flows in the near-term with more accuracy. In fact, it is often the case that the first stage of a multi-stage DCF will be based on discrete cash flows projected on an annual basis for the next several years. However, in the context of discounting expected future DPS, it is often the case that a compound growth rate is applied to the current DPS to estimate the expected DPS over the next several years. Although it is rare for a company to tie its targeted DPS growth rate directly to a 5-year EPS projected compound growth rate, because equity analysts' 5-year EPS forecasts are widely available and may provide some insight on expected DPS, Staff decided to use these growth rates for the first 5-years of its multi-stage DCF.

[38] www.cbo.gov/publication/52801.
[39] https://www.federalreserve.gov/monetarypolicy/mpr_20170214_part3.htm.
[40] https://data.oecd.org/gdp/gdp-long-term-forecast.htm.
[41] https://www.eia.gov/outlooks/aeo/data/browser/#/?id=18-AEO2017&cases=ref2017&sourcekey=0.

iii. Stage two

Stage two, i.e., the transition stage, is simply a gradual movement from above normal growth to more normal/sustainable growth for the final stage. Although stage two can also consist of forecasted discrete cash flows, because it is a transitional period, it is logical to linearly reduce the high growth first-stage growth over a specific period in order to gradually reduce the growth rate to the expected sustainable growth rate. Staff chose to do this over a five-year period, which is fairly conventional in multi-stage DCF analysis.

iv. Stage three

Stage three is the final/constant-growth stage. In fact, the final stage can be reduced to the single-stage, constant-growth form of the DCF. Although this is the "generic" stage, it is extremely important to select a reasonable growth rate for this stage to arrive at a reliable cost of equity estimate.

F. Tests of Reasonableness

Staff has tested the reasonableness of its DCF results by use of a CAPM analysis and consideration of other evidence.

1. The CAPM

The CAPM is built on the premise that the variance in returns is the appropriate measure of risk, but only the non-diversifiable variance (systematic risk) is rewarded. Systematic risks, also called market risks, are unanticipated events that affect almost all assets to some degree because the effects are economy wide. Systematic risk in an asset, relative to the average, is measured by the Beta of that asset. Unsystematic risks, also called asset-specific risks, are unanticipated events that affect single assets or small groups of assets. Because unsystematic risks can be freely eliminated by diversification, the reward for bearing risk depends on the level

of systematic risk. The CAPM shows that the expected return for a particular asset depends on the pure time value of money (measured by the risk free rate), the reward for bearing systematic risk (measured by the market risk premium), and the amount of systematic risk incurred by the asset (measured by Beta). The general form of the CAPM is as follows:

$$k = Rf + \beta\,(Rm - Rf)$$

Where: k is the expected return on equity for a security;
Rf is the risk-free rate;
β is Beta; and
Rm - Rf is the market risk premium.

For inputs, Staff relied on historical capital market return information through the end of 2017. For the risk-free rate (Rf), Staff used the average yield on 30-year U.S. Treasury bonds for the three-month period ending April 30, 2018; that figure was 3.10%. For beta (β), Staff relied on SNL Financial betas; the average beta for the proxy group was 0.64. For the market risk premium (Rm – Rf) estimates, Staff relied on the historical difference between earned total returns on stocks and earned total returns on bonds.[42] The first risk premium was based on the long-term arithmetic average of historical return differences from 1926 - 2017 (6.10 %). The second risk premium was based on the long-term geometric average of historical return differences from 1926 - 2017 (4.70%). The results using the long-term arithmetic average risk premium and the long-term geometric risk premium are 7.01% and 6.11%, respectively.

[42] From Duff & Phelps *2018 SBBI Yearbook: Stocks, Bonds, Bills, and Inflation.*

2. Other Tests

a. The "Rule of Thumb"

A "rule of thumb" method allows an objective test of individual analysts' COE estimates. Because this method is suggested in a textbook used for the curriculum for Chartered Financial Analyst ("CFA") Program, Staff believes this method is free of any bias from those involved in utility ratemaking. It is also a useful test because it is very straightforward and limits the risk premium to a 200-basis point range. The cost of equity is estimated by simply adding a risk premium to the yield-to-maturity ("YTM") of the subject company's long-term debt. Based on experience in developed markets, the typical risk premium is in the 3% to 5% range.[43] Considering that this is based on general U.S. capital-market experience and that regulated utilities are on the low end of the risk spectrum of the general U.S. market, a risk premium closer to 3% seems logical. This is especially true considering that regulated utility stocks behave like bonds. Considering the yield on KCPL's previously described long-term bond averaged 4.45% the three months ended April 30, 2018, adding a 3% to 5% risk premium, the "rule of thumb" indicates a cost of common equity between 7.45% and 9.45%.

b. Average Authorized Returns

Staff recognizes that the Commission has expressed interest in recent authorized ROEs and capital structure decisions for other electric utility and gas utility companies throughout the country. According to Regulatory Research Associates ("RRA"), the average authorized ROE for fully-litigated cases for electric utilities in the first quarter of 2018 was 9.94% (based on 5 ROE determinations). For further consideration of authorized ROEs and capital structures for electric and gas utility companies across the U.S., the chart below presents information,

[43] Courtois, Y., Drake, P., & Lai, G. (2007), *Cost of Capital*. Reading 36, Corporate Finance and Portfolio Management, CFA Program Curriculum, 2017, Level I, Volume 4.

compiled and published by RRA, describing the average allowed ROEs from Commissions around the country along with the percentage of common equity to total capital in rate cases from 2013 – 2017.

Utility	Electric		Gas	
Year	ROE%	% Equity	ROE%	% Equity
2013	10.03	49.25	9.68	50.06
2014	9.91	50.28	9.78	51.11
2015	9.85	49.54	9.60	49.93
2016	9.77	48.91	9.54	50.06
2017	9.74	48.90	9.72	49.88

Source: Regulated Research Associates, an offering of S&P Global Market Intelligence

G. Conclusion

A just and reasonable rate is one that is fair to investors and fair to ratepayers. Fairness to ratepayers means rates that are no more than is necessary to be fair to shareholders. Fairness to the shareholders means rates that produce revenues sufficient to cover the Companies' prudent cost of service, including the COE. In light of recent Commission decisions, Staff believes an allowed ROE in the range of 9.00% to 10.00% is fair and reasonable for KCPL and GMO. Considering information Staff has reviewed, Staff recommends the Commission authorize a ROE of 9.85%.

A ROE range of 9.00% – 10.00% leads to a ROR range of 6.94% to 7.43% for KCPL, and a ROR range of 6.96% to 7.44% for GMO (*see* Schedule JS-d 15). Using the point recommended allowed ROE of 9.85% results in an allowed ROR of 7.36% for KCPL, and 7.37% for GMO. KCPL's ROR was calculated by applying an embedded ** _____ _____ ** and an allowed return on common equity of 9.85% to a capital structure consisting of 49.45% common equity and 50.55% long-term debt. GMO's ROR was calculated by

applying an embedded ** _____ ** and an allowed return on common equity of 9.85% to a capital structure consisting of 48.15% common equity and 51.85% long-term debt. Although this is above what Staff estimates to be the COE to be in the current capital market environment, this allowed ROE is fair and reasonable considering economic developments since KCPL's last rate case, the recent Commission authorized ROE for Spire Missouri, and recent allowed ROEs across the country.

AN ANALYSIS OF THE COST OF CAPITAL

FOR

KANSAS CITY POWER & LIGHT COMPANY
CASE NO. ER-2018-0145
and
KCP&L GREATER MISSOURI OPERATIONS COMPANY
CASE NO. ER-2018-0146

SCHEDULES

BY

Jeffrey Smith

Financial Analysis

MISSOURI PUBLIC SERVICE COMMISSION

June 2018

Kansas City Power Light
Case No. ER-2018-0145

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13-1	2016 Multiple-Stage Discounted Cash Flow (DCF) Estimated Costs of Common Equity for Staff's Constant Comparable Electric Utility Companies, Growth in Perperetuity of 3.60%
13-2	2016 Multiple-Stage Discounted Cash Flow (DCF) Estimated Costs of Common Equity for Staff's Constant Comparable Electric Utility Companies, Growth in Perperetuity of 4.20%
13-3	2016 Multiple-Stage Discounted Cash Flow (DCF) Estimated Costs of Common Equity for Staff's Constant Comparable Electric Utility Companies, Growth in Perperetuity of 4.60%
14	Recommended Allowed Rate of Return as of March 31, 2018 for KCP&L and KCP&L GMO

Kansas City Power Light
Case No. ER-2018-0145

Federal Reserve Discount Rates Changes and Federal Reserve Funds Rates Changes

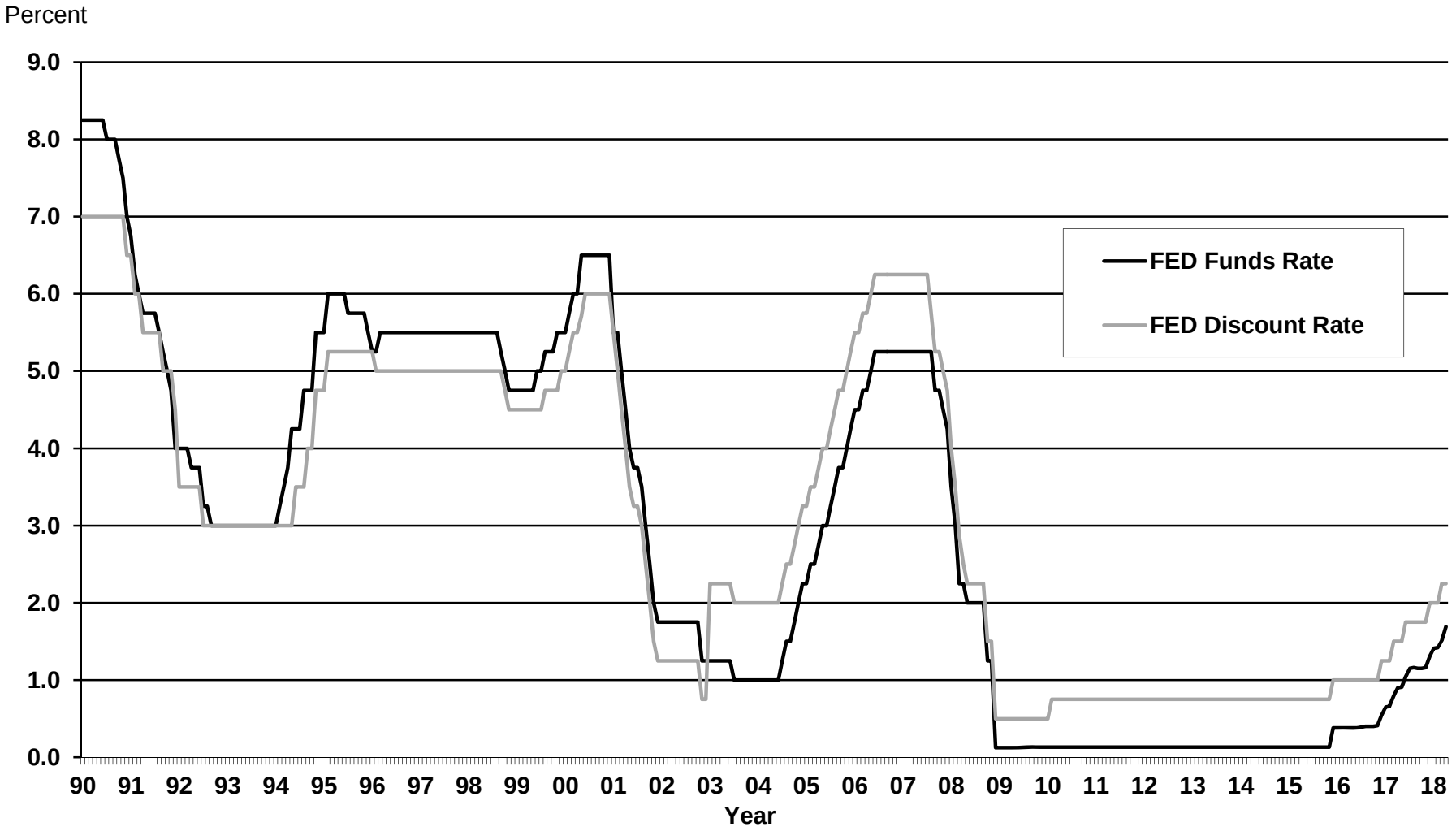
Date	Federal Reserve Discount Rate	Federal Reserve Funds Rate
07/13/90		8.00%
10/29/90		7.75%
11/13/90		7.50%
12/07/90		7.25%
12/18/90		7.00%
12/19/90	6.50%	
01/09/91		6.75%
02/01/91	6.00%	6.25%
03/08/91		6.00%
04/30/91	5.50%	5.75%
08/06/91		5.50%
09/13/91	5.00%	5.25%
10/31/91		5.00%
11/06/91	4.50%	4.75%
12/06/91		4.50%
12/20/91	3.50%	4.00%
04/09/92		3.75%
07/02/92	3.00%	3.25%
09/04/92		3.00%
01/01/93		
12/31/93	No Changes	No Changes
02/04/94		3.25%
03/22/94		3.50%
04/18/94		3.75%
05/17/94	3.50%	4.25%
08/16/94	4.00%	4.75%
11/15/94	4.75%	5.50%
02/01/95	5.25%	6.00%
07/06/95		5.75%
12/19/95		5.50%
01/31/96	5.00%	5.25%
03/25/97		5.50%
12/12/97	5.00%	
01/09/98	5.00%	
03/06/98	5.00%	
09/29/98		5.25%
10/15/98	4.75%	5.00%
11/17/98	4.50%	4.75%
06/30/99	4.50%	5.00%
08/24/99	4.75%	5.25%
11/16/99	5.00%	5.50%
02/02/00	5.25%	5.75%
03/21/00	5.50%	6.00%
05/19/00	6.00%	6.50%
01/03/01	5.75%	6.00%
01/04/01	5.50%	6.00%
01/31/01	5.00%	5.50%
03/20/01	4.50%	5.00%
04/18/01	4.00%	4.50%
05/15/01	3.50%	4.00%
06/27/01	3.25%	3.75%
08/21/01	3.00%	3.50%
09/17/01	2.50%	3.00%
10/02/01	2.00%	2.50%
11/06/01	1.50%	2.00%
12/11/01	1.25%	1.75%
11/06/02	0.75%	1.25%
01/09/03	2.25% *	1.25%
06/25/03	2.00%	1.00%
06/30/04	2.25%	1.25%
08/10/04	2.50%	1.50%
09/21/04	2.75%	1.75%
11/10/04	3.00%	2.00%
12/14/04	3.25%	2.25%
02/02/05	3.50%	2.50%
03/22/05	3.75%	2.75%
05/03/05	4.00%	3.00%
06/30/05	4.25%	3.25%
08/09/05	4.50%	3.50%
09/20/05	4.75%	3.75%
11/01/05	5.00%	4.00%
12/13/05	5.25%	4.25%
01/31/06	5.50%	4.50%
03/28/06	5.75%	4.75%
05/10/06	6.00%	5.00%
06/29/06	6.25%	5.25%
08/17/07	5.75%	5.25%
09/18/07	5.25%	4.75%
10/31/07	5.00%	4.50%
12/11/07	4.75%	4.25%
01/22/08	4.00%	3.50%
01/30/08	3.50%	3.00%
03/16/08	3.25%	
03/18/08	2.50%	2.25%
04/30/08	2.25%	2.00%
10/08/08	1.75%	1.50%
10/28/08	1.25%	1.00%
12/16/08	0.50%	0% - .25%
02/19/10	0.75%	
12/17/15	1.00%	.25% - .50%
12/15/16	1.25%	.50% - .75%
03/16/17	1.50%	.75% - 1.00%
06/15/17	1.75%	1.00% - 1.25%
12/12/17	2.00%	1.25% - 1.50%
03/21/18	2.25%	1.50% - 1.75%

*Revised discount window program begins. Reflects rate on primary credit. This revised discount window policy of the discount rates after January 9, 2003 to discount rates before January 9, 2003.

Source: Federal Reserve Discount rate http://www.newyorkfed.org/markets/statistics/dlyrates/fedrate.html
Federal Reserve Funds rate https://fred.stlouisfed.org/series/FEDFUNDS
Note: Interest rates as of December 31 for each year are underlined.

Kansas City Power Light
Case No. ER-2018-0145

Federal Reserve Discount Rates and Federal Funds Rates
1990 - 2018



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Kansas City Power Light
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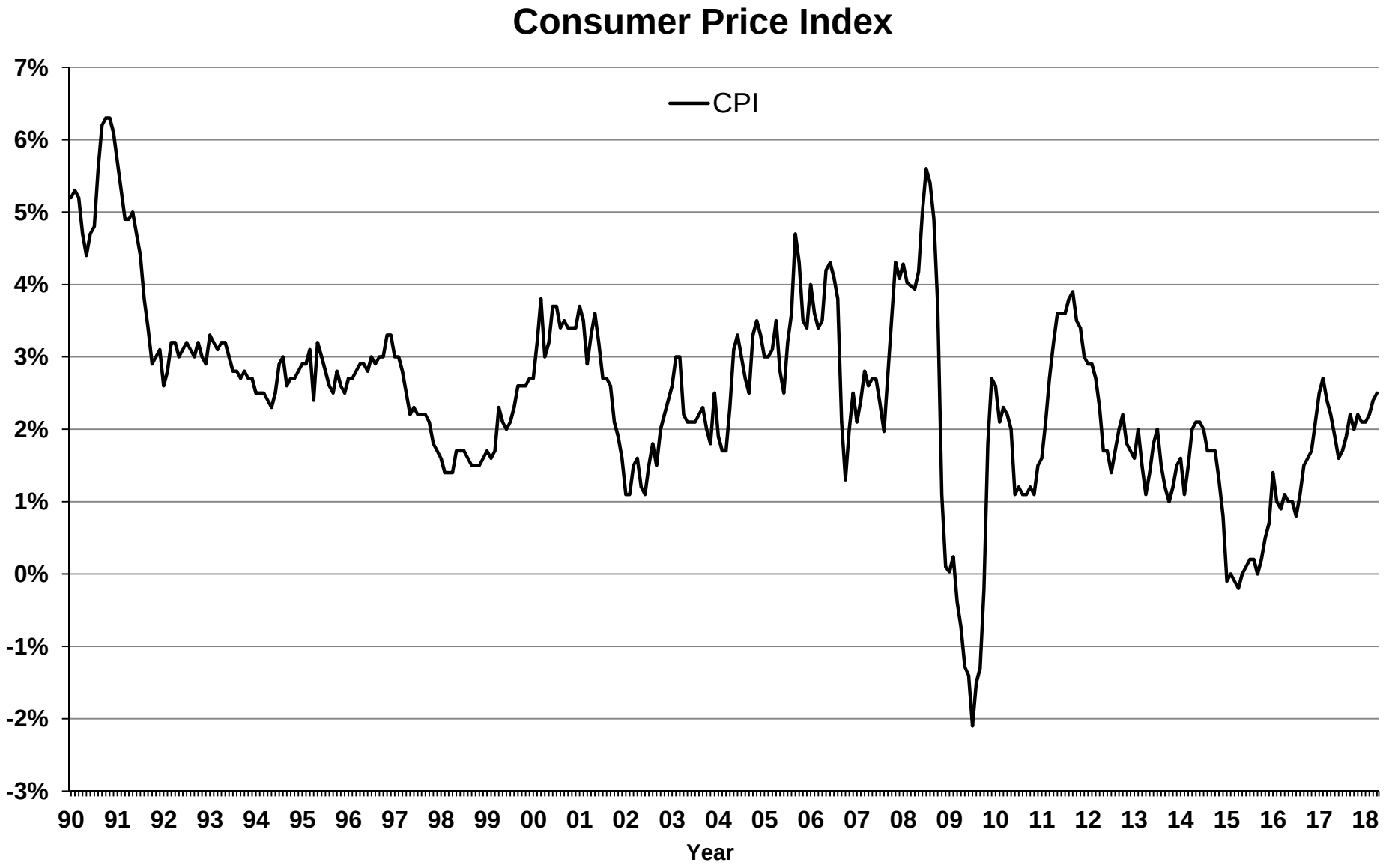
CPI Rate of Inflation

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1988	4.10	Jan 1994	2.50	Jan 2000	2.70	Jan 2006	4.00	Jan 2012	2.90
Feb	3.90	Feb	2.50	Feb	3.20	Feb	3.60	Feb	2.90
Mar	3.80	Mar	2.50	Mar	3.70	Mar	3.40	Mar	2.70
Apr	4.00	Apr	2.40	Apr	3.00	Apr	3.50	Apr	2.30
May	4.00	May	2.30	May	3.20	May	4.20	May	1.70
Jun	4.00	Jun	2.50	Jun	3.70	June	4.30	Jun	1.70
Jul	4.10	Jul	2.90	Jul	3.70	July	4.10	Jul	1.40
Aug	4.10	Aug	3.00	Aug	3.40	Aug	3.80	Aug	1.70
Sep	4.20	Sep	2.60	Sep	3.50	Sep	2.10	Sep	2.00
Oct	4.30	Oct	2.70	Oct	3.40	Oct	1.30	Oct	2.20
Nov	4.20	Nov	2.70	Nov	3.40	Nov	2.00	Nov	1.80
Dec	4.40	Dec	2.80	Dec	3.40	Dec	2.50	Dec	1.70
Jan 1989	4.50	Jan 1995	2.90	Jan 2001	3.70	Jan 2007	2.10	Jan 2013	1.60
Feb	4.60	Feb	2.90	Feb	3.50	Feb	2.40	Feb	2.00
Mar	4.90	Mar	3.10	Mar	2.90	Mar	2.80	Mar	1.50
Apr	5.00	Apr	2.40	Apr	3.30	Apr	2.60	Apr	1.10
May	5.30	May	3.20	May	3.60	May	2.70	May	1.40
Jun	5.20	Jun	3.00	Jun	3.20	Jun	2.70	Jun	1.80
Jul	5.10	Jul	2.80	Jul	2.70	Jul	2.40	Jul	2.00
Aug	4.60	Aug	2.60	Aug	2.70	Aug	2.00	Aug	1.50
Sep	4.40	Sep	2.50	Sep	2.60	Sep	2.80	Sept	1.20
Oct	4.60	Oct	2.80	Oct	2.10	Oct	3.50	Oct	1.00
Nov	4.70	Nov	2.60	Nov	1.90	Nov	4.30	Nov	1.20
Dec	4.60	Dec	2.50	Dec	1.60	Dec	4.10	Dec	1.50
Jan 1990	5.20	Jan 1996	2.70	Jan 2002	1.10	Jan 2008	4.30	Jan 2015	-0.10
Feb	5.30	Feb	2.70	Feb	1.10	Feb	4.00	Feb	0.00
Mar	5.20	Mar	2.80	Mar	1.50	Mar	4.00	Mar	-0.10
Apr	4.70	Apr	2.90	Apr	1.60	Apr	3.90	Apr	-0.20
May	4.40	May	2.90	May	1.20	May	4.20	May	0.00
Jun	4.70	Jun	2.80	Jun	1.10	Jun	5.00	Jun	0.10
Jul	4.80	Jul	3.00	Jul	1.50	Jul	5.60	Jul	0.20
Aug	5.60	Aug	2.90	Aug	1.80	Aug	5.40	Aug	0.20
Sep	6.20	Sep	3.00	Sep	1.50	Sep	4.90	Sep	0.00
Oct	6.30	Oct	3.00	Oct	2.00	Oct	3.70	Oct	0.20
Nov	6.30	Nov	3.30	Nov	2.20	Nov	1.10	Nov	0.50
Dec	6.10	Dec	3.30	Dec	2.40	Dec	0.10	Dec	0.70
Jan 1991	5.70	Jan 1997	3.00	Jan 2003	2.60	Jan 2009	0.00	Jan 2016	1.40
Feb	5.30	Feb	3.00	Feb	3.00	Feb	0.20	Feb	1.00
Mar	4.90	Mar	2.80	Mar	3.00	Mar	-0.40	Mar	0.90
Apr	4.90	Apr	2.50	Apr	2.20	Apr	-0.70	Apr	1.10
May	5.00	May	2.20	May	2.10	May	-1.28	May	1.00
Jun	4.70	Jun	2.30	Jun	2.10	Jun	-1.40	Jun	1.00
Jul	4.40	Jul	2.20	Jul	2.10	Jul	-2.10	Jul	0.80
Aug	3.80	Aug	2.20	Aug	2.20	Aug	-1.50	Aug	1.10
Sep	3.40	Sep	2.20	Sep	2.30	Sep	-1.30	Sep	1.50
Oct	2.90	Oct	2.10	Oct	2.00	Oct	-0.20	Oct	1.60
Nov	3.00	Nov	1.80	Nov	1.80	Nov	1.80	Nov	1.70
Dec	3.10	Dec	1.70	Dec	1.90	Dec	2.70	Dec	2.10
Jan 1992	2.60	Jan 1998	1.60	Jan 2004	1.90	Jan 2010	2.60	Jan 2017	2.50
Feb	2.80	Feb	1.40	Feb	1.70	Feb	2.10	Feb	2.70
Mar	3.20	Mar	1.40	Mar	1.70	Mar	2.30	Mar	2.40
Apr	3.20	Apr	1.40	Apr	2.30	April	2.20	Apr	2.20
May	3.00	May	1.70	May	3.10	May	2.00	May	1.90
Jun	3.10	Jun	1.70	Jun	3.30	Jun	1.10	Jun	1.60
Jul	3.20	Jul	1.70	Jul	3.00	Jul	1.20	Ju;y	1.70
Aug	3.10	Aug	1.60	Aug	2.70	Aug	1.10	Aug	1.90
Sep	3.00	Sep	1.50	Sep	2.50	Sep	1.10	Sep	2.20
Oct	3.20	Oct	1.50	Oct	3.30	Oct	1.20	Oct	2.00
Nov	3.00	Nov	1.50	Nov	3.50	Nov	1.10	Nov	2.20
Dec	2.90	Dec	1.60	Dec	3.30	Dec	1.50	Dec	2.10
Jan 1993	3.30	Jan 1999	1.70	Jan 2005	3.00	Jan 2011	1.60	Jan 2018	2.10
Feb	3.20	Feb	1.60	Feb	3.00	Feb	2.10	Feb	2.30
Mar	3.10	Mar	1.70	Mar	3.10	Mar	2.70	Mar	2.40
Apr	3.20	Apr	2.30	Apr	3.50	Apr	3.20	Apr	2.50
May	3.20	May	2.10	May	2.80	May	3.60		
Jun	3.00	Jun	2.00	Jun	2.50	Jun	3.60		
Jul	2.80	Jul	2.10	Jul	3.20	Jul	3.60		
Aug	2.80	Aug	2.30	Aug	3.60	Aug	3.80		
Sep	2.70	Sep	2.60	Sep	4.70	Sep	3.90		
Oct	2.80	Oct	2.60	Oct	4.30	Oct	3.50		
Nov	2.70	Nov	2.60	Nov	3.50	Nov	3.40		
Dec	2.70	Dec	2.70	Dec	3.40	Dec	3.00		

Source: U.S. Dept of Labor, Bureau of Labor Statistics, Consumer Price Index - All Urban Consumers, Change for 12-Month Period, Bureau of Labor Statistics,
http://www.bls.gov/schedule/archives/cpi_nr.htm

Kansas City Power Light
Case No. ER-2018-0145



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Kansas City Power Light
Case No. ER-2018-0145

Different Treasury Securities' Yields and Spreads Between Their Yields

Note: Shaded Date Ranges Correspond to U.S. Recessions

Underlined Spreads Correspond to Inverted Yield Curves

Date	2YR	5YR	10YR	30YR	2/5 Spread	2/10 Spread	2/30 Spread	5/10 Spread	5/30 Spread	10/30 Spread
1990-01-01	8.09	8.12	8.21	8.26	0.03	0.12	0.17	0.09	0.14	0.05
1990-02-01	8.37	8.42	8.47	8.50	0.05	0.10	0.13	0.05	0.08	0.03
1990-03-01	8.63	8.60	8.59	8.56	**-0.03**	**-0.04**	**-0.06**	**-0.01**	**-0.04**	**-0.03**
1990-04-01	8.72	8.77	8.79	8.76	0.04	0.06	0.03	0.02	**-0.01**	**-0.03**
1990-05-01	8.64	8.74	8.76	8.73	0.09	0.12	0.09	0.02	0.00	**-0.03**
1990-06-01	8.35	8.43	8.48	8.46	0.08	0.13	0.11	0.05	0.03	**-0.02**
1990-07-01	8.16	8.33	8.47	8.50	0.17	0.31	0.34	0.14	0.17	0.03
1990-08-01	8.06	8.44	8.75	8.86	0.38	0.69	0.80	0.32	0.43	0.11
1990-09-01	8.08	8.51	8.89	9.03	0.43	0.81	0.95	0.38	0.52	0.14
1990-10-01	7.88	8.33	8.72	8.86	0.45	0.84	0.98	0.39	0.53	0.14
1990-11-01	7.60	8.02	8.39	8.54	0.42	0.79	0.94	0.37	0.52	0.15
1990-12-01	7.31	7.73	8.08	8.24	0.41	0.76	0.92	0.35	0.51	0.16
1991-01-01	7.13	7.70	8.09	8.27	0.57	0.97	1.14	0.39	0.57	0.18
1991-02-01	6.87	7.47	7.85	8.03	0.61	0.99	1.17	0.38	0.56	0.18
1991-03-01	7.10	7.77	8.11	8.29	0.67	1.01	1.19	0.34	0.52	0.18
1991-04-01	6.95	7.70	8.04	8.21	0.75	1.09	1.26	0.34	0.51	0.17
1991-05-01	6.78	7.70	8.07	8.27	0.92	1.28	1.48	0.37	0.57	0.20
1991-06-01	6.96	7.94	8.28	8.47	0.98	1.33	1.52	0.35	0.53	0.19
1991-07-01	6.92	7.91	8.27	8.45	0.99	1.36	1.53	0.36	0.54	0.18
1991-08-01	6.43	7.43	7.90	8.14	0.99	1.47	1.71	0.48	0.72	0.24
1991-09-01	6.18	7.14	7.65	7.95	0.95	1.47	1.77	0.51	0.81	0.30
1991-10-01	5.91	6.87	7.53	7.93	0.96	1.62	2.02	0.66	1.06	0.40
1991-11-01	5.56	6.62	7.42	7.92	1.06	1.86	2.36	0.80	1.30	0.50
1991-12-01	5.03	6.19	7.09	7.70	1.16	2.06	2.68	0.90	1.52	0.61
1992-01-01	4.96	6.24	7.03	7.58	1.28	2.07	2.62	0.79	1.34	0.55
1992-02-01	5.21	6.58	7.34	7.85	1.37	2.13	2.64	0.76	1.28	0.52
1992-03-01	5.69	6.95	7.54	7.97	1.26	1.86	2.28	0.60	1.02	0.43
1992-04-01	5.34	6.78	7.48	7.96	1.44	2.14	2.62	0.70	1.18	0.48
1992-05-01	5.23	6.69	7.39	7.89	1.47	2.17	2.67	0.70	1.20	0.50
1992-06-01	5.05	6.48	7.26	7.84	1.43	2.21	2.79	0.78	1.36	0.58
1992-07-01	4.36	5.84	6.84	7.60	1.48	2.49	3.24	1.01	1.76	0.75

Kansas City Power Light
Case No. ER-2018-0145

Different Treasury Securities' Yields and Spreads Between Their Yields

Note: Shaded Date Ranges Correspond to U.S. Recessions

Underlined Spreads Correspond to Inverted Yield Curves

Date	2YR	5YR	10YR	30YR	2/5 Spread	2/10 Spread	2/30 Spread	5/10 Spread	5/30 Spread	10/30 Spread
1992-08-01	4.19	5.60	6.59	7.39	1.40	2.39	3.20	0.99	1.79	0.80
1992-09-01	3.89	5.38	6.42	7.34	1.49	2.52	3.45	1.04	1.96	0.93
1992-10-01	4.08	5.60	6.59	7.53	1.52	2.51	3.45	0.99	1.93	0.94
1992-11-01	4.58	6.04	6.87	7.61	1.46	2.29	3.03	0.84	1.57	0.73
1992-12-01	4.67	6.08	6.77	7.44	1.40	2.10	2.76	0.69	1.36	0.67
1993-01-01	4.39	5.83	6.60	7.34	1.44	2.21	2.95	0.77	1.51	0.74
1993-02-01	4.10	5.43	6.26	7.09	1.33	2.16	2.99	0.83	1.66	0.83
1993-03-01	3.95	5.19	5.98	6.82	1.25	2.03	2.87	0.78	1.63	0.85
1993-04-01	3.84	5.13	5.97	6.85	1.30	2.13	3.02	0.84	1.72	0.88
1993-05-01	3.98	5.20	6.04	6.92	1.22	2.06	2.94	0.84	1.72	0.88
1993-06-01	4.16	5.22	5.96	6.81	1.05	1.80	2.64	0.75	1.59	0.84
1993-07-01	4.07	5.09	5.81	6.63	1.02	1.73	2.55	0.71	1.53	0.82
1993-08-01	4.00	5.03	5.68	6.32	1.02	1.68	2.32	0.65	1.30	0.65
1993-09-01	3.85	4.73	5.36	6.00	0.89	1.51	2.15	0.63	1.26	0.64
1993-10-01	3.87	4.71	5.33	5.94	0.83	1.46	2.06	0.63	1.23	0.61
1993-11-01	4.16	5.06	5.72	6.21	0.91	1.57	2.05	0.66	1.15	0.49
1993-12-01	4.21	5.15	5.77	6.25	0.93	1.56	2.04	0.63	1.11	0.48
1994-01-01	4.14	5.09	5.75	6.29	0.95	1.61	2.15	0.66	1.20	0.54
1994-02-01	4.47	5.40	5.97	6.49	0.92	1.50	2.02	0.58	1.10	0.52
1994-03-01	5.00	5.94	6.48	6.91	0.95	1.49	1.91	0.54	0.97	0.42
1994-04-01	5.55	6.52	6.97	7.27	0.97	1.42	1.72	0.45	0.74	0.30
1994-05-01	5.97	6.78	7.18	7.41	0.81	1.22	1.44	0.40	0.63	0.23
1994-06-01	5.93	6.70	7.10	7.40	0.76	1.17	1.46	0.41	0.70	0.29
1994-07-01	6.13	6.91	7.30	7.58	0.78	1.17	1.45	0.39	0.67	0.28
1994-08-01	6.18	6.88	7.24	7.49	0.70	1.06	1.31	0.36	0.61	0.25
1994-09-01	6.39	7.08	7.46	7.71	0.69	1.06	1.32	0.37	0.63	0.26
1994-10-01	6.73	7.40	7.74	7.94	0.67	1.02	1.21	0.34	0.53	0.19
1994-11-01	7.15	7.72	7.96	8.08	0.57	0.81	0.93	0.24	0.36	0.13
1994-12-01	7.59	7.78	7.81	7.87	0.19	0.22	0.28	0.04	0.10	0.06
1995-01-01	7.51	7.76	7.78	7.85	0.25	0.27	0.34	0.02	0.09	0.07
1995-02-01	7.11	7.37	7.47	7.61	0.25	0.36	0.50	0.10	0.25	0.14

