

Kentucky Power Company
KPSC Case No. 2023-00159
Joint Intervenors' Second Set of Data Request
Dated September 11, 2023
Page 1 of 2

DATA REQUEST

- JI 2_1** Please refer to the Company's response to Staff Request 2-6, including the statement that "Each program included in the [Distribution Reliability Rider] Work Plan and recovered through the DRR will have a specific work order to track all costs, which are recorded to various FERC accounts."
- a. Within the "TOR – Enhanced ROW Widening" (see Ex. EGP-4) DRR program, please list each FERC account that costs will be assigned to (e.g., Accounts 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, etc.) and approximate percentages.
 - b. Within the "Additional Tie Lines" DRR program, please list each FERC account that costs will be assigned to and approximate percentages.
 - c. Within the "DACR/Recloser Modernization" DRR program, please list each FERC account that costs will be assigned to and approximate percentages.
 - d. Within the "Additional New Distribution Substation Sources" DRR program, please list each FERC account that costs will be assigned to and approximate percentages.
 - e. Within the "Asset Renewal/Storm Hardening or Resiliency" DRR program, please list each FERC account that costs will be assigned to and approximate percentages.

RESPONSE

The FERC Account numbers expected to be assigned to DRR programs include:

- a. "TOR – Enhanced ROW Widening"-364, 365
- b. "Additional Tie Lines"-364, 365
- c. "DACR/Recloser Modernization"-36216
- d. "Additional New Distribution Substation Sources"-362
- e. "Asset Renewal/Storm Hardening or Resiliency"-364, 365

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The projects within each DRR program have not been scoped yet, so it is premature to estimate percentages that will be assigned to each FERC Account.

Witness: Everett G. Phillips

Witness: Heather M. Whitney

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DATA REQUEST

JI 2_2 Please refer to the Company's response to Staff Request 2-12, including KPCO_R_KPSC_2_12_Attachment2.

- a. For each customer that received HEART assistance in the 2022/2023 program year, please state whether the customer received HEART or THAW assistance in each of the five preceding program years.
- b. If the Company does not track, from year to year for each customer account, a history of billing that includes receipt of HEART funds, please explain why not.
- c. For each customer that received THAW assistance in the 2022/2023 program year, please state whether the customer received HEART or THAW assistance in each of the five preceding program years.
- d. If the Company does not track, from year to year for each customer account, a history of billing that includes receipt of THAW funds, please explain why not.

RESPONSE

- a. Please see KPCO_R_JI_2_2_Attachment1.
- b. Not applicable. See response to part a.
- c. Please see KPCO_R_JI_2_2_Attachment1.
- d. Not applicable. See response to part c.

Witness: Stevi N. Cobern

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DATA REQUEST

JI 2_3 Please refer to the Company's response to Joint Intervenors' Request 1.21 and the Company's response to Staff Request 2-12, including KPCO_R_KPSC_2_12_Attachment2.

a. Please provide the number of customers who received assistance from the TEE program annually from the years 2019 to 2023, and provide the dollar amount spent per customer for each program year.

b. Please provide the number of customers that received assistance from both the Targeted Energy Efficiency (TEE) Program and one of the Company's HEA Programs (HEART or THAW) assistance in the 2022/2023 program year.

c. If the Company does not track whether participants in the HEART or THAW program also receive assistance from the TEE Program, please explain why not.

d. Does the Company have a process for referrals of participants in the HEART or THAW programs to the TEE program?

i. If so, please describe said process.

ii. If not, please explain why not.

e. Please refer to the TEE page on Kentucky Power's website, at <https://www.kentuckypower.com/savings/home/targeted-energy-efficiency>. Is the Company aware that the link to "contact the local community action agency in your county of residence" is broken?

RESPONSE

a.

TEE Program Year	Customers Receiving Assistance	Total Spend	Average Spend Per Customer
2019	71	\$284,800	\$4,011
2020	48	\$199,960	\$4,166
2021	70	\$253,189	\$3,617
2022	78	\$255,312	\$3,273
2023 through July	42	\$129,279	\$3,078

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b. In the 2022/2023 program year, 12 customers who received weatherization assistance from the Company's TEE program also received assistance from its HEA Programs (HEART or THAW).

c. Not applicable. See response to subpart b.

d. Community Action Kentucky ("CAK"), through local community action agencies, administers and qualifies customers for the Company's HEA Programs (HEART and THAW) and the TEE program, which provides supplemental funding to Kentucky Housing Corporation's Weatherization Assistance program. The Company relies on CAK's expertise to refer customers to programs for which they may be eligible.

e. The referenced link has been updated to the appropriate CAPKY.org page.

Witness: Scott E. Bishop

Witness: Stevi N. Cobern

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DATA REQUEST

- JI 2_4** If customers qualify for both the HEA Programs and federal LIHEAP program:
- a. Are they able to receive assistance from both programs? Please explain.
 - b. Do they automatically receive assistance from both programs? Please explain.
 - c. If they qualify for both programs, but are not able to receive assistance from both programs, is one program the default program? Please identify which program is the default program and/or describe any policies that determine which program the customer will receive assistance from.
 - d. Is the Company aware of any process for referrals of participants in the LIHEAP programs to the TEE program?
 - i. If so, please describe said process.
 - ii. If not, please explain why not.

RESPONSE

- a. Yes, customers may qualify to receive assistance from HEART or THAW in addition to federal programs such as LIHEAP.
- b. No, customers do not automatically receive assistance from both programs. Customers qualify for each program, HEA or LIHEAP, independently and receipt of assistance from one program does not guarantee qualification for another program. THAW eligibility is not income based, therefore customers who do not meet LIHEAP income guidelines may qualify for THAW.
- c. Neither program is the default program. Customers can apply for one or both programs and may receive assistance from both or only one.
- d. The TEE program provides supplemental funding to Kentucky Housing Corporation's Weatherization Assistance program. Local community action agencies administer and process applications for LIHEAP programs and the Company's TEE program. The

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Company relies on CAK's expertise to refer customers to programs for which they may be eligible.

Witness: Stevi N. Cobern

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DATA REQUEST

JI 2_5 Please identify the number of customers participating in the Company's Average Monthly Payment plan (AMP) in each of the last three calendar years.

RESPONSE

The number of customers participating in the Company's AMP plan as of December 31 for the last three calendar years is as follows:

2020: 11,258

2021: 13,456

2022: 15,166

For 2023, 15,095 customers were participating in the AMP plan as of June 30, 2023. AMP is an optional budget program that can levelize the bill amounts throughout the year to help avoid seasonal spikes. Because it is an optional program, the number of participating customers on AMP fluctuates throughout the year due to customers enrolling or removing their account from the program.

Witness: Stevi N. Cobern

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DATA REQUEST

- JI 2_6** Please refer to the direct testimony of Michael M. Spaeth, page 12–13, concerning the proposed optional seasonal provision for residential customers.
- a. In Mr. Spaeth's view, would the proposed seasonal provision more consistently reduce monthly bill volatility for all participants as compared to participating in the Company's Average Monthly Payment plan? Please explain why or why not in full.
- b. Has the Company considered offering operational seasonal provisions for residential customers during summer months? Please explain in full.

RESPONSE

- a. The proposed seasonal provision would reduce bill volatility for participating customers as the season transitions from the shoulder months (November and April) into winter and summer, respectively. The discounted winter months rate lessens the bill shock a participating customer would receive had they been on the standard residential service rate. With the AMP plan, customers pay about the same amount for electricity each month, year round. That way, the costs of high usage in cold and hot months are spread over the entire year. At the 12-month anniversary, any remaining balance is applied to the AMP monthly payments for the next 12 months to further avoid a settlement balance.
- b. The Company's residential monthly energy usage does not currently support the need for a discounted summer rate. Nor have customers communicated a desire for such provisions to the Company.

Witness: Michael M. Spaeth (subparts a and b)

Witness: Stevi N. Cobern (subpart b)

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DATA REQUEST

JI 2_7 Please refer to the direct testimony of Everett G. Phillips, page 16, and response to Staff's Request No. 2-19. Please identify the specific data source(s) Mr. Phillips relied upon for the comparison of customers per distribution line mile.

RESPONSE

Refer to the Company's response to KPSC 3-16 and KPCO_R_KPSC_3_16_Attachment1 for the requested information.

Witness: Everett G. Phillips

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DATA REQUEST

JI 2_8 Please refer to the direct testimony of Michael M. Spaeth, Exhibit MMS-7, and to the Company's response to Joint Intervenors' request 1.18(a). Please identify the special contract that is summarized in the exhibit and provide a copy of the special contract.

RESPONSE

Please see Case Number 2020-00019 for the requested information.

Witness: Michael M. Spaeth

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DATA REQUEST

JI 2_9 Please refer to the direct testimony of Cynthia G. Wiseman, page 19, lines 1–23.

a. Has the Company quantified the “lower customer bill impacts” referenced in the testimony?

i. If yes, please provide that analysis, including any supporting workpapers.

ii. If not, please explain in detail why not.

b. Please explain why “the suspension of rider collection until securitization occurs . . . would be cash flow neutral compared to 2023.”

RESPONSE

a. See the Company’s supplemental response and attachment to AG-KIUC 1_18.

b. Assuming securitization occurs in 2024, the Company’s 2024 annual cash flows from a retail ratemaking perspective would be materially the same with or without deferral of the rider collection. Cash that would have been collected in the rider in 2024 will be received via the requested securitization proceeds in 2024 whether or not the Company collects part of the rider’s annual revenue requirement before securitization occurs.

Witness: Brian K. West

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DATA REQUEST

JI 2_10 Please refer to the direct testimony of Cynthia G. Wiseman, page 22, lines 6–8.

a. Has the Company quantified the extent to which “the measures . . . describe[d] above . . . offset and reduce its requested rate increase”?

i. If yes, please provide that analysis, including any supporting workpapers.

ii. If not, please explain in detail why not.

RESPONSE

The Company has quantified the benefit to customers for the following items based upon the Company's proposal. As described below regarding each quantification, certain quantifications are the estimated impact to the test year revenue requirement, whereas others are a net present value of benefits over time. The Company did not fully compute test year revenue requirements for all items it is not requesting in this case.

1. Securitization – see Messner Direct Testimony.
2. Suspension of Decommissioning Rider and Rockport Deferral Collection – see the Company’s September 8, 2023 Supplemental Response to AG-KIUC 1-18.
3. Postponing Depreciation Rate Updates – Estimated \$69 million annually (see Wiseman Direct Testimony at page 20).
4. Reduction to Storm Project Expense Level – Estimated \$8.3 million (see Wiseman Direct Testimony at page 20).
5. Reduction of Recommended ROE – see the Company’s response to KPSC 3-30.
6. Terminate PJM LSE OATT tracking through Tariff P.P.A. – see the Company’s September 8, 2023 Supplemental Response to AG-KIUC 1_18.

Witness: Franz D. Messner

Witness: Katharine I. Walsh

Witness: Heather M. Whitney

Witness: Brian K. West

Witness: Michael M. Spaeth

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DATA REQUEST

- JI 2_11** Please refer to the direct testimony of Timothy C. Kerns, page 13, lines 9–14.
- a. Please provide any supporting documentation in the Company's possession, custody, or control concerning the need for the Mitchell Unit 2 Air Heater Basket Replacement Project.
 - b. Please provide a detailed breakdown of the total costs of the Mitchell Unit 2 Air Heater Basket Replacement Project, irrespective of whether the Company proposes to recover those costs from Kentucky Power ratepayers (i.e., inclusive of any costs that AEP's West Virginia affiliate might seek to recover from ratepayers in a different jurisdiction).
 - c. Please identify the percentage of the Mitchell Unit 2 Air Heater Basket Replacement Project that is proposed to be borne by Kentucky ratepayers (as opposed to ratepayers in a different jurisdiction), and please explain in detail the Company's rationale for this allocation.

RESPONSE

- a. Please see KPCO_R_JI_2_11_Attachment1, KPCO_R_JI_2_11_ConfidentialAttachment2, and KPCO_R_JI_2_11_Attachment3 for the requested information.
- b. Please see KPCO_R_JI_2_11_Attachment4 for the requested information.
- c. Please see the Company's response to Joint Intervenors 2-11(b) for the requested information. Please see the Company's response to Joint Intervenors 2-12(b) for the Company's rationale for this allocation.

Witness: Timothy C. Kerns

Capital Program Approval Requisition One Page Summary

Company:	Kentucky Power Company Wheeling Power Company	Version: 1																																			
Project:	ML2AHBPRG - Mitchell Unit 2 Air Heater Basket Replacement -																																				
Location:	Moundsville, WV																																				
Description:	<p>The Mitchell Unit 2 steam generator is equipped with two regenerative air heaters. The purpose of the air heaters are to improve the thermal efficiency of the boiler by heating the incoming cooler combustion air with exiting hot flue gas. The heat transfer takes place using baskets which consist of heat transferring corrugated plates as they travel from the hot gas side to the cold air side of the air heater. Because of these service conditions, the baskets are subject to deterioration damage from sulfur dew point corrosion and soot blower impact damage due to difficult to remove ammonium bisulfate depositions. The existing baskets have been converted to a Selective Catalytic Reduction (SCR) tolerant design. These baskets are currently one year beyond their typical life cycle and due to the horizontal shaft design these baskets will degrade exponentially.</p> <p>Based upon the current severely deteriorated condition of these baskets, it is anticipated that a significant increase in Equivalent Forced Outage Rate (EFOR) is imminent. It is recommended as a least cost alternative to replace the air heater baskets with new baskets in 2022. The air heater baskets need to be purchased in July 2021 in order to arrive in time for installation during the Spring 2022 outage.</p>																																				
Authorization Amount:	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 25%;">Company</th> <th style="width: 25%;">Function</th> <th style="width: 15%;">Previously Approved Amount</th> <th style="width: 15%;">This Submission</th> <th style="width: 20%;">Total Approved Project Cost</th> </tr> </thead> <tbody> <tr> <td>KYPCO</td> <td>GEN</td> <td>\$0</td> <td>\$3,443,303</td> <td>\$3,443,303</td> </tr> <tr> <td>WPCO</td> <td>GEN</td> <td>\$0</td> <td>\$3,304,916</td> <td>\$3,304,916</td> </tr> <tr> <td colspan="2">Total</td> <td>\$0</td> <td>\$6,748,220</td> <td>\$6,748,220</td> </tr> </tbody> </table>		Company	Function	Previously Approved Amount	This Submission	Total Approved Project Cost	KYPCO	GEN	\$0	\$3,443,303	\$3,443,303	WPCO	GEN	\$0	\$3,304,916	\$3,304,916	Total		\$0	\$6,748,220	\$6,748,220															
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Cash Flow:	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 25%;"></th> <th style="width: 25%;"></th> <th style="width: 15%;"></th> <th style="width: 15%;"></th> <th style="width: 20%;"></th> </tr> </thead> <tbody> <tr> <td>Capital</td> <td>\$0</td> <td>\$1,815,019</td> <td>\$4,455,229</td> <td>\$0</td> </tr> <tr> <td>Removal</td> <td>\$0</td> <td>\$0</td> <td>\$477,971</td> <td>\$0</td> </tr> <tr> <td>Total To Be Authorized</td> <td>\$0</td> <td>\$1,815,019</td> <td>\$4,933,200</td> <td>\$0</td> </tr> <tr> <td>Less CIAC/Other Credits</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> </tr> <tr> <td>Total Project Cost</td> <td>\$0</td> <td>\$1,815,019</td> <td>\$4,933,200</td> <td>\$0</td> </tr> <tr> <td>Total Expense</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> </tr> </tbody> </table>							Capital	\$0	\$1,815,019	\$4,455,229	\$0	Removal	\$0	\$0	\$477,971	\$0	Total To Be Authorized	\$0	\$1,815,019	\$4,933,200	\$0	Less CIAC/Other Credits	\$0	\$0	\$0	\$0	Total Project Cost	\$0	\$1,815,019	\$4,933,200	\$0	Total Expense	\$0	\$0	\$0	\$0
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Total Project Cost	\$0	\$1,815,019	\$4,933,200	\$0																																	
Total Expense	\$0	\$0	\$0	\$0																																	
Project Dates:	Start Date : 03/01/2021 In Service Date : 06/01/2022 Completion Date: 08/01/2022																																				
Regulatory Recovery:	Kentucky Power Company -- \$3.4M (51%) \$3.4M (99%) base rate case filing, TYE 3/31/23, effective 1/1/24. \$0.03M (1%) FERC Annual Formula Rate update, TYE 12/31/22, effective 6/1/23. Wheeling Power Company -- \$3.3M (49%) WPCo WV base rate case filing, TYE TBD, effective TBD.																																				
Funding:	IRC Approved : Yes	In Budget : Yes																																			
Approved By : Daniel V Lee, Christian T Beam, D Brett Mattison	Approved On : 07/07/2021																																				