Kansas City Power Light
Case No. ER-2018-0145

Different Treasury Securities' Yields and Spreads Between Their Yields

Note: Shaded Date Ranges Correspond to U.S. Recessions

Underlined Spreads Correspond to Inverted Yield Curves

Date	2YR	5YR	10YR	30YR	2/5 Spread	2/10 Spread	2/30 Spread	5/10 Spread	5/30 Spread	10/30 Spread
1995-03-01	6.78	7.05	7.20	7.45	0.27	0.43	0.67	0.16	0.40	0.24
1995-04-01	6.57	6.86	7.06	7.36	0.29	0.49	0.79	0.20	0.50	0.30
1995-05-01	6.17	6.41	6.63	6.95	0.24	0.46	0.78	0.22	0.54	0.32
1995-06-01	5.72	5.93	6.17	6.57	0.21	0.45	0.86	0.24	0.64	0.41
1995-07-01	5.78	6.01	6.28	6.72	0.23	0.50	0.94	0.27	0.71	0.44
1995-08-01	5.98	6.24	6.49	6.86	0.26	0.51	0.88	0.24	0.62	0.37
1995-09-01	5.81	6.00	6.20	6.55	0.20	0.39	0.74	0.20	0.55	0.35
1995-10-01	5.70	5.86	6.04	6.37	0.17	0.35	0.68	0.18	0.51	0.33
1995-11-01	5.48	5.69	5.93	6.26	0.22	0.45	0.78	0.24	0.57	0.33
1995-12-01	5.32	5.51	5.71	6.06	0.19	0.39	0.74	0.20	0.55	0.35
1996-01-01	5.11	5.36	5.65	6.05	0.25	0.54	0.94	0.29	0.69	0.40
1996-02-01	5.03	5.38	5.81	6.24	0.35	0.78	1.22	0.43	0.86	0.44
1996-03-01	5.66	5.97	6.27	6.60	0.31	0.61	0.94	0.30	0.64	0.34
1996-04-01	5.96	6.30	6.51	6.79	0.34	0.55	0.84	0.21	0.49	0.28
1996-05-01	6.10	6.48	6.74	6.93	0.39	0.64	0.83	0.25	0.44	0.19
1996-06-01	6.30	6.69	6.91	7.06	0.39	0.62	0.76	0.22	0.37	0.15
1996-07-01	6.27	6.64	6.87	7.03	0.37	0.60	0.76	0.23	0.40	0.17
1996-08-01	6.03	6.39	6.64	6.84	0.36	0.61	0.81	0.25	0.45	0.21
1996-09-01	6.23	6.60	6.83	7.03	0.36	0.60	0.79	0.23	0.43	0.19
1996-10-01	5.91	6.27	6.53	6.81	0.36	0.62	0.90	0.26	0.54	0.28
1996-11-01	5.70	5.97	6.20	6.48	0.27	0.50	0.78	0.23	0.51	0.28
1996-12-01	5.78	6.07	6.30	6.55	0.29	0.52	0.77	0.23	0.48	0.25
1997-01-01	6.01	6.33	6.58	6.83	0.33	0.57	0.82	0.25	0.49	0.25
1997-02-01	5.90	6.20	6.42	6.69	0.30	0.52	0.79	0.22	0.49	0.27
1997-03-01	6.22	6.54	6.69	6.93	0.32	0.47	0.71	0.16	0.40	0.24
1997-04-01	6.45	6.76	6.89	7.09	0.31	0.44	0.64	0.13	0.33	0.21
1997-05-01	6.28	6.57	6.71	6.94	0.29	0.43	0.66	0.14	0.37	0.22
1997-06-01	6.09	6.38	6.49	6.77	0.28	0.40	0.68	0.12	0.40	0.28
1997-07-01	5.89	6.12	6.22	6.51	0.23	0.33	0.62	0.10	0.39	0.29
1997-08-01	5.94	6.16	6.30	6.58	0.22	0.36	0.64	0.14	0.42	0.28
1997-09-01	5.88	6.11	6.21	6.50	0.22	0.33	0.61	0.10	0.39	0.29

Kansas City Power Light
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Different Treasury Securities' Yields and Spreads Between Their Yields

Note: Shaded Date Ranges Correspond to U.S. Recessions

Underlined Spreads Correspond to Inverted Yield Curves

Date	2YR	5YR	10YR	30YR	2/5 Spread	2/10 Spread	2/30 Spread	5/10 Spread	5/30 Spread	10/30 Spread
1997-10-01	5.77	5.93	6.03	6.33	0.16	0.26	0.55	0.10	0.40	0.30
1997-11-01	5.71	5.80	5.88	6.11	0.09	0.16	0.40	0.07	0.31	0.23
1997-12-01	5.72	5.77	5.81	5.99	0.06	0.09	0.28	0.04	0.22	0.18
1998-01-01	5.36	5.42	5.54	5.81	0.06	0.19	0.45	0.13	0.40	0.27
1998-02-01	5.42	5.49	5.57	5.89	0.07	0.16	0.47	0.08	0.40	0.32
1998-03-01	5.56	5.61	5.65	5.95	0.05	0.09	0.39	0.04	0.34	0.30
1998-04-01	5.56	5.61	5.64	5.92	0.05	0.07	0.36	0.03	0.31	0.29
1998-05-01	5.59	5.63	5.65	5.93	0.03	0.06	0.33	0.02	0.30	0.27
1998-06-01	5.52	5.52	5.50	5.70	0.00	**-0.02**	0.18	**-0.03**	0.18	0.21
1998-07-01	5.46	5.46	5.46	5.68	0.00	0.00	0.22	0.00	0.22	0.22
1998-08-01	5.27	5.27	5.34	5.54	0.01	0.07	0.27	0.07	0.27	0.20
1998-09-01	4.67	4.62	4.81	5.20	**-0.04**	0.14	0.54	0.18	0.58	0.40
1998-10-01	4.09	4.18	4.53	5.01	0.09	0.44	0.92	0.35	0.83	0.48
1998-11-01	4.54	4.54	4.83	5.25	0.00	0.29	0.71	0.29	0.71	0.42
1998-12-01	4.51	4.45	4.65	5.06	**-0.06**	0.14	0.55	0.19	0.61	0.41
1999-01-01	4.62	4.60	4.72	5.16	**-0.01**	0.11	0.54	0.12	0.56	0.44
1999-02-01	4.88	4.91	5.00	5.37	0.04	0.12	0.49	0.08	0.45	0.37
1999-03-01	5.05	5.14	5.23	5.58	0.09	0.18	0.53	0.09	0.44	0.35
1999-04-01	4.98	5.08	5.18	5.55	0.10	0.21	0.57	0.11	0.47	0.36
1999-05-01	5.25	5.44	5.54	5.81	0.18	0.29	0.55	0.10	0.37	0.27
1999-06-01	5.62	5.81	5.90	6.04	0.19	0.28	0.42	0.09	0.23	0.14
1999-07-01	5.55	5.68	5.79	5.98	0.12	0.24	0.43	0.11	0.30	0.19
1999-08-01	5.68	5.84	5.94	6.07	0.16	0.26	0.39	0.10	0.23	0.13
1999-09-01	5.66	5.80	5.92	6.07	0.14	0.25	0.41	0.11	0.27	0.16
1999-10-01	5.86	6.03	6.11	6.26	0.17	0.25	0.40	0.08	0.23	0.15
1999-11-01	5.86	5.97	6.03	6.15	0.11	0.17	0.28	0.06	0.18	0.11
1999-12-01	6.10	6.19	6.28	6.35	0.08	0.17	0.25	0.09	0.17	0.08
2000-01-01	6.44	6.58	6.66	6.63	0.14	0.22	0.19	0.08	0.05	**-0.04**
2000-02-01	6.61	6.68	6.52	6.23	0.07	**-0.09**	**-0.38**	**-0.16**	**-0.45**	**-0.29**
2000-03-01	6.53	6.50	6.26	6.05	**-0.02**	**-0.27**	**-0.47**	**-0.25**	**-0.45**	**-0.20**
2000-04-01	6.40	6.26	5.99	5.85	**-0.14**	**-0.41**	**-0.56**	**-0.27**	**-0.42**	**-0.14**

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Different Treasury Securities' Yields and Spreads Between Their Yields

Note: Shaded Date Ranges Correspond to U.S. Recessions

Underlined Spreads Correspond to Inverted Yield Curves

Date	2YR	5YR	10YR	30YR	2/5 Spread	2/10 Spread	2/30 Spread	5/10 Spread	5/30 Spread	10/30 Spread
2000-05-01	6.81	6.69	6.44	6.15	**-0.12**	**-0.37**	**-0.66**	**-0.25**	**-0.54**	**-0.29**
2000-06-01	6.48	6.30	6.10	5.93	**-0.18**	**-0.38**	**-0.56**	**-0.20**	**-0.37**	**-0.17**
2000-07-01	6.34	6.18	6.05	5.85	**-0.16**	**-0.29**	**-0.49**	**-0.13**	**-0.33**	**-0.20**
2000-08-01	6.23	6.06	5.83	5.72	**-0.17**	**-0.40**	**-0.51**	**-0.23**	**-0.34**	**-0.11**
2000-09-01	6.08	5.93	5.80	5.83	**-0.15**	**-0.28**	**-0.26**	**-0.14**	**-0.11**	0.03
2000-10-01	5.91	5.78	5.74	5.80	**-0.13**	**-0.17**	**-0.11**	**-0.04**	0.02	0.06
2000-11-01	5.88	5.70	5.72	5.78	**-0.18**	**-0.16**	**-0.10**	0.02	0.08	0.06
2000-12-01	5.35	5.17	5.24	5.49	**-0.18**	**-0.11**	0.14	0.07	0.32	0.25
2001-01-01	4.76	4.86	5.16	5.54	0.10	0.40	0.78	0.30	0.68	0.38
2001-02-01	4.66	4.89	5.10	5.45	0.23	0.44	0.80	0.21	0.57	0.36
2001-03-01	4.34	4.64	4.89	5.34	0.30	0.54	1.00	0.24	0.70	0.45
2001-04-01	4.23	4.76	5.14	5.65	0.53	0.91	1.41	0.38	0.88	0.51
2001-05-01	4.26	4.93	5.39	5.78	0.67	1.13	1.52	0.46	0.85	0.39
2001-06-01	4.08	4.81	5.28	5.67	0.73	1.20	1.59	0.48	0.86	0.39
2001-07-01	4.04	4.76	5.24	5.61	0.72	1.20	1.57	0.47	0.85	0.38
2001-08-01	3.76	4.57	4.97	5.48	0.82	1.21	1.73	0.40	0.91	0.51
2001-09-01	3.12	4.12	4.73	5.48	1.00	1.61	2.36	0.62	1.37	0.75
2001-10-01	2.73	3.91	4.57	5.32	1.18	1.84	2.59	0.66	1.41	0.75
2001-11-01	2.78	3.97	4.65	5.12	1.19	1.87	2.34	0.68	1.15	0.47
2001-12-01	3.11	4.39	5.09	5.48	1.28	1.98	2.37	0.70	1.09	0.39
2002-01-01	3.03	4.34	5.04	5.45	1.31	2.01	2.42	0.70	1.11	0.41
2002-02-01	3.02	4.30	4.91	5.40	1.28	1.90	2.39	0.61	1.10	0.49
2002-03-01	3.56	4.74	5.28	0	1.18	1.73		0.55		
2002-04-01	3.42	4.65	5.21	0	1.22	1.79		0.56		
2002-05-01	3.26	4.49	5.16	0	1.23	1.90		0.67		
2002-06-01	2.99	4.19	4.93	0	1.19	1.93		0.74		
2002-07-01	2.56	3.81	4.65	0	1.25	2.10		0.85		
2002-08-01	2.13	3.29	4.26	0	1.16	2.12		0.96		
2002-09-01	2.00	2.94	3.87	0	0.93	1.87		0.93		
2002-10-01	1.91	2.95	3.94	0	1.03	2.03		1.00		
2002-11-01	1.92	3.05	4.05	0	1.13	2.13		0.99		

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Different Treasury Securities' Yields and Spreads Between Their Yields

Note: Shaded Date Ranges Correspond to U.S. Recessions

Underlined Spreads Correspond to Inverted Yield Curves

Date	2YR	5YR	10YR	30YR	2/5 Spread	2/10 Spread	2/30 Spread	5/10 Spread	5/30 Spread	10/30 Spread
2002-12-01	1.84	3.03	4.03	0	1.20	2.20		1.00		
2003-01-01	1.74	3.05	4.05	0	1.31	2.31		1.00		
2003-02-01	1.63	2.90	3.90	0	1.27	2.27		1.00		
2003-03-01	1.57	2.78	3.81	0	1.21	2.23		1.02		
2003-04-01	1.62	2.93	3.96	0	1.31	2.34		1.03		
2003-05-01	1.42	2.52	3.57	0	1.10	2.15		1.05		
2003-06-01	1.23	2.27	3.33	0	1.04	2.11		1.07		
2003-07-01	1.47	2.87	3.98	0	1.40	2.50		1.10		
2003-08-01	1.86	3.37	4.45	0	1.51	2.58		1.08		
2003-09-01	1.71	3.18	4.27	0	1.48	2.57		1.09		
2003-10-01	1.75	3.19	4.29	0	1.44	2.54		1.10		
2003-11-01	1.93	3.29	4.30	0	1.36	2.37		1.01		
2003-12-01	1.91	3.27	4.27	0	1.36	2.36		1.00		
2004-01-01	1.76	3.12	4.15	0	1.36	2.39		1.03		
2004-02-01	1.74	3.07	4.08	0	1.33	2.34		1.02		
2004-03-01	1.58	2.79	3.83	0	1.21	2.25		1.04		
2004-04-01	2.07	3.39	4.35	0	1.32	2.28		0.96		
2004-05-01	2.53	3.85	4.72	0	1.32	2.18		0.87		
2004-06-01	2.76	3.93	4.73	0	1.17	1.97		0.80		
2004-07-01	2.64	3.69	4.50	0	1.05	1.86		0.81		
2004-08-01	2.51	3.47	4.28	0	0.97	1.77		0.81		
2004-09-01	2.53	3.36	4.13	0	0.83	1.60		0.77		
2004-10-01	2.58	3.35	4.10	0	0.76	1.51		0.75		
2004-11-01	2.85	3.53	4.19	0	0.67	1.34		0.67		
2004-12-01	3.01	3.60	4.23	0	0.59	1.22		0.63		
2005-01-01	3.22	3.71	4.22	0	0.48	1.00		0.51		
2005-02-01	3.38	3.77	4.17	0	0.38	0.78		0.40		
2005-03-01	3.73	4.17	4.50	0	0.44	0.77		0.33		
2005-04-01	3.65	4.00	4.34	0	0.34	0.69		0.34		
2005-05-01	3.64	3.85	4.14	0	0.21	0.50		0.29		
2005-06-01	3.64	3.77	4.00	0	0.13	0.36		0.23		

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Date	2YR	5YR	10YR	30YR	2/5 Spread	2/10 Spread	2/30 Spread	5/10 Spread	5/30 Spread	10/30 Spread
2005-07-01	3.87	3.98	4.18	0	0.11	0.31		0.20		
2005-08-01	4.04	4.12	4.26	0	0.08	0.22		0.14		
2005-09-01	3.95	4.01	4.20	0	0.06	0.25		0.19		
2005-10-01	4.27	4.33	4.46	0	0.06	0.19		0.14		
2005-11-01	4.42	4.45	4.54	0	0.04	0.12		0.08		
2005-12-01	4.40	4.39	4.47	0	**-0.01**	0.06		0.07		
2006-01-01	4.40	4.35	4.42	0	**-0.05**	0.02		0.07		
2006-02-01	4.67	4.57	4.57	4.54	**-0.10**	**-0.10**	**-0.13**	0.00	**-0.04**	**-0.03**
2006-03-01	4.73	4.72	4.72	4.73	**-0.02**	**-0.01**	0.00	0.01	0.02	0.01
2006-04-01	4.89	4.90	4.99	5.06	0.01	0.10	0.17	0.09	0.16	0.07
2006-05-01	4.97	5.00	5.11	5.20	0.03	0.14	0.23	0.11	0.20	0.09
2006-06-01	5.12	5.07	5.11	5.15	**-0.05**	**-0.02**	0.03	0.04	0.09	0.05
2006-07-01	5.12	5.04	5.09	5.13	**-0.08**	**-0.03**	0.02	0.05	0.09	0.05
2006-08-01	4.90	4.82	4.88	5.00	**-0.08**	**-0.03**	0.09	0.05	0.17	0.12
2006-09-01	4.77	4.67	4.72	4.85	**-0.10**	**-0.05**	0.08	0.05	0.18	0.13
2006-10-01	4.80	4.69	4.73	4.85	**-0.11**	**-0.07**	0.06	0.04	0.17	0.13
2006-11-01	4.74	4.58	4.60	4.69	**-0.16**	**-0.15**	**-0.05**	0.01	0.10	0.09
2006-12-01	4.67	4.53	4.56	4.68	**-0.14**	**-0.11**	0.01	0.03	0.15	0.12
2007-01-01	4.88	4.75	4.76	4.85	**-0.12**	**-0.12**	**-0.02**	0.01	0.10	0.09
2007-02-01	4.85	4.71	4.72	4.82	**-0.14**	**-0.13**	**-0.03**	0.01	0.11	0.10
2007-03-01	4.57	4.48	4.56	4.72	**-0.09**	**-0.01**	0.15	0.08	0.24	0.16
2007-04-01	4.67	4.59	4.69	4.87	**-0.07**	0.03	0.20	0.10	0.27	0.17
2007-05-01	4.77	4.67	4.75	4.90	**-0.10**	**-0.02**	0.14	0.08	0.23	0.16
2007-06-01	4.98	5.03	5.10	5.20	0.05	0.12	0.22	0.08	0.18	0.10
2007-07-01	4.82	4.88	5.00	5.11	0.07	0.19	0.29	0.12	0.22	0.10
2007-08-01	4.31	4.43	4.67	4.93	0.12	0.36	0.62	0.24	0.50	0.26
2007-09-01	4.01	4.20	4.52	4.79	0.19	0.51	0.78	0.32	0.59	0.27
2007-10-01	3.97	4.20	4.53	4.77	0.23	0.56	0.81	0.33	0.58	0.25
2007-11-01	3.34	3.67	4.15	4.52	0.33	0.81	1.18	0.48	0.85	0.37
2007-12-01	3.12	3.49	4.10	4.53	0.37	0.98	1.41	0.61	1.04	0.43
2008-01-01	2.48	2.98	3.74	4.33	0.50	1.27	1.85	0.76	1.35	0.59

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Date	2YR	5YR	10YR	30YR	2/5 Spread	2/10 Spread	2/30 Spread	5/10 Spread	5/30 Spread	10/30 Spread
2008-02-01	1.97	2.78	3.74	4.52	0.81	1.76	2.54	0.96	1.74	0.78
2008-03-01	1.62	2.48	3.51	4.39	0.87	1.89	2.78	1.03	1.91	0.88
2008-04-01	2.05	2.84	3.68	4.44	0.79	1.63	2.40	0.83	1.60	0.77
2008-05-01	2.45	3.15	3.88	4.60	0.71	1.43	2.15	0.73	1.44	0.72
2008-06-01	2.77	3.49	4.10	4.69	0.71	1.33	1.92	0.61	1.20	0.59
2008-07-01	2.57	3.30	4.01	4.57	0.73	1.43	2.00	0.70	1.27	0.56
2008-08-01	2.42	3.14	3.89	4.50	0.72	1.47	2.08	0.74	1.36	0.62
2008-09-01	2.08	2.88	3.69	4.27	0.81	1.61	2.19	0.80	1.38	0.58
2008-10-01	1.61	2.73	3.81	4.17	1.11	2.20	2.56	1.09	1.45	0.36
2008-11-01	1.21	2.29	3.53	4.00	1.08	2.31	2.79	1.24	1.71	0.48
2008-12-01	0.82	1.52	2.42	2.87	0.70	1.60	2.05	0.89	1.35	0.45
2009-01-01	0.81	1.60	2.52	3.13	0.79	1.71	2.32	0.92	1.53	0.61
2009-02-01	0.98	1.87	2.87	3.59	0.90	1.89	2.61	1.00	1.72	0.72
2009-03-01	0.93	1.82	2.82	3.64	0.88	1.89	2.71	1.00	1.83	0.82
2009-04-01	0.93	1.86	2.93	3.76	0.93	2.00	2.83	1.07	1.90	0.83
2009-05-01	0.93	2.13	3.29	4.23	1.20	2.36	3.30	1.16	2.09	0.93
2009-06-01	1.18	2.71	3.72	4.52	1.52	2.54	3.33	1.02	1.81	0.79
2009-07-01	1.02	2.46	3.56	4.41	1.44	2.54	3.39	1.10	1.94	0.84
2009-08-01	1.12	2.57	3.59	4.37	1.46	2.47	3.26	1.02	1.80	0.78
2009-09-01	0.96	2.37	3.40	4.19	1.41	2.45	3.23	1.03	1.82	0.78
2009-10-01	0.95	2.33	3.39	4.19	1.38	2.44	3.24	1.05	1.86	0.80
2009-11-01	0.80	2.23	3.40	4.31	1.43	2.60	3.51	1.17	2.08	0.91
2009-12-01	0.87	2.34	3.59	4.49	1.47	2.72	3.62	1.25	2.15	0.90
2010-01-01	0.93	2.48	3.73	4.60	1.56	2.80	3.68	1.25	2.12	0.87
2010-02-01	0.86	2.36	3.69	4.62	1.51	2.83	3.76	1.33	2.26	0.93
2010-03-01	0.96	2.43	3.73	4.64	1.47	2.77	3.69	1.29	2.21	0.92
2010-04-01	1.06	2.58	3.85	4.69	1.52	2.79	3.63	1.27	2.11	0.85
2010-05-01	0.83	2.18	3.42	4.29	1.35	2.59	3.46	1.24	2.11	0.87
2010-06-01	0.72	2.00	3.20	4.13	1.27	2.48	3.40	1.21	2.13	0.92
2010-07-01	0.62	1.76	3.01	3.99	1.15	2.39	3.38	1.25	2.23	0.98
2010-08-01	0.52	1.47	2.70	3.80	0.95	2.18	3.28	1.23	2.34	1.10

Kansas City Power Light
Case No. ER-2018-0145

Different Treasury Securities' Yields and Spreads Between Their Yields

Note: Shaded Date Ranges Correspond to U.S. Recessions

Underlined Spreads Correspond to Inverted Yield Curves

Date	2YR	5YR	10YR	30YR	2/5 Spread	2/10 Spread	2/30 Spread	5/10 Spread	5/30 Spread	10/30 Spread
2010-09-01	0.48	1.41	2.65	3.77	0.93	2.17	3.29	1.24	2.36	1.13
2010-10-01	0.38	1.18	2.54	3.87	0.81	2.16	3.50	1.36	2.69	1.33
2010-11-01	0.45	1.35	2.76	4.19	0.90	2.31	3.73	1.41	2.84	1.42
2010-12-01	0.62	1.93	3.29	4.42	1.32	2.67	3.80	1.36	2.48	1.13
2011-01-01	0.61	1.99	3.39	4.52	1.38	2.78	3.91	1.40	2.53	1.13
2011-02-01	0.77	2.26	3.58	4.65	1.49	2.80	3.88	1.32	2.39	1.08
2011-03-01	0.70	2.11	3.41	4.51	1.42	2.72	3.82	1.30	2.40	1.10
2011-04-01	0.73	2.17	3.46	4.50	1.43	2.72	3.77	1.29	2.33	1.05
2011-05-01	0.56	1.84	3.17	4.29	1.29	2.61	3.74	1.33	2.45	1.12
2011-06-01	0.41	1.58	3.00	4.23	1.17	2.59	3.82	1.42	2.65	1.23
2011-07-01	0.41	1.54	3.00	4.27	1.13	2.60	3.86	1.46	2.73	1.27
2011-08-01	0.23	1.02	2.30	3.65	0.79	2.07	3.42	1.28	2.63	1.35
2011-09-01	0.21	0.90	1.98	3.18	0.69	1.76	2.97	1.07	2.28	1.21
2011-10-01	0.28	1.06	2.15	3.13	0.78	1.87	2.85	1.09	2.07	0.98
2011-11-01	0.25	0.91	2.01	3.02	0.65	1.76	2.76	1.11	2.11	1.00
2011-12-01	0.26	0.89	1.98	2.98	0.63	1.72	2.73	1.09	2.09	1.00
2012-01-01	0.24	0.84	1.97	3.03	0.59	1.73	2.79	1.13	2.19	1.06
2012-02-01	0.28	0.83	1.97	3.11	0.55	1.69	2.83	1.14	2.28	1.14
2012-03-01	0.34	1.02	2.17	3.28	0.67	1.83	2.94	1.16	2.26	1.11
2012-04-01	0.29	0.89	2.05	3.18	0.60	1.76	2.89	1.16	2.29	1.13
2012-05-01	0.29	0.76	1.80	2.93	0.48	1.52	2.65	1.04	2.17	1.13
2012-06-01	0.29	0.71	1.62	2.70	0.42	1.33	2.41	0.91	1.99	1.08
2012-07-01	0.25	0.62	1.53	2.59	0.37	1.28	2.34	0.91	1.97	1.06
2012-08-01	0.27	0.71	1.68	2.77	0.45	1.41	2.50	0.96	2.06	1.09
2012-09-01	0.26	0.67	1.72	2.88	0.41	1.47	2.63	1.05	2.21	1.16
2012-10-01	0.28	0.71	1.75	2.90	0.43	1.47	2.62	1.04	2.19	1.15
2012-11-01	0.27	0.67	1.65	2.80	0.40	1.39	2.54	0.99	2.14	1.15
2012-12-01	0.26	0.70	1.72	2.88	0.44	1.46	2.63	1.02	2.19	1.16
2013-01-01	0.27	0.81	1.91	3.08	0.54	1.65	2.82	1.11	2.28	1.17
2013-02-01	0.27	0.85	1.98	3.17	0.58	1.72	2.90	1.14	2.32	1.18
2013-03-01	0.26	0.82	1.96	3.16	0.56	1.70	2.91	1.14	2.34	1.21

Kansas City Power Light
Case No. ER-2018-0145

Different Treasury Securities' Yields and Spreads Between Their Yields

Note: Shaded Date Ranges Correspond to U.S. Recessions

Underlined Spreads Correspond to Inverted Yield Curves

Date	2YR	5YR	10YR	30YR	2/5 Spread	2/10 Spread	2/30 Spread	5/10 Spread	5/30 Spread	10/30 Spread
2013-04-01	0.23	0.71	1.76	2.93	0.48	1.53	2.70	1.05	2.22	1.17
2013-05-01	0.25	0.84	1.93	3.11	0.59	1.68	2.86	1.09	2.27	1.18
2013-06-01	0.33	1.20	2.30	3.40	0.87	1.97	3.07	1.10	2.20	1.10
2013-07-01	0.34	1.40	2.58	3.61	1.06	2.24	3.26	1.18	2.20	1.02
2013-08-01	0.36	1.52	2.74	3.76	1.16	2.38	3.40	1.22	2.24	1.02
2013-09-01	0.40	1.60	2.81	3.79	1.19	2.41	3.38	1.21	2.19	0.98
2013-10-01	0.34	1.37	2.62	3.68	1.03	2.28	3.34	1.25	2.31	1.06
2013-11-01	0.30	1.37	2.72	3.80	1.07	2.41	3.50	1.35	2.43	1.08
2013-12-01	0.34	1.58	2.90	3.89	1.24	2.56	3.55	1.33	2.31	0.99
2014-01-01	0.39	1.65	2.86	3.77	1.25	2.46	3.38	1.21	2.12	0.91
2014-02-01	0.33	1.52	2.71	3.66	1.19	2.38	3.34	1.19	2.15	0.95
2014-03-01	0.40	1.64	2.72	3.62	1.24	2.32	3.22	1.08	1.98	0.90
2014-04-01	0.42	1.70	2.71	3.52	1.28	2.29	3.10	1.00	1.82	0.81
2014-05-01	0.39	1.59	2.56	3.39	1.20	2.17	3.00	0.97	1.80	0.83
2014-06-01	0.45	1.68	2.60	3.42	1.23	2.15	2.97	0.92	1.74	0.82
2014-07-01	0.51	1.70	2.54	3.33	1.19	2.04	2.83	0.84	1.63	0.79
2014-08-01	0.47	1.63	2.42	3.20	1.16	1.95	2.73	0.79	1.57	0.78
2014-09-01	0.57	1.77	2.53	3.26	1.21	1.97	2.69	0.76	1.49	0.73
2014-10-01	0.45	1.55	2.30	3.04	1.10	1.86	2.59	0.76	1.49	0.74
2014-11-01	0.53	1.62	2.33	3.04	1.09	1.80	2.51	0.71	1.42	0.71
2014-12-01	0.64	1.64	2.21	2.83	1.00	1.57	2.20	0.57	1.19	0.63
2015-01-01	0.55	1.37	1.88	2.46	0.82	1.33	1.90	0.51	1.08	0.57
2015-02-01	0.62	1.47	1.98	2.57	0.85	1.36	1.95	0.50	1.09	0.59
2015-03-01	0.64	1.52	2.04	2.63	0.88	1.40	1.99	0.52	1.11	0.58
2015-04-01	0.54	1.35	1.94	2.59	0.81	1.40	2.05	0.58	1.23	0.65
2015-05-01	0.61	1.54	2.20	2.96	0.93	1.59	2.35	0.66	1.42	0.76
2015-06-01	0.69	1.68	2.36	3.11	1.00	1.68	2.42	0.68	1.43	0.75
2015-07-01	0.67	1.63	2.32	3.07	0.96	1.66	2.40	0.69	1.43	0.74
2015-08-01	0.70	1.54	2.17	2.86	0.84	1.47	2.16	0.63	1.31	0.69
2015-09-01	0.71	1.49	2.17	2.95	0.78	1.46	2.24	0.68	1.46	0.78
2015-10-01	0.64	1.39	2.07	2.89	0.74	1.43	2.24	0.68	1.50	0.82