Capital Program Approval Requisition

Funding and Approval

Direct Cost Funding:		Prior Years	2021	2022	Future Years	Total
	In Forecast \$	\$0	\$0	\$0	\$0	\$0
	Offsets Required	\$0	\$1,491,784	\$3,990,731	\$0	\$5,482,515
	Total Direct Cost	\$0	\$1,491,784	\$3,990,731	\$0	\$5,482,515

Required Signatures:		Status	Name	Date
	Approved	Constance Gayle Casto	06/10/2021	
	Approved	Michael L Belter	06/18/2021	
	Approved	Timothy V Riordan	06/20/2021	
	Approved	Timothy C Kerns	06/20/2021	
	Approved	Michael J Zwick	06/24/2021	
	Approved	Gary O Spitznogle	06/24/2021	
	Approved	Robert D Gladman	06/24/2021	
	Approved	Brian K West	06/24/2021	
	Approved	John J Scalzo	07/01/2021	
	Approved	Daniel V Lee	07/07/2021	
	Approved	Christian T Beam	07/07/2021	
	Approved	D Brett Mattison	07/07/2021	
	Approved	Michael H Huggett	07/07/2021	
Approved	Douglas E Adams	07/07/2021		

Project Contacts:		Type	Name
	Detail Provider	PIANTA,JAMES R	
	Project Manager	PIANTA,JAMES R	

Capital Program Approval Requisition

Component CI's

Component ID	Company	Description of Work	Previously Approved (\$)		This Submission (\$)		Total Authorized (\$)		
			Capital	Removal	Capital	Removal	Capital	Removal	Total
ML220SC01	KYPCO	AIR HEATER BASKET REPLACEMENT	0	0	3,204,317	238,986	3,204,317	238,986	3,443,303
KYPCO Total :			0	0	3,204,317	238,986	3,204,317	238,986	3,443,303
ML220SCWP	WPCO	ML U2 AHB Replacement WP	0	0	3,065,931	238,985	3,065,931	238,985	3,304,916
WPCO Total :			0	0	3,065,931	238,985	3,065,931	238,985	3,304,916
Grand Total :			0	0	6,270,248	477,971	6,270,248	477,971	6,748,220

Capital Program Approval Requisition

Additional Information

IR Justification:	The Mitchell Unit 2 steam generator is equipped with two regenerative air heaters. The purpose of the air heaters are to improve the thermal efficiency of the boiler by heating the incoming cooler combustion air with exiting hot flue gas. The heat transfer takes place using baskets which consist of heat transferring corrugated plates as they travel from the hot gas side to the cold air side of the air heater. Because of these service conditions, the baskets are subject to deterioration damage from sulfur dew point corrosion and soot blower impact damage due to difficult to remove ammonium bisulfate depositions. The existing baskets have been converted to a SCR tolerant design. Based upon the current severely deteriorated condition of these baskets, it is anticipated that a significant increase in EFOR is eminent. It is recommended as a least cost alternative to replace the air heater baskets with new baskets in 2022.
Alternatives Considered:	An alternative is to do nothing and continue using the existing baskets. This would not be a suitable option as the existing baskets have been in service for nine years and are severely deteriorated. The air heater baskets will continue to deteriorate and cause an air heater failure predicted at the end of 2022. A failure would result in a three week forced outage to make temporary repair and will cost approximately \$500,000 in O&M. There will be a 300MW load curtailment until the permanent repairs can be made in the fall of 2023 and this would require a ten week outage.
Conclusion:	Based upon the current deteriorated condition of the baskets, it is anticipated that a significant increase in EFOR is imminent. Based on the alternatives, it is recommended as a least cost alternative to replace the air heater baskets with new baskets in 2022.

Mitchell Unit 2 Air Heater Basket Replacement

Unit	Mitchell 2	Funding Numbers	ML2AHBPRG	Version	1
Category Code	Mtc of Critical Infrastructure	Operating Company (s)	Kentucky Power Company Wheeling Power Company	Project Mgr.	PIANTA,JAMES R
Project Description	ML U2 Air Heater Basket Replacement				
Project Plan	Scope & Objectives	The Mitchell Unit 2 steam generator is equipped with two regenerative air heaters. The purpose of the air heaters are to improve the thermal efficiency of the boiler by heating the incoming cooler combustion air with exiting hot flue gas. The heat transfer takes place using baskets which consist of heat transferring corrugated plates as they travel from the hot gas side to the cold air side of the air heater. Because of these service conditions, the baskets are subject to deterioration damage from sulfur dew point corrosion and soot blower impact damage due to difficult to remove ammonium bisulfate depositions. The existing baskets have been converted to a Selective Catalytic Reduction (SCR) tolerant design. These baskets are currently one year beyond their typical life cycle and due to the horizontal shaft design these baskets will degrade exponentially. Based upon the current severely deteriorated condition of these baskets, it is anticipated that a significant increase in Equivalent Forced Outage Rate (EFOR) is imminent. It is recommended as a least cost alternative to replace the air heater baskets with new baskets in 2022. The air heater baskets need to be purchased in July 2021 in order to arrive in time for installation during the Spring 2022 outage.			
	Project Phase(s) Covered In This Version		Total Estimate Cost of all Phases		
Schedule					In-Service Date: 2022-06-01
Project Justification	The Mitchell Unit 2 steam generator is equipped with two regenerative air heaters. The purpose of the air heaters are to improve the thermal efficiency of the boiler by heating the incoming cooler combustion air with exiting hot flue gas. The heat transfer takes place using baskets which consist of heat transferring corrugated plates as they travel from the hot gas side to the cold air side of the air heater. Because of these service conditions, the baskets are subject to deterioration damage from sulfur dew point corrosion and soot blower impact damage due to difficult to remove ammonium bisulfate depositions. The existing baskets have been converted to a SCR tolerant design. Based upon the current severely deteriorated condition of these baskets, it is anticipated that a significant increase in EFOR is eminent. It is recommended as a least cost alternative to replace the air heater baskets with new baskets in 2022.				
Alternatives Considered	An alternative is to do nothing and continue using the existing baskets. This would not be a suitable option as the existing baskets have been in service for nine years and are severely deteriorated. The air heater baskets will continue to deteriorate and cause an air heater failure predicted at the end of 2022. A failure would result in a three week forced outage to make temporary repair and will cost approximately \$500,000 in O&M. There will be a 300MW load curtailment until the permanent repairs can be made in the fall of 2023 and this would require a ten week outage.				