Kansas City Power Light
Case No. ER-2018-0145

Different Treasury Securities' Yields and Spreads Between Their Yields

Note: Shaded Date Ranges Correspond to U.S. Recessions

Underlined Spreads Correspond to Inverted Yield Curves

Date	2YR	5YR	10YR	30YR	2/5 Spread	2/10 Spread	2/30 Spread	5/10 Spread	5/30 Spread	10/30 Spread
2015-11-01	0.88	1.67	2.26	3.03	0.79	1.38	2.15	0.59	1.36	0.77
2015-12-01	0.98	1.70	2.24	2.97	0.72	1.26	1.99	0.54	1.27	0.73
2016-01-01	0.90	1.52	2.09	2.86	0.62	1.19	1.96	0.57	1.34	0.77
2016-02-01	0.73	1.22	1.78	2.62	0.49	1.05	1.89	0.56	1.40	0.84
2016-03-01	0.88	1.38	1.89	2.68	0.50	1.01	1.81	0.51	1.31	0.80
2016-04-01	0.77	1.26	1.81	2.62	0.49	1.04	1.86	0.55	1.37	0.82
2016-05-01	0.82	1.30	1.81	2.63	0.48	0.99	1.81	0.51	1.33	0.82
2016-06-01	0.73	1.17	1.64	2.45	0.44	0.91	1.72	0.48	1.29	0.81
2016-07-01	0.67	1.07	1.50	2.23	0.40	0.83	1.55	0.43	1.16	0.72
2016-08-01	0.74	1.13	1.56	2.26	0.40	0.82	1.52	0.42	1.13	0.71
2016-09-01	0.77	1.18	1.63	2.35	0.41	0.86	1.58	0.45	1.17	0.72
2016-10-01	0.84	1.27	1.76	2.50	0.43	0.92	1.66	0.49	1.23	0.74
2016-11-01	0.98	1.60	2.14	2.86	0.62	1.16	1.88	0.55	1.27	0.72
2016-12-01	1.20	1.96	2.49	3.11	0.76	1.30	1.92	0.53	1.15	0.62
2017-01-01	1.21	1.92	2.43	3.02	0.71	1.23	1.81	0.52	1.10	0.59
2017-02-01	1.20	1.90	2.42	3.03	0.70	1.22	1.83	0.52	1.13	0.61
2017-03-01	1.31	2.01	2.48	3.08	0.70	1.17	1.77	0.47	1.07	0.60
2017-04-01	1.24	1.82	2.30	2.94	0.58	1.06	1.70	0.47	1.12	0.64
2017-05-01	1.30	1.84	2.30	2.96	0.54	1.00	1.66	0.47	1.12	0.66
2017-06-01	1.34	1.77	2.19	2.80	0.43	0.84	1.45	0.41	1.02	0.61
2017-07-01	1.37	1.87	2.32	2.88	0.50	0.95	1.51	0.45	1.01	0.57
2017-08-01	1.34	1.78	2.21	2.80	0.44	0.87	1.46	0.43	1.02	0.59
2017-09-01	1.38	1.80	2.20	2.78	0.41	0.82	1.39	0.40	0.98	0.57
2017-10-01	1.55	1.98	2.36	2.88	0.43	0.81	1.33	0.38	0.90	0.52
2017-11-01	1.70	2.05	2.35	2.80	0.35	0.66	1.11	0.30	0.75	0.45
2017-12-01	1.84	2.18	2.40	2.77	0.34	0.56	0.92	0.22	0.59	0.37
2018-01-01	2.03	2.38	2.58	2.88	0.35	0.55	0.85	0.20	0.50	0.29
2018-02-01	2.18	2.60	2.86	3.13	0.42	0.68	0.96	0.26	0.53	0.27
2018-03-01	2.28	2.63	2.84	3.09	0.35	0.57	0.82	0.21	0.46	0.25
2018-04-01	2.38	2.70	2.87	3.07	0.32	0.49	0.69	0.17	0.37	0.20

Kansas City Power Light
Case No. ER-2018-0145

Different Treasury Securities' Yields and Spreads Between Their Yields

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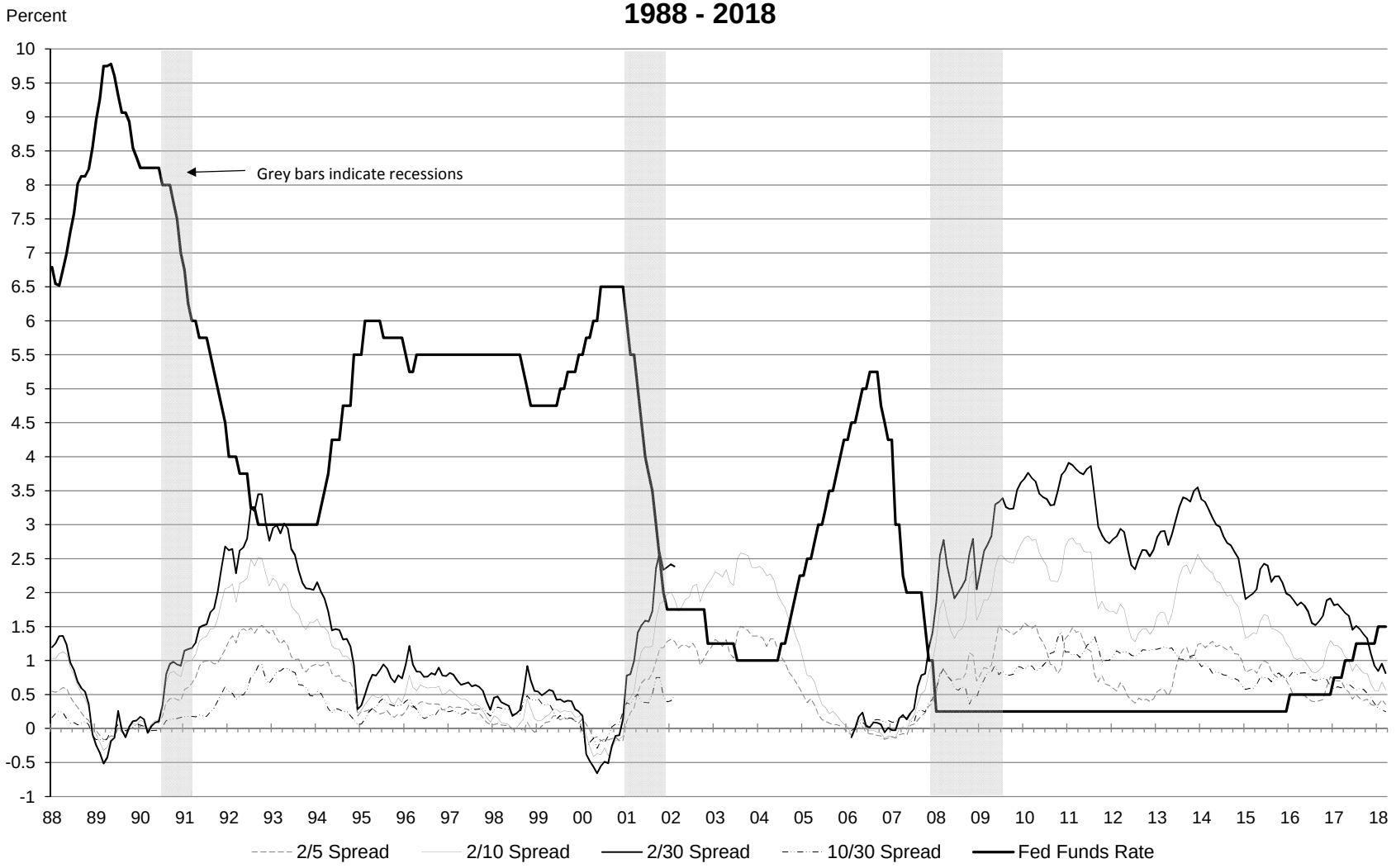
Underlined Spreads Correspond to Inverted Yield Curves

Date	2YR	5YR	10YR	30YR	2/5 Spread	2/10 Spread	2/30 Spread	5/10 Spread	5/30 Spread	10/30 Spread

Source: St. Louis Federal Reserve Bank Constant Maturity Yields Data

Fed Funds Rate & Treasury Spreads
1988 - 2018



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Kansas City Power Light
Case No. ER-2018-0145

Federal Reserve Bank Balance Sheet Normalization

	Quarterly		Cumulative		Total
	Treasuries	Mortgage Backed Securties	Treasuries	Mortgage Backed Securities	
October	6	4	6	4	10
November	6	4	12	8	20
December	6	4	18	12	30
2018					
January	12	8	30	20	50
February	12	8	42	28	70
March	12	8	54	36	90
April	18	12	72	48	120
May	18	12	90	60	150
June	18	12	108	72	180
July	24	16	132	88	220
August	24	16	156	104	260
September	24	16	180	120	300
October	30	20	210	140	350
November	30	20	240	160	400
December	30	20	270	180	450
2019					
January	30	20	300	200	500
February	30	20	330	220	550
March	30	20	360	240	600
April	30	20	390	260	650
May	30	20	420	280	700
June	30	20	450	300	750
July	30	20	480	320	800
August	30	20	510	340	850
September	30	20	540	360	900
November	30	20	570	380	950
December	30	20	600	400	1000
2020					
January	30	20	630	420	1050
February	30	20	**660**	440	1100
March	30	20	**690**	460	1150
April	30	20	720	480	1200
May	30	20	750	500	1250
June	30	20	780	520	1300
July	30	20	810	540	1350
August	30	20	840	560	1400
September	30	20	870	580	1450
October	30	20	900	600	1500
November	30	20	930	620	1550
December	30	20	960	640	1600
2021					
January	30	20	990	660	1650

Kansas City Power Light
Case No. ER-2018-0145

	Quarterly		Cumulative		Total
	Treasuries	Mortgage Backed Securties	Treasuries	Mortgage Backed Securities	
February	30	20	1020	680	1700
March	30	20	1050	700	1750
April	30	20	1080	720	1800
May	30	20	1110	740	1850
June	30	20	1140	760	1900
July	30	20	1170	780	1950
August	30	20	1200	800	2000
September	30	20	1230	820	2050
October	30	20	1260	840	2100
November	30	20	1290	860	2150
December	30	20	1320	880	2200
2022					
January	30	20	1350	900	2250
February	30	20	1380	920	2300
March	30	20	1410	940	2350
April	30	20	1440	960	2400
May	30	20	1470	980	2450
June	30	20	1500	1000	2500
July	30	20	**1530**	1020	2550
August	30	20	**1560**	1040	2600
September	30	20	1590	1060	2650
October	30	20	1620	1080	2700
November	30	20	1650	1100	2750
December	30	20	1680	1120	2800

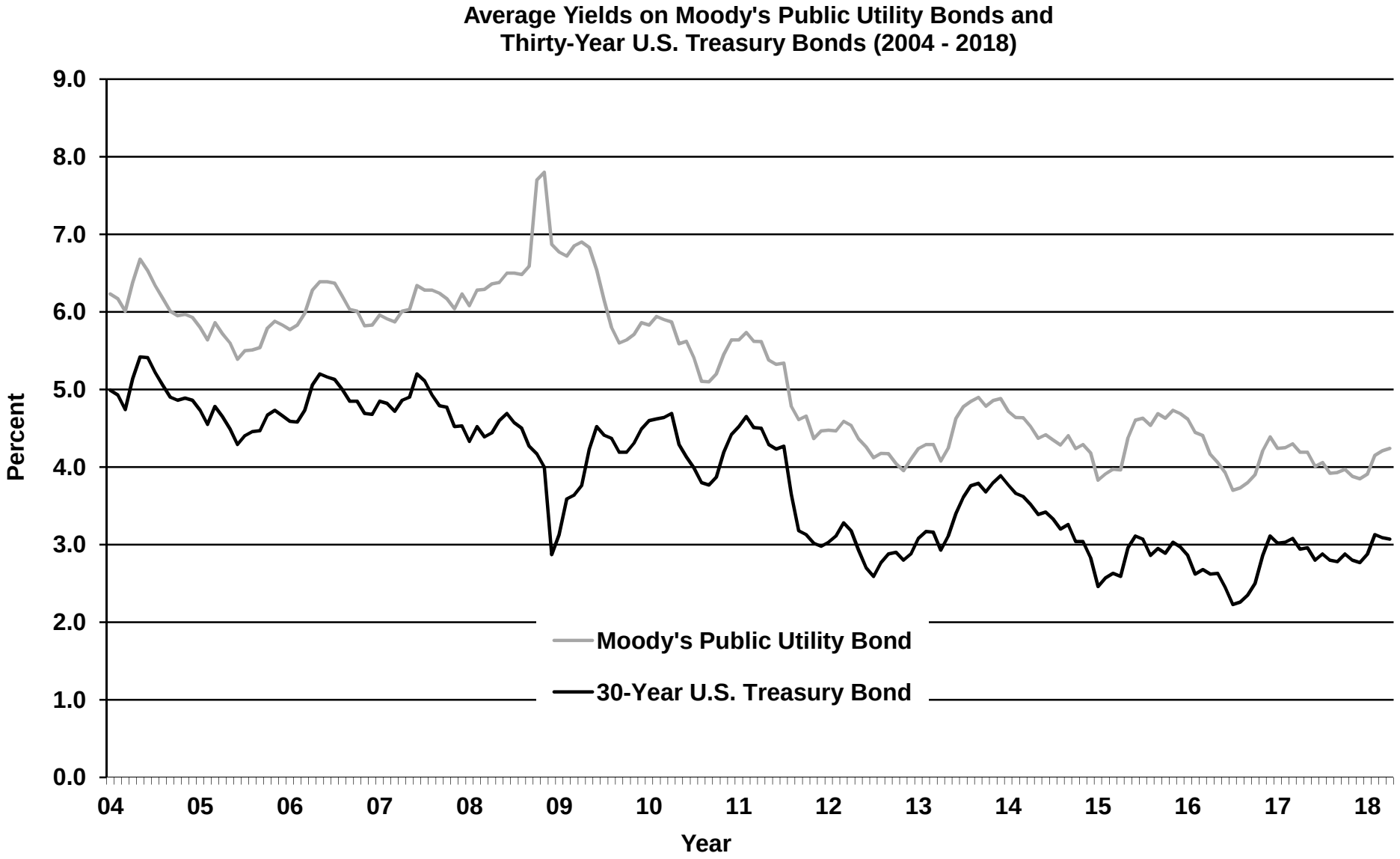
Kansas City Power Light
Case No. ER-2018-0145

Average Yields on Moody's Public Utility Bonds

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1990	9.44	Jan 1996	7.20	Jan 2002	7.69	Jan 2008	6.08	Jan 2014	4.72
Feb	9.66	Feb	7.37	Feb	7.62	Feb	6.28	Feb	4.64
Mar	9.75	Mar	7.72	Mar	7.83	Mar	6.29	Mar	4.63
Apr	9.87	Apr	7.88	Apr	7.74	Apr	6.36	Apr	4.52
May	9.89	May	7.99	May	7.76	May	6.38	May	4.37
Jun	9.69	Jun	8.07	Jun	7.67	Jun	6.50	Jun	4.42
Jul	9.66	Jul	8.02	Jul	7.54	Jul	6.50	Jul	4.35
Aug	9.84	Aug	7.84	Aug	7.34	Aug	6.48	Aug	4.29
Sep	10.01	Sep	8.01	Sep	7.23	Sep	6.59	Sep	4.40
Oct	9.94	Oct	7.76	Oct	7.43	Oct	7.70	Oct	4.24
Nov	9.76	Nov	7.48	Nov	7.31	Nov	7.80	Nov	4.29
Dec	9.57	Dec	7.58	Dec	7.20	Dec	6.87	Dec	4.18
Jan 1991	9.56	Jan 1997	7.79	Jan 2003	7.13	Jan 2009	6.77	Jan 2015	3.83
Feb	9.31	Feb	7.68	Feb	6.92	Feb	6.72	Feb	3.91
Mar	9.39	Mar	7.92	Mar	6.80	Mar	6.85	Mar	3.97
Apr	9.30	Apr	8.08	Apr	6.68	Apr	6.90	Apr	3.96
May	9.29	May	7.94	May	6.35	May	6.83	May	4.38
Jun	9.44	Jun	7.77	Jun	6.21	June	6.54	Jun	4.60
Jul	9.40	Jul	7.52	Jul	6.54	July	6.15	Jul	4.63
Aug	9.16	Aug	7.57	Aug	6.78	Aug	5.80	Aug	4.54
Sep	9.03	Sep	7.50	Sep	6.58	Sep	5.60	Sep	4.68
Oct	8.99	Oct	7.37	Oct	6.50	Oct	5.64	Oct	4.63
Nov	8.93	Nov	7.24	Nov	6.44	Nov	5.71	Nov	4.73
Dec	8.76	Dec	7.16	Dec	6.36	Dec	5.86	Dec	4.69
Jan 1992	8.67	Jan 1998	7.03	Jan 2004	6.23	Jan 2010	5.83	Jan 2016	4.62
Feb	8.77	Feb	7.09	Feb	6.17	Feb	5.94	Feb	4.44
Mar	8.84	Mar	7.13	Mar	6.01	Mar	5.90	Mar	4.40
Apr	8.79	Apr	7.12	Apr	6.38	Apr	5.87	Apr	4.16
May	8.72	May	7.11	May	6.68	May	5.59	May	4.06
Jun	8.64	Jun	6.99	Jun	6.53	June	5.62	Jun	3.93
Jul	8.46	Jul	6.99	Jul	6.34	July	5.41	Jul	3.70
Aug	8.34	Aug	6.96	Aug	6.18	Aug	5.10	Aug	3.73
Sep	8.32	Sep	6.88	Sep	6.01	Sep	5.10	Sep	3.80
Oct	8.44	Oct	6.88	Oct	5.95	Oct	5.20	Oct	3.90
Nov	8.53	Nov	6.96	Nov	5.97	Nov	5.45	Nov	4.21
Dec	8.36	Dec	6.84	Dec	5.93	Dec	5.61	Dec	4.39
Jan 1993	8.23	Jan 1999	6.87	Jan 2005	5.80	Jan 2011	5.69	Jan 2017	4.24
Feb	8.00	Feb	7.00	Feb	5.64	Feb	5.82	Feb	4.25
Mar	7.85	Mar	7.18	Mar	5.86	Mar	5.74	Mar	4.30
Apr	7.76	Apr	7.16	Apr	5.72	Apr	5.76	Apr	4.19
May	7.78	May	7.42	May	5.60	May	5.57	May	4.19
Jun	7.68	Jun	7.70	Jun	5.39	June	5.52	Jun	4.01
Jul	7.53	Jul	7.66	Jul	5.50	July	5.61	Jul	4.06
Aug	7.21	Aug	7.86	Aug	5.51	Aug	5.26	Aug	3.92
Sep	7.01	Sep	7.87	Sep	5.54	Sep	5.01	Sep	3.93
Oct	6.99	Oct	8.02	Oct	5.79	Oct	5.11	Oct	3.97
Nov	7.30	Nov	7.86	Nov	5.88	Nov	5.00	Nov	3.88
Dec	7.33	Dec	8.04	Dec	5.83	Dec	4.96	Dec	3.85
Jan 1994	7.31	Jan 2000	8.22	Jan 2006	5.77	Jan 2012	4.97	Jan 2018	3.91
Feb	7.44	Feb	8.10	Feb	5.83	Feb	4.99	Feb	4.15
Mar	7.83	Mar	8.14	Mar	5.98	Mar	5.13	March	4.21
Apr	8.20	Apr	8.14	Apr	6.28	Apr	5.05	April	4.24
May	8.32	May	8.55	May	6.39	May	4.84		
Jun	8.31	Jun	8.22	June	6.39	Jun	4.67		
Jul	8.47	Jul	8.17	July	6.37	Jul	4.56		
Aug	8.41	Aug	8.05	Aug	6.20	Aug	4.71		
Sep	8.65	Sep	8.16	Sep	6.03	Sep	4.75		
Oct	8.88	Oct	8.08	Oct	6.01	Oct	4.69		
Nov	9.00	Nov	8.03	Nov	5.82	Nov	4.53		
Dec	8.79	Dec	7.79	Dec	5.83	Dec	4.28		
Jan 1995	8.77	Jan 2001	7.76	Jan 2007	5.96	Jan 2013	4.45		
Feb	8.56	Feb	7.69	Feb	5.91	Feb	4.49		
Mar	8.41	Mar	7.59	Mar	5.87	Mar	4.45		
Apr	8.30	Apr	7.81	Apr	6.01	Apr	4.19		
May	7.93	May	7.88	May	6.03	May	4.36		
Jun	7.62	Jun	7.75	June	6.34	Jun	4.70		
Jul	7.73	Jul	7.71	July	6.28	Jul	4.90		
Aug	7.86	Aug	7.57	Aug	6.28	Aug	5.00		
Sep	7.62	Sep	7.73	Sep	6.24	Sep	5.05		
Oct	7.46	Oct	7.64	Oct	6.17	Oct	4.94		
Nov	7.40	Nov	7.61	Nov	6.04	Nov	5.04		
Dec	7.21	Dec	7.86	Dec	6.23	Dec	4.89		

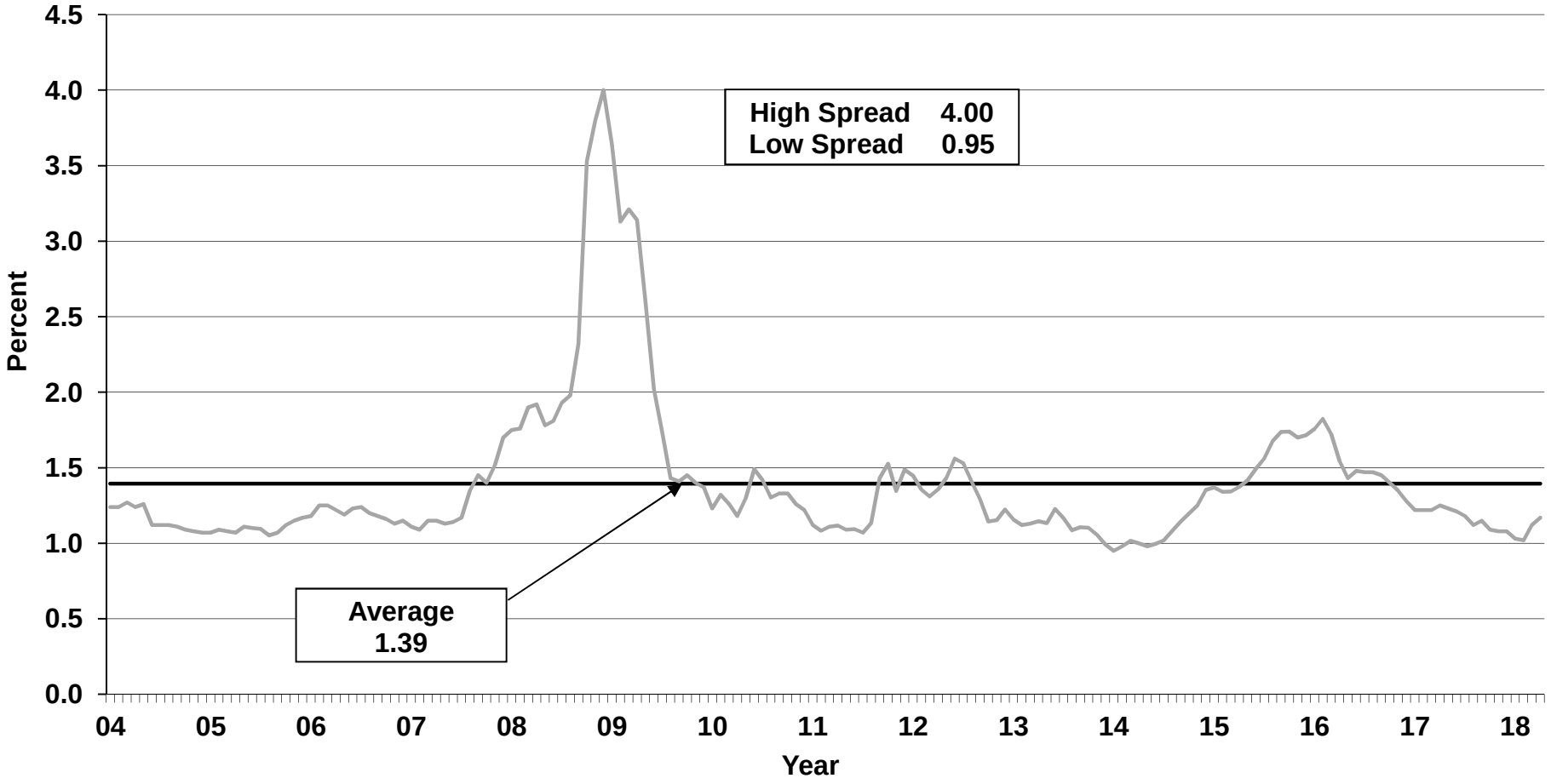
Source:
Mergent Bond Record (through November 2010); BondsOnline (December 2010 - November 2013); Mergent Bond Record (December 2013 - Present).

Kansas City Power Light
Case No. ER-2018-0145



Schedule JS-d 4-5

Monthly Spreads Between Yields on Moody's Public Utility Bonds and Thirty-Year U.S. Treasury Bonds (1990 - 2018)



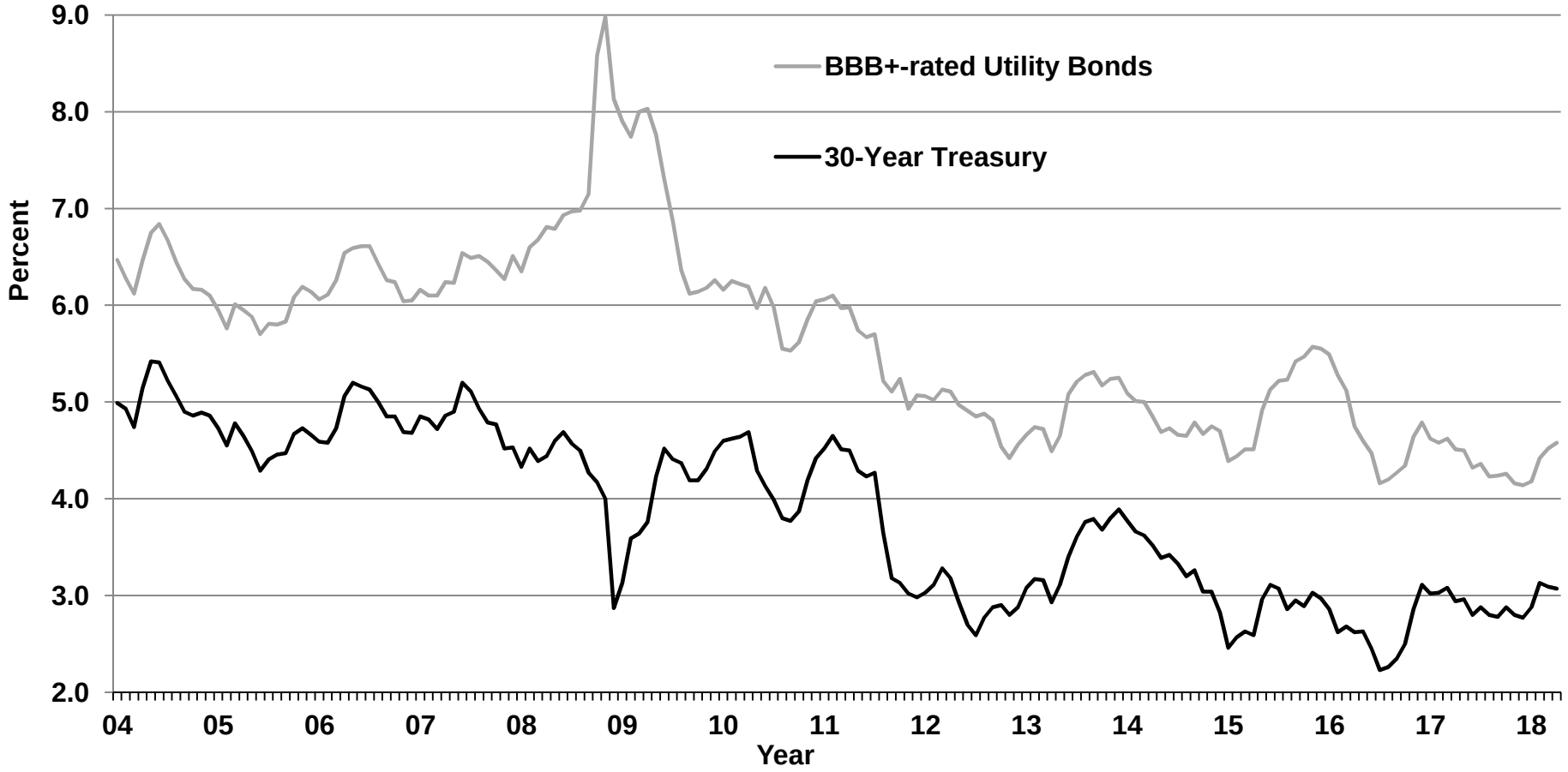
Kansas City Power Light
Case No. ER-2018-0145

Average Yields on BBB+ Public Utility Bonds

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 2004	6.47	Jan 2008	6.35	Jan 2012	5.06	Jan 2016	5.49
Feb	6.28	Feb	6.6	Feb	5.02	Feb	5.28
Mar	6.12	Mar	6.68	Mar	5.13	Mar	5.12
Apr	6.46	Apr	6.81	Apr	5.11	Apr	4.75
May	6.75	May	6.79	May	4.97	May	4.60
Jun	6.84	Jun	6.93	Jun	4.91	Jun	4.47
Jul	6.67	Jul	6.97	Jul	4.85	Jul	4.16
Aug	6.45	Aug	6.98	Aug	4.88	Aug	4.20
Sep	6.27	Sep	7.15	Sep	4.81	Sep	4.27
Oct	6.17	Oct	8.58	Oct	4.54	Oct	4.34
Nov	6.16	Nov	8.98	Nov	4.42	Nov	4.64
Dec	6.1	Dec	8.13	Dec	4.56	Dec	4.79
Jan 2005	5.95	Jan 2009	7.9	Jan 2013	4.66	Jan 2017	4.62
Feb	5.76	Feb	7.74	Feb	4.74	Feb	4.58
Mar	6.01	Mar	8	Mar	4.72	Mar	4.62
Apr	5.95	Apr	8.03	Apr	4.49	Apr	4.51
May	5.88	May	7.76	May	4.65	May	4.50
Jun	5.7	Jun	7.3	Jun	5.08	Jun	4.32
Jul	5.81	Jul	6.87	Jul	5.21	Jul	4.36
Aug	5.8	Aug	6.36	Aug	5.28	Aug	4.23
Sep	5.83	Sep	6.12	Sep	5.31	Sep	4.24
Oct	6.08	Oct	6.14	Oct	5.17	Oct	4.26
Nov	6.19	Nov	6.18	Nov	5.24	Nov	4.16
Dec	6.14	Dec	6.26	Dec	5.25	Dec	4.14
Jan 2006	6.06	Jan 2010	6.16	Jan 2014	5.09	Jan 2018	4.18
Feb	6.11	Feb	6.25	Feb	5.01	Feb	4.42
Mar	6.26	Mar	6.22	Mar	5.00	Mar	4.52
Apr	6.54	Apr	6.19	Apr	4.85	Apr	4.58
May	6.59	May	5.97	May	4.69		
Jun	6.61	Jun	6.18	Jun	4.73		
Jul	6.61	Jul	5.98	Jul	4.66		
Aug	6.43	Aug	5.55	Aug	4.65		
Sep	6.26	Sep	5.53	Sep	4.79		
Oct	6.24	Oct	5.62	Oct	4.67		
Nov	6.04	Nov	5.85	Nov	4.75		
Dec	6.05	Dec	6.04	Dec	4.70		
Jan 2007	6.16	Jan 2011	6.06	Jan 2015	4.39		
Feb	6.1	Feb	6.10	Feb	4.44		
Mar	6.1	Mar	5.97	Mar	4.51		
Apr	6.24	Apr	5.98	Apr	4.51		
May	6.23	May	5.74	May	4.91		
Jun	6.54	Jun	5.67	Jun	5.13		
Jul	6.49	Jul	5.70	Jul	5.22		
Aug	6.51	Aug	5.22	Aug	5.23		
Sep	6.45	Sep	5.11	Sep	5.42		
Oct	6.36	Oct	5.24	Oct	5.47		
Nov	6.27	Nov	4.93	Nov	5.57		
Dec	6.51	Dec	5.07	Dec	5.55		

Kansas City Power Light
Case No. ER-2018-0145

Average Yields on BBB+-Rated Utility Bonds and 30-Year Treasury Bonds
From (2004 - 2018)



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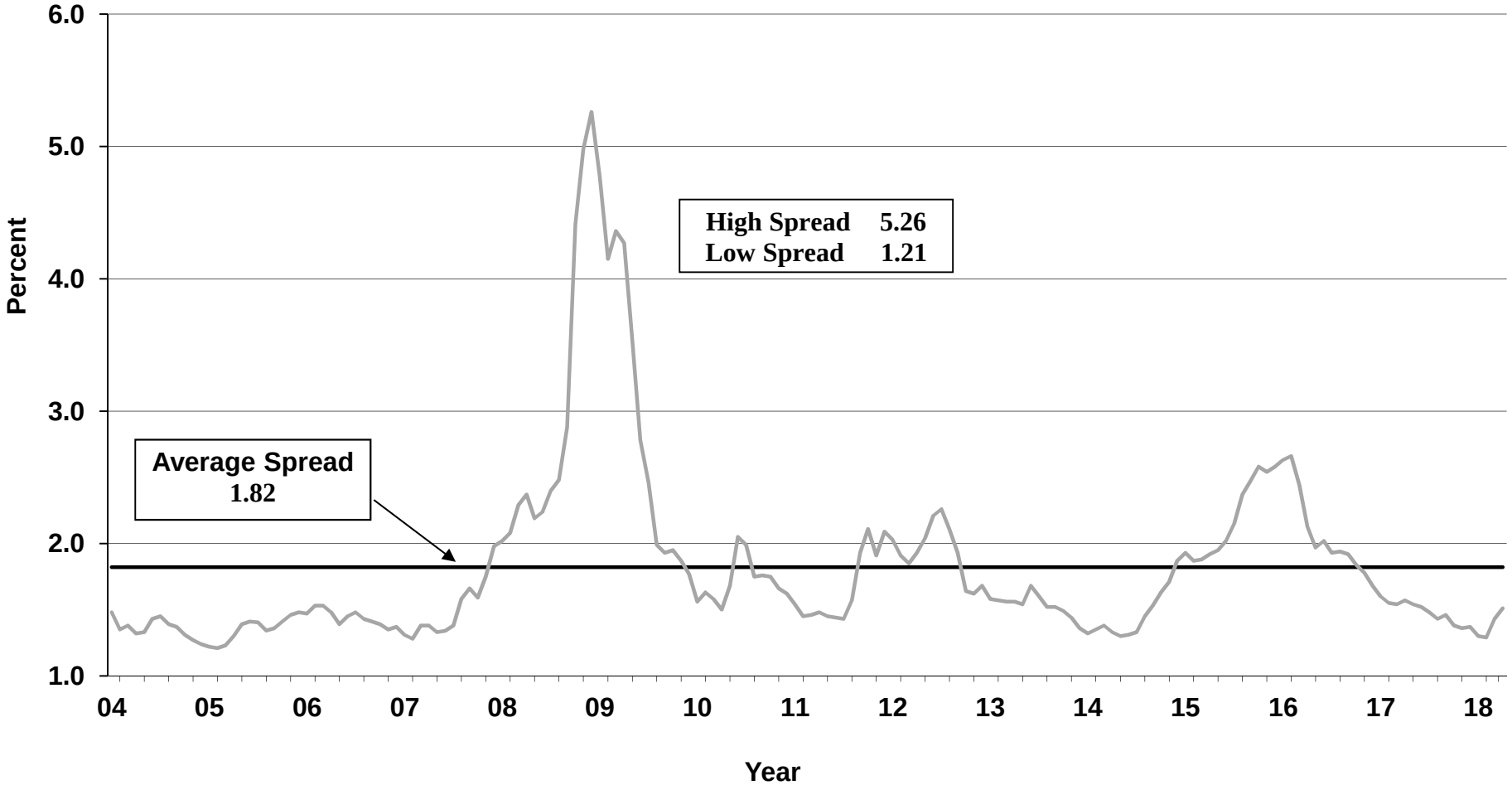
Kansas City Power Light
Case No. ER-2018-0145