Financial Analysis Summary	
Economic Analysis Assumptions	

	Year	Prior Years	2023	2024	2025+	Total (\$)
Cash Flow (Requested) Direct Costs (AEP Portion = 100 %)	Amount Budgeted	\$0	\$0	\$0	\$0	\$0
	Internal Labor/RSO	\$0	\$0	\$0	\$0	\$0
	Material	\$1,657,538	\$0	\$0	\$0	\$1,657,538
	FODA	\$199,264	\$0	\$0	\$0	\$199,264
	Outside Services	\$2,846,614	\$0	\$0	\$0	\$2,846,614
	Other	\$0	\$0	\$0	\$0	\$0
	Contingency	\$313,554	\$0	\$0	\$0	\$313,554
	Removal (No 506)	\$465,545	\$0	\$0	\$0	\$465,545
	Total Direct	\$5,482,515	\$0	\$0	\$0	\$5,482,515
	Delta: Budget vs Request	(\$5,482,515)	\$0	\$0	\$0	(\$5,482,515)
LOADINGS (AEP Portion = 100%)	Overheads	\$1,010,255	\$0	\$0	\$1,010,255	\$1,010,255
	Fringes	\$102,095	\$0	\$0	\$0	\$102,095
	AFUDC	\$153,354	\$0	\$0	\$0	\$153,354
	Amount to be Authorized	\$6,748,220	\$0	\$0	\$0	\$6,748,220
Loaded Costs (AEP Portion = 100%)	Associated O&M (incl 506 Removal)	\$0	\$0	\$0	\$0	\$0

ATTACHMENT 3: Risk-Balanced Technical Options (RBTO) Matrix - ML2AHBPRG

Project Lead/Organization: **James R Pianta**
 RBTO Process Participants/Roles: **Jim Pianta Detail Provider**
Ryan Huff Steam Process Owner

CI Project Description: **ML U2 AH Basket Replacement**
 Overall Problem Statement: The air heater baskets are at end of life.
 Design Life (5 years vs. 10 years vs. 20 years vs. 30 years, other): **Other 8 year**

***Required for CI project authorization: Approver/Endorsement (see RBTO Guideline, Item 4.4.4 for Mgmt Approval & RBTO Guideline, Item 4.4.5 for Plant Sponsor endorsement):**

Project Lead's Manager approval: Joseph E Bittinger Jr. 3/29/2021 (include typed initials & date approved)
 Project Lead's Director approval for CI's greater than or equal to \$1MM: Matthew T Usher 3/29/2021 (include typed initials & date approved)
 Plant Sponsor endorsement (Plant Manager or designated delegate): Ryan Huff 3/30/2021 (include typed initials & date endorsed)

Notes: The Mitchell Unit 2 air heater baskets were replaced in 2012. These baskets have suffered corrosion / fatigue / erosion since the 2012 replacement due to sootblowing and typical service. These baskets have deteriorated to a point requiring replacement in 2022. These baskets are currently 1 year beyond their typical life cycle and due to the horizontal shaft design of these baskets will degrade exponentially. Based upon current conditions a % EFOR due to complete basket failure is predicted for 2023. Due to the current severe nature of the damage an 10 week forced outage in 2023 is anticipated if this project is not implemented in 2022.

Replace the ML2 Air Heater Baskets and Seals during the 2022 Outage versus doing nothing and accepting the associated forced outage, capital, O&M, and negative capacity impacts. The do nothing case assumes the air heater baskets will continue to fail and cause a full air heater catastrophic failure at the end of 2022. This will require a 10 week unscheduled outage and will need \$6.9M to replace the rotors and air heater baskets.

Technical Options	Risks, Key Assumptions & Benefits	Capital Cost	O&M Cost (define Removal if known)	Recommendation & Rationale
Required: Include more than 1 technical option in addition to a 'Do-Nothing' option or a schedule deferral.				IF more than 1 technical option is desired to be processed through more advanced cost estimating and business case development then define on this matrix. Cost estimate class will be assumed to be AACEI Class V (Concept Screening) for all technical options unless defined otherwise in this column.
3) Complete air heater basket replacement in 2022	Risk: None Benefit: Benefit - complete replacement of air heater baskets would restore the heat transfer surface area and alleviate future projected curtailments and forced outages. Design: Maintain current ABS tolerant design to continue clean-ability and performance.	\$6,748,219		Recommended Air heater basket materials require routine replacement based upon a predicted finite life cycle. Lowest cost of acceptable options.
1) Do Nothing	Risk: Future escalating curtailments and forced outage events. The existing baskets are severely deteriorated and a catastrophic basket failure is anticipated prior to the 2024 outage. If a catastrophic failure were to occur, baskets have an 18 week lead time. A minimum 10 week outage is required to replace the baskets. Loose basket fill can bind up the air heater in service causing a forced outage to repair. Benefit: Deferred capital expenditure. Design:	Catastrophic failure basket replacement conducted in 2023.	Forced outage costs to remove basket debris and restore PA fans to service.	Possible but not Recommended Not Recommended Outside stakeholders risk tolerance due to excessive forced outage duration.
2) Deferral to next outage of sufficient length.	Risk: Future escalating curtailments and forced outage events. The existing baskets are severely deteriorated and a catastrophic basket failure is anticipated prior to the 2024 outage. If a catastrophic failure were to occur, baskets have an 18 week lead time. A minimum 10 week outage is required to replace the baskets. Loose basket fill can bind up the air heater in service causing a forced outage to repair. Benefit: Deferred capital expenditure. Design:	Catastrophic failure basket replacement conducted in 2023.	Forced outage costs to remove basket debris and restore PA fans to service.	Possible but not Recommended Not Recommended. Continued degradation of the air heater baskets will become more costly and wash cleanings less effective to alleviate curtailments and forced outages.
4) Replace cold end baskets in 2022 and not hot end.	Risk: Hot end corrosion and degradation continues. Benefit: Benefit - replacement of cold end air heater baskets would restore the heat transfer surface area on cold end curtailments and alleviate future projected curtailments and forced outages. Design: Maintain current ABS tolerant design to continue clean-ability and performance.	\$5,860,000		Possible but not Recommended Cold end basket only replacement requires the hot end needs to be removed to access the cold end retaining welds and shims. Same cost as complete air heater basket replacement.

Include more than 1 page as needed. Prepare RBTO matrix line items as complete technical options to be directly comparable (i.e., apples-to-apples), see Attachment 2.

Required: For this RBTO matrix to be 'completed', it must include more than one technically feasible option,

is responsible management approved and is Plant Sponsor endorsed (see RBTO Guideline, Item 1.4).

***Note: RBTO matrix approval for non-CI project authorization activities should be developed, reviewed and endorsed in accordance with local management requirements.**

QMSU-G-710.02

Attachment 3

Rev. 3

Kentucky Power Company
KPSC Case No. 2023-00159
Joint Intervenors' Second Set of Data Request
Dated September 11, 2023

DATA REQUEST

- JI 2_12** Please refer to the direct testimony of Timothy C. Kerns, page 12, Figure TCK-3. For each generation capital addition listed for the Mitchell plant, please identify:
- a. Whether the dollar figure listed is the total amount that was spent at the Mitchell plant for that purpose, only the portion of the total expenditure that the Company seeks to recover from Kentucky ratepayers, or something else;
 - b. What percentage of the total expenditure the Company seeks to recover from Kentucky ratepayers, as opposed to ratepayers in a different jurisdiction, and the Company's rationale for this percentage.