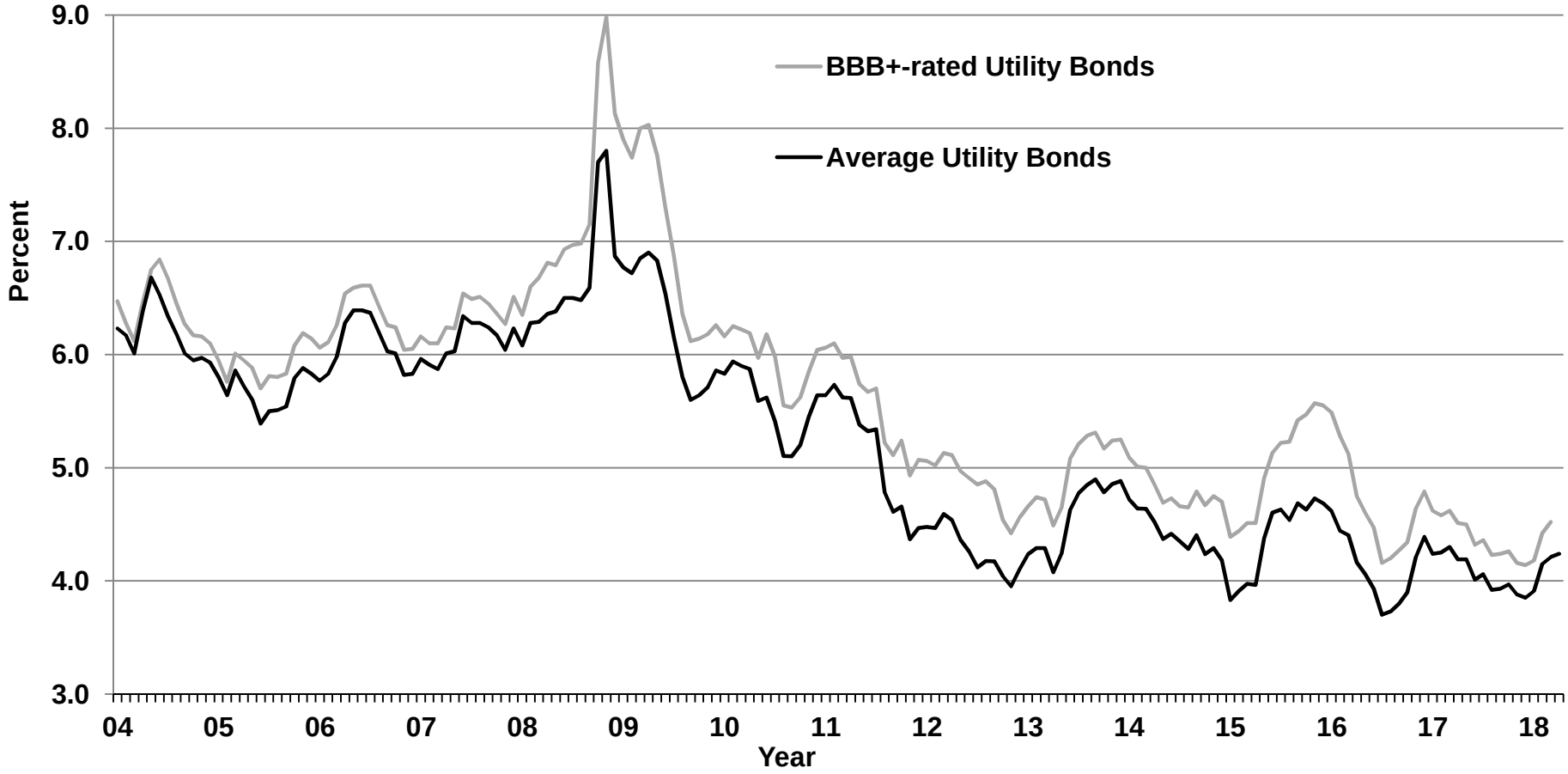
Monthly Spreads Between Yields on BBB+-Rated Public Utility Bonds and 30-year Treasuries (2004 - 2018)



Schedule JS-d 4-9

Kansas City Power Light
Case No. ER-2018-0145

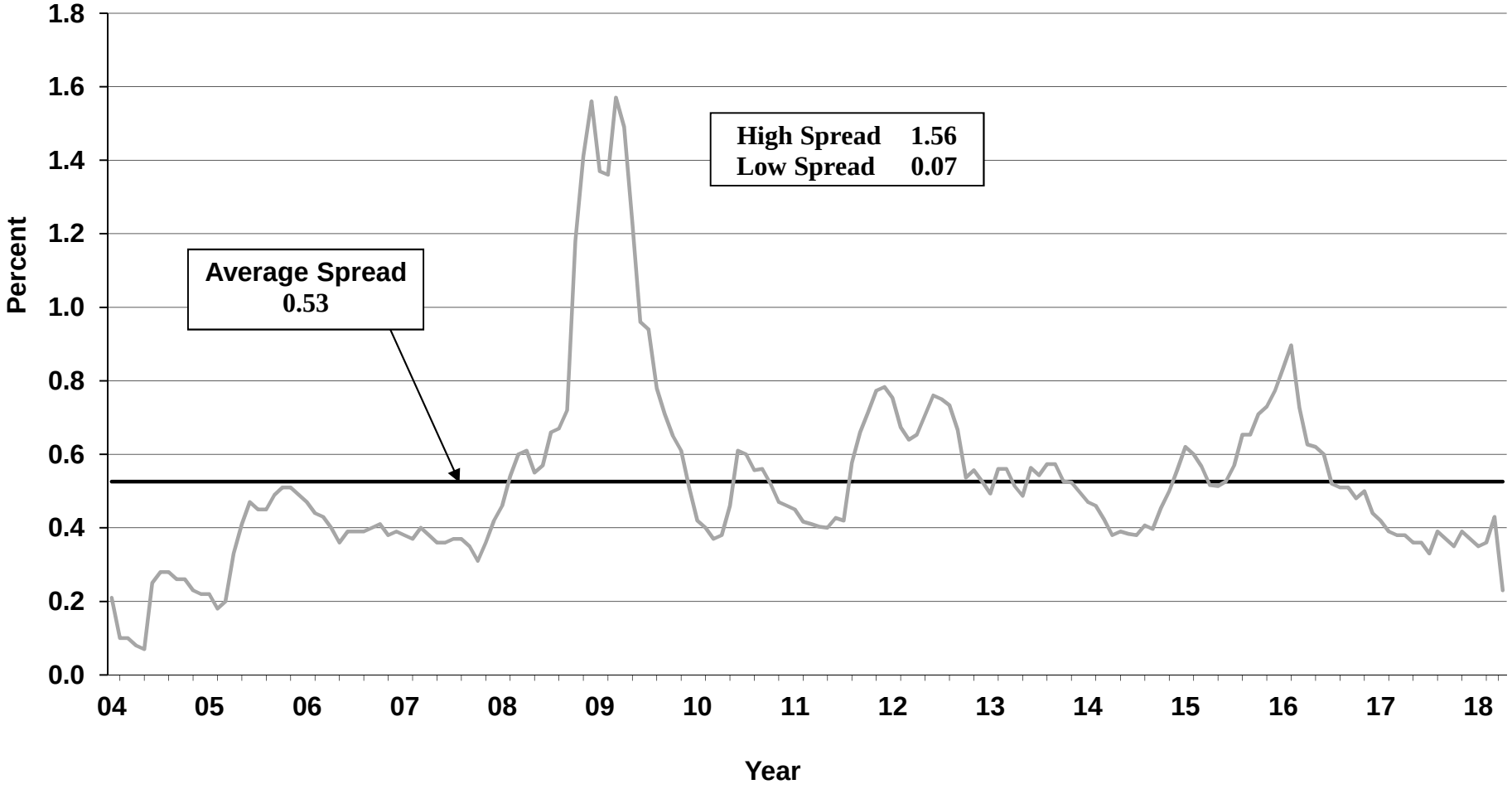
Average Utility Bonds' Yields and Average BBB+-Rated Utility Bond Yields
From (2004 - 2018)



Schedule JS-d 4-10

Kansas City Power Light
Case No. ER-2018-0145

Monthly Spreads Between Yields on Average Public Utility Bonds and BBB+-Rated Public Utility Bonds (2004 - 2018)



Schedule JS-d 4-11

Kansas City Power Light
ER-2018-0145

Criteria for Selecting Comparable Electric Utility Companies

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Edison Electric Institute Power Companies	Ticker	Stock Publicly Traded	80% of Assets U.S. Regulated (EEI)	At Least Investment Grade Credit Rating (2 of 3 agencies)	L- T Growth Coverage from at least 2 equity analysts and L-T Growth Available	No Pending Merger or Acquisition	No Reduced Dividend Since 2015	At least 50% of Plant from Electric Utility	At least 25% of Plant Electric Plant Generation	At Least 80% of Income from U.S. Regulated Utility Operations	Comparable Company Met All Criteria
ALLETE, Inc.	ALE	YES	**NO**								
Alliant Energy Corporation	LNT	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Ameren Corporation	AEE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
American Electric Power Company, Inc.	AEP	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
AVANGRID, Inc.	AGR	YES	**NO**								
Avista Corporation	AVA	YES	YES	YES	YES	**NO**					
Berkshire Hathaway Energy	NA	**NO**									
Black Hills Corporation	BKH	YES	YES	YES	YES	YES	YES	**NO**			
CenterPoint Energy, Inc.	CNP	YES	**NO**								
Cleco Corporation	NA	**NO**									
CMS Energy Corporation	CMS	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Consolidated Edison, Inc.	ED	YES	YES	YES	YES	YES	YES	YES	**NO**		
Dominion Resources, Inc.	D	YES	**NO**								
DPL, Inc.	NA	**NO**									
DTE Energy Company	DTE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Duke Energy Corporation	DUK	YES	YES	YES	YES	**NO**					
Edison International	EIX	YES	YES	YES	YES	YES	YES	YES	**NO**		
El Paso Electric Company	EE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Entergy Corporation *	ETR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Eversource Energy	ES	YES	YES	YES	YES	YES	YES	YES	**NO**		
Exelon Corporation	EXC	YES	**NO**								
FirstEnergy Corp.	FE	YES	**NO**								
Great Plains Energy Incorporated	GXP	YES	YES	YES	YES	**NO**					
Hawaiian Electric Industries, Inc.	HE	YES	**NO**								
IDACORP, Inc.	IDA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
IPALCO Enterprises, Inc.	NA	**NO**									
MDU Resources Group, Inc.	MDU	YES	**NO**								
MGE Energy, Inc.	MGEE	YES	**NO**								
NextEra Energy, Inc.	NEE	YES	**NO**								
NiSource Inc.	NI	YES	YES	YES	YES	YES	**NO**				
NorthWestern Corporation	NWE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
OGE Energy Corp.	OGE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Oncor Electric Delivery Company	NA	**NO**									
Otter Tail Corporation	OTTR	YES	YES	YES	YES	YES	YES	YES	YES	**NO**	
PG&E Corporation	PCG	YES	YES	YES	YES	YES	**NO**				
Pinnacle West Capital Corporation	PNW	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PNM Resources, Inc.	PNM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Portland General Electric Company	POR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PPL Corporation	PPL	YES	**NO**								
Public Service Enterprise Group Inc.	PEG	YES	**NO**								
Puget Energy, Inc.	NA	**NO**									
SCANA Corporation	SCG	YES	**NO**								
Sempra Energy	SRE	YES	**NO**								
Southern Company	SO	YES	YES	YES	YES	**NO**					
Unitil Corporation	UTL	YES	YES	YES	YES	YES	YES	**NO**			
Vectren Corporation	VVC	YES	YES	**NO**							
WEC Energy Group, Inc.	WEC	YES	YES	YES	YES	YES	YES	YES	YES	**NO**	
Westar Energy, Inc.	WR	YES	YES	YES	YES	**NO**					
Xcel Energy, Inc.	XEL	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Sources: Columns 1, 2, 3, 4 = Edison Electric Institute
Column 5,6,7,8,9,10,11 = SNL Finance

* Entergy Corporation was not included because losses from its wholesale commodities business have led to considerable volitility in revenues, compared to the proxy group.

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Kansas City Power Light
Case No. ER-2018-0145

Comparable Electric Utility Companies
for KCP&L and KCP&L GMO

Number	Ticker Symbol	Company Name	S&P Corporate Credit Rating
1	LNT	Alliant Energy Corporation	A-
2	AEE	Ameren Corporation	BBB+
3	AEP	American Electric Power Company, Inc.	A-
4	CMS	CMS Energy Corporation	BBB+
5	DTE	DTE Energy Company	BBB+
6	EE	El Paso Electric Company	BBB
7	IDA	IDACORP, Inc.	BBB
8	NWE	NorthWestern Co	BBB
9	OGE	OGE Energy Corp.	A-
10	PNW	Pinnacle West Capital Corporation	A-
11	PNM	PNM Resources, Inc.	BBB+
12	POR	Portland General Electric Company	BBB
13	XEL	Xcel Energy, Inc.	A-

SCHEDULE JS-d 6-1

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SCHEDULE JS-d 6-2

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Kansas City Power Light
Case No. ER-2018-0145

Proxy Group Simple Capital Structure — % Deb

Company	Ticker	FY2017	FY2016	FY2015	FY2014	FY2013	Average
Alliant Energy Corporation	LNT	48.95%	52.77%	NA	51.04%	47.57%	**50.08%**
Ameren Corporation	AEE	48.72%	48.15%	49.76%	47.55%	45.68%	**47.97%**
American Electric Power Company, Inc.	AEP	51.50%	49.97%	49.79%	48.77%	51.13%	**50.23%**
CMS Energy Corporation	CMS	67.26%	67.01%	68.08%	68.59%	67.28%	**67.65%**
DTE Energy Company	DTE	53.72%	53.83%	48.56%	48.56%	45.91%	**50.11%**
El Paso Electric Company	EE	51.15%	52.67%	52.48%	53.54%	51.44%	**52.25%**
IDACORP, Inc.	IDA	43.68%	44.75%	45.61%	45.01%	46.60%	**45.13%**
NorthWestern Corporation	NWE	49.92%	51.69%	52.49%	52.94%	52.85%	**51.98%**
OGE Energy Corp.	OGE	41.66%	41.13%	44.15%	45.92%	43.10%	**43.19%**
Pinnacle West Capital Corporation	PNW	48.89%	45.57%	43.03%	40.77%	40.00%	**43.65%**
PNM Resources, Inc.	PNM	56.26%	55.84%	54.31%	48.63%	49.95%	**53.00%**
Portland General Electric Company	POR	50.10%	48.42%	47.71%	52.66%	51.30%	**50.04%**
Xcel Energy Inc.	XEL	55.90%	56.29%	53.91%	52.96%	53.28%	**54.47%**
Average		**51.36%**	**51.39%**	**50.82%**	**50.53%**	**49.70%**	**50.76%**

Proxy Group Simple Capital Structure — % Equity

Company	Ticker	FY2017	FY2016	FY2015	FY2014	FY2013	Average
Alliant Energy Corporation	LNT	51.05%	47.23%	NA	48.96%	52.43%	**49.92%**
Ameren Corporation	AEE	51.28%	51.85%	50.24%	52.45%	54.32%	**52.03%**
American Electric Power Company, Inc.	AEP	48.50%	50.03%	50.21%	51.23%	48.87%	**49.77%**
CMS Energy Corporation	CMS	32.74%	32.99%	31.92%	31.41%	32.72%	**32.35%**
DTE Energy Company	DTE	46.28%	46.17%	51.44%	51.44%	54.09%	**49.89%**
El Paso Electric Company	EE	48.85%	47.33%	47.52%	46.46%	48.56%	**47.75%**
IDACORP, Inc.	IDA	56.32%	55.25%	54.39%	54.99%	53.40%	**54.87%**
NorthWestern Corporation	NWE	50.08%	48.31%	47.51%	47.06%	47.15%	**48.02%**
OGE Energy Corp.	OGE	58.34%	58.87%	55.85%	54.08%	56.90%	**56.81%**
Pinnacle West Capital Corporation	PNW	51.11%	54.43%	56.97%	59.23%	60.00%	**56.35%**
PNM Resources, Inc.	PNM	43.74%	44.16%	45.69%	51.37%	50.05%	**47.00%**
Portland General Electric Company	POR	49.90%	51.58%	52.29%	47.34%	48.70%	**49.96%**
Xcel Energy Inc.	XEL	44.10%	43.71%	46.09%	47.04%	46.72%	**45.53%**
Average		**48.64%**	**48.61%**	**49.18%**	**49.47%**	**50.30%**	**49.24%**

Operating Company Simple Capital Structure — % Debt

Operating Company	Parent	2017	2016	2015	2014	2013	Average
Union Electric Company	AEE	45.25%	47.05%	48.99%	49.29%	48.25%	**47.77%**
Ameren Illinois Company	AEE	42.22%	44.03%	45.24%	46.11%	43.75%	**44.27%**
Appalachian Power Company	AEP	49.51%	49.63%	50.97%	49.65%	54.40%	**50.83%**
AEP Texas Central Company	AEP	NA	NA	69.98%	75.58%	77.71%	**74.42%**
Indiana Michigan Power Company	AEP	50.59%	51.25%	47.43%	45.59%	47.57%	**48.49%**
Kentucky Power Company	AEP	54.17%	41.65%	54.72%	53.10%	47.17%	**50.16%**
Ohio Power Company	AEP	36.40%	44.78%	47.00%	52.12%	58.56%	**47.77%**
Public Service Company of Oklahoma	AEP	51.41%	51.43%	47.44%	50.20%	50.62%	**50.22%**
Southwestern Electric Power Company	AEP	52.18%	51.22%	51.14%	46.54%	49.81%	**50.18%**
AEP Texas North Company	AEP	NA	NA	53.88%	52.93%	53.32%	**53.38%**
Kingsport Power Company	AEP	NA	NA	NA	NA	NA	**NA**
Wheeling Power Company	AEP	NA	NA	NA	NA	NA	**NA**
Consumers Energy Company	CMS	46.30%	47.09%	48.48%	49.59%	48.72%	**48.03%**
DTE Electric Company	DTE	48.99%	49.51%	48.94%	49.75%	48.90%	**49.22%**
El Paso Electric Company	EE	51.15%	52.67%	52.48%	53.54%	51.44%	**52.25%**
Idaho Power Co.	IDA	45.57%	46.61%	47.41%	46.80%	48.37%	**46.95%**
Wisconsin Power and Light Company	LNT	49.35%	47.01%	46.62%	47.31%	44.63%	**46.98%**
Interstate Power and Light Company	LNT	45.03%	48.92%	48.20%	47.40%	47.50%	**47.41%**
NorthWestern Corporation	NWE	49.92%	51.69%	52.49%	52.94%	52.85%	**51.98%**
Oklahoma Gas and Electric Company	OGE	44.31%	42.52%	44.49%	46.92%	44.84%	**44.62%**
Public Service Company of New Mexico	PNM	53.83%	50.03%	52.48%	50.11%	50.11%	**51.31%**
Arizona Public Service Company	PNW	46.07%	45.05%	41.63%	39.15%	38.27%	**42.04%**
Portland General Electric Company	POR	50.10%	48.42%	47.71%	52.66%	51.30%	**50.04%**
Southwestern Public Service Company	XEL	46.21%	45.85%	42.54%	46.38%	46.80%	**45.56%**
Public Service Company of Colorado	XEL	42.47%	44.42%	44.45%	44.28%	42.78%	**43.68%**
Northern States Power Company - MN	XEL	47.39%	47.49%	46.53%	45.58%	46.46%	**46.69%**
Northern States Power Company - WI	XEL	41.04%	44.91%	45.55%	44.84%	43.67%	**44.00%**
Average		**47.37%**	**47.53%**	**49.07%**	**49.53%**	**49.51%**	**48.60%**

Operating Company Simple Capital Structure — % Equity

Operating Company	Parent	2017	2016	2015	2014	2013	Average
Union Electric Company	AEE	54.75%	52.95%	51.01%	50.71%	51.75%	**52.23%**
Ameren Illinois Company	AEE	57.78%	55.97%	54.76%	53.89%	56.25%	**55.73%**
Appalachian Power Company	AEP	50.49%	50.37%	49.03%	50.35%	45.60%	**49.17%**
AEP Texas Central Company	AEP	NA	NA	30.02%	24.42%	22.29%	**25.58%**
Indiana Michigan Power Company	AEP	49.41%	48.75%	52.57%	54.41%	52.43%	**51.51%**
Kentucky Power Company	AEP	45.83%	58.35%	45.28%	46.90%	52.83%	**49.84%**
Ohio Power Company	AEP	63.60%	55.22%	53.00%	47.88%	41.44%	**52.23%**
Public Service Company of Oklahoma	AEP	48.59%	48.57%	52.56%	49.80%	49.38%	**49.78%**
Southwestern Electric Power Company	AEP	47.82%	48.78%	48.86%	53.46%	50.19%	**49.82%**
AEP Texas North Company	AEP	NA	NA	46.12%	47.07%	46.68%	**46.62%**
Kingsport Power Company	AEP	NA	NA	NA	NA	NA	**NA**
Wheeling Power Company	AEP	NA	NA	NA	NA	NA	**NA**
Consumers Energy Company	CMS	53.70%	52.91%	51.52%	50.41%	51.28%	**51.97%**
DTE Electric Company	DTE	51.01%	50.49%	51.06%	50.25%	51.10%	**50.78%**
El Paso Electric Company	EE	48.85%	47.33%	47.52%	46.46%	48.56%	**47.75%**
Idaho Power Co.	IDA	54.43%	53.39%	52.59%	53.20%	51.63%	**53.05%**
Wisconsin Power and Light Company	LNT	50.65%	52.99%	53.38%	52.69%	55.37%	**53.02%**
Interstate Power and Light Company	LNT	54.97%	51.08%	51.80%	52.60%	52.50%	**52.59%**
NorthWestern Corporation	NWE	50.08%	48.31%	47.51%	47.06%	47.15%	**48.02%**
Oklahoma Gas and Electric Company	OGE	55.69%	57.48%	55.51%	53.08%	55.16%	**55.38%**
Public Service Company of New Mexico	PNM	46.17%	49.97%	47.52%	49.89%	49.89%	**48.69%**
Arizona Public Service Company	PNW	53.93%	54.95%	58.37%	60.85%	61.73%	**57.96%**
Portland General Electric Company	POR	49.90%	51.58%	52.29%	47.34%	48.70%	**49.96%**
Southwestern Public Service Company	XEL	53.79%	54.15%	57.46%	53.62%	53.20%	**54.44%**
Public Service Company of Colorado	XEL	57.53%	55.58%	55.55%	55.72%	57.22%	**56.32%**
Northern States Power Company - MN	XEL	52.61%	52.51%	53.47%	54.42%	53.54%	**53.31%**
Northern States Power Company - WI	XEL	58.96%	55.09%	54.45%	55.16%	56.33%	**56.00%**
Average		**52.63%**	**52.47%**	**50.93%**	**50.47%**	**50.49%**	**51.40%**

Source: SNL Financial

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Kansas City Power Light
Case No. ER-2018-0145

Proxy Group Capital Structure Including Current Portion of Long-Term Debt

Company	Ticker	FY2017	FY2016	FY2015	FY2014	FY2013	% Deb Average
Alliant Energy Corporation	LNT	53.78%	52.80%	NA	52.28%	50.41%	**52.32%**
Ameren Corporation	AEE	51.60%	50.60%	51.16%	48.03%	47.99%	**49.88%**
American Electric Power Company, Inc.	AEP	53.66%	53.80%	52.24%	52.39%	53.33%	**53.08%**
CMS Energy Corporation	CMS	69.68%	69.08%	69.76%	69.93%	68.87%	**69.46%**
DTE Energy Company	DTE	53.95%	53.85%	49.92%	49.39%	49.01%	**51.22%**
El Paso Electric Company	EE	51.15%	54.34%	52.48%	53.87%	51.44%	**52.65%**
IDACORP, Inc.	IDA	43.68%	44.77%	45.62%	45.02%	46.62%	**45.14%**
NorthWestern Corporation	NWE	49.92%	51.69%	52.49%	52.94%	52.85%	**51.98%**
OGE Energy Corp.	OGE	43.78%	43.31%	45.16%	45.92%	44.14%	**44.46%**
Pinnacle West Capital Corporation	PNW	49.32%	46.33%	45.45%	43.70%	44.31%	**45.82%**
PNM Resources, Inc.	PNM	58.98%	58.81%	55.83%	53.27%	51.05%	**55.59%**
Portland General Electric Company	POR	50.10%	50.06%	49.27%	56.69%	51.30%	**51.48%**
Xcel Energy Inc.	XEL	56.66%	56.73%	55.19%	53.51%	53.92%	**55.20%**
Average		**52.79%**	**52.78%**	**52.05%**	**52.07%**	**51.17%**	**52.17%**

Proxy Group Capital Structure Including Current Portion of Long-Term DEBT

Company	Ticker	FY2017	FY2016	FY2015	FY2014	FY2013	% Equity Average
Alliant Energy Corporation	LNT	46.22%	47.20%	NA	47.72%	49.59%	**47.68%**
Ameren Corporation	AEE	48.40%	49.40%	48.84%	51.97%	52.01%	**50.12%**
American Electric Power Company, Inc.	AEP	46.34%	46.20%	47.76%	47.61%	46.67%	**46.92%**
CMS Energy Corporation	CMS	30.32%	30.92%	30.24%	30.07%	31.13%	**30.54%**
DTE Energy Company	DTE	46.05%	46.15%	50.08%	50.61%	50.99%	**48.78%**
El Paso Electric Company	EE	48.85%	45.66%	47.52%	46.13%	48.56%	**47.35%**
IDACORP, Inc.	IDA	56.32%	55.23%	54.38%	54.98%	53.38%	**54.86%**
NorthWestern Corporation	NWE	50.08%	48.31%	47.51%	47.06%	47.15%	**48.02%**
OGE Energy Corp.	OGE	56.22%	56.69%	54.84%	54.08%	55.86%	**55.54%**
Pinnacle West Capital Corporation	PNW	50.68%	53.67%	54.55%	56.30%	55.69%	**54.18%**
PNM Resources, Inc.	PNM	41.02%	41.19%	44.17%	46.73%	48.95%	**44.41%**
Portland General Electric Company	POR	49.90%	49.94%	50.73%	43.31%	48.70%	**48.52%**
Xcel Energy Inc.	XEL	43.34%	43.27%	44.81%	46.49%	46.08%	**44.80%**
Average		**47.21%**	**47.22%**	**47.95%**	**47.93%**	**48.83%**	**47.83%**

Operating Company Capital Structure Including Current Portion of Long-Term Debt

Operating Company	Parent	2017	2016	2015	2014	2013	% Deb Average
Union Electric Company	AEE	47.94%	49.90%	50.67%	50.06%	48.98%	**49.51%**
Ameren Illinois Company	AEE	46.56%	46.55%	46.57%	46.11%	43.75%	**45.91%**
Appalachian Power Company	AEP	51.13%	52.96%	53.08%	54.04%	56.50%	**53.54%**
AEP Texas Central Company	AEP	NA	NA	72.64%	77.35%	79.28%	**76.42%**
Indiana Michigan Power Company	AEP	55.31%	53.46%	49.55%	50.83%	51.48%	**52.12%**
Kentucky Power Company	AEP	56.40%	56.47%	56.65%	55.16%	47.17%	**54.37%**
Ohio Power Company	AEP	42.67%	45.44%	52.06%	53.59%	62.73%	**51.30%**
Public Service Company of Oklahoma	AEP	51.42%	51.44%	53.45%	50.21%	51.49%	**51.60%**
Southwestern Electric Power Company	AEP	52.21%	54.74%	51.17%	50.42%	49.85%	**51.68%**
AEP Texas North Company	AEP	NA	NA	57.55%	52.93%	53.32%	**54.60%**
Kingsport Power Company	AEP	NA	NA	NA	NA	NA	**NA**
Wheeling Power Company	AEP	NA	NA	NA	NA	NA	**NA**
Consumers Energy Company	CMS	47.79%	48.81%	49.41%	50.18%	48.95%	**49.03%**
DTE Electric Company	DTE	48.99%	49.51%	49.65%	50.30%	51.46%	**49.98%**
El Paso Electric Company	EE	51.15%	54.34%	52.48%	53.87%	51.44%	**52.65%**
Idaho Power Co.	IDA	45.57%	46.62%	47.42%	46.82%	48.39%	**46.96%**
Wisconsin Power and Light Company	LNT	49.35%	47.01%	46.62%	47.80%	44.78%	**47.11%**
Interstate Power and Light Company	LNT	48.95%	48.92%	48.20%	49.63%	48.13%	**48.76%**
NorthWestern Corporation	NWE	49.92%	51.69%	52.49%	52.94%	52.85%	**51.98%**
Oklahoma Gas and Electric Company	OGE	46.47%	43.76%	45.54%	46.92%	44.84%	**45.51%**
Public Service Company of New Mexico	PNM	53.83%	53.85%	54.53%	54.00%	51.61%	**53.56%**
Arizona Public Service Company	PNW	46.52%	45.05%	44.12%	42.17%	42.71%	**44.11%**
Portland General Electric Company	POR	50.10%	50.06%	49.27%	56.69%	51.30%	**51.48%**
Southwestern Public Service Company	XEL	46.21%	45.85%	45.97%	46.38%	46.80%	**46.24%**
Public Service Company of Colorado	XEL	44.15%	44.45%	44.50%	44.33%	44.64%	**44.42%**
Northern States Power Company - MN	XEL	47.39%	47.49%	46.53%	47.11%	46.46%	**47.00%**
Northern States Power Company - WI	XEL	46.48%	44.96%	45.60%	44.89%	43.68%	**45.12%**
Average		**48.98%**	**49.27%**	**50.63%**	**50.99%**	**50.50%**	**50.08%**

Operating Company Capital Structure Including Current Portion of Long-Term Debt

Operating Company	Parent	2017	2016	2015	2014	2013	% Equity Average
Union Electric Company	AEE	52.06%	50.10%	49.33%	49.94%	51.02%	**50.49%**
Ameren Illinois Company	AEE	53.44%	53.45%	53.43%	53.89%	56.25%	**54.09%**
Appalachian Power Company	AEP	48.87%	47.04%	46.92%	45.96%	43.50%	**46.46%**
AEP Texas Central Company	AEP	NA	NA	27.36%	22.65%	20.72%	**23.58%**
Indiana Michigan Power Company	AEP	44.69%	46.54%	50.45%	49.17%	48.52%	**47.88%**
Kentucky Power Company	AEP	43.60%	43.53%	43.35%	44.84%	52.83%	**45.63%**
Ohio Power Company	AEP	57.33%	54.56%	47.94%	46.41%	37.27%	**48.70%**
Public Service Company of Oklahoma	AEP	48.58%	48.56%	46.55%	49.79%	48.51%	**48.40%**
Southwestern Electric Power Company	AEP	47.79%	45.26%	48.83%	49.58%	50.15%	**48.32%**
AEP Texas North Company	AEP	NA	NA	42.45%	47.07%	46.68%	**45.40%**
Kingsport Power Company	AEP	NA	NA	NA	NA	NA	**NA**
Wheeling Power Company	AEP	NA	NA	NA	NA	NA	**NA**
Consumers Energy Company	CMS	52.21%	51.19%	50.59%	49.82%	51.05%	**50.97%**
DTE Electric Company	DTE	51.01%	50.49%	50.35%	49.70%	48.54%	**50.02%**
El Paso Electric Company	EE	48.85%	45.66%	47.52%	46.13%	48.56%	**47.35%**
Idaho Power Co.	IDA	54.43%	53.38%	52.58%	53.18%	51.61%	**53.04%**
Wisconsin Power and Light Company	LNT	50.65%	52.99%	53.38%	52.20%	55.22%	**52.89%**
Interstate Power and Light Company	LNT	51.05%	51.08%	51.80%	50.37%	51.87%	**51.24%**
NorthWestern Corporation	NWE	50.08%	48.31%	47.51%	47.06%	47.15%	**48.02%**
Oklahoma Gas and Electric Company	OGE	53.53%	56.24%	54.46%	53.08%	55.16%	**54.49%**
Public Service Company of New Mexico	PNM	46.17%	46.15%	45.47%	46.00%	48.39%	**46.44%**
Arizona Public Service Company	PNW	53.48%	54.95%	55.88%	57.83%	57.29%	**55.89%**
Portland General Electric Company	POR	49.90%	49.94%	50.73%	43.31%	48.70%	**48.52%**
Southwestern Public Service Company	XEL	53.79%	54.15%	54.03%	53.62%	53.20%	**53.76%**
Public Service Company of Colorado	XEL	55.85%	55.55%	55.50%	55.67%	55.36%	**55.58%**
Northern States Power Company - MN	XEL	52.61%	52.51%	53.47%	52.89%	53.54%	**53.00%**
Northern States Power Company - WI	XEL	53.52%	55.04%	54.40%	55.11%	56.32%	**54.88%**
Average		**51.02%**	**50.73%**	**49.37%**	**49.01%**	**49.50%**	**49.92%**

Source: SNL Financial

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SCHEDULE JS-d 6-8

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Kansas City Power Light
Case No. ER-2018-0145

Proxy Group Capital Structure Including Current Portion of LT-Debt - Goodwill — % Deb

Company	Ticker	FY2017	FY2016	FY2015	FY2014	FY2013	Average
Alliant Energy Corporation	LNT	53.78%	52.80%	NA	52.28%	50.41%	**52.32%**
Ameren Corporation	AEE	53.07%	52.09%	52.68%	49.61%	49.61%	**51.41%**
American Electric Power Company, Inc.	AEP	53.73%	53.87%	52.32%	52.47%	53.47%	**53.17%**
CMS Energy Corporation	CMS	69.68%	69.08%	69.76%	69.93%	68.87%	**69.46%**
DTE Energy Company	DTE	60.69%	60.99%	56.42%	56.29%	56.33%	**58.14%**
El Paso Electric Company	EE	51.15%	54.34%	52.48%	53.87%	51.44%	**52.65%**
IDACORP, Inc.	IDA	43.68%	44.77%	45.62%	45.02%	46.62%	**45.14%**
NorthWestern Corporation	NWE	55.44%	57.63%	58.73%	59.69%	63.10%	**58.92%**
OGE Energy Corp.	OGE	43.78%	43.31%	45.16%	45.92%	44.14%	**44.46%**
Pinnacle West Capital Corporation	PNW	49.32%	46.33%	45.45%	43.70%	44.31%	**45.82%**
PNM Resources, Inc.	PNM	63.24%	63.13%	60.31%	57.62%	55.57%	**59.98%**
Portland General Electric Company	POR	50.10%	50.06%	49.27%	56.69%	51.30%	**51.48%**
Xcel Energy Inc.	XEL	56.66%	56.73%	55.19%	53.51%	53.92%	**55.20%**
Average		**54.18%**	**54.24%**	**53.62%**	**53.59%**	**53.01%**	**53.73%**

Proxy Group Capital Structure Including Current Portion of LT-Debt - Goodwill — % Equity

Company	Ticker	FY2017	FY2016	FY2015	FY2014	FY2013	Average
Alliant Energy Corporation	LNT	46.22%	47.20%	NA	47.72%	49.59%	**47.68%**
Ameren Corporation	AEE	46.93%	47.91%	47.32%	50.39%	50.39%	**48.59%**
American Electric Power Company, Inc.	AEP	46.27%	46.13%	47.68%	47.53%	46.53%	**46.83%**
CMS Energy Corporation	CMS	30.32%	30.92%	30.24%	30.07%	31.13%	**30.54%**
DTE Energy Company	DTE	39.31%	39.01%	43.58%	43.71%	43.67%	**41.86%**
El Paso Electric Company	EE	48.85%	45.66%	47.52%	46.13%	48.56%	**47.35%**
IDACORP, Inc.	IDA	56.32%	55.23%	54.38%	54.98%	53.38%	**54.86%**
NorthWestern Corporation	NWE	44.56%	42.37%	41.27%	40.31%	36.90%	**41.08%**
OGE Energy Corp.	OGE	56.22%	56.69%	54.84%	54.08%	55.86%	**55.54%**
Pinnacle West Capital Corporation	PNW	50.68%	53.67%	54.55%	56.30%	55.69%	**54.18%**
PNM Resources, Inc.	PNM	36.76%	36.87%	39.69%	42.38%	44.43%	**40.02%**
Portland General Electric Company	POR	49.90%	49.94%	50.73%	43.31%	48.70%	**48.52%**
Xcel Energy Inc.	XEL	43.34%	43.27%	44.81%	46.49%	46.08%	**44.80%**
Average		**45.82%**	**45.76%**	**46.38%**	**46.41%**	**46.99%**	**46.27%**

Operating Company Capital Structure Including Current Portion of LT-Debt - Goodwill — % Deb

Operating Company	Parent	2017	2016	2015	2014	2013	Average
Union Electric Company	AEE	47.94%	49.90%	50.67%	50.06%	48.98%	**49.51%**
Ameren Illinois Company	AEE	49.94%	50.26%	50.48%	50.41%	48.45%	**49.91%**
Appalachian Power Company	AEP	51.13%	52.96%	53.08%	54.04%	56.50%	**53.54%**
AEP Texas Central Company	AEP	NA	NA	72.64%	77.35%	79.28%	**76.42%**
Indiana Michigan Power Company	AEP	55.31%	53.46%	49.55%	50.83%	51.48%	**52.12%**
Kentucky Power Company	AEP	56.40%	56.47%	56.65%	55.16%	47.17%	**54.37%**
Ohio Power Company	AEP	42.67%	45.44%	52.06%	53.59%	62.73%	**51.30%**
Public Service Company of Oklahoma	AEP	51.42%	51.44%	53.45%	50.21%	51.49%	**51.60%**
Southwestern Electric Power Company	AEP	52.21%	54.74%	51.17%	50.42%	49.85%	**51.68%**
AEP Texas North Company	AEP	NA	NA	57.55%	52.93%	53.32%	**54.60%**
Kingsport Power Company	AEP	NA	NA	NA	NA	NA	**NA**
Wheeling Power Company	AEP	NA	NA	NA	NA	NA	**NA**
Consumers Energy Company	CMS	47.79%	48.81%	49.41%	50.18%	48.95%	**49.03%**
DTE Electric Company	DTE	48.99%	49.51%	49.65%	50.30%	51.46%	**49.98%**
El Paso Electric Company	EE	51.15%	54.34%	52.48%	53.87%	51.44%	**52.65%**
Idaho Power Co.	IDA	45.57%	46.62%	47.42%	46.82%	48.39%	**46.96%**
Wisconsin Power and Light Company	LNT	49.35%	47.01%	46.62%	47.80%	44.78%	**47.11%**
Interstate Power and Light Company	LNT	48.95%	48.92%	48.20%	49.63%	48.13%	**48.76%**
NorthWestern Corporation	NWE	55.44%	57.63%	58.73%	59.69%	63.10%	**58.92%**
Oklahoma Gas and Electric Company	OGE	46.47%	43.76%	45.54%	46.92%	44.84%	**45.51%**
Public Service Company of New Mexico	PNM	54.74%	54.79%	55.52%	55.04%	52.70%	**54.56%**
Arizona Public Service Company	PNW	46.52%	45.05%	44.12%	42.17%	42.71%	**44.11%**
Portland General Electric Company	POR	50.10%	50.06%	49.27%	56.69%	51.30%	**51.48%**
Southwestern Public Service Company	XEL	46.21%	45.85%	45.97%	46.38%	46.80%	**46.24%**
Public Service Company of Colorado	XEL	44.15%	44.45%	44.50%	44.33%	44.64%	**44.42%**
Northern States Power Company - MN	XEL	47.39%	47.49%	46.53%	47.11%	46.46%	**47.00%**
Northern States Power Company - WI	XEL	46.48%	44.96%	45.60%	44.89%	43.68%	**45.12%**
Average		**49.41%**	**49.74%**	**51.08%**	**51.47%**	**51.14%**	**50.57%**

Operating Company Capital Structure Including Current Portion of LT-Debt - Goodwill — % Equity

Operating Company	Parent	2017	2016	2015	2014	2013	Average
Union Electric Company	AEE	52.06%	50.10%	49.33%	49.94%	51.02%	**50.49%**
Ameren Illinois Company	AEE	50.06%	49.74%	49.52%	49.59%	51.55%	**50.09%**
Appalachian Power Company	AEP	48.87%	47.04%	46.92%	45.96%	43.50%	**46.46%**
AEP Texas Central Company	AEP	NA	NA	27.36%	22.65%	20.72%	**23.58%**
Indiana Michigan Power Company	AEP	44.69%	46.54%	50.45%	49.17%	48.52%	**47.88%**
Kentucky Power Company	AEP	43.60%	43.53%	43.35%	44.84%	52.83%	**45.63%**
Ohio Power Company	AEP	57.33%	54.56%	47.94%	46.41%	37.27%	**48.70%**
Public Service Company of Oklahoma	AEP	48.58%	48.56%	46.55%	49.79%	48.51%	**48.40%**
Southwestern Electric Power Company	AEP	47.79%	45.26%	48.83%	49.58%	50.15%	**48.32%**
AEP Texas North Company	AEP	NA	NA	42.45%	47.07%	46.68%	**45.40%**
Kingsport Power Company	AEP	NA	NA	NA	NA	NA	**NA**
Wheeling Power Company	AEP	NA	NA	NA	NA	NA	**NA**
Consumers Energy Company	CMS	52.21%	51.19%	50.59%	49.82%	51.05%	**50.97%**
DTE Electric Company	DTE	51.01%	50.49%	50.35%	49.70%	48.54%	**50.02%**
El Paso Electric Company	EE	48.85%	45.66%	47.52%	46.13%	48.56%	**47.35%**
Idaho Power Co.	IDA	54.43%	53.38%	52.58%	53.18%	51.61%	**53.04%**
Wisconsin Power and Light Company	LNT	50.65%	52.99%	53.38%	52.20%	55.22%	**52.89%**
Interstate Power and Light Company	LNT	51.05%	51.08%	51.80%	50.37%	51.87%	**51.24%**
NorthWestern Corporation	NWE	44.56%	42.37%	41.27%	40.31%	36.90%	**41.08%**
Oklahoma Gas and Electric Company	OGE	53.53%	56.24%	54.46%	53.08%	55.16%	**54.49%**
Public Service Company of New Mexico	PNM	45.26%	45.21%	44.48%	44.96%	47.30%	**45.44%**
Arizona Public Service Company	PNW	53.48%	54.95%	55.88%	57.83%	57.29%	**55.89%**
Portland General Electric Company	POR	49.90%	49.94%	50.73%	43.31%	48.70%	**48.52%**
Southwestern Public Service Company	XEL	53.79%	54.15%	54.03%	53.62%	53.20%	**53.76%**
Public Service Company of Colorado	XEL	55.85%	55.55%	55.50%	55.67%	55.36%	**55.58%**
Northern States Power Company - MN	XEL	52.61%	52.51%	53.47%	52.89%	53.54%	**53.00%**
Northern States Power Company - WI	XEL	53.52%	55.04%	54.40%	55.11%	56.32%	**54.88%**
Average		**50.59%**	**50.26%**	**48.92%**	**48.53%**	**48.86%**	**49.43%**

Source: SNL Financial

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SCHEDULE JS-d 7

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Kansas City Power Light
Case No. ER-2018-0145

Ten-Year Dividends Per Share, Earnings Per Share & Book Value Per Share Growth Rates
for the Comparable Electric Utility Companies

	---------- 10-Year Annual Compound Growth Rates ----------			
Company Name	DPS	EPS	BVPS	Average of Growth Rates
Alliant Energy Corporation	7.38%	4.28%	4.23%	5.30%
Ameren Corporation	-3.85%	-1.90%	-0.86%	-2.20%
American Electric Power Company, Inc.	4.23%	0.85%	4.24%	3.11%
CMS Energy Corporation	33.99%	NA	4.18%	19.08%
DTE Energy Company	3.99%	6.14%	4.15%	4.76%
El Paso Electric Company	NA	6.36%	7.42%	6.89%
IDACORP, Inc.	5.65%	6.81%	5.31%	5.92%
NorthWestern Co	5.51%	8.92%	5.23%	6.55%
OGE Energy Corp.	5.59%	5.90%	7.61%	6.37%
Pinnacle West Capital Corporation	2.44%	3.75%	2.18%	2.79%
PNM Resources, Inc.	0.49%	-1.50%	-0.01%	-0.34%
Portland General Electric Company	4.61%	3.49%	2.81%	3.64%
Xcel Energy, Inc.	4.42%	4.83%	4.40%	4.55%
Average	**6.21%**	**4.00%**	**3.91%**	**5.11%**

NA = Not Available

Source: SNL Financial

Kansas City Power Light
Case No. ER-2018-0145

Five-Year Dividends Per Share, Earnings Per Share & Book Value Per Share Growth Rates
for the Comparable Electric Utility Companies

	5-Year Annual Compound Growth Rates			
Company Name	DPS	EPS	BVPS	Average of Growth Rate
Alliant Energy Corporation	6.83%	5.11%	4.78%	5.58%
Ameren Corporation	1.86%	9.99%	-1.01%	3.61%
American Electric Power Company, Inc.	4.59%	0.84%	3.89%	3.11%
CMS Energy Corporation	8.68%	3.80%	5.13%	5.87%
DTE Energy Company	5.99%	5.02%	4.20%	5.07%
El Paso Electric Company	17.85%	-0.01%	6.31%	8.05%
IDACORP, Inc.	10.60%	4.06%	5.34%	6.67%
NorthWestern Co	7.06%	6.20%	7.88%	7.05%
OGE Energy Corp.	8.72%	3.95%	6.51%	6.39%
Pinnacle West Capital Corporation	2.32%	5.05%	4.23%	3.87%
PNM Resources, Inc.	11.44%	-1.06%	1.81%	4.06%
Portland General Electric Company	3.62%	2.87%	3.61%	3.37%
Xcel Energy, Inc.	5.61%	4.28%	4.47%	4.79%

Kansas City Power Light
Case No. ER-2018-0145

Average of Ten- and Five-Year Dividends Per Share, Earnings Per Share &
Book Value Per Share Growth Rates for the Comparable Electric Utility Companies

Company Name	(1) 10-Year Average DPS, EPS & BVPS	(2) 5-Year Average DPS, EPS & BVPS	Average of 5-Year & 10-Year Averages
Alliant Energy Corporation	5.30%	5.58%	5.44%
Ameren Corporation	-2.20%	3.61%	0.71%
American Electric Power Company, Inc.	3.11%	3.11%	3.11%
CMS Energy Corporation	19.08%	5.87%	12.48%
DTE Energy Company	4.76%	5.07%	4.92%
El Paso Electric Company	6.89%	8.05%	7.47%
IDACORP, Inc.	5.92%	6.67%	6.30%
NorthWestern Co	6.55%	7.05%	6.80%
OGE Energy Corp.	6.37%	6.39%	6.38%
Pinnacle West Capital Corporation	2.79%	3.87%	3.33%
PNM Resources, Inc.	-0.34%	4.06%	1.86%
Portland General Electric Company	3.64%	3.37%	3.50%
Xcel Energy, Inc.	4.55%	4.79%	4.67%
Average	**5.11%**	**5.19%**	**5.15%**

Sources: Column 1 = Schedule 8-1
Column 2 = Schedule 8-2

Kansas City Power Light
Case No. ER-2018-0145

Five-Year Projected Dividends Per Share, Earnings Per Share & Book Value Per Share Growth Rates for the Comparable Electric Utility Companies

	3-Year Projected Compound Growth Rates			
Company Name	DPS	EPS	BVPS	Average of 3 Year Annual Compound Growth Rates
Alliant Energy Corporation	NA	7.38%	6.68%	7.03%
Ameren Corporation	NA	6.77%	4.64%	5.70%
American Electric Power Company, Inc.	5.89%	5.75%	4.21%	5.29%
CMS Energy Corporation	7.61%	7.32%	7.23%	7.39%
DTE Energy Company	NA	4.99%	6.25%	5.62%
El Paso Electric Company	6.76%	5.95%	3.67%	5.46%
IDACORP, Inc.	6.69%	2.80%	NA	4.74%
NorthWestern Co	NA	0.53%	1.86%	1.19%
OGE Energy Corp.	NA	5.03%	0.04%	2.53%
Pinnacle West Capital Corporation	5.74%	4.43%	3.65%	4.61%
PNM Resources, Inc.	8.54%	3.93%	1.59%	4.69%

Kansas City Power Light
Case No. ER-2018-0145

Historical and Projected Growth Rates
for the Comparable Electric Utility Companies

Company Name	(1) 10-Year Average DPS, EPS & BVPS	(2) 5-Year Average DPS, EPS & BVPS	(3) Projected 3-Year Growth Rate (DPS, EPS and BVPS)	(4) Mean Projected Long-Term Growth Rate
Alliant Energy Corporation	5.30%	5.58%	7.03%	5.91%
Ameren Corporation	-2.20%	3.61%	5.70%	6.43%
American Electric Power Company, Inc.	3.11%	3.11%	5.29%	5.54%
CMS Energy Corporation	19.08%	5.87%	7.39%	6.69%
DTE Energy Company	4.76%	5.07%	5.62%	5.81%
El Paso Electric Company	6.89%	8.05%	5.46%	4.90%
IDACORP, Inc.	5.92%	6.67%	4.74%	4.12%
NorthWestern Co	6.55%	7.05%	1.19%	2.41%
OGE Energy Corp.	6.37%	6.39%	2.53%	5.95%
Pinnacle West Capital Corporation	2.79%	3.87%	4.61%	4.58%
PNM Resources, Inc.	-0.34%	4.06%	4.69%	5.42%
Portland General Electric Company	3.64%	3.37%	3.28%	2.91%
Xcel Energy, Inc.	4.55%	4.79%	5.93%	5.73%
Average	**5.11%**	**5.19%**	**4.88%**	**5.11%**

Proposed Range of Growth for Comparables: **4% - 5%**

Sources: Column 1 = Schedule 8-3
Column 2 = Schedule 8-3
Column 3 = Schedule 8-4

Kansas City Power Light
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Average High / Low Stock Price for March 2018 through May 2018.
for the Comparable Electric Utility Companies

Company Name	(1) -- Feb 2018 -- High Stock Price	(2) -- Feb 2018 -- Low Stock Price	(3) -- March 2018 -- High Stock Price	(4) -- March 2018 -- Low Stock Price	(5) -- April 2018 -- High Stock Price	(6) -- April 2018 -- Low Stock Price	(7) **Average High/Low Stock Price (02/18 - 04/18)**
Alliant Energy Corporation	39.75	37.14	40.86	38.06	43.06	40.52	**39.90**
Ameren Corporation	56.35	52.59	56.63	53.58	58.62	55.33	**55.52**
American Electric Power Company, Inc.	67.84	63.38	68.66	64.92	70.55	66.64	**67.00**
CMS Energy Corporation	44.20	41.77	45.29	42.36	47.19	43.96	**44.13**
DTE Energy Company	105.22	98.49	104.40	99.92	105.65	102.10	**102.63**
El Paso Electric Company	51.45	48.60	51.00	48.35	51.35	48.55	**49.88**
IDACORP, Inc.	85.27	81.05	88.27	81.36	93.63	84.98	**85.76**
NorthWestern Co	53.44	50.33	53.80	50.84	55.36	52.83	**52.77**
OGE Energy Corp.	32.95	29.60	32.77	30.88	32.91	31.56	**31.78**
Pinnacle West Capital Corporation	80.28	74.34	79.80	75.43	81.61	77.30	**78.13**
PNM Resources, Inc.	36.85	33.80	38.30	35.10	40.05	37.25	**36.89**
Portland General Electric Company	41.69	39.73	40.51	39.11	42.48	39.35	**40.48**
Xcel Energy, Inc.	44.81	42.44	45.48	42.72	47.10	44.02	**44.43**

Notes: Column 7 = [(Column 1 + Column 2 + Column 3 + Column 4 + Column 5 + Column 6 / 6]

Source: SNL Finance

Kansas City Power Light
Case No. ER-2018-0145

Constant-Growth Discounted Cash Flow (DCF) Estimated Costs of Common Equity for the Comparable Electric Utility Companies

Company Name	(1) Expected Annual Dividend	(2) Average High/Low Stock Price	(3) Projected Dividend Yield
Alliant Energy Corporation	$1.36	$39.90	3.41%
Ameren Corporation	$1.94	$55.52	3.49%
American Electric Power Company, Inc.	$2.55	$67.00	3.81%
CMS Energy Corporation	$1.35	$44.13	3.05%
DTE Energy Company	$3.58	$102.63	3.49%
El Paso Electric Company	$1.43	$49.88	2.86%
IDACORP, Inc.	$2.44	$85.76	2.85%
NorthWestern Co [4]	$2.12	$52.77	4.03%
OGE Energy Corp.	$1.34	$31.78	4.23%
Pinnacle West Capital Corporation	$2.86	$78.13	3.66%
PNM Resources, Inc.	$1.09	$36.89	2.96%
Portland General Electric Company	$1.44	$40.48	3.55%
Xcel Energy, Inc.	$1.55	$44.43	3.48%
Average			**3.45%**

Proposed Dividend Yield:	**3.45%**
Proposed Range of Growth:	**4% - 5%**
Indicated Cost of Common Equity:	**7.45% - 8.45%**

Notes: 1. Estimated Dividend Declared per share is weighted by 3/4 for 2018 and 1/4 for 2019.
3. Projected Dividend Yield = (Column 1 / Column 2)
4. NWE did not have expected dividend data. Expected Annual Dividend = 2017 dividends per share * (1 + 3yr growth rate)

Sources: Column 1 = SNL Financial
Column 2 = Schedule 9

Kansas City Power Light
Case No. ER-2018-0145

Capital Asset Pricing Model (CAPM) Costs of Common Equity Estimates
Based on Historical Return Differences Between Common Stocks and Long-Term U.S. Treasuries
for the Comparable Electric Utility Companies

Company Name	(1) Risk Free Rate	(2) Company's Value Line Beta	(3) Arithmetic Average Market Risk Premium (1926-2017)	(4) Geometric Average Market Risk Premium (1926-2017)	(5) Arithmetic CAPM Cost of Common Equity (1926-2017)	(6) Geometric CAPM Cost of Common Equity (1926-2017)
Alliant Energy Corporation	3.10%	0.62	6.10%	4.70%	6.87%	6.00%
Ameren Corporation	3.10%	0.62	6.10%	4.70%	6.91%	6.04%
American Electric Power Company, Inc.	3.10%	0.60	6.10%	4.70%	6.79%	5.94%
CMS Energy Corporation	3.10%	0.59	6.10%	4.70%	6.71%	5.88%
DTE Energy Company	3.10%	0.64	6.10%	4.70%	6.99%	6.10%
El Paso Electric Company	3.10%	0.73	6.10%	4.70%	7.52%	6.51%
IDACORP, Inc.	3.10%	0.58	6.10%	4.70%	6.62%	5.82%
NorthWestern Co	3.10%	0.63	6.10%	4.70%	6.95%	6.07%
OGE Energy Corp.	3.10%	0.94	6.10%	4.70%	8.83%	7.52%
Pinnacle West Capital Corporation	3.10%	0.61	6.10%	4.70%	6.83%	5.97%
PNM Resources, Inc.	3.10%	0.66	6.10%	4.70%	7.16%	6.23%
Portland General Electric Company	3.10%	0.56	6.10%	4.70%	6.54%	5.75%
Xcel Energy, Inc.	3.10%	0.54	6.10%	4.70%	6.38%	5.63%
Average		**0.64**			**7.01%**	**6.11%**

Column 1 = The appropriate yield is equal to the average 30-year U.S. Treasury Bond yield for February, March, and April 2018 which was obtained from the St. Louis Federal Reserve website at http://research.stlouisfed.org/fred2/series/GS30/22.

Column 2 = Beta is a measure of the movement and relative risk of an individual stock to the market as a whole. Staff calculated unadjusted Beta fror an Excel spreadsheet designed specifically to be used with the SNL database market and financial information, then adjusted Beta using the Blume adjustment formula as used by Value Line: Adjusted Beta = 0.35 + 0.67 * Unadjusted Beta

Column 3 = The Market Risk Premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk free investment. The appropriate Market Risk Premium for the period 1927 - 2017 was determined to be 6.10% based on an arithmetic average as calculated in Duff & Phelps' 2018 SBBI Yearbook.

Column 4 = The Market Risk Premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk free investment. The appropriate Market Risk Premium for the period 1926 - 2017 was determined to be 4.70% based on a geometric average as calculated in Duff & Phelps' 2018 SBBI Yearbook.

Column 5 = (Column 1 + (Column 2 * Column 3))

Column 6 = (Column 1 + (Column 2 * Column 4))

Kansas City Power Light
Case No. ER-2018-0145

Multiple-Stage Discounted Cash Flow (DCF) Estimated Costs of Common Equity for the Comparable Electric Utility Companies

Company Name	(1) Annualizec Quarterly Dividend	(2) Growth Years 1-5	(3) 6	(4) 7	(5) Growth Years 8	(6) 9	(7) 10	(8) Growth in Perpetuity	(9) Cost of Equity
Alliant Energy Corporation	$1.34	5.91%	5.53%	5.14%	4.76%	4.37%	3.99%	3.60%	7.63%
Ameren Corporation	$1.83	6.43%	5.96%	5.49%	5.02%	4.54%	4.07%	3.60%	7.68%
American Electric Power Company, Inc.	$2.48	5.54%	5.22%	4.89%	4.57%	4.25%	3.92%	3.60%	7.93%
CMS Energy Corporation	$1.43	6.69%	6.18%	5.66%	5.15%	4.63%	4.12%	3.60%	7.68%
DTE Energy Company	$3.53	5.81%	5.44%	5.07%	4.71%	4.34%	3.97%	3.60%	7.70%
El Paso Electric Company	$1.34	4.90%	4.68%	4.47%	4.25%	4.03%	3.82%	3.60%	6.62%
IDACORP, Inc.	$2.36	4.12%	4.03%	3.95%	3.86%	3.77%	3.69%	3.60%	6.54%
NorthWestern Co	$2.20	2.41%	2.61%	2.81%	3.01%	3.20%	3.40%	3.60%	7.60%
OGE Energy Corp.	$1.33	5.95%	5.56%	5.17%	4.78%	4.38%	3.99%	3.60%	8.61%
Pinnacle West Capital Corporation	$2.78	4.58%	4.42%	4.25%	4.09%	3.93%	3.76%	3.60%	7.52%
PNM Resources, Inc.	$1.06	5.42%	5.12%	4.81%	4.51%	4.21%	3.90%	3.60%	6.94%
Portland General Electric Company	$1.36	2.91%	3.03%	3.14%	3.26%	3.37%	3.49%	3.60%	6.92%
Xcel Energy, Inc.	$1.52	5.73%	5.38%	5.02%	4.67%	4.31%	3.96%	3.60%	7.66%
								Average	**7.46%**

Sources: Column 1 = SNL Financial
Column 2 = Schedule JS-8-4
Columns 3 - 7 = Linear reduction of short-term growth rate projections to sustainable level.
Column 8 = Low Range of Projected GDP Growth Rates Cited in Staff Cost of Service Report, and average growth rate of the electric utility industry until deregulation in 2000.

Kansas City Power Light
Case No. ER-2018-0145

Multiple-Stage Discounted Cash Flow (DCF) Estimated Costs of Common Equity for the Comparable Electric Utility Companies

Company Name	(1) Annualized Quarterly Dividend	(2) Growth Years 1-5	(3) 6	(4) 7	(5) Growth Years 8	(6) 9	(7) 10	(8) Growth in Perpetuity	(9) Cost of Equity
Alliant Energy Corporation	$1.34	5.91%	5.63%	5.34%	5.06%	4.77%	4.49%	4.20%	8.10%
Ameren Corporation	$1.83	6.43%	6.06%	5.69%	5.32%	4.94%	4.57%	4.20%	8.15%
American Electric Power Company, Inc.	$2.48	5.54%	5.32%	5.09%	4.87%	4.65%	4.42%	4.20%	8.40%
CMS Energy Corporation	$1.43	6.69%	6.28%	5.86%	5.45%	5.03%	4.62%	4.20%	8.15%
DTE Energy Company	$3.53	5.81%	5.54%	5.27%	5.01%	4.74%	4.47%	4.20%	8.17%
El Paso Electric Company	$1.34	4.90%	4.78%	4.67%	4.55%	4.43%	4.32%	4.20%	7.12%
IDACORP, Inc.	$2.36	4.12%	4.13%	4.15%	4.16%	4.17%	4.19%	4.20%	7.04%
NorthWestern Co	$2.20	2.41%	2.71%	3.01%	3.31%	3.60%	3.90%	4.20%	8.07%
OGE Energy Corp.	$1.33	5.95%	5.66%	5.37%	5.08%	4.78%	4.49%	4.20%	9.06%
Pinnacle West Capital Corporation	$2.78	4.58%	4.52%	4.45%	4.39%	4.33%	4.26%	4.20%	8.00%
PNM Resources, Inc.	$1.06	5.42%	5.22%	5.01%	4.81%	4.61%	4.40%	4.20%	7.43%
Portland General Electric Company	$1.36	2.91%	3.13%	3.34%	3.56%	3.77%	3.99%	4.20%	7.41%
Xcel Energy, Inc.	$1.52	5.73%	5.48%	5.22%	4.97%	4.71%	4.46%	4.20%	8.13%
								Average	**7.94%**

Sources: Column 1 = SNL Financial
Column 2 = Schedule JS-8-4
Columns 3 - 7 = Linear reduction of short-term growth rate projections to sustainable level.
Column 8 = Average Projected GDP Growth Rates during 2016 KCPL Rate Case.

Kansas City Power Light
Case No. ER-2018-0145

Multiple-Stage Discounted Cash Flow (DCF) Estimated Costs of Common Equity for the Comparable Electric Utility Companies

Company Name	(1) Annualized Quarterly Dividend	(2) Growth Years 1-5	(3) 6	(4) 7	(5) Growth Years 8	(6) 9	(7) 10	(8) Growth in Perpetuity	(9) Cost of Equity
Alliant Energy Corporation	$1.34	5.91%	5.69%	5.47%	5.26%	5.04%	4.82%	4.60%	8.41%
Ameren Corporation	$1.83	6.43%	6.13%	5.82%	5.52%	5.21%	4.91%	4.60%	8.47%
American Electric Power Company, Inc.	$2.48	5.54%	5.38%	5.23%	5.07%	4.91%	4.76%	4.60%	8.71%
CMS Energy Corporation	$1.43	6.69%	6.34%	5.99%	5.65%	5.30%	4.95%	4.60%	8.47%
DTE Energy Company	$3.53	5.81%	5.61%	5.41%	5.21%	5.00%	4.80%	4.60%	8.48%
El Paso Electric Company	$1.34	4.90%	4.85%	4.80%	4.75%	4.70%	4.65%	4.60%	7.45%
IDACORP, Inc.	$2.36	4.12%	4.20%	4.28%	4.36%	4.44%	4.52%	4.60%	7.37%
NorthWestern Co	$2.20	2.41%	2.78%	3.14%	3.51%	3.87%	4.24%	4.60%	8.39%
OGE Energy Corp.	$1.33	5.95%	5.73%	5.50%	5.28%	5.05%	4.83%	4.60%	9.36%
Pinnacle West Capital Corporation	$2.78	4.58%	4.58%	4.59%	4.59%	4.59%	4.60%	4.60%	8.31%
PNM Resources, Inc.	$1.06	5.42%	5.28%	5.15%	5.01%	4.87%	4.74%	4.60%	7.76%
Portland General Electric Company	$1.36	2.91%	3.19%	3.47%	3.76%	4.04%	4.32%	4.60%	7.74%
Xcel Energy, Inc.	$1.52	5.73%	5.54%	5.35%	5.17%	4.98%	4.79%	4.60%	8.44%
								Average	**8.26%**

Sources: Column 1 = SNL Financial
Column 2 = Schedule JS-8-4
Columns 3 - 7 = Linear reduction of short-term growth rate projections to sustainable level.
Column 8 = High Range of Projected GDP Growth Rates Cited in Staff Cost of Service Report.