RESPONSE

- a. The dollar figure listed represents Kentucky Power's share only.
- b. Capital expenditures incurred prior to September 2022, excluding AFUDC, were allocated 50:50 between Kentucky Power and Wheeling Power. Please see KPCO_R_JI_2_12_Attachment1 for the allocations applied to capital expenditures incurred on/after September 2022, excluding AFUDC.

Please see KPCO_R_JI_2_12_Attachment2 for the Company's rationale, which is the Written Consent Action of the Mitchell Operating Company, dated September 1, 2022. Effluent Limitation Guidelines ("ELG") and Coal Combustion Residuals ("CCR") related items can be found in sub-bullets c, d, and e, at the top of page 4, while capital expenditures such as the air heater basket can be found in sub-bullets b and c in the middle of page 4.

Witness: Timothy C. Kerns

American Electric Power Allocation of Non-ELG Mitchell Capital Expenditures						Annual Avg.	
Month	Wheeling	Kentucky	Remaining Dep. Life	Periods prior to Dec. 2028	Portion of Dep Life before Dec. 2028	Wheeling	Kentucky
Sep-22	82.73%	17.27%	220	76	34.55%	82.95%	17.05%
Oct-22	82.88%	17.12%	219	75	34.25%		
Nov-22	83.03%	16.97%	218	74	33.94%		
Dec-22	83.18%	16.82%	217	73	33.64%		
Jan-23	83.33%	16.67%	216	72	33.33%	84.21%	15.79%
Feb-23	83.49%	16.51%	215	71	33.02%		
Mar-23	83.64%	16.36%	214	70	32.71%		
Apr-23	83.80%	16.20%	213	69	32.39%		
May-23	83.96%	16.04%	212	68	32.08%		
Jun-23	84.12%	15.88%	211	67	31.75%		
Jul-23	84.29%	15.71%	210	66	31.43%		
Aug-23	84.45%	15.55%	209	65	31.10%		
Sep-23	84.62%	15.38%	208	64	30.77%		
Oct-23	84.78%	15.22%	207	63	30.43%		
Nov-23	84.95%	15.05%	206	62	30.10%		
Dec-23	85.12%	14.88%	205	61	29.76%		
Jan-24	85.29%	14.71%	204	60	29.41%	86.28%	13.72%
Feb-24	85.47%	14.53%	203	59	29.06%		
Mar-24	85.64%	14.36%	202	58	28.71%		
Apr-24	85.82%	14.18%	201	57	28.36%		
May-24	86.00%	14.00%	200	56	28.00%		
Jun-24	86.18%	13.82%	199	55	27.64%		
Jul-24	86.36%	13.64%	198	54	27.27%		
Aug-24	86.55%	13.45%	197	53	26.90%		
Sep-24	86.73%	13.27%	196	52	26.53%		
Oct-24	86.92%	13.08%	195	51	26.15%		
Nov-24	87.11%	12.89%	194	50	25.77%		
Dec-24	87.31%	12.69%	193	49	25.39%		

						Annual Avg.	
Month	Wheeling	Kentucky	Remaining Dep. Life	Periods prior to Dec. 2028	Portion of Dep Life before Dec. 2028	Wheeling	Kentucky
Jan-25	87.50%	12.50%	192	48	25.00%	88.62%	11.38%
Feb-25	87.70%	12.30%	191	47	24.61%		
Mar-25	87.89%	12.11%	190	46	24.21%		
Apr-25	88.10%	11.90%	189	45	23.81%		
May-25	88.30%	11.70%	188	44	23.40%		
Jun-25	88.50%	11.50%	187	43	22.99%		
Jul-25	88.71%	11.29%	186	42	22.58%		
Aug-25	88.92%	11.08%	185	41	22.16%		
Sep-25	89.13%	10.87%	184	40	21.74%		
Oct-25	89.34%	10.66%	183	39	21.31%		
Nov-25	89.56%	10.44%	182	38	20.88%		
Dec-25	89.78%	10.22%	181	37	20.44%		
Jan-26	90.00%	10.00%	180	36	20.00%	91.28%	8.72%
Feb-26	90.22%	9.78%	179	35	19.55%		
Mar-26	90.45%	9.55%	178	34	19.10%		
Apr-26	90.68%	9.32%	177	33	18.64%		
May-26	90.91%	9.09%	176	32	18.18%		
Jun-26	91.14%	8.86%	175	31	17.71%		
Jul-26	91.38%	8.62%	174	30	17.24%		
Aug-26	91.62%	8.38%	173	29	16.76%		
Sep-26	91.86%	8.14%	172	28	16.28%		
Oct-26	92.11%	7.89%	171	27	15.79%		
Nov-26	92.35%	7.65%	170	26	15.29%		
Dec-26	92.60%	7.40%	169	25	14.79%		
Jan-27	92.86%	7.14%	168	24	14.29%	94.33%	5.67%
Feb-27	93.11%	6.89%	167	23	13.77%		
Mar-27	93.37%	6.63%	166	22	13.25%		
Apr-27	93.64%	6.36%	165	21	12.73%		
May-27	93.90%	6.10%	164	20	12.20%		
Jun-27	94.17%	5.83%	163	19	11.66%		
Jul-27	94.44%	5.56%	162	18	11.11%		
Aug-27	94.72%	5.28%	161	17	10.56%		
Sep-27	95.00%	5.00%	160	16	10.00%		
Oct-27	95.28%	4.72%	159	15	9.43%		
Nov-27	95.57%	4.43%	158	14	8.86%		
Dec-27	95.86%	4.14%	157	13	8.28%		

						Annual Avg.	
Month	Wheeling	Kentucky	Remaining Dep. Life	Periods prior to Dec. 2028	Portion of Dep Life before Dec. 2028	Wheeling	Kentucky
Jan-28	96.15%	3.85%	156	12	7.69%	97.87%	2.13%
Feb-28	96.45%	3.55%	155	11	7.10%		
Mar-28	96.75%	3.25%	154	10	6.49%		
Apr-28	97.06%	2.94%	153	9	5.88%		
May-28	97.37%	2.63%	152	8	5.26%		
Jun-28	97.68%	2.32%	151	7	4.64%		
Jul-28	98.00%	2.00%	150	6	4.00%		
Aug-28	98.32%	1.68%	149	5	3.36%		
Sep-28	98.65%	1.35%	148	4	2.70%		
Oct-28	98.98%	1.02%	147	3	2.04%		
Nov-28	99.32%	0.68%	146	2	1.37%		
Dec-28	99.66%	0.34%	145	1	0.69%		

Execution Copy

**WRITTEN CONSENT ACTION
OF THE MITCHELL OPERATING COMMITTEE**

September 1, 2022

The undersigned, being all of the Owners' Operating Representatives of the Operating Committee (the "Committee") of the Mitchell Plant Operating Agreement (the "Agreement"), do hereby consent to the adoption of the following resolutions, which resolutions shall be deemed to be adopted as of the date hereof ("Effective Date") and to have the same force and effect as if such resolutions had been adopted at a meeting duly called therefor:

1. Waiver of Notice.

RESOLVED, that any and all notice to take any action in adopting the following resolutions be, and it hereby is, waived by the undersigned.