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Case No. ER-2018-0145

Multiple-Stage Discounted Cash Flow (DCF) Estimated Costs of Common Equity for the Constant Comparable Electric Utility Companies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Company Name	Annualized Quarterly Dividend	Growth Years 1-5	6	7	Growth Years 8	9	10	Growth in Perpetuity	Cost of Equity
Alliant Energy	$1.18	6.00%	5.60%	5.20%	4.80%	4.40%	4.00%	3.60%	7.30%
Ameren Corp.	$1.70	6.25%	5.81%	5.37%	4.93%	4.48%	4.04%	3.60%	7.78%
American Electric Power	$2.24	4.18%	4.08%	3.99%	3.89%	3.79%	3.70%	3.60%	7.30%
CMS Energy Corporation	$1.24	6.84%	6.30%	5.76%	5.22%	4.68%	4.14%	3.60%	7.32%
DTE Energy Company	$2.92	5.41%	5.11%	4.81%	4.51%	4.20%	3.90%	3.60%	7.20%
El Paso Electric Company	$1.24	4.40%	4.27%	4.13%	4.00%	3.87%	3.73%	3.60%	6.55%
IDACORP, Inc.	$2.04	4.35%	4.23%	4.10%	3.98%	3.85%	3.73%	3.60%	6.45%
NorthWestern Co	$2.00	4.67%	4.49%	4.31%	4.14%	3.96%	3.78%	3.60%	7.44%
OGE Energy Corp.	$1.10	4.67%	4.49%	4.31%	4.14%	3.96%	3.78%	3.60%	7.53%
Pinnacle West Capital	$2.50	4.36%	4.23%	4.11%	3.98%	3.85%	3.73%	3.60%	7.17%
PNM Resources, Inc.	$0.88	7.22%	6.62%	6.01%	5.41%	4.81%	4.20%	3.60%	7.11%
Portland General Electric	$1.28	5.84%	5.47%	5.09%	4.72%	4.35%	3.97%	3.60%	7.19%
Xcel Energy	$1.36	5.64%	5.30%	4.96%	4.62%	4.28%	3.94%	3.60%	7.45%
								Average	**7.21%**

Sources: Column 1 = SNL Financial
Column 2 = SNL Financial

Price	Year 1	2	3	4	5	6	7	8	9	10
($38.348)	1.2455	1.32023	1.399444	1.48341	1.572415	1.66047	1.746815	1.830662	1.911211	1.987659
($49.735)	1.80625	1.919141	2.039087	2.16653	2.301938	2.435642	2.566355	2.692748	2.813473	2.927184
($65.030)	2.333632	2.431178	2.532801	2.638672	2.748969	2.861218	2.975285	3.091024	3.208277	3.326876
($42.422)	1.324816	1.415433	1.512249	1.615687	1.7262	1.83495	1.940644	2.041945	2.137508	2.226001
($94.290)	3.077972	3.24449	3.420017	3.60504	3.800073	3.994193	4.186181	4.374768	4.558654	4.736518
($45.770)	1.29456	1.351521	1.410988	1.473071	1.537886	1.603503	1.669781	1.736572	1.803719	1.871058
($77.598)	2.12874	2.22134	2.317968	2.4188	2.524018	2.630658	2.738515	2.847371	2.956994	3.067142
($57.810)	2.0934	2.191162	2.293489	2.400595	2.512703	2.625565	2.738814	2.852064	2.964911	3.076935
($31.053)	1.15137	1.205139	1.261419	1.320327	1.381987	1.444061	1.506348	1.568635	1.630701	1.692314
($76.048)	2.609	2.722752	2.841464	2.965352	3.094642	3.225648	3.358115	3.491768	3.626317	3.761458
($32.698)	0.943536	1.011659	1.084701	1.163017	1.246986	1.329495	1.409442	1.485693	1.557105	1.622556
($42.648)	1.354752	1.43387	1.517607	1.606236	1.70004	1.792975	1.884298	1.973237	2.059007	2.140818
($41.638)	1.436704	1.517734	1.603334	1.693762	1.789291	1.884123	1.977575	2.068939	2.15749	2.242495

11	12	13	14	15	16	17	18	19	20	21
2.059215	2.133347	2.210147	2.289713	2.372142	2.457539	2.546011	2.637667	2.732623	2.830998	2.932914
3.032563	3.141735	3.254837	3.372012	3.493404	3.619166	3.749456	3.884437	4.024277	4.169151	4.31924
3.446644	3.570723	3.699269	3.832443	3.970411	4.113345	4.261426	4.414837	4.573771	4.738427	4.90901
2.306137	2.389158	2.475168	2.564274	2.656588	2.752225	2.851305	2.953952	3.060294	3.170465	3.284601
4.907032	5.083686	5.266698	5.456299	5.652726	5.856224	6.067048	6.285462	6.511739	6.746161	6.989023
1.938416	2.008199	2.080495	2.155392	2.232986	2.313374	2.396655	2.482935	2.572321	2.664924	2.760861
3.17756	3.291952	3.410462	3.533239	3.660435	3.792211	3.92873	4.070165	4.216691	4.368492	4.525757
3.187705	3.302462	3.421351	3.54452	3.672122	3.804319	3.941274	4.08316	4.230154	4.382439	4.540207
1.753238	1.816354	1.881743	1.949486	2.019667	2.092375	2.167701	2.245738	2.326585	2.410342	2.497114
3.89687	4.037158	4.182495	4.333065	4.489056	4.650662	4.818085	4.991536	5.171232	5.357396	5.550262
1.680968	1.741483	1.804176	1.869126	1.936415	2.006126	2.078346	2.153167	2.230681	2.310985	2.394181
2.217887	2.297731	2.380449	2.466146	2.554927	2.646904	2.742193	2.840912	2.943185	3.049139	3.158908
2.323225	2.406861	2.493508	2.583274	2.676272	2.772618	2.872432	2.97584	3.08297	3.193957	3.308939

22	23	24	25	26	27	28	29	30	31	32
3.038499	3.147885	3.261208	3.378612	3.500242	3.626251	3.756796	3.89204	4.032154	4.177311	4.327694
4.474733	4.635823	4.802713	4.97561	5.154732	5.340303	5.532554	5.731725	5.938068	6.151838	6.373304
5.085735	5.268821	5.458499	5.655005	5.858585	6.069494	6.287996	6.514363	6.748881	6.99184	7.243547
3.402847	3.52535	3.652262	3.783744	3.919958	4.061077	4.207276	4.358738	4.515652	4.678216	4.846631
7.240628	7.501291	7.771337	8.051105	8.340945	8.641219	8.952303	9.274586	9.608471	9.954376	10.31273
2.860252	2.963222	3.069898	3.180414	3.294909	3.413525	3.536412	3.663723	3.795617	3.932259	4.073821
4.688684	4.857477	5.032346	5.213511	5.401197	5.59564	5.797083	6.005778	6.221986	6.445978	6.678033
4.703655	4.872986	5.048414	5.230157	5.418442	5.613506	5.815592	6.024954	6.241852	6.466559	6.699355
2.58701	2.680142	2.776627	2.876586	2.980143	3.087428	3.198576	3.313724	3.433019	3.556607	3.684645
5.750072	5.957074	6.171529	6.393704	6.623877	6.862337	7.109381	7.365319	7.63047	7.905167	8.189753
2.480371	2.569665	2.662172	2.758011	2.857299	2.960162	3.066728	3.17713	3.291507	3.410001	3.532761
3.272629	3.390444	3.512499	3.638949	3.769952	3.90567	4.046274	4.19194	4.34285	4.499192	4.661163
3.428061	3.551472	3.679324	3.81178	3.949004	4.091168	4.23845	4.391035	4.549112	4.71288	4.882544

33	34	35	36	37	38	39	40	41	42	43
4.483491	4.644897	4.812113	4.98535	5.164822	5.350756	5.543383	5.742945	5.949691	6.16388	6.385779
6.602743	6.840442	7.086698	7.341819	7.606124	7.879945	8.163623	8.457513	8.761984	9.077415	9.404202
7.504314	7.77447	8.05435	8.344307	8.644702	8.955911	9.278324	9.612344	9.958388	10.31689	10.6883
5.02111	5.20187	5.389137	5.583146	5.78414	5.992369	6.208094	6.431585	6.663122	6.902995	7.151503
10.68399	11.06862	11.46709	11.8799	12.30758	12.75065	13.20967	13.68522	14.17789	14.68829	15.21707
4.220478	4.372416	4.529823	4.692896	4.86184	5.036867	5.218194	5.406049	5.600667	5.802291	6.011173
6.918442	7.167506	7.425536	7.692856	7.969798	8.256711	8.553953	8.861895	9.180923	9.511437	9.853848
6.940531	7.190391	7.449245	7.717418	7.995245	8.283073	8.581264	8.890189	9.210236	9.541805	9.88531
3.817292	3.954715	4.097085	4.24458	4.397384	4.55569	4.719695	4.889604	5.06563	5.247993	5.43692
8.484584	8.79003	9.106471	9.434304	9.773938	10.1258	10.49033	10.86798	11.25923	11.66456	12.08448
3.65994	3.791698	3.928199	4.069614	4.21612	4.367901	4.525145	4.68805	4.85682	5.031666	5.212806
4.828965	5.002808	5.182909	5.369494	5.562795	5.763056	5.970526	6.185465	6.408142	6.638835	6.877833
5.058315	5.240415	5.429069	5.624516	5.826999	6.036771	6.254094	6.479242	6.712494	6.954144	7.204493

44	45	46	47	48	49	50	51	52	53	54
6.615667	6.853831	7.100569	7.35619	7.621013	7.895369	8.179602	8.474068	8.779134	9.095183	9.42261
9.742753	10.09349	10.45686	10.83331	11.2233	11.62734	12.04593	12.47958	12.92885	13.39428	13.87648
11.07308	11.47171	11.88469	12.31254	12.75579	13.215	13.69074	14.1836	14.69421	15.22321	15.77124
7.408957	7.675679	7.952004	8.238276	8.534854	8.842108	9.160424	9.4902	9.831847	10.18579	10.55248
15.76489	16.33242	16.92039	17.52952	18.16059	18.81437	19.49169	20.19339	20.92035	21.67348	22.45373
6.227575	6.451768	6.684032	6.924657	7.173944	7.432206	7.699766	7.976957	8.264128	8.561637	8.869855
10.20859	10.5761	10.95684	11.35128	11.75993	12.18328	12.62188	13.07627	13.54702	14.03471	14.53996
10.24118	10.60986	10.99182	11.38752	11.79747	12.22218	12.66218	13.11802	13.59027	14.07952	14.58638
5.63265	5.835425	6.0455	6.263138	6.488611	6.722201	6.9642	7.214912	7.474648	7.743736	8.02251
12.51953	12.97023	13.43716	13.92089	14.42205	14.94124	15.47913	16.03637	16.61368	17.21178	17.8314
5.400467	5.594884	5.796299	6.004966	6.221145	6.445106	6.67713	6.917507	7.166537	7.424532	7.691815
7.125435	7.381951	7.647701	7.923018	8.208247	8.503744	8.809878	9.127034	9.455607	9.796009	10.14867
7.463855	7.732554	8.010926	8.299319	8.598095	8.907626	9.228301	9.560519	9.904698	10.26127	10.63067

55	56	57	58	59	60	61	62	63	64	65
9.761824	10.11325	10.47733	10.85451	11.24527	11.6501	12.06951	12.50401	12.95415	13.4205	13.90364
14.37603	14.89357	15.42974	15.98521	16.56068	17.15686	17.77451	18.41439	19.07731	19.76409	20.4756
16.33901	16.92721	17.53659	18.16791	18.82195	19.49954	20.20153	20.92878	21.68222	22.46278	23.27144
10.93237	11.32594	11.73367	12.15608	12.5937	13.04707	13.51677	14.00337	14.50749	15.02976	15.57084
23.26206	24.09949	24.96708	25.86589	26.79706	27.76176	28.76118	29.79658	30.86926	31.98055	33.13185
9.18917	9.51998	9.8627	10.21776	10.5856	10.96668	11.36148	11.77049	12.19423	12.63322	13.08802
15.0634	15.60568	16.16748	16.74951	17.3525	17.97719	18.62436	19.29484	19.98946	20.70908	21.4546
15.11149	15.65551	16.2191	16.80299	17.4079	18.03458	18.68383	19.35645	20.05328	20.7752	21.5231
8.311321	8.610528	8.920507	9.241645	9.574345	9.919021	10.27611	10.64605	11.0293	11.42636	11.83771
18.47333	19.13837	19.82735	20.54114	21.28062	22.04672	22.8404	23.66266	24.51451	25.39703	26.31133
7.968721	8.255595	8.552796	8.860697	9.179682	9.51015	9.852516	10.20721	10.57467	10.95535	11.34975
10.51402	10.89252	11.28465	11.6909	12.11177	12.5478	12.99952	13.4675	13.95233	14.45461	14.97498
11.01338	11.40986	11.82061	12.24616	12.68702	13.14375	13.61692	14.10713	14.61499	15.14113	15.68621

66	67	68	69	70	71	72	73	74	75	76
14.40417	14.92272	15.45994	16.0165	16.59309	17.19044	17.8093	18.45043	19.11465	19.80278	20.51568
21.21272	21.97638	22.76753	23.58716	24.43629	25.316	26.22738	27.17156	28.14974	29.16313	30.213
24.10921	24.97714	25.87632	26.80786	27.77295	28.77277	29.80859	30.8817	31.99344	33.14521	34.33843
16.13139	16.71212	17.31375	17.93705	18.58278	19.25176	19.94482	20.66284	21.4067	22.17734	22.97573
34.3246	35.56028	36.84046	38.16671	39.54071	40.96418	42.43889	43.96669	45.54949	47.18927	48.88809
13.55919	14.04732	14.55302	15.07693	15.6197	16.18201	16.76456	17.36808	17.99333	18.64109	19.31217
22.22697	23.02714	23.85612	24.71494	25.60467	26.52644	27.4814	28.47073	29.49567	30.55752	31.65759
22.29794	23.10066	23.93229	24.79385	25.68643	26.61114	27.56914	28.56163	29.58985	30.65508	31.75866
12.26386	12.70536	13.16276	13.63662	14.12753	14.63613	15.16303	15.70889	16.27442	16.86029	17.46726
27.25853	28.23984	29.25648	30.30971	31.40086	32.53129	33.70242	34.9157	36.17267	37.47488	38.82398
11.75834	12.18164	12.62018	13.0745	13.54518	14.03281	14.53799	15.06136	15.60357	16.1653	16.74725
15.51408	16.07259	16.6512	17.25064	17.87167	18.51505	19.18159	19.87212	20.58752	21.32867	22.0965
16.25091	16.83595	17.44204	18.06996	18.72047	19.39441	20.09261	20.81594	21.56532	22.34167	23.14597

77	78	79	80	81	82	83	84	85	86	87
21.25424	22.01939	22.81209	23.63333	24.48413	25.36555	26.27871	27.22475	28.20484	29.22021	30.27214
31.30067	32.42749	33.59488	34.8043	36.05726	37.35532	38.70011	40.09331	41.53667	43.03199	44.58114
35.57462	36.8553	38.1821	39.55665	40.98069	42.456	43.98441	45.56785	47.20829	48.90779	50.66847
23.80285	24.65975	25.54751	26.46722	27.42004	28.40716	29.42981	30.48929	31.5869	32.72403	33.9021
50.64806	52.47139	54.36036	56.31733	58.34475	60.44516	62.62119	64.87555	67.21107	69.63067	72.13738
20.00741	20.72768	21.47388	22.24693	23.04782	23.87755	24.73714	25.62767	26.55027	27.50608	28.4963
32.79726	33.97796	35.20117	36.46841	37.78127	39.1414	40.55049	42.01031	43.52268	45.08949	46.71271
32.90197	34.08645	35.31356	36.58485	37.9019	39.26637	40.67996	42.14444	43.66164	45.23346	46.86186
18.09609	18.74755	19.42246	20.12167	20.84605	21.5965	22.37398	23.17944	24.0139	24.8784	25.77402
40.22164	41.66962	43.16973	44.72384	46.3339	48.00192	49.72999	51.52027	53.375	55.2965	57.28717
17.35015	17.97475	18.62185	19.29223	19.98675	20.70628	21.4517	22.22396	23.02403	23.85289	24.71159
22.89198	23.71609	24.56987	25.45438	26.37074	27.32009	28.30361	29.32254	30.37815	31.47177	32.60475
23.97922	24.84248	25.73681	26.66333	27.62321	28.61765	29.64788	30.7152	31.82095	32.96651	34.1533

88	89	90	91	92	93	94	95	96	97	98
31.36194	32.49097	33.66064	34.87243	36.12783	37.42844	38.77586	40.17179	41.61797	43.11622	44.66841
46.18606	47.84876	49.57132	51.35588	53.2047	55.12007	57.10439	59.16015	61.28991	63.49635	65.78222
52.49254	54.38227	56.34003	58.36827	60.46953	62.64643	64.9017	67.23816	69.65874	72.16645	74.76444
35.12257	36.38698	37.69691	39.054	40.45995	41.91651	43.4255	44.98882	46.60842	48.28632	50.02463
74.73432	77.42476	80.21205	83.09968	86.09127	89.19056	92.40142	95.72787	99.17407	102.7443	106.4431
29.52217	30.58496	31.68602	32.82672	34.00848	35.23279	36.50117	37.81521	39.17656	40.58691	42.04804
48.39437	50.13657	51.94149	53.81138	55.74859	57.75554	59.83474	61.98879	64.22039	66.53232	68.92748
48.54889	50.29665	52.10733	53.98319	55.92658	57.93994	60.02578	62.18671	64.42543	66.74474	69.14756
26.70189	27.66316	28.65903	29.69075	30.75962	31.86697	33.01418	34.20269	35.43399	36.70961	38.03116
59.34951	61.48609	63.69959	65.99278	68.36852	70.82978	73.37965	76.02132	78.75809	81.59338	84.53074
25.60121	26.52286	27.47768	28.46688	29.49168	30.55338	31.65331	32.79282	33.97337	35.19641	36.46348
33.77852	34.99455	36.25435	37.55951	38.91165	40.31247	41.76372	43.26721	44.82483	46.43852	48.11031
35.38282	36.6566	37.97624	39.34338	40.75975	42.2271	43.74727	45.32217	46.95377	48.64411	50.39529

99	100	101	102	103	104	105	106	107	108	109
46.27647	47.94242	49.66835	51.45641	53.30884	55.22796	57.21616	59.27595	61.40988	63.62064	65.91098
68.15038	70.60379	73.14553	75.77877	78.5068	81.33305	84.26104	87.29443	90.43703	93.69277	97.0657
77.45596	80.24438	83.13318	86.12597	89.22651	92.43866	95.76645	99.21404	102.7858	106.486	110.3195
51.82551	53.69123	55.62412	57.62658	59.70114	61.85038	64.077	66.38377	68.77358	71.24943	73.81441
110.2751	114.245	118.3578	122.6187	127.033	131.6061	136.344	141.2524	146.3374	151.6056	157.0634
43.56177	45.13	46.75468	48.43784	50.18161	51.98814	53.85972	55.79867	57.80742	59.88849	62.04447
71.40887	73.97959	76.64286	79.402	82.26047	85.22185	88.28983	91.46827	94.76113	98.17253	101.7067
71.63687	74.21579	76.88756	79.65552	82.52311	85.49395	88.57173	91.76031	95.06368	98.48597	102.0315
39.40028	40.81869	42.28816	43.81053	45.38771	47.02167	48.71445	50.46817	52.28502	54.16729	56.11731
87.57385	90.72651	93.99266	97.3764	100.8819	104.5137	108.2762	112.1741	116.2124	120.396	124.7303
37.77616	39.1361	40.545	42.00462	43.51679	45.0834	46.7064	48.38783	50.12979	51.93446	53.8041
49.84228	51.63661	53.49552	55.42136	57.41653	59.48353	61.62493	63.84343	66.14179	68.5229	70.98972
52.20953	54.08907	56.03627	58.05358	60.14351	62.30868	64.55179	66.87565	69.28318	71.77737	74.36136

110	111	112	113	114	115	116	117	118	119	120
68.28377	70.74199	73.2887	75.92709	78.66047	81.49225	84.42597	87.4653	90.61405	93.87616	97.2557
100.5601	104.1802	107.9307	111.8162	115.8416	120.0119	124.3323	128.8083	133.4454	138.2494	143.2264
114.291	118.4055	122.6681	127.0842	131.6592	136.3989	141.3093	146.3964	151.6667	157.1267	162.7833
76.47173	79.22471	82.0768	85.03157	88.0927	91.26404	94.54955	97.95333	101.4796	105.1329	108.9177
162.7177	168.5755	174.6442	180.9314	187.4449	194.193	201.1839	208.4265	215.9299	223.7034	231.7567
64.27807	66.59208	68.9894	71.47302	74.04605	76.7117	79.47332	82.33436	85.2984	88.36914	91.55043
105.3682	109.1614	113.0912	117.1625	121.3804	125.7501	130.2771	134.9671	139.8259	144.8596	150.0745
105.7046	109.51	113.4523	117.5366	121.7679	126.1516	130.693	135.398	140.2723	145.3221	150.5537
58.13753	60.23048	62.39878	64.64514	66.97236	69.38337	71.88117	74.46889	77.14977	79.92716	82.80454
129.2206	133.8725	138.692	143.6849	148.8575	154.2164	159.7682	165.5198	171.4785	177.6518	184.0472
55.74105	57.74773	59.82665	61.98041	64.2117	66.52332	68.91816	71.39922	73.96959	76.63249	79.39126
73.54535	76.19299	78.93593	81.77763	84.72162	87.7716	90.93138	94.20491	97.59628	101.1097	104.7497
77.03836	79.81175	82.68497	85.66163	88.74545	91.94028	95.25013	98.67914	102.2316	105.9119	109.7248

121	122	123	124	125	126	127	128	129	130	131
100.7569	104.3842	108.142	112.0351	116.0684	120.2468	124.5757	129.0604	133.7066	138.52	143.5068
148.3826	153.7243	159.2584	164.9917	170.9314	177.085	183.46	190.0646	196.9069	203.9955	211.3394
168.6435	174.7146	181.0043	187.5205	194.2712	201.265	208.5105	216.0169	223.7935	231.8501	240.1967
112.8387	116.9009	121.1094	125.4693	129.9862	134.6657	139.5137	144.5362	149.7395	155.1301	160.7148
240.0999	248.7435	257.6983	266.9754	276.5865	286.5437	296.8592	307.5462	318.6178	330.0881	341.9712
94.84625	98.26071	101.7981	105.4628	109.2595	113.1928	117.2678	121.4894	125.863	130.3941	135.0883
155.4772	161.0744	166.8731	172.8805	179.1042	185.552	192.2318	199.1522	206.3217	213.7492	221.4442
155.9736	161.5887	167.4059	173.4325	179.6761	186.1444	192.8456	199.788	206.9804	214.4317	222.1512
85.7855	88.87378	92.07324	95.38787	98.82184	102.3794	106.0651	109.8834	113.8392	117.9374	122.1832
190.6729	197.5372	204.6485	212.0158	219.6484	227.5558	235.7478	244.2347	253.0271	262.1361	271.573
82.24935	85.21032	88.2779	91.4559	94.74831	98.15925	101.693	105.3539	109.1467	113.076	117.1467
108.5207	112.4274	116.4748	120.6679	125.012	129.5124	134.1748	139.0051	144.0093	149.1937	154.5646
113.6748	117.7671	122.0068	126.399	130.9494	135.6635	140.5474	145.6071	150.849	156.2796	161.9056

132	133	134	135	136	137	138	139	140	141	142
148.673	154.0252	159.5701	165.3147	171.266	177.4316	183.8191	190.4366	197.2923	204.3948	211.7531
218.9476	226.8297	234.9956	243.4554	252.2198	261.2997	270.7065	280.452	290.5482	301.008	311.8443
248.8438	257.8022	267.083	276.698	286.6592	296.9789	307.6701	318.7462	330.2211	342.1091	354.425
166.5005	172.4945	178.7043	185.1377	191.8026	198.7075	205.861	213.272	220.9498	228.904	237.1445
354.2822	367.0364	380.2497	393.9387	408.1204	422.8128	438.034	453.8033	470.1402	487.0652	504.5996
139.9515	144.9897	150.2094	155.6169	161.2191	167.023	173.0358	179.2651	185.7186	192.4045	199.3311
229.4162	237.6752	246.2315	255.0958	264.2793	273.7933	283.6499	293.8613	304.4403	315.4002	326.7546
230.1487	238.434	247.0177	255.9103	265.1231	274.6675	284.5555	294.7995	305.4123	316.4072	327.7978
126.5818	131.1387	135.8597	140.7507	145.8177	151.0671	156.5055	162.1397	167.9768	174.0239	180.2888
281.3496	291.4782	301.9714	312.8424	324.1047	335.7725	347.8603	360.3833	373.3571	386.7979	400.7227
121.364	125.7331	130.2595	134.9488	139.807	144.84	150.0543	155.4562	161.0526	166.8505	172.8571
160.1289	165.8936	171.8658	178.0529	184.4628	191.1035	197.9832	205.1106	212.4946	220.1444	228.0696
167.7342	173.7727	180.0285	186.5095	193.2238	200.1799	207.3864	214.8523	222.587	230.6001	238.9017

143	144	145	146	147	148	149	150	151	152	153
219.3762	227.2737	235.4556	243.932	252.7135	261.8112	271.2364	281.0009	291.1169	301.5972	312.4547
323.0706	334.7012	346.7504	359.2334	372.1658	385.5638	399.4441	413.8241	428.7218	444.1558	460.1454
367.1843	380.4029	394.0974	408.2849	422.9832	438.2106	453.9862	470.3297	487.2616	504.803	522.9759
245.6817	254.5263	263.6892	273.182	283.0166	293.2052	303.7606	314.6959	326.025	337.7619	349.9213
522.7652	541.5847	561.0818	581.2807	602.2068	623.8863	646.3462	669.6146	693.7207	718.6947	744.5677
206.507	213.9413	221.6431	229.6223	237.8887	246.4527	255.325	264.5167	274.0393	283.9047	294.1253
338.5177	350.7044	363.3297	376.4096	389.9603	403.9989	418.5429	433.6104	449.2204	465.3923	482.1464
339.5985	351.8241	364.4898	377.6114	391.2054	405.2888	419.8792	434.9948	450.6547	466.8782	483.6858
186.7792	193.5033	200.4694	207.6863	215.163	222.9088	230.9336	239.2472	247.8601	256.783	266.0272
415.1487	430.094	445.5774	461.6182	478.2365	495.453	513.2893	531.7677	550.9113	570.7442	591.2909
179.08	185.5269	192.2058	199.1253	206.2938	213.7203	221.4143	229.3852	237.6431	246.1982	255.0613
236.2801	244.7862	253.5985	262.728	272.1863	281.985	292.1364	302.6533	313.5488	324.8366	336.5307
247.5022	256.4122	265.6431	275.2062	285.1136	295.3777	306.0113	317.0277	328.4407	340.2646	352.5141

154	155	156	157	158	159	160	161	162	163	164
323.703	335.3563	347.4292	359.9366	372.8943	386.3185	400.226	414.6341	429.5609	445.0251	461.046
476.7106	493.8722	511.6516	530.071	549.1536	568.9231	589.4044	610.6229	632.6053	655.3791	678.9728
541.803	561.3079	581.515	602.4495	624.1377	646.6067	669.8845	694.0004	718.9844	744.8678	771.6831
362.5185	375.5691	389.0896	403.0969	417.6084	432.6423	448.2174	464.3532	481.0699	498.3884	516.3304
771.3721	799.1415	827.9106	857.7154	888.5932	920.5825	953.7235	988.0575	1023.628	1060.478	1098.655
304.7138	315.6835	327.0481	338.8218	351.0194	363.6561	376.7477	390.3106	404.3618	418.9188	433.9999
499.5037	517.4858	536.1153	555.4155	575.4104	596.1252	617.5857	639.8188	662.8523	686.715	711.4367
501.0985	519.1381	537.8271	557.1888	577.2476	598.0285	619.5576	641.8616	664.9687	688.9075	713.7082
275.6042	285.5259	295.8049	306.4539	317.4862	328.9157	340.7567	353.0239	365.7328	378.8991	392.5395
612.5774	634.6302	657.4769	681.1461	705.6673	731.0713	757.3899	784.6559	812.9036	842.1681	872.4861
264.2435	273.7563	283.6115	293.8216	304.3991	315.3575	326.7104	338.4719	350.6569	363.2806	376.3587
348.6458	361.1971	374.2002	387.6714	401.6275	416.0861	431.0652	446.5836	462.6606	479.3164	496.5718
365.2046	378.352	391.9727	406.0837	420.7027	435.848	451.5385	467.7939	484.6345	502.0814	520.1563

165	166	167	168	169	170	171	172	173	174	175
477.6437	494.8389	512.6531	531.1086	550.2285	570.0367	590.558	611.8181	633.8436	656.662	680.3018
703.4158	728.7388	754.9734	782.1524	810.3099	839.481	869.7024	901.0116	933.4481	967.0522	1001.866
799.4637	828.2443	858.0611	888.9513	920.9536	954.1079	988.4558	1024.04	1060.906	1099.098	1138.666
534.9183	554.1754	574.1257	594.7942	616.2068	638.3902	661.3723	685.1817	709.8482	735.4028	761.8773
1138.207	1179.182	1221.633	1265.612	1311.174	1358.376	1407.278	1457.94	1510.425	1564.801	1621.134
449.6239	465.8104	482.5795	499.9524	517.9507	536.5969	555.9144	575.9273	596.6607	618.1405	640.3935
737.0484	763.5822	791.0711	819.5497	849.0535	879.6194	911.2857	944.092	978.0793	1013.29	1049.769
739.4017	766.0202	793.5969	822.1664	851.7644	882.4279	914.1953	947.1063	981.2021	1016.525	1053.12
406.6709	421.3111	436.4783	452.1915	468.4704	485.3353	502.8074	520.9085	539.6612	559.089	579.2162
903.8956	936.4359	970.1476	1005.073	1041.256	1078.741	1117.575	1157.808	1199.489	1242.671	1287.407
389.9076	403.9443	418.4863	433.5518	449.1596	465.3294	482.0812	499.4362	517.4159	536.0428	555.3404
514.4484	532.9685	552.1554	572.033	592.6261	613.9607	636.0633	658.9615	682.6842	707.2608	732.7222
538.8819	558.2817	578.3798	599.2015	620.7727	643.1205	666.2729	690.2587	715.108	740.8519	767.5226

176	177	178	179	180	181	182	183	184	185	186
704.7927	730.1652	756.4511	783.6834	811.896	841.1242	871.4047	902.7753	935.2752	968.9451	1003.827
1037.933	1075.299	1114.01	1154.114	1195.662	1238.706	1283.299	1329.498	1377.36	1426.945	1478.315
1179.658	1222.125	1266.122	1311.702	1358.924	1407.845	1458.527	1511.034	1565.432	1621.787	1680.171
789.3048	817.7198	847.1577	877.6554	909.251	941.984	975.8955	1011.028	1047.425	1085.132	1124.197
1679.494	1739.956	1802.595	1867.488	1934.718	2004.367	2076.525	2151.28	2228.726	2308.96	2392.082
663.4477	687.3318	712.0758	737.7105	764.2681	791.7817	820.2859	849.8162	880.4096	912.1043	944.9401
1087.56	1126.712	1167.274	1209.296	1252.831	1297.933	1344.658	1393.066	1443.216	1495.172	1548.998
1091.033	1130.31	1171.001	1213.157	1256.831	1302.077	1348.951	1397.514	1447.824	1499.946	1553.944
600.068	621.6704	644.0505	667.2364	691.2569	716.1421	741.9232	768.6325	796.3032	824.9702	854.6691
1333.754	1381.769	1431.512	1483.047	1536.437	1591.748	1649.051	1708.417	1769.92	1833.637	1899.648
575.3326	596.0446	617.5022	639.7323	662.7627	686.6221	711.3405	736.9488	763.4789	790.9642	819.4389
759.1002	786.4278	814.7392	844.0698	874.4563	905.9367	938.5505	972.3383	1007.342	1043.607	1081.177
795.1534	823.7789	853.4349	884.1586	915.9883	948.9639	983.1266	1018.519	1055.186	1093.173	1132.527

187	188	189	190	191	192	193	194	195	196	197
1039.965	1077.404	1116.19	1156.373	1198.002	1241.131	1285.811	1332.1	1380.056	1429.738	1481.209
1531.534	1586.67	1643.79	1702.966	1764.273	1827.787	1893.587	1961.756	2032.379	2105.545	2181.345
1740.658	1803.321	1868.241	1935.497	2005.175	2077.362	2152.147	2229.624	2309.89	2393.047	2479.196
1164.668	1206.596	1250.033	1295.035	1341.656	1389.955	1439.994	1491.834	1545.54	1601.179	1658.821
2478.197	2567.412	2659.839	2755.593	2854.795	2957.567	3064.04	3174.345	3288.622	3407.012	3529.665
978.9579	1014.2	1050.712	1088.537	1127.725	1168.323	1210.382	1253.956	1299.098	1345.866	1394.317
1604.762	1662.533	1722.385	1784.391	1848.629	1915.179	1984.126	2055.554	2129.554	2206.218	2285.642
1609.886	1667.842	1727.884	1790.088	1854.531	1921.294	1990.461	2062.117	2136.353	2213.262	2292.94
885.4372	917.3129	950.3362	984.5483	1019.992	1056.712	1094.753	1134.164	1174.994	1217.294	1261.117
1968.035	2038.885	2112.285	2188.327	2267.107	2348.722	2433.276	2520.874	2611.626	2705.644	2803.048
848.9387	879.5005	911.1625	943.9643	977.947	1013.153	1049.627	1087.413	1126.56	1167.116	1209.132
1120.099	1160.423	1202.198	1245.477	1290.314	1336.765	1384.889	1434.745	1486.396	1539.906	1595.343
1173.298	1215.536	1259.296	1304.63	1351.597	1400.255	1450.664	1502.888	1556.992	1613.043	1671.113

198	199	200
1534.532	1589.775	1647.007
2259.873	2341.228	2425.513
2568.447	2660.911	2756.704
1718.539	1780.406	1844.501
3656.732	3788.375	3924.756
1444.513	1496.515	1550.39
2367.925	2453.17	2541.485
2375.485	2461.003	2549.599
1306.517	1353.552	1402.279
2903.957	3008.5	3116.806
1252.661	1297.757	1344.476
1652.775	1712.275	1773.917
1731.273	1793.599	1858.168

Kansas City Power Light
Case No. ER-2018-0145

Multiple-Stage Discounted Cash Flow (DCF) Estimated Costs of Common Equity for the Constant Comparable Electric Utility Companies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Company Name	Annualized Quarterly Dividend	Growth Years 1-5	6	7	Growth Years 8	9	10	Growth in Perpetuity	Cost of Equity
Alliant Energy	$1.18	6.00%	5.70%	5.40%	5.10%	4.80%	4.50%	4.20%	7.78%
Ameren Corp.	$1.70	6.25%	5.91%	5.57%	5.23%	4.88%	4.54%	4.20%	8.25%
American Electric Power	$2.24	4.18%	4.18%	4.19%	4.19%	4.19%	4.20%	4.20%	7.78%
CMS Energy Corporation	$1.24	6.84%	6.40%	5.96%	5.52%	5.08%	4.64%	4.20%	7.80%
DTE Energy Company	$2.92	5.41%	5.21%	5.01%	4.81%	4.60%	4.40%	4.20%	7.68%
El Paso Electric Company	$1.24	4.40%	4.37%	4.33%	4.30%	4.27%	4.23%	4.20%	7.05%
IDACORP, Inc.	$2.04	4.35%	4.33%	4.30%	4.28%	4.25%	4.23%	4.20%	6.95%
NorthWestern Co	$2.00	4.67%	4.59%	4.51%	4.44%	4.36%	4.28%	4.20%	7.91%
OGE Energy Corp.	$1.10	4.67%	4.59%	4.51%	4.44%	4.36%	4.28%	4.20%	8.00%
Pinnacle West Capital	$2.50	4.36%	4.33%	4.31%	4.28%	4.25%	4.23%	4.20%	7.66%
PNM Resources, Inc.	$0.88	7.22%	6.72%	6.21%	5.71%	5.21%	4.70%	4.20%	7.60%
Portland General Electric	$1.28	5.84%	5.57%	5.29%	5.02%	4.75%	4.47%	4.20%	7.67%
Xcel Energy	$1.36	5.64%	5.40%	5.16%	4.92%	4.68%	4.44%	4.20%	7.93%
								Average	**7.70%**

Sources: Column 1 = SNL Financial
Column 2 = SNL Financial

Kansas City Power Light
Case No. ER-2018-0145

Price	Year 1	2	3	4	5	6	7	8	9	10	11
($38.348)	1.2455	1.32023	1.39944	1.48341	1.57242	1.66204	1.75179	1.84113	1.92951	2.01634	2.10102
($49.735)	1.80625	1.91914	2.03909	2.16653	2.30194	2.43794	2.57366	2.70813	2.84038	2.96938	3.09409
($65.030)	2.33363	2.43118	2.5328	2.63867	2.74897	2.86397	2.98387	3.1089	3.23926	3.3752	3.51696
($42.422)	1.32482	1.41543	1.51225	1.61569	1.7262	1.83668	1.94614	2.05357	2.15789	2.25802	2.35285
($94.290)	3.07797	3.24449	3.42002	3.60504	3.80007	3.99799	4.19816	4.39988	4.60242	4.80501	5.00682
($45.770)	1.29456	1.35152	1.41099	1.47307	1.53789	1.60504	1.67459	1.7466	1.82112	1.89822	1.97794
($77.598)	2.12874	2.22134	2.31797	2.4188	2.52402	2.63318	2.74641	2.86382	2.98553	3.11167	3.24236
($57.810)	2.0934	2.19116	2.29349	2.40059	2.5127	2.62808	2.74669	2.86851	2.99348	3.12155	3.25265
($31.053)	1.15137	1.20514	1.26142	1.32033	1.38199	1.44544	1.51068	1.57768	1.64641	1.71685	1.78896
($76.048)	2.609	2.72275	2.84146	2.96535	3.09464	3.22874	3.36779	3.51194	3.66131	3.81606	3.97634
($32.698)	0.94354	1.01166	1.0847	1.16302	1.24699	1.33074	1.41343	1.49413	1.57193	1.64586	1.71499
($42.648)	1.35475	1.43387	1.51761	1.60624	1.70004	1.79468	1.88967	1.98454	2.07873	2.17172	2.26294
($41.638)	1.4367	1.51773	1.60333	1.69376	1.78929	1.88591	1.98323	2.0808	2.17818	2.27489	2.37044

12	13	14	15	16	17	18	19	20	21	22	23
2.18927	2.28122	2.37703	2.47686	2.58089	2.68929	2.80224	2.91993	3.04257	3.17036	3.30351	3.44226
3.22404	3.35945	3.50055	3.64757	3.80077	3.9604	4.12674	4.30006	4.48067	4.66885	4.86495	5.06927
3.66467	3.81859	3.97897	4.14609	4.32022	4.50167	4.69074	4.88776	5.09304	5.30695	5.52984	5.76209
2.45167	2.55464	2.66194	2.77374	2.89024	3.01163	3.13812	3.26992	3.40725	3.55036	3.69947	3.85485
5.2171	5.43622	5.66454	5.90245	6.15036	6.40867	6.67783	6.9583	7.25055	7.55508	7.87239	8.20303
2.06101	2.14758	2.23777	2.33176	2.4297	2.53174	2.63808	2.74887	2.86433	2.98463	3.10998	3.2406
3.37854	3.52044	3.66829	3.82236	3.9829	4.15018	4.32449	4.50612	4.69538	4.89258	5.09807	5.31219
3.38927	3.53162	3.67994	3.8345	3.99555	4.16336	4.33822	4.52043	4.71029	4.90812	5.11426	5.32906
1.8641	1.94239	2.02397	2.10898	2.19755	2.28985	2.38602	2.48624	2.59066	2.69947	2.81284	2.93098
4.14334	4.31736	4.49869	4.68764	4.88452	5.08967	5.30343	5.52618	5.75828	6.00012	6.25213	6.51472
1.78702	1.86207	1.94028	2.02177	2.10668	2.19516	2.28736	2.38343	2.48353	2.58784	2.69653	2.80979
2.35798	2.45701	2.56021	2.66774	2.77978	2.89653	3.01819	3.14495	3.27704	3.41468	3.55809	3.70753
2.47	2.57374	2.68183	2.79447	2.91184	3.03414	3.16157	3.29435	3.43272	3.57689	3.72712	3.88366

24	25	26	27	28	29	30	31	32	33	34	35
3.58683	3.73748	3.89445	4.05802	4.22846	4.40605	4.59111	4.78393	4.98486	5.19422	5.41238	5.6397
5.28218	5.50403	5.7352	5.97608	6.22708	6.48862	6.76114	7.04511	7.341	7.64932	7.97059	8.30536
6.0041	6.25627	6.51904	6.79284	7.07814	7.37542	7.68519	8.00796	8.3443	8.69476	9.05994	9.44046
4.01675	4.18546	4.36125	4.54442	4.73529	4.93417	5.1414	5.35734	5.58235	5.81681	6.06111	6.31568
8.54756	8.90655	9.28063	9.67041	10.0766	10.4998	10.9408	11.4003	11.8791	12.378	12.8979	13.4396
3.37671	3.51853	3.66631	3.82029	3.98075	4.14794	4.32215	4.50368	4.69284	4.88993	5.09531	5.30931
5.5353	5.76779	6.01003	6.26245	6.52548	6.79955	7.08513	7.3827	7.69278	8.01587	8.35254	8.70335
5.55288	5.7861	6.02912	6.28234	6.5462	6.82114	7.10763	7.40615	7.71721	8.04133	8.37906	8.73098
3.05408	3.18236	3.31601	3.45529	3.60041	3.75163	3.90919	4.07338	4.24446	4.42273	4.60849	4.80204
6.78834	7.07345	7.37053	7.68009	8.00266	8.33877	8.689	9.05394	9.4342	9.83044	10.2433	10.6735
2.9278	3.05076	3.1789	3.31241	3.45153	3.5965	3.74755	3.90494	4.06895	4.23985	4.41792	4.60348
3.86325	4.0255	4.19458	4.37075	4.55432	4.7456	4.94492	5.1526	5.36901	5.59451	5.82948	6.07432
4.04677	4.21674	4.39384	4.57838	4.77068	4.97104	5.17983	5.39738	5.62407	5.86028	6.10641	6.36288

36	37	38	39	40	41	42	43	44	45	46	47
5.87657	6.12338	6.38057	6.64855	6.92779	7.21876	7.52194	7.83787	8.16706	8.51007	8.8675	9.23993
8.65418	9.01766	9.3964	9.79105	10.2023	10.6308	11.0773	11.5425	12.0273	12.5324	13.0588	13.6073
9.83695	10.2501	10.6806	11.1292	11.5966	12.0837	12.5912	13.12	13.6711	14.2453	14.8436	15.467
6.58094	6.85734	7.14535	7.44545	7.75816	8.084	8.42353	8.77732	9.14597	9.5301	9.93036	10.3474
14.0041	14.5923	15.2051	15.8437	16.5092	17.2026	17.9251	18.6779	19.4624	20.2798	21.1316	22.0191
5.53231	5.76466	6.00678	6.25906	6.52194	6.79587	7.08129	7.37871	7.68861	8.01153	8.34802	8.69863
9.06889	9.44978	9.84667	10.2602	10.6912	11.1402	11.6081	12.0956	12.6036	13.133	13.6846	14.2593
9.09769	9.47979	9.87794	10.2928	10.7251	11.1756	11.6449	12.134	12.6437	13.1747	13.728	14.3046
5.00373	5.21388	5.43287	5.66105	5.89881	6.14656	6.40472	6.67372	6.95401	7.24608	7.55041	7.86753
11.1218	11.5889	12.0757	12.5829	13.1113	13.662	14.2358	14.8337	15.4567	16.1059	16.7824	17.4872
4.79682	4.99829	5.20822	5.42696	5.65489	5.8924	6.13988	6.39775	6.66646	6.94645	7.2382	7.54221
6.32944	6.59527	6.87228	7.16091	7.46167	7.77506	8.10161	8.44188	8.79644	9.16589	9.55086	9.95199
6.63012	6.90859	7.19875	7.5011	7.81614	8.14442	8.48649	8.84292	9.21432	9.60132	10.0046	10.4248

48	49	50	51	52	53	54	55	56	57	58	59
9.62801	10.0324	10.4537	10.8928	11.3503	11.827	12.3237	12.8413	13.3807	13.9427	14.5283	15.1384
14.1788	14.7743	15.3948	16.0414	16.7151	17.4172	18.1487	18.9109	19.7052	20.5328	21.3952	22.2938
16.1166	16.7935	17.4988	18.2338	18.9996	19.7976	20.6291	21.4955	22.3983	23.339	24.3193	25.3407
10.782	11.2349	11.7067	12.1984	12.7108	13.2446	13.8009	14.3805	14.9845	15.6139	16.2696	16.953
22.9439	23.9075	24.9117	25.9579	27.0482	28.1842	29.3679	30.6014	31.8867	33.2259	34.6214	36.0755
9.06398	9.44466	9.84134	10.2547	10.6854	11.1342	11.6018	12.0891	12.5968	13.1259	13.6772	14.2516
14.8582	15.4823	16.1325	16.8101	17.5161	18.2518	19.0184	19.8171	20.6494	21.5167	22.4204	23.3621
14.9054	15.5314	16.1837	16.8635	17.5717	18.3097	19.0787	19.8801	20.715	21.585	22.4916	23.4363
8.19797	8.54228	8.90106	9.2749	9.66445	10.0704	10.4933	10.934	11.3933	11.8718	12.3704	12.8899
18.2217	18.987	19.7845	20.6154	21.4812	22.3835	23.3236	24.3032	25.3239	26.3875	27.4958	28.6506
7.85898	8.18906	8.533	8.89138	9.26482	9.65394	10.0594	10.4819	10.9221	11.3809	11.8589	12.3569
10.37	10.8055	11.2593	11.7322	12.225	12.7384	13.2735	13.8309	14.4118	15.0171	15.6479	16.3051
10.8626	11.3188	11.7942	12.2896	12.8058	13.3436	13.904	14.488	15.0965	15.7305	16.3912	17.0797

60	61	62	63	64	65	66	67	68	69	70	71
15.7743	16.4368	17.1271	17.8465	18.596	19.377	20.1909	21.0389	21.9225	22.8433	23.8027	24.8024
23.2301	24.2058	25.2224	26.2818	27.3856	28.5358	29.7343	30.9831	32.2844	33.6404	35.0533	36.5255
26.405	27.514	28.6696	29.8737	31.1284	32.4358	33.7981	35.2176	36.6968	38.238	39.844	41.5175
17.665	18.4069	19.18	19.9856	20.825	21.6996	22.611	23.5606	24.5502	25.5813	26.6557	27.7753
37.5907	39.1695	40.8146	42.5288	44.315	46.1762	48.1156	50.1365	52.2422	54.4364	56.7227	59.1051
14.8502	15.4739	16.1238	16.801	17.5066	18.2419	19.0081	19.8064	20.6383	21.5051	22.4083	23.3494
24.3433	25.3657	26.4311	27.5412	28.6979	29.9032	31.1591	32.4678	33.8315	35.2524	36.733	38.2758
24.4206	25.4463	26.515	27.6286	28.789	29.9982	31.2581	32.5709	33.9389	35.3643	36.8497	38.3973
13.4313	13.9954	14.5833	15.1957	15.834	16.499	17.192	17.914	18.6664	19.4504	20.2673	21.1185
29.8539	31.1078	32.4143	33.7757	35.1943	36.6724	38.2127	39.8176	41.49	43.2325	45.0483	46.9403
12.8759	13.4167	13.9802	14.5674	15.1792	15.8168	16.4811	17.1733	17.8945	18.6461	19.4292	20.2453
16.9899	17.7035	18.447	19.2218	20.0291	20.8703	21.7469	22.6602	23.612	24.6037	25.637	26.7138
17.797	18.5445	19.3233	20.1349	20.9806	21.8618	22.78	23.7367	24.7337	25.7725	26.8549	27.9828

72	73	74	75	76	77	78	79	80	81	82	83
25.8441	26.9296	28.0606	29.2392	30.4672	31.7468	33.0802	34.4696	35.9173	37.4258	38.9977	40.6356
38.0596	39.6581	41.3237	43.0593	44.8678	46.7523	48.7158	50.7619	52.8939	55.1155	57.4303	59.8424
43.2612	45.0782	46.9715	48.9443	50.9999	53.1419	55.3739	57.6996	60.123	62.6481	65.2793	68.0211
28.9418	30.1574	31.424	32.7438	34.119	35.552	37.0452	38.6011	40.2224	41.9117	43.672	45.5062
61.5875	64.1742	66.8695	69.678	72.6045	75.6539	78.8313	82.1422	85.5922	89.1871	92.9329	96.8361
24.3301	25.352	26.4168	27.5263	28.6824	29.887	31.1423	32.4503	33.8132	35.2333	36.7131	38.2551
39.8834	41.5585	43.3039	45.1227	47.0178	48.9926	51.0503	53.1944	55.4286	57.7566	60.1823	62.71
40.01	41.6904	43.4414	45.266	47.1672	49.1482	51.2124	53.3633	55.6046	57.94	60.3735	62.9091
22.0055	22.9297	23.8928	24.8963	25.9419	27.0315	28.1668	29.3498	30.5825	31.867	33.2054	34.6
48.9118	50.9661	53.1067	55.3372	57.6613	60.0831	62.6066	65.2361	67.976	70.831	73.8059	76.9058
21.0956	21.9816	22.9048	23.8668	24.8692	25.9137	27.0021	28.1362	29.3179	30.5493	31.8323	33.1693
27.8358	29.0049	30.2231	31.4924	32.8151	34.1934	35.6295	37.1259	38.6852	40.31	42.003	43.7671
29.1581	30.3828	31.6588	32.9885	34.374	35.8177	37.3221	38.8896	40.523	42.2249	43.9984	45.8463

84	85	86	87	88	89	90	91	92	93	94	95
42.3423	44.1207	45.9737	47.9046	49.9166	52.0131	54.1977	56.474	58.8459	61.3174	63.8927	66.5762
62.3558	64.9747	67.7036	70.5472	73.5102	76.5976	79.8147	83.1669	86.6599	90.2996	94.0922	98.0441
70.878	73.8548	76.9567	80.1889	83.5568	87.0662	90.723	94.5334	98.5038	102.641	106.952	111.444
47.4175	49.409	51.4842	53.6465	55.8997	58.2475	60.6939	63.243	65.8992	68.667	71.551	74.5561
100.903	105.141	109.557	114.158	118.953	123.949	129.155	134.58	140.232	146.122	152.259	158.654
39.8618	41.536	43.2805	45.0983	46.9924	48.9661	51.0227	53.1656	55.3986	57.7253	60.1498	62.676
65.3438	68.0883	70.948	73.9278	77.0327	80.2681	83.6394	87.1522	90.8126	94.6268	98.6011	102.742
65.5513	68.3045	71.1733	74.1625	77.2774	80.523	83.905	87.429	91.101	94.9273	98.9142	103.069
36.0532	37.5675	39.1453	40.7894	42.5026	44.2877	46.1477	48.0859	50.1056	52.21	54.4028	56.6877
80.1358	83.5015	87.0086	90.6629	94.4708	98.4385	102.573	106.881	111.37	116.048	120.922	126
34.5624	36.014	37.5266	39.1027	40.7451	42.4563	44.2395	46.0976	48.0337	50.0511	52.1532	54.3437
45.6053	47.5208	49.5166	51.5963	53.7634	56.0214	58.3743	60.8261	63.3808	66.0428	68.8165	71.7068
47.7719	49.7783	51.869	54.0475	56.3175	58.6828	61.1475	63.7157	66.3917	69.1802	72.0857	75.1133

96	97	98	99	100	101	102	103	104	105	106	107
69.3724	72.2861	75.3221	78.4856	81.782	85.2169	88.796	92.5254	96.4115	100.461	104.68	109.077
102.162	106.453	110.924	115.583	120.437	125.495	130.766	136.258	141.981	147.944	154.158	160.633
116.124	121.002	126.084	131.379	136.897	142.647	148.638	154.881	161.386	168.164	175.227	182.587
77.6875	80.9504	84.3503	87.893	91.5845	95.431	99.4391	103.616	107.967	112.502	117.227	122.151
165.317	172.26	179.495	187.034	194.89	203.075	211.604	220.491	229.752	239.402	249.457	259.934
65.3084	68.0514	70.9096	73.8878	76.991	80.2247	83.5941	87.1051	90.7635	94.5755	98.5477	102.687
107.058	111.554	116.239	121.121	126.208	131.509	137.032	142.788	148.785	155.034	161.545	168.33
107.397	111.908	116.608	121.506	126.609	131.927	137.468	143.241	149.257	155.526	162.058	168.865
59.0686	61.5495	64.1346	66.8282	69.635	72.5597	75.6072	78.7827	82.0916	85.5394	89.1321	92.8756
131.292	136.807	142.552	148.54	154.778	161.279	168.053	175.111	182.466	190.129	198.115	206.435
56.6261	59.0044	61.4826	64.0648	66.7556	69.5593	72.4808	75.525	78.697	82.0023	85.4464	89.0352
74.7185	77.8567	81.1267	84.534	88.0844	91.784	95.6389	99.6557	103.841	108.203	112.747	117.483
78.2681	81.5554	84.9807	88.5499	92.269	96.1443	100.182	104.39	108.774	113.343	118.103	123.064

108	109	110	111	112	113	114	115	116	117	118	119
113.658	118.432	123.406	128.589	133.989	139.617	145.481	151.591	157.958	164.592	171.505	178.708
167.379	174.409	181.734	189.367	197.321	205.608	214.244	223.242	232.618	242.388	252.568	263.176
190.255	198.246	206.572	215.248	224.289	233.709	243.525	253.753	264.41	275.515	287.087	299.145
127.281	132.627	138.197	144.001	150.05	156.352	162.918	169.761	176.891	184.32	192.062	200.128
270.851	282.227	294.08	306.432	319.302	332.712	346.686	361.247	376.419	392.229	408.703	425.868
107	111.494	116.176	121.056	126.14	131.438	136.958	142.711	148.704	154.95	161.458	168.239
175.4	182.767	190.443	198.442	206.776	215.461	224.51	233.94	243.765	254.003	264.671	275.788
175.957	183.347	191.048	199.072	207.433	216.145	225.223	234.683	244.539	254.81	265.512	276.663
96.7764	100.841	105.076	109.49	114.088	118.88	123.873	129.075	134.497	140.145	146.032	152.165
215.106	224.14	233.554	243.363	253.584	264.235	275.333	286.897	298.947	311.502	324.585	338.218
92.7746	96.6712	100.731	104.962	109.37	113.964	118.751	123.738	128.935	134.35	139.993	145.873
122.417	127.558	132.916	138.498	144.315	150.376	156.692	163.273	170.131	177.276	184.722	192.48
128.232	133.618	139.23	145.078	151.171	157.52	164.136	171.03	178.213	185.698	193.497	201.624

120	121	122	123	124	125	126	127	128	129	130	131
186.214	194.035	202.184	210.676	219.525	228.745	238.352	248.363	258.794	269.663	280.989	292.791
274.23	285.747	297.749	310.254	323.285	336.863	351.011	365.754	381.115	397.122	413.801	431.181
311.709	324.801	338.442	352.657	367.468	382.902	398.984	415.741	433.202	451.397	470.356	490.11
208.534	217.292	226.418	235.928	245.837	256.162	266.921	278.132	289.813	301.985	314.669	327.885
443.755	462.392	481.813	502.049	523.135	545.107	568.001	591.857	616.715	642.617	669.607	697.731
175.305	182.668	190.34	198.334	206.664	215.344	224.389	233.813	243.633	253.866	264.528	275.638
287.371	299.44	312.017	325.121	338.776	353.005	367.831	383.28	399.378	416.152	433.63	451.843
288.283	300.391	313.008	326.154	339.852	354.126	368.999	384.497	400.646	417.473	435.007	453.278
158.556	165.215	172.154	179.385	186.919	194.769	202.95	211.474	220.355	229.61	239.254	249.303
352.423	367.225	382.648	398.72	415.466	432.915	451.098	470.044	489.786	510.357	531.792	554.127
151.999	158.383	165.035	171.967	179.19	186.716	194.558	202.729	211.244	220.116	229.361	238.994
200.564	208.988	217.765	226.912	236.442	246.372	256.72	267.502	278.737	290.444	302.643	315.354
210.092	218.916	228.111	237.691	247.674	258.077	268.916	280.21	291.979	304.242	317.02	330.335

132	133	134	135	136	137	138	139	140	141	142	143
305.088	317.901	331.253	345.166	359.663	374.769	390.509	406.91	424.001	441.809	460.365	479.7
449.29	468.161	487.823	508.312	529.661	551.907	575.087	599.24	624.409	650.634	677.96	706.435
510.695	532.144	554.494	577.783	602.05	627.336	653.684	681.139	709.747	739.556	770.618	802.983
341.656	356.005	370.958	386.538	402.773	419.689	437.316	455.683	474.822	494.764	515.544	537.197
727.035	757.571	789.389	822.543	857.09	893.088	930.598	969.683	1010.41	1052.85	1097.07	1143.14
287.215	299.278	311.848	324.945	338.593	352.814	367.632	383.073	399.162	415.927	433.396	451.598
470.82	490.595	511.2	532.67	555.042	578.354	602.645	627.956	654.33	681.812	710.448	740.287
472.315	492.152	512.823	534.361	556.805	580.19	604.558	629.95	656.408	683.977	712.704	742.637
259.773	270.684	282.053	293.899	306.243	319.105	332.507	346.472	361.024	376.187	391.987	408.451
577.4	601.651	626.921	653.251	680.688	709.277	739.066	770.107	802.452	836.154	871.273	907.866
249.032	259.491	270.39	281.746	293.579	305.91	318.758	332.146	346.096	360.632	375.778	391.561
328.599	342.4	356.781	371.766	387.38	403.65	420.603	438.268	456.676	475.856	495.842	516.667
344.209	358.666	373.73	389.427	405.783	422.826	440.584	459.089	478.37	498.462	519.397	541.212

144	145	146	147	148	149	150	151	152	153	154	155
499.847	520.841	542.716	565.51	589.262	614.011	639.799	666.671	694.671	723.847	754.249	785.927
736.105	767.021	799.236	832.804	867.782	904.229	942.206	981.779	1023.01	1065.98	1110.75	1157.4
836.709	871.851	908.468	946.624	986.382	1027.81	1070.98	1115.96	1162.83	1211.67	1262.56	1315.59
559.76	583.27	607.767	633.293	659.891	687.607	716.486	746.579	777.935	810.608	844.654	880.129
1191.15	1241.18	1293.31	1347.63	1404.23	1463.21	1524.67	1588.7	1655.43	1724.95	1797.4	1872.89
470.565	490.329	510.923	532.382	554.742	578.041	602.318	627.616	653.976	681.443	710.063	739.886
771.379	803.777	837.535	872.712	909.366	947.559	987.356	1028.83	1072.04	1117.06	1163.98	1212.87
773.828	806.329	840.195	875.483	912.253	950.568	990.492	1032.09	1075.44	1120.61	1167.67	1216.72
425.606	443.481	462.107	481.516	501.739	522.812	544.771	567.651	591.492	616.335	642.221	669.194
945.997	985.729	1027.13	1070.27	1115.22	1162.06	1210.87	1261.72	1314.71	1369.93	1427.47	1487.42
408.007	425.143	442.999	461.605	480.992	501.194	522.244	544.178	567.034	590.849	615.665	641.523
538.367	560.979	584.54	609.091	634.673	661.329	689.105	718.047	748.205	779.63	812.374	846.494
563.943	587.629	612.309	638.026	664.823	692.746	721.841	752.158	783.749	816.666	850.966	886.707

156	157	158	159	160	161	162	163	164	165	166	167
818.936	853.331	889.171	926.517	965.43	1005.98	1048.23	1092.26	1138.13	1185.93	1235.74	1287.64
1206.01	1256.67	1309.45	1364.44	1421.75	1481.46	1543.68	1608.52	1676.08	1746.47	1819.82	1896.26
1370.84	1428.42	1488.41	1550.92	1616.06	1683.94	1754.66	1828.36	1905.15	1985.16	2068.54	2155.42
917.095	955.613	995.748	1037.57	1081.15	1126.56	1173.87	1223.17	1274.55	1328.08	1383.86	1441.98
1951.56	2033.52	2118.93	2207.92	2300.66	2397.28	2497.97	2602.88	2712.21	2826.12	2944.82	3068.5
770.961	803.341	837.082	872.239	908.873	947.046	986.822	1028.27	1071.46	1116.46	1163.35	1212.21
1263.81	1316.89	1372.19	1429.83	1489.88	1552.45	1617.66	1685.6	1756.39	1830.16	1907.03	1987.12
1267.82	1321.07	1376.55	1434.37	1494.61	1557.38	1622.79	1690.95	1761.97	1835.97	1913.09	1993.44
697.3	726.587	757.104	788.902	822.036	856.561	892.537	930.024	969.085	1009.79	1052.2	1096.39
1549.9	1614.99	1682.82	1753.5	1827.15	1903.89	1983.85	2067.17	2153.99	2244.46	2338.73	2436.95
668.467	696.542	725.797	756.281	788.044	821.142	855.63	891.567	929.012	968.031	1008.69	1051.05
882.046	919.092	957.694	997.917	1039.83	1083.5	1129.01	1176.43	1225.84	1277.32	1330.97	1386.87
923.949	962.755	1003.19	1045.32	1089.23	1134.98	1182.64	1232.32	1284.07	1338	1394.2	1452.76

168	169	170	171	172	173	174	175	176	177	178	179
1341.72	1398.07	1456.79	1517.98	1581.73	1648.17	1717.39	1789.52	1864.68	1943	2024.6	2109.64
1975.9	2058.89	2145.36	2235.47	2329.36	2427.19	2529.13	2635.35	2746.04	2861.37	2981.55	3106.78
2245.95	2340.28	2438.57	2540.99	2647.71	2758.91	2874.79	2995.53	3121.34	3252.44	3389.04	3531.38
1502.54	1565.65	1631.41	1699.93	1771.32	1845.72	1923.24	2004.01	2088.18	2175.89	2267.27	2362.5
3197.37	3331.66	3471.59	3617.4	3769.33	3927.64	4092.6	4264.49	4443.6	4630.23	4824.7	5027.34
1263.12	1316.17	1371.45	1429.05	1489.07	1551.61	1616.78	1684.69	1755.44	1829.17	1906	1986.05
2070.58	2157.55	2248.17	2342.59	2440.98	2543.5	2650.33	2761.64	2877.63	2998.49	3124.42	3255.65
2077.16	2164.4	2255.31	2350.03	2448.73	2551.58	2658.74	2770.41	2886.77	3008.01	3134.35	3265.99
1142.44	1190.42	1240.42	1292.52	1346.8	1403.37	1462.31	1523.72	1587.72	1654.41	1723.89	1796.29
2539.31	2645.96	2757.09	2872.88	2993.55	3119.27	3250.28	3386.8	3529.04	3677.26	3831.71	3992.64
1095.2	1141.2	1189.13	1239.07	1291.11	1345.34	1401.84	1460.72	1522.07	1586	1652.61	1722.02
1445.12	1505.82	1569.06	1634.96	1703.63	1775.18	1849.74	1927.43	2008.38	2092.73	2180.63	2272.21
1513.77	1577.35	1643.6	1712.63	1784.56	1859.51	1937.61	2018.99	2103.79	2192.15	2284.22	2380.16

180	181	182	183	184	185	186	187	188	189	190	191
2198.24	2290.57	2386.77	2487.02	2591.47	2700.31	2813.72	2931.9	3055.04	3183.35	3317.05	3456.37
3237.26	3373.23	3514.9	3662.53	3816.35	3976.64	4143.66	4317.69	4499.03	4687.99	4884.89	5090.06
3679.7	3834.25	3995.28	4163.09	4337.94	4520.13	4709.97	4907.79	5113.92	5328.7	5552.51	5785.72
2461.72	2565.12	2672.85	2785.11	2902.09	3023.97	3150.98	3283.32	3421.22	3564.91	3714.64	3870.65
5238.49	5458.51	5687.76	5926.65	6175.57	6434.94	6705.21	6986.83	7280.28	7586.05	7904.66	8236.66
2069.46	2156.38	2246.95	2341.32	2439.66	2542.12	2648.89	2760.14	2876.07	2996.87	3122.73	3253.89
3392.39	3534.87	3683.33	3838.03	3999.23	4167.2	4342.22	4524.59	4714.63	4912.64	5118.97	5333.97
3403.16	3546.09	3695.03	3850.22	4011.93	4180.43	4356.01	4538.96	4729.6	4928.24	5135.23	5350.91
1871.74	1950.35	2032.27	2117.62	2206.56	2299.24	2395.81	2496.43	2601.28	2710.53	2824.37	2943
4160.33	4335.06	4517.13	4706.85	4904.54	5110.53	5325.17	5548.83	5781.88	6024.72	6277.76	6541.43
1794.34	1869.7	1948.23	2030.06	2115.32	2204.16	2296.74	2393.2	2493.71	2598.45	2707.59	2821.3
2367.65	2467.09	2570.7	2678.67	2791.18	2908.41	3030.56	3157.84	3290.47	3428.67	3572.68	3722.73
2480.12	2584.29	2692.83	2805.93	2923.78	3046.57	3174.53	3307.86	3446.79	3591.56	3742.4	3899.58

192	193	194	195	196	197	198	199	200
3601.54	3752.8	3910.42	4074.66	4245.79	4424.12	4609.93	4803.55	5005.3
5303.84	5526.6	5758.72	6000.58	6252.61	6515.22	6788.86	7073.99	7371.09
6028.72	6281.92	6545.76	6820.68	7107.15	7405.65	7716.69	8040.79	8378.51
4033.22	4202.62	4379.13	4563.05	4754.7	4954.4	5162.48	5379.3	5605.24
8582.6	8943.07	9318.68	9710.06	10117.9	10542.8	10985.6	11447	11927.8
3390.55	3532.95	3681.34	3835.96	3997.07	4164.94	4339.87	4522.14	4712.07
5558	5791.43	6034.67	6288.13	6552.23	6827.42	7114.17	7412.97	7724.31
5575.64	5809.82	6053.83	6308.1	6573.04	6849.1	7136.77	7436.51	7748.84
3066.6	3195.4	3329.61	3469.45	3615.17	3767.01	3925.22	4090.08	4261.86
6816.17	7102.45	7400.75	7711.58	8035.47	8372.96	8724.62	9091.05	9472.88
2939.8	3063.27	3191.93	3325.99	3465.68	3611.24	3762.91	3920.95	4085.63
3879.09	4042.01	4211.77	4388.67	4572.99	4765.06	4965.19	5173.73	5391.02
4063.36	4234.03	4411.85	4597.15	4790.23	4991.42	5201.06	5419.51	5647.13