2. Approval of Resolutions To Implement the Agreement

WHEREAS, Wheeling Power Company ("Wheeling Power") and Kentucky Power Company ("Kentucky Power") recognize that the Public Service Commission of West Virginia ("WVPSC") and the Kentucky Public Service Commission ("KPSC") approved different investments in response to federal environmental rules at the Mitchell Plant and different approaches to operating and owning the Mitchell Plant after December 31, 2028;

WHEREAS, the WVPSC in its orders authorized Wheeling Power to make any improvements or upgrades to the Mitchell Plant to enable compliance with the Effluent Limitations Guidelines ("ELG Rule"), and agreed exclusively to fund all of the capital expenditures associated with implementation of the ELG Rule ("ELG Upgrades"), and to make other necessary improvements or upgrades to the Mitchell Plant, to preserve the option to operate the plant past 2028;

WHEREAS, the KPSC in its orders authorized Kentucky Power to make only the improvements and upgrades to the Mitchell Plant to enable compliance with the Coal Combustion Residuals Rule ("CCR Rule"), and agreed to fund only its ownership share of the capital expenditures associated with the CCR Rule ("CCR Upgrades"), but not the ELG Rule, and acknowledged that because the ELG Upgrades are needed to operate the Mitchell Plant after 2028, approving the CCR and not the ELG Upgrades results in Kentucky Power being permitted only to operate the Mitchell Plant until the end of 2028;

WHEREAS, on November 19, 2021, each Owner filed with its Commission a proposed Mitchell Plant Operations and Maintenance Agreement and a proposed Mitchell Plant Ownership Agreement ("Proposed Mitchell Agreements") to replace the Agreement to facilitate compliance with the KPSC's and WVPSC's respective orders regarding compliance with the CCR and ELG Rules at the Mitchell Plant;

WHEREAS, the Committee believed that replacement of the Agreement with the New Mitchell Agreements at the soonest practical date was advisable and in the best interests of

Kentucky Power Company, Wheeling Power Company, and their respective customers;

WHEREAS, the KPSC and WVPSC issued orders adopting versions of the Mitchell Agreements on May 3, 2022 and July 1, 2022, respectively, that differ in material respects, such that the Owners are unable to enter into new agreements at the current time;

WHEREAS, the Agreement remains in full force and effect in accordance with its terms pending future negotiation of longer term arrangements by the Owners that replace the Agreement, subject to state and other applicable regulatory approvals;

WHEREAS, in light of the foregoing developments, the Operating Committee believes it is now in the best interests of the Mitchell Plant and their respective customers to continue operating under the Agreement in the short term to accomplish the operational objectives necessitated by the KPSC and WVPSC in their orders and prevent any delays in constructing the ELG Upgrades, which could have a negative effect on future plant outages and unit availability;

WHEREAS, the Committee must establish certain operating principles pursuant to its authority under the Agreement to appoint Wheeling Power as the operator of the Mitchell Plant, to enable the ELG Upgrades to be performed by Wheeling Power, and to adopt the procedures necessary to properly allocate costs between the two Owners such that Wheeling Power will pay for all of the costs of the ELG Upgrades, in accordance with the authority of the Committee under the Agreement;

WHEREAS, the Committee must also appropriately allocate costs between the two Owners such that Wheeling Power will pay for the cost of capital investments to the extent they have a depreciable life after December 31, 2028;

WHEREAS, the Committee is vested with certain enumerated rights and duties under the Agreement, as well as other duties as agreed by the Owners (Section 7.2(j));

WHEREAS, the rights and responsibilities of the Committee include, but are not limited to, (1) review and approval of an annual budget and operating plan (Section 7.2(a)); (2) decisions on capital expenditures (Section 7.2(d)); establishment and modification of billing procedures (Section 7.2(f)); (3) establishment of, termination of, and approval of any change or amendment to the operating arrangements between Kentucky Power and Agent pertaining to the Mitchell Plant (Section 7.2(h)); and (4) review and approval of plans and procedures designed to ensure compliance with any environmental law, regulation ordinance or permit (Section 7.2(i));

WHEREAS, pursuant to Section 7.9 of the Agreement, capital repairs and improvements to the Mitchell Plant will be determined by the Committee pursuant to the annual budgeting process which shall, pursuant to Section 7.10 of the Agreement, remain in effect throughout the applicable operating year subject to such changes, revisions, amendments and updating as the Committee may determine; and

WHEREAS, further pursuant to Section 7.9, the expenditures that the Committee determines have been or will be incurred exclusively for one Owner shall be assigned exclusively

to that owner, and, pursuant to Section 7.2(d), decisions on capital expenditures are among the responsibilities of the Committee.

NOW, THEREFORE, BE IT RESOLVED, that Kentucky Power's rights and obligations to operate and maintain the Mitchell Plant are delegated to Wheeling Power, and Wheeling Power accepts and consents to such delegation, effective as of the Effective Date, including, but not limited to, Kentucky Power's rights and obligations under Sections 1.1 (Appointment of Operator), 1.2 (Maintenance of Books and Records), 1.4 (Monthly Statements), 1.5 (Daily Operations), 3.1 (Capital Work), 5.1 (Coal Procurement), 6.3 (Accounting - Operating Expenses), 6.4 (Accounting – Maintenance Expenses), and 7.10 (Budgeting) of the Agreement, including the following which shall occur on or after the Effective Date:

- a. Kentucky Power's employees who work at the Mitchell Plant shall become employees of Wheeling Power;
- b. All open and active contracts on the Effective Date for the purchase of fuel, transportation, goods and services for the operation, maintenance and improvement of the Mitchell Plant and all collective bargaining agreements for labor at Mitchell Plant shall be assigned by Kentucky Power to Wheeling Power and assumed by Wheeling Power;
- c. All leased property used in support of the Mitchell Plant, including but not limited to vehicles and computer equipment, shall be transferred on the books of the lessor from the leased assets account of Kentucky Power to the leased assets account of Wheeling Power; and
- d. Ownership or other beneficial interest of the tugboat used at Mitchell Plant shall be transferred to Wheeling Power.

RESOLVED, that Wheeling Power will have the power and obligation as the operator of the Mitchell Plant to enter into and hold permits in its name on behalf of both Owners or on its own behalf, as the circumstances require, including the ELG permits, and all existing permits not held by Wheeling Power will be transferred to it in an orderly manner.

RESOLVED, that pursuant to Sections 7.2(d) and 7.9 of the Agreement, the Owners jointly recognize Wheeling Power's right to carry out and pay for the ELG Upgrades under the Agreement and approve the following procedures to facilitate that work consistent with the orders of the WVPSC and KPSC, and to protect Kentucky ratepayers from the associated costs and risks:

- a. The permits related to the ELG Upgrades at the Mitchell Plant will be transferred to Wheeling Power to the extent not held by Wheeling Power, and all prior action taken by the Owners in furtherance of the foregoing is ratified and approved;
- b. All construction and other contracts related to the ELG Upgrades will be in the name of Wheeling Power such that Wheeling Power (and not Kentucky Power) is contractually responsible for those contracts;

- c. The appropriate work orders and supporting accounting will be implemented to assign to Wheeling Power all costs associated with the ELG Upgrades;
- d. The appropriate work orders and supporting accounting will be implemented to assign to Wheeling Power and Kentucky Power equally all costs associated with the CCR Upgrades;
- e. The expenditures associated with the CCR Upgrades, in which the Owners share equally, and the ELG Upgrades, which will be the exclusive responsibility of Wheeling Power, will be classified in accordance with the recommendations of the independent engineer's report identifying the ELG Upgrades and CCR Upgrades and their associated costs, as previously adopted by this Committee.

RESOLVED, that to further implement and clarify Sections 3.2 and 7.9 of the Agreement, the Owners approve the following procedures related to capital items which have a depreciable life extending beyond, or with an in-service date not occurring until after, December 31, 2028:

- a. Wheeling Power will exclusively pay for any capital item whose in-service date is reasonably expected to be after December 31, 2028;
- b. Wheeling Power's Operating Representative may unilaterally authorize any capital expenditure that will be assigned exclusively to Wheeling Power, including the ELG Upgrades;
- c. if a capital expenditure has a depreciable life that extends beyond December 31, 2028, Kentucky Power's responsibility for the cost of that item will be limited to its 50% ownership share of the cost of the asset ratably allocated to the portion of such depreciable life occurring prior to December 31, 2028, and Wheeling Power will be responsible for the remainder;
- d. any other capital expenditures shall be allocated 50% to (and paid for by) each Owner, subject to the written approval of the Operating Committee;
- e. to the extent either Owner funds any capital item in excess of 50%, that capital item will be owned by the Owners in proportion to their investment in that asset for regulatory, tax and other purposes; and
- f. an Owner's Operating Representative may unilaterally authorize any capital expenditure for which such Owner shall be allocated greater than 75% of the capital costs, up to an aggregate amount of such capital costs that does not exceed \$3 million per year allocated to the other Owner.

IN WITNESS WHEREOF, the undersigned have signed this written consent action effective as of the Effective Date.

OPERATING REPRESENTATIVES:

DocuSigned by:
Deryle Brett Mattison
E6E00DC0D8C3443
D. Brett Mattison

DocuSigned by:
Christian T. Beam
E27434EPE1A34E8
Christian T. Beam

Kentucky Power Company
KPSC Case No. 2023-00159
Joint Intervenors' Second Set of Data Request
Dated September 11, 2023

DATA REQUEST

JI 2_13 Please refer to the direct testimony of Timothy C. Kerns, page 16, lines 12–20, and the Company's response to Staff Request 2-33.

a. Please provide copies of the Company's "work orders to ensure costs related to the scope of work for each of the CCR and ELG projects are appropriately charged."

RESPONSE

a. Please see KPCO_R_JI_2_13_Attachment1 for the requested information.

Witness: Timothy C. Kerns

Maximo Work Order Number	WO Description	WO Status	Maximo WO and Task Number	WO Task Description	GL Project	GL Account	WO Benefiting Loc	Comment	WPCo LTD Spend through March 2023, excluding AFUDC	KYPCo LTD Spend through March 2023, excluding AFUDC	WPCo (% allocated to each WO)	KPCo (% allocated to each WO)
E10075764	Bottom Ash Pond CCR Compliance	Closed	E10075764001	Bottom Ash Pond CCR Compliance	000020310	1070001	Mitchell Plant Unit 0	Replaced through change in operational control to Wheeling	-	-	N/A	N/A
E10075764	Bottom Ash Pond CCR Compliance	Closed	E10075764002	ML Dry Ash Hndling Conv Rmvl	000020310	1080005	Mitchell Plant Unit 0	Replaced through change in operational control to Wheeling	-	-	N/A	N/A
E10164546	ML CCR/ELG Compliance	Closed	E10164546001	ML New Wastewater Ponds Inst	000020310	1070001	Mitchell Plant Unit 0	Replaced through change in operational control to Wheeling	-	-	N/A	N/A
E10164546	ML CCR/ELG Compliance	Closed	E10164546002	ML New Wastewater Ponds Rmvl	000020310	1080005	Mitchell Plant Unit 0	Replaced through change in operational control to Wheeling	-	-	N/A	N/A
E10164592	ML CCR/ELG Compliance	Closed	E10164592001	ML Bottom Ash Removal Fuel	000020310	5010000	Mitchell Plant Unit 0	Replaced through change in operational control to Wheeling	(2,493)	645	135%	-35%
E10164593	ML CCR/ELG Compliance	Closed	E10164593001	ML FGD Wstewater Trtmnt Inst	000020310	1070001	Mitchell Plant Unit 0	Replaced through change in operational control to Wheeling	-	-	N/A	N/A
E10539452	ML ELG Cmplianc Bottom Ash Pond	Approved	E10539452001	ML ELG Bottom Ash Pond (I)	MLWPC0ELG	1070001	Mitchell Plant-WPCo Gen only	Current WO	32,590,408	-	100%	0%
E10539452	ML ELG Cmplianc Bottom Ash Pond	Approved	E10539452002	ML ELG Dry Ash Hndling Conv(R)	MLWPC0ELG	1080005	Mitchell Plant-WPCo Gen only	Current WO	365,448	-	100%	0%
E10539454	ML0 CCR Compliance	Approved	E10539454001	ML0 CCR New Wastewater Ponds(I)	MLWPC0ELG	1070001	Mitchell Plant Unit 0	Replaced by E10567546001 to correct owner allocation	(249,526)	(49,344)	83%	17%
E10539454	ML0 CCR Compliance	Approved	E10539454002	ML0 CCR Wastewater Ponds(R)	MLWPC0ELG	1080005	Mitchell Plant Unit 0	Replaced by E10567546002 to correct owner allocation	13,112	13,112	50%	50%
E10539455	ML0 CCR Compliance	Approved	E10539455001	ML0 CCR Bottom Ash Rmvl Fuel	MLWPC0ELG	5010000	Mitchell Plant Unit 0	Current WO	2,103,417	2,100,279	50%	50%
E10539457	ML0 ELG Compliance	Approved	E10539457001	ML0 ELG FGD Wstewtr Trtmnt Inst	MLWPC0ELG	1070001	Mitchell Plant-WPCo Gen only	Current WO	17,033,945	-	100%	0%
E10567546	ML0 CCR Compliance	Approved	E10567546001	ML0 CCR New Wastewater Pond(I)	MLWPC0ELG	1070001	CCR Mitchell Plant	Current WO	10,944,038	10,942,332	50%	50%
E10567546	ML0 CCR Compliance	Approved	E10567546002	ML0 CCR Wastewater Ponds(R)	MLWPC0ELG	1080005	CCR Mitchell Plant	Current WO	201,582	201,582	50%	50%

Kentucky Power Company
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DATA REQUEST

JI 2_14 Please refer to the direct testimony of Adrien M. McKenzie, page 45, lines 4–13.

- a. Please provide the threshold values used to determine low and high end DCF results.
- b. Please explain how the low and high end DCF value thresholds were determined, including supporting documentation and/or analyses to support these thresholds.

RESPONSE

a. As noted at page 45 of Witness McKenzie's Direct Testimony, low-end DCF estimates ranging from 1.6% to 7.3% and high-end DCF results of 19.8% and 20.4% were eliminated. As explained at pages 44-45 of his Direct Testimony, Mr. McKenzie's evaluation of low-end DCF results considered prevailing yields on public utility bonds, as well as threshold tests applied by other regulators. Considering these benchmarks, Mr. McKenzie eliminated DCF estimates of 7.3% and below. With respect to the 19.8% and 20.4% values, at the upper end of the DCF range, Mr. McKenzie considered these estimates to be illogical based on the dispersion of the results, considered in light of his professional judgment.

b. Please refer to the tab labelled "Low-end WP" in the Excel file supporting Mr. McKenzie's Direct Testimony, which was previously provided as KPCO_R_KPSC_2_1_Attachment54_McKenzieWP54 in response to KPSC 2-1. In addition, FERC applies a high-end test equal to 200% of the median value of all results. The medians produced by Mr. McKenzie's DCF study range from 8.5% to 9.6%, and imply upper-end thresholds of 17.0% to 19.2%.

Witness: Adrien M. McKenzie

Kentucky Power Company
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DATA REQUEST

JI 2_15 Please refer to the Company's response to Staff Request 2-1, Attachment 10, Messner workpaper.

- a. Please explain why the "conventional" regulatory asset calculations assume a flat payment each month (as shown in the "received from customers" column) for the entire recovery period, as with a mortgage payment.
- b. In reality, would the regulatory asset's return of and on investment be recovered in rates through a flat monthly payment?
 - i. If yes, please explain why.
 - ii. If not, please explain how the costs would be passed through to rates, and how that would be calculated.
 - iii. If not, please explain why the NPV savings from securitization assumed that the conventional rate recovery of a regulatory asset would follow a flat payment.
- c. If available, please provide the NPV savings assuming that the conventional rate recovery would be the same as any regulatory asset.
- d. If the regulatory asset were recovered in the manner described in (c), would that increase or decrease the savings from securitization? Please explain.