Kansas City Power Light
Case No. ER-2018-0145

Multiple-Stage Discounted Cash Flow (DCF) Estimated Costs of Common Equity for the Constant Comparable Electric Utility Companies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Company Name	Annualized Quarterly Dividend	Growth Years 1-5	6	7	Growth Years 8	9	10	Growth in Perpetuity	Cost of Equity
Alliant Energy	$1.18	6.00%	5.77%	5.53%	5.30%	5.07%	4.83%	4.60%	8.10%
Ameren Corp.	$1.70	6.25%	5.98%	5.70%	5.43%	5.15%	4.88%	4.60%	8.57%
American Electric Power	$2.24	4.18%	4.25%	4.32%	4.39%	4.46%	4.53%	4.60%	8.10%
CMS Energy Corporation	$1.24	6.84%	6.47%	6.09%	5.72%	5.35%	4.97%	4.60%	8.12%
DTE Energy Company	$2.92	5.41%	5.28%	5.14%	5.01%	4.87%	4.74%	4.60%	8.01%
El Paso Electric Company	$1.24	4.40%	4.43%	4.47%	4.50%	4.53%	4.57%	4.60%	7.38%
IDACORP, Inc.	$2.04	4.35%	4.39%	4.43%	4.48%	4.52%	4.56%	4.60%	7.29%
NorthWestern Co	$2.00	4.67%	4.66%	4.65%	4.64%	4.62%	4.61%	4.60%	8.23%
OGE Energy Corp.	$1.10	4.67%	4.66%	4.65%	4.64%	4.62%	4.61%	4.60%	8.32%
Pinnacle West Capital	$2.50	4.36%	4.40%	4.44%	4.48%	4.52%	4.56%	4.60%	7.98%
PNM Resources, Inc.	$0.88	7.22%	6.78%	6.35%	5.91%	5.47%	5.04%	4.60%	7.92%
Portland General Electric	$1.28	5.84%	5.63%	5.43%	5.22%	5.01%	4.81%	4.60%	7.99%
Xcel Energy	$1.36	5.64%	5.47%	5.29%	5.12%	4.95%	4.77%	4.60%	8.25%
								Average	**8.02%**

Sources: Column 1 = SNL Financial
Column 2 = SNL Financial

Price	Year 1	2	3	4	5	6	7	8	9	10	11
($38.348)	1.2455	1.32023	1.39944	1.48341	1.57242	1.66309	1.75512	1.84814	1.94178	2.03563	2.12927
($49.735)	1.80625	1.91914	2.03909	2.16653	2.30194	2.43948	2.57853	2.71841	2.85841	2.99776	3.13566
($65.030)	2.33363	2.43118	2.5328	2.63867	2.74897	2.8658	2.9896	3.12085	3.26004	3.40772	3.56447
($42.422)	1.32482	1.41543	1.51225	1.61569	1.7262	1.83783	1.94981	2.06134	2.17155	2.27955	2.38441
($94.290)	3.07797	3.24449	3.42002	3.60504	3.80007	4.00053	4.20615	4.41667	4.63176	4.85108	5.07423
($45.770)	1.29456	1.35152	1.41099	1.47307	1.53789	1.60607	1.6778	1.7533	1.83279	1.91648	2.00464
($77.598)	2.12874	2.22134	2.31797	2.4188	2.52402	2.63486	2.75168	2.87481	3.00466	3.14162	3.28614
($57.810)	2.0934	2.19116	2.29349	2.40059	2.5127	2.62975	2.75195	2.8795	3.01263	3.15156	3.29653
($31.053)	1.15137	1.20514	1.26142	1.32033	1.38199	1.44636	1.51357	1.58373	1.65695	1.73336	1.81309
($76.048)	2.609	2.72275	2.84146	2.96535	3.09464	3.23081	3.37425	3.52542	3.68477	3.85279	4.03002
($32.698)	0.94354	1.01166	1.0847	1.16302	1.24699	1.33157	1.41608	1.49977	1.58186	1.66154	1.73797
($42.648)	1.35475	1.43387	1.51761	1.60624	1.70004	1.79581	1.89326	1.99209	2.09196	2.19251	2.29337
($41.638)	1.4367	1.51773	1.60333	1.69376	1.78929	1.88711	1.987	2.08873	2.19205	2.29669	2.40233

12	13	14	15	16	17	18	19	20	21	22	23
2.22721	2.32966	2.43683	2.54892	2.66617	2.78882	2.9171	3.05129	3.19165	3.33847	3.49204	3.65267
3.2799	3.43077	3.58859	3.75366	3.92633	4.10694	4.29586	4.49347	4.70017	4.91638	5.14253	5.37909
3.72844	3.89994	4.07934	4.26699	4.46327	4.66858	4.88334	5.10797	5.34294	5.58871	5.84579	6.1147
2.4941	2.60882	2.72883	2.85436	2.98566	3.123	3.26665	3.41692	3.5741	3.73851	3.91048	4.09036
5.30764	5.55179	5.80718	6.07431	6.35372	6.646	6.95171	7.27149	7.60598	7.95585	8.32182	8.70463
2.09686	2.19331	2.2942	2.39974	2.51013	2.62559	2.74637	2.8727	3.00485	3.14307	3.28765	3.43888
3.4373	3.59542	3.7608	3.9338	4.11476	4.30403	4.50202	4.70911	4.92573	5.15232	5.38932	5.63723
3.44818	3.60679	3.7727	3.94625	4.12778	4.31765	4.51627	4.72401	4.94132	5.16862	5.40638	5.65507
1.8965	1.98374	2.07499	2.17044	2.27028	2.37471	2.48395	2.59821	2.71773	2.84274	2.97351	3.11029
4.2154	4.40931	4.61214	4.8243	5.04622	5.27834	5.52115	5.77512	6.04078	6.31865	6.60931	6.91334
1.81791	1.90154	1.98901	2.0805	2.1762	2.27631	2.38102	2.49055	2.60511	2.72495	2.8503	2.98141
2.39886	2.50921	2.62464	2.74537	2.87166	3.00375	3.14192	3.28645	3.43763	3.59576	3.76117	3.93418
2.51284	2.62843	2.74934	2.87581	3.0081	3.14647	3.29121	3.4426	3.60096	3.76661	3.93987	4.1211

24	25	26	27	28	29	30	31	32	33	34	35
3.82069	3.99644	4.18028	4.37257	4.57371	4.7841	5.00417	5.23436	5.47514	5.727	5.99044	6.266
5.62653	5.88535	6.15607	6.43925	6.73546	7.04529	7.36937	7.70836	8.06295	8.43385	8.8218	9.22761
6.39598	6.69019	6.99794	7.31985	7.65656	8.00876	8.37716	8.76251	9.16559	9.58721	10.0282	10.4895
4.27852	4.47533	4.68119	4.89653	5.12177	5.35737	5.60381	5.86159	6.13122	6.41326	6.70826	7.01685
9.10504	9.52387	9.96197	10.4202	10.8995	11.4009	11.9254	12.4739	13.0477	13.6479	14.2757	14.9324
3.59707	3.76254	3.93561	4.11665	4.30602	4.50409	4.71128	4.928	5.15469	5.3918	5.63983	5.89926
5.89654	6.16779	6.4515	6.74827	7.05869	7.38339	7.72303	8.07829	8.44989	8.83858	9.24516	9.67044
5.9152	6.1873	6.47192	6.76963	7.08103	7.40676	7.74747	8.10385	8.47663	8.86655	9.27441	9.70104
3.25336	3.40302	3.55955	3.72329	3.89457	4.07372	4.26111	4.45712	4.66214	4.8766	5.10093	5.33557
7.23135	7.56399	7.91194	8.27589	8.65658	9.05478	9.4713	9.90698	10.3627	10.8394	11.338	11.8595
3.11855	3.26201	3.41206	3.56901	3.73319	3.90492	4.08454	4.27243	4.46896	4.67453	4.88956	5.11448
4.11515	4.30445	4.50245	4.70957	4.92621	5.15281	5.38984	5.63777	5.89711	6.16838	6.45212	6.74892
4.31068	4.50897	4.71638	4.93333	5.16027	5.39764	5.64593	5.90564	6.1773	6.46146	6.75868	7.06958

36	37	38	39	40	41	42	43	44	45	46	47
6.55424	6.85573	7.1711	7.50097	7.84601	8.20693	8.58445	8.97933	9.39238	9.82443	10.2764	10.7491
9.65207	10.0961	10.5605	11.0463	11.5544	12.0859	12.6419	13.2234	13.8317	14.4679	15.1334	15.8296
10.972	11.4767	12.0047	12.5569	13.1345	13.7387	14.3707	15.0317	15.7232	16.4465	17.203	17.9943
7.33962	7.67724	8.0304	8.39979	8.78618	9.19035	9.6131	10.0553	10.5179	11.0017	11.5077	12.0371
15.6193	16.3378	17.0893	17.8755	18.6977	19.5578	20.4575	21.3985	22.3829	23.4125	24.4894	25.616
6.17063	6.45447	6.75138	7.06194	7.38679	7.72659	8.08201	8.45378	8.84266	9.24942	9.67489	10.1199
10.1153	10.5806	11.0673	11.5764	12.1089	12.6659	13.2485	13.858	14.4954	15.1622	15.8597	16.5892
10.1473	10.6141	11.1023	11.613	12.1472	12.706	13.2905	13.9018	14.5413	15.2102	15.9099	16.6417
5.58101	5.83773	6.10627	6.38716	6.68097	6.98829	7.30975	7.646	7.99772	8.36561	8.75043	9.15295
12.4051	12.9757	13.5726	14.1969	14.85	15.5331	16.2476	16.995	17.7768	18.5945	19.4499	20.3446
5.34975	5.59584	5.85325	6.1225	6.40413	6.69872	7.00686	7.32918	7.66632	8.01897	8.38784	8.77368
7.05937	7.3841	7.72377	8.07906	8.4507	8.83943	9.24605	9.67137	10.1162	10.5816	11.0683	11.5775
7.39478	7.73494	8.09075	8.46293	8.85222	9.25942	9.68536	10.1309	10.5969	11.0844	11.5942	12.1276

48	49	50	51	52	53	54	55	56	57	58	59
11.2435	11.7607	12.3017	12.8676	13.4595	14.0786	14.7263	15.4037	16.1122	16.8534	17.6287	18.4396
16.5577	17.3194	18.1161	18.9494	19.8211	20.7329	21.6866	22.6842	23.7276	24.8191	25.9608	27.155
18.8221	19.6879	20.5935	21.5408	22.5317	23.5682	24.6523	25.7863	26.9725	28.2132	29.511	30.8685
12.5908	13.17	13.7758	14.4095	15.0723	15.7657	16.4909	17.2495	18.0429	18.8729	19.7411	20.6492
26.7943	28.0268	29.3161	30.6646	32.0752	33.5506	35.094	36.7083	38.3969	40.1631	42.0106	43.9431
10.5855	11.0724	11.5817	12.1145	12.6717	13.2546	13.8644	14.5021	15.1692	15.867	16.5969	17.3603
17.3523	18.1505	18.9855	19.8588	20.7723	21.7278	22.7273	23.7728	24.8663	26.0102	27.2066	28.4581
17.4072	18.208	19.0455	19.9216	20.838	21.7966	22.7992	23.848	24.945	26.0925	27.2927	28.5482
9.57398	10.0144	10.475	10.9569	11.4609	11.9881	12.5396	13.1164	13.7197	14.3509	15.011	15.7015
21.2804	22.2593	23.2832	24.3543	25.4746	26.6464	27.8721	29.1542	30.4953	31.8981	33.3654	34.9002
9.17727	9.59943	10.041	10.5029	10.986	11.4914	12.02	12.5729	13.1513	13.7562	14.389	15.0509
12.1101	12.6671	13.2498	13.8593	14.4968	15.1637	15.8612	16.5908	17.354	18.1523	18.9873	19.8607
12.6854	13.269	13.8793	14.5178	15.1856	15.8842	16.6148	17.3791	18.1785	19.0148	19.8894	20.8044

60	61	62	63	64	65	66	67	68	69	70	71
19.2878	20.175	21.1031	22.0738	23.0892	24.1513	25.2623	26.4244	27.6399	28.9113	30.2412	31.6323
28.4041	29.7107	31.0774	32.5069	34.0023	35.5664	37.2024	38.9137	40.7038	42.5761	44.5346	46.5832
32.2885	33.7737	35.3273	36.9524	38.6522	40.4302	42.29	44.2353	46.2702	48.3986	50.6249	52.9537
21.599	22.5926	23.6318	24.7189	25.856	27.0453	28.2894	29.5907	30.9519	32.3757	33.865	35.4228
45.9645	48.0789	50.2905	52.6038	55.0236	57.5547	60.2022	62.9715	65.8682	68.8982	72.0675	75.3826
18.1589	18.9942	19.8679	20.7819	21.7378	22.7378	23.7837	24.8778	26.0221	27.2192	28.4712	29.7809
29.7672	31.1365	32.5688	34.067	35.634	37.2732	38.9878	40.7812	42.6571	44.6194	46.6719	48.8188
29.8614	31.235	32.6718	34.1747	35.7468	37.3911	39.1111	40.9102	42.7921	44.7605	46.8195	48.9732
16.4238	17.1793	17.9695	18.7961	19.6607	20.5651	21.5111	22.5006	23.5357	24.6183	25.7507	26.9353
36.5057	38.1849	39.9414	41.7787	43.7005	45.7108	47.8135	50.0129	52.3135	54.7199	57.237	59.8699
15.7432	16.4674	17.2249	18.0173	18.8461	19.713	20.6198	21.5683	22.5604	23.5982	24.6837	25.8192
20.7743	21.7299	22.7295	23.7751	24.8687	26.0127	27.2092	28.4609	29.7701	31.1395	32.5719	34.0702
21.7614	22.7624	23.8094	24.9047	26.0503	27.2486	28.502	29.8131	31.1845	32.619	34.1195	35.689

72	73	74	75	76	77	78	79	80	81	82	83
33.0874	34.6094	36.2015	37.8667	39.6086	41.4306	43.3364	45.3299	47.4151	49.5962	51.8776	54.2639
48.7261	50.9675	53.312	55.7643	58.3295	61.0126	63.8192	66.7549	69.8256	73.0376	76.3973	79.9116
55.3895	57.9375	60.6026	63.3903	66.3063	69.3563	72.5467	75.8839	79.3745	83.0258	86.845	90.8398
37.0522	38.7566	40.5394	42.4042	44.3548	46.3952	48.5293	50.7617	53.0967	55.5392	58.094	60.7663
78.8502	82.4773	86.2712	90.2397	94.3907	98.7327	103.274	108.025	112.994	118.192	123.629	129.316
31.1508	32.5838	34.0826	35.6504	37.2904	39.0057	40.8	42.6768	44.6399	46.6933	48.8412	51.0879
51.0644	53.4134	55.8704	58.4404	61.1287	63.9406	66.8819	69.9585	73.1765	76.5427	80.0636	83.7466
51.226	53.5824	56.0472	58.6254	61.3221	64.1429	67.0935	70.1798	73.4081	76.7849	80.317	84.0115
28.1743	29.4703	30.826	32.2439	33.7272	35.2786	36.9014	38.5989	40.3744	42.2317	44.1743	46.2063
62.6239	65.5046	68.5178	71.6697	74.9665	78.4149	82.022	85.795	89.7416	93.8697	98.1877	102.704
27.0069	28.2492	29.5486	30.9079	32.3296	33.8168	35.3724	36.9995	38.7015	40.4817	42.3439	44.2917
35.6375	37.2768	38.9915	40.7851	42.6612	44.6237	46.6763	48.8235	51.0693	53.4185	55.8758	58.4461
37.3307	39.0479	40.8441	42.7229	44.6882	46.7439	48.8941	51.1432	53.4958	55.9566	58.5306	61.223

84	85	86	87	88	89	90	91	92	93	94	95
56.7601	59.371	62.1021	64.9588	67.9469	71.0725	74.3418	77.7615	81.3386	85.0801	88.9938	93.0875
83.5875	87.4326	91.4545	95.6614	100.062	104.665	109.479	114.515	119.783	125.293	131.056	137.085
95.0185	99.3893	103.961	108.743	113.746	118.978	124.451	130.176	136.164	142.427	148.979	155.832
63.5615	66.4854	69.5437	72.7427	76.0889	79.589	83.2501	87.0796	91.0852	95.2751	99.6578	104.242
135.264	141.486	147.995	154.802	161.923	169.372	177.163	185.312	193.837	202.753	212.08	221.836
53.438	55.8961	58.4674	61.1569	63.9701	66.9127	69.9907	73.2102	76.5779	80.1005	83.7851	87.6392
87.5989	91.6284	95.8434	100.252	104.864	109.687	114.733	120.011	125.531	131.306	137.346	143.664
87.8761	91.9184	96.1466	100.569	105.196	110.035	115.096	120.391	125.929	131.721	137.78	144.118
48.3318	50.5551	52.8806	55.3131	57.8576	60.519	63.3029	66.2148	69.2607	72.4467	75.7792	79.2651
107.429	112.37	117.54	122.946	128.602	134.518	140.705	147.178	153.948	161.03	168.437	176.185
46.3291	48.4603	50.6895	53.0212	55.4601	58.0113	60.6798	63.4711	66.3908	69.4448	72.6392	75.9806
61.1346	63.9468	66.8883	69.9652	73.1836	76.55	80.0713	83.7546	87.6073	91.6373	95.8526	100.262
64.0393	66.9851	70.0664	73.2894	76.6608	80.1872	83.8758	87.734	91.7698	95.9912	100.407	105.026

96	97	98	99	100	101	102	103	104	105	106	107
97.3696	101.849	106.534	111.434	116.56	121.922	127.53	133.397	139.533	145.951	152.665	159.688
143.391	149.987	156.886	164.103	171.652	179.548	187.807	196.446	205.483	214.935	224.822	235.164
163	170.498	178.341	186.545	195.126	204.102	213.49	223.311	233.583	244.328	255.567	267.323
109.037	114.053	119.299	124.787	130.527	136.532	142.812	149.381	156.253	163.441	170.959	178.823
232.04	242.714	253.879	265.557	277.773	290.55	303.916	317.896	332.519	347.815	363.814	380.55
91.6706	95.8875	100.298	104.912	109.738	114.786	120.066	125.589	131.366	137.409	143.73	150.341
150.272	157.185	164.415	171.978	179.889	188.164	196.82	205.874	215.344	225.25	235.611	246.449
150.748	157.682	164.936	172.523	180.459	188.76	197.443	206.525	216.025	225.962	236.357	247.229
82.9113	86.7252	90.7145	94.8874	99.2522	103.818	108.593	113.589	118.814	124.279	129.996	135.976
184.29	192.767	201.634	210.909	220.611	230.759	241.374	252.477	264.091	276.24	288.947	302.238
79.4757	83.1316	86.9557	90.9556	95.1396	99.516	104.094	108.882	113.891	119.13	124.61	130.342
104.874	109.698	114.744	120.022	125.543	131.318	137.359	143.678	150.287	157.2	164.431	171.995
109.857	114.91	120.196	125.725	131.508	137.558	143.885	150.504	157.427	164.669	172.244	180.167

108	109	110	111	112	113	114	115	116	117	118	119
167.033	174.717	182.754	191.161	199.954	209.152	218.773	228.836	239.363	250.374	261.891	273.938
245.981	257.296	269.132	281.512	294.462	308.007	322.175	336.995	352.497	368.712	385.673	403.414
279.62	292.483	305.937	320.01	334.73	350.128	366.234	383.081	400.702	419.135	438.415	458.582
187.049	195.653	204.653	214.067	223.914	234.214	244.988	256.258	268.045	280.375	293.273	306.763
398.055	416.366	435.519	455.552	476.508	498.427	521.355	545.337	570.423	596.662	624.109	652.818
157.257	164.491	172.058	179.972	188.251	196.911	205.968	215.443	225.353	235.72	246.563	257.905
257.786	269.644	282.048	295.022	308.593	322.788	337.636	353.168	369.413	386.406	404.181	422.773
258.602	270.497	282.94	295.955	309.569	323.809	338.705	354.285	370.582	387.629	405.46	424.111
142.231	148.773	155.617	162.775	170.263	178.095	186.288	194.857	203.82	213.196	223.003	233.261
316.141	330.684	345.895	361.806	378.449	395.858	414.067	433.115	453.038	473.878	495.676	518.477
136.337	142.609	149.169	156.031	163.208	170.716	178.568	186.783	195.375	204.362	213.763	223.596
179.907	188.182	196.839	205.893	215.364	225.271	235.634	246.473	257.811	269.67	282.075	295.05
188.455	197.124	206.191	215.676	225.597	235.975	246.829	258.184	270.06	282.483	295.477	309.069

120	121	122	123	124	125	126	127	128	129	130	131
286.539	299.72	313.507	327.928	343.013	358.791	375.296	392.559	410.617	429.506	449.263	469.929
421.971	441.381	461.685	482.922	505.137	528.373	552.678	578.101	604.694	632.51	661.605	692.039
479.677	501.742	524.822	548.964	574.216	600.63	628.259	657.159	687.388	719.008	752.082	786.678
320.874	335.635	351.074	367.223	384.115	401.785	420.267	439.599	459.821	480.972	503.097	526.24
682.847	714.258	747.114	781.481	817.429	855.031	894.363	935.503	978.536	1023.55	1070.63	1119.88
269.768	282.178	295.158	308.735	322.937	337.792	353.33	369.583	386.584	404.367	422.968	442.425
442.221	462.563	483.841	506.098	529.378	553.73	579.201	605.844	633.713	662.864	693.356	725.25
443.62	464.027	485.372	507.699	531.053	555.482	581.034	607.761	635.718	664.961	695.55	727.545
243.991	255.215	266.955	279.234	292.079	305.515	319.569	334.269	349.645	365.729	382.552	400.15
542.327	567.274	593.369	620.664	649.214	679.078	710.315	742.99	777.168	812.917	850.311	889.426
233.881	244.64	255.893	267.664	279.977	292.855	306.327	320.418	335.157	350.574	366.701	383.569
308.622	322.819	337.669	353.202	369.449	386.443	404.22	422.814	442.263	462.608	483.887	506.146
323.286	338.157	353.712	369.983	387.002	404.805	423.426	442.903	463.277	484.587	506.879	530.195

132	133	134	135	136	137	138	139	140	141	142	143
491.546	514.157	537.808	562.547	588.424	615.492	643.804	673.42	704.397	736.799	770.692	806.144
723.873	757.171	792.001	828.433	866.541	906.402	948.096	991.709	1037.33	1085.04	1134.96	1187.16
822.865	860.717	900.31	941.724	985.044	1030.36	1077.75	1127.33	1179.19	1233.43	1290.17	1349.51
550.447	575.767	602.253	629.956	658.934	689.245	720.95	754.114	788.803	825.088	863.042	902.742
1171.4	1225.28	1281.64	1340.6	1402.27	1466.77	1534.24	1604.82	1678.64	1755.86	1836.63	1921.11
462.776	484.064	506.331	529.622	553.985	579.468	606.123	634.005	663.169	693.675	725.584	758.961
758.612	793.508	830.009	868.19	908.126	949.9	993.595	1039.3	1087.11	1137.12	1189.42	1244.14
761.012	796.019	832.635	870.937	911	952.906	996.739	1042.59	1090.55	1140.71	1193.19	1248.07
418.557	437.81	457.949	479.015	501.05	524.098	548.207	573.424	599.802	627.393	656.253	686.44
930.339	973.135	1017.9	1064.72	1113.7	1164.93	1218.52	1274.57	1333.2	1394.53	1458.67	1525.77
401.213	419.669	438.974	459.166	480.288	502.381	525.491	549.664	574.948	601.396	629.06	657.997
529.429	553.783	579.257	605.903	633.774	662.928	693.422	725.32	758.685	793.584	830.089	868.273
554.584	580.095	606.779	634.691	663.887	694.426	726.369	759.782	794.732	831.29	869.529	909.527

144	145	146	147	148	149	150	151	152	153	154	155
843.226	882.015	922.587	965.026	1009.42	1055.85	1104.42	1155.22	1208.36	1263.95	1322.09	1382.91
1241.77	1298.9	1358.64	1421.14	1486.52	1554.89	1626.42	1701.24	1779.49	1861.35	1946.97	2036.53
1411.59	1476.52	1544.44	1615.49	1689.8	1767.53	1848.84	1933.89	2022.84	2115.9	2213.23	2315.03
944.268	987.705	1033.14	1080.66	1130.37	1182.37	1236.76	1293.65	1353.16	1415.4	1480.51	1548.62
2009.48	2101.92	2198.61	2299.74	2405.53	2516.18	2631.93	2753	2879.63	3012.1	3150.65	3295.58
793.873	830.391	868.589	908.544	950.338	994.053	1039.78	1087.61	1137.64	1189.97	1244.71	1301.97
1301.37	1361.23	1423.85	1489.34	1557.85	1629.51	1704.47	1782.88	1864.89	1950.67	2040.41	2134.26
1305.48	1365.54	1428.35	1494.06	1562.78	1634.67	1709.86	1788.52	1870.79	1956.85	2046.86	2141.02
718.016	751.045	785.593	821.731	859.53	899.069	940.426	983.685	1028.93	1076.27	1125.77	1177.56
1595.96	1669.37	1746.16	1826.49	1910.51	1998.39	2090.31	2186.47	2287.05	2392.25	2502.29	2617.4
688.264	719.925	753.041	787.681	823.914	861.814	901.458	942.925	986.3	1031.67	1079.13	1128.77
908.214	949.991	993.691	1039.4	1087.21	1137.22	1189.54	1244.26	1301.49	1361.36	1423.98	1489.49
951.366	995.128	1040.9	1088.79	1138.87	1191.26	1246.06	1303.37	1363.33	1426.04	1491.64	1560.26

156	157	158	159	160	161	162	163	164	165	166	167
1446.52	1513.06	1582.66	1655.46	1731.61	1811.27	1894.59	1981.74	2072.9	2168.25	2267.99	2372.32
2130.21	2228.2	2330.7	2437.91	2550.06	2667.36	2790.06	2918.4	3052.65	3193.07	3339.95	3493.59
2421.53	2532.92	2649.43	2771.3	2898.78	3032.13	3171.61	3317.5	3470.11	3629.73	3796.7	3971.35
1619.85	1694.37	1772.31	1853.83	1939.11	2028.31	2121.61	2219.21	2321.29	2428.07	2539.76	2656.59
3447.18	3605.75	3771.62	3945.11	4126.59	4316.41	4514.96	4722.65	4939.89	5167.13	5404.82	5653.44
1361.86	1424.5	1490.03	1558.57	1630.26	1705.26	1783.7	1865.75	1951.57	2041.35	2135.25	2233.47
2232.44	2335.13	2442.55	2554.91	2672.43	2795.36	2923.95	3058.45	3199.14	3346.3	3500.23	3661.24
2239.5	2342.52	2450.28	2562.99	2680.89	2804.21	2933.2	3068.13	3209.26	3356.89	3511.31	3672.83
1231.73	1288.39	1347.65	1409.64	1474.49	1542.31	1613.26	1687.47	1765.1	1846.29	1931.22	2020.05
2737.8	2863.74	2995.47	3133.26	3277.39	3428.15	3585.85	3750.8	3923.33	4103.81	4292.58	4490.04
1180.69	1235	1291.81	1351.23	1413.39	1478.41	1546.41	1617.55	1691.96	1769.79	1851.2	1936.35
1558	1629.67	1704.64	1783.05	1865.07	1950.86	2040.6	2134.47	2232.66	2335.36	2442.78	2555.15
1632.03	1707.1	1785.63	1867.77	1953.68	2043.55	2137.56	2235.88	2338.74	2446.32	2558.85	2676.56

168	169	170	171	172	173	174	175	176	177	178	179
2481.44	2595.59	2714.99	2839.88	2970.51	3107.16	3250.08	3399.59	3555.97	3719.54	3890.64	4069.61
3654.29	3822.39	3998.22	4182.14	4374.51	4575.74	4786.23	5006.39	5236.69	5477.57	5729.54	5993.1
4154.03	4345.11	4544.99	4754.06	4972.75	5201.49	5440.76	5691.03	5952.82	6226.65	6513.08	6812.68
2778.79	2906.62	3040.32	3180.17	3326.46	3479.48	3639.54	3806.95	3982.07	4165.25	4356.85	4557.27
5913.5	6185.52	6470.05	6767.67	7078.99	7404.62	7745.23	8101.51	8474.18	8864	9271.74	9698.24
2336.21	2443.67	2556.08	2673.66	2796.65	2925.3	3059.86	3200.61	3347.84	3501.84	3662.93	3831.42
3829.66	4005.82	4190.09	4382.84	4584.45	4795.33	5015.92	5246.65	5487.99	5740.44	6004.5	6280.71
3841.78	4018.5	4203.35	4396.7	4598.95	4810.5	5031.79	5263.25	5505.36	5758.61	6023.5	6300.58
2112.98	2210.17	2311.84	2418.19	2529.42	2645.78	2767.48	2894.79	3027.95	3167.23	3312.93	3465.32
4696.58	4912.63	5138.61	5374.98	5622.23	5880.85	6151.37	6434.34	6730.32	7039.91	7363.75	7702.48
2025.42	2118.59	2216.05	2317.99	2424.61	2536.15	2652.81	2774.84	2902.48	3035.99	3175.65	3321.73
2672.69	2795.63	2924.23	3058.75	3199.45	3346.62	3500.57	3661.59	3830.03	4006.21	4190.49	4383.26
2799.68	2928.46	3063.17	3204.08	3351.46	3505.63	3666.89	3835.57	4012	4196.56	4389.6	4591.52

180	181	182	183	184	185	186	187	188	189	190	191
4256.81	4452.63	4657.45	4871.69	5095.79	5330.2	5575.39	5831.85	6100.12	6380.72	6674.24	6981.25
6268.78	6557.15	6858.78	7174.28	7504.3	7849.49	8210.57	8588.26	8983.32	9396.55	9828.79	10280.9
7126.06	7453.86	7796.74	8155.39	8530.54	8922.94	9333.4	9762.73	10211.8	10681.6	11172.9	11686.9
4766.9	4986.18	5215.54	5455.46	5706.41	5968.9	6243.47	6530.67	6831.08	7145.31	7474	7817.8
10144.4	10611	11099.1	11609.7	12143.7	12702.3	13286.6	13897.8	14537.1	15205.8	15905.3	16636.9
4007.67	4192.02	4384.85	4586.56	4797.54	5018.23	5249.06	5490.52	5743.09	6007.27	6283.6	6572.65
6569.62	6871.82	7187.93	7518.57	7864.43	8226.19	8604.6	9000.41	9414.43	9847.49	10300.5	10774.3
6590.41	6893.57	7210.67	7542.36	7889.31	8252.22	8631.82	9028.89	9444.21	9878.65	10333.1	10808.4
3624.72	3791.46	3965.87	4148.3	4339.12	4538.72	4747.5	4965.89	5194.32	5433.26	5683.19	5944.61
8056.79	8427.41	8815.07	9220.56	9644.71	10088.4	10552.4	11037.8	11545.6	12076.7	12632.2	13213.3
3474.53	3634.36	3801.54	3976.41	4159.32	4350.65	4550.78	4760.12	4979.08	5208.12	5447.7	5698.29
4584.89	4795.79	5016.4	5247.15	5488.52	5740.99	6005.08	6281.31	6570.25	6872.48	7188.62	7519.3
4802.73	5023.65	5254.74	5496.46	5749.3	6013.77	6290.4	6579.76	6882.43	7199.02	7530.17	7876.56

192	193	194	195	196	197	198	199	200
7302.39	7638.3	7989.66	8357.19	8741.62	9143.73	9564.34	10004.3	10464.5
10753.8	11248.5	11765.9	12307.2	12873.3	13465.5	14084.9	14732.8	15410.5
12224.5	12786.8	13375	13990.2	14633.8	15306.9	16011.1	16747.6	17518
8177.42	8553.58	8947.05	9358.61	9789.11	10239.4	10710.4	11203.1	11718.4
17402.2	18202.7	19040.1	19915.9	20832	21790.3	22792.7	23841.1	24937.8
6874.99	7191.24	7522.04	7868.05	8229.98	8608.56	9004.55	9418.76	9852.02
11269.9	11788.3	12330.6	12897.8	13491.1	14111.7	14760.8	15439.8	16150.1
11305.6	11825.6	12369.6	12938.6	13533.8	14156.3	14807.5	15488.7	16201.2
6218.06	6504.1	6803.28	7116.24	7443.58	7785.99	8144.14	8518.77	8910.64
13821.1	14456.9	15121.9	15817.5	16545.1	17306.2	18102.2	18935	19806
5960.41	6234.59	6521.38	6821.36	7135.15	7463.36	7806.68	8165.79	8541.41
7865.18	8226.98	8605.42	9001.27	9415.33	9848.44	10301.5	10775.3	11271
8238.88	8617.87	9014.29	9428.95	9862.68	10316.4	10790.9	11287.3	11806.5

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