RESPONSE

a. The "conventional" regulatory asset calculations assumed a flat monthly payment because the way the regulatory assets may be recovered through conventional recovery is presently unknown. A flat payment assumption also allows for a relatively straightforward comparison to a flat securitization payment assumption. The illustrative calculation of the savings associated with securitization as compared to conventional recovery is primarily driven by the fact that securitization assumes a lower cost of capital than conventional recovery. As described in the Direct Testimony of Witness Niehaus beginning on page 8, line 22:

With the appropriate statutory framework and a carefully crafted financing order, securitizations benefit from a significantly lower cost of capital compared to traditional investor-owned utility rate mechanisms. Typically,

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traditional rate mechanisms set customer rates based upon a utility's weighted cost of capital, which includes an average corporate debt cost along with a generally higher allowed return on 50 percent or more equity capital in the calculation. Utility securitization customer charges are based upon a capital cost comprised of 99.5 percent AAA-rated debt and 0.5 percent equity. By significantly increasing the percentage of debt and virtually eliminating the equity return component of these transactions, utility ratepayers can save millions of dollars in carrying costs associated with the recovery of these legitimate utility expenses.

b.-d. See response to subpart a above.

Witness: Franz D. Messner

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DATA REQUEST

JI 2_16 Please refer to the Company's response to Staff Request 2-1, Attachment 54, McKenzie workpaper.

- a. Please provide the underlying data and source for the "average utility bond yield" rates used in tab 9(2).
- b. Please provide the assumed or actual bond rating for this data.
- c. Please provide the earned ROE for the industry for the years shown on tab 9(2), for as many years as available.

RESPONSE

- a. Copies of the source documents supporting the annual average utility bond yields reported in tab 9(2) are attached as KPCO_R_JI_2_16_Attachment1.
- b. The yields reported on tab 9(2) are the average of the yields corresponding to the Aaa, Aa, A, and Baa rating categories, where applicable in each year.
- c. Mr. McKenzie has not conducted any analyses of average historical earned rates of return on common equity for the electric utility industry; nor was such a study necessary to support the recommendations and conclusions presented in his Direct Testimony.

Witness: Adrien M. McKenzie

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MERGENT PUBLIC UTILITY MANUAL

1963	4.20	4.27	4.26	4.37	4.34	4.32	4.35	4.35	4.38	4.39	4.42	4.49
1962	4.55	4.51	4.41	4.29	4.24	4.26	4.42	4.34	4.27	4.26	4.24	4.32
1961	4.52	4.51	4.37	4.61	4.59	4.76	4.65	4.85	4.50	4.45	4.48	4.69
1960	4.92	5.04	4.74	4.94	4.88	4.76	4.65	4.375	4.62	4.65	4.78	4.97
1959	4.59	4.35	4.43	4.59	4.53	4.98	4.93	4.93	5.48	5.12	5.21	5.16

MOODY'S AVERAGE OF YIELD ON NEWLY ISSUED A PUBLIC UTILITY BONDS (IN PERCENT)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1998	6.15	6.43	6.94	6.32	6.80	6.38	6.82	7.00	6.79		6.78	6.59
1997	6.85	7.30	7.92	7.72	8.00	8.00	8.00				7.43	7.43
1996	8.53	8.32	8.32	8.32	8.32	8.32	8.32				7.43	7.43
1995	7.07	7.34	7.46	8.07	8.07	8.07	8.48				9.06	9.06
1994	7.91	7.37	7.38	7.27	7.25	7.40	7.34	7.05	6.62	6.69	7.15	7.13
1993	7.95	8.47	8.69	7.93	8.57	8.64	8.47	7.83	7.95	8.11	8.45	7.84
1992	9.55	9.00	9.17	9.03	9.34	9.08	9.34	9.10	8.81	8.84	8.85	8.80
1991	10.07	10.12	9.95	10.25	9.73	9.50	9.50	9.24	9.32	9.87	9.87	9.47
1990	10.41	10.00	10.32	10.23	10.12	10.52	10.22	10.90	11.00	10.30	9.80	9.93
1989	8.85	8.97	8.76	10.20	10.05	9.272	10.16	9.59	9.95	9.52	9.36	9.19
1988	10.76	9.76	9.26	9.11	9.36	9.81	9.55	11.70	12.04	11.876	11.28	10.84
1987	12.23	12.75	12.95	12.55	12.25	10.91					12.87	12.87
1986	12.94										13.02	13.16
1985	12.94										13.16	13.00
1984	12.94										15.86	16.01
1983	15.00	15.15	15.04	14.54	11.77	11.69	12.29	13.04	13.66	14.42	12.49	12.25
1982	12.51	9.95	9.95	10.27	10.34	9.90	9.42	9.53	8.90	9.04	9.63	9.32
1981	9.95	8.90	9.02	9.08	9.35	9.42	9.53	8.90	9.04	9.50	9.63	9.32
1980	8.90	8.90	9.02	9.08	9.35	9.42	9.53	8.90	9.04	9.50	9.63	9.32
1979	8.38	8.39	8.51	8.67	8.68	8.34	8.60	8.25	8.35	8.52	8.56	8.64
1978	9.10	9.11	9.15	9.31	9.30	9.34	9.56	8.94	8.59	8.59	8.40	8.41
1977	9.71	9.42	10.16	10.94	10.00	9.87	10.38	10.76	10.83	10.46	10.11	10.31
1976	8.50	8.49	8.81	9.40	9.81	9.95	11.06	10.75	11.02	10.75	9.90	10.25
1975	7.39	7.68	7.69	7.66	7.68	7.87	8.21	8.76	8.18	8.38	8.10	8.21
1974	7.36	7.50	7.48	7.80	7.66	7.54	7.65	7.62	7.70	7.62	7.37	7.47
1973	7.90	7.74	8.09	7.89	8.39	8.08	8.42	7.88	8.19	7.75	7.74	7.61
1972	8.96	8.87	8.96	9.02	9.30	9.67	9.11	9.35	9.32	9.40	9.12	8.73
1971	7.17	7.37	7.85	7.41	7.64	7.92	8.07	8.02	8.71	8.56	8.95	9.16
1970	6.62	6.56	6.94	6.90	6.90	6.90	6.90	6.90	6.90	6.90	7.08	7.34
1969	5.00	5.10	5.26	5.84	6.27	6.12	6.22	6.39	6.38	6.56	6.88	6.88
1968	4.55	4.44	4.55	4.61	4.59	4.68	4.65	4.74	4.82	4.81	4.90	4.99
1967	4.325	4.32	4.33	4.43	4.38	4.40	4.40	4.51	4.45	4.45	4.56	4.56
1966	4.625	4.70		4.35	4.33	4.47	4.43	4.51	4.35	4.42	4.32	4.32
1965	4.59	4.45	4.45	4.73	4.90	5.07	4.82	4.90	4.80	4.57	4.60	4.625
1964	5.30	5.10	4.98	5.14	5.15	5.18	4.74	4.74	5.00	4.90	5.02	5.02
1963	4.72	4.66	4.77	5.12	5.04	5.12	5.12	5.65	5.29	5.29	5.17	5.17

MOODY'S AVERAGE OF YIELD ON NEWLY ISSUED Baa PUBLIC UTILITY BONDS (IN PERCENT)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1998	6.30	6.51	6.89	6.72	6.72	6.72	6.99	6.36	6.72		6.93	7.19
1997	7.96	7.12	7.12	7.12	7.12	7.44	7.25	7.18				
1996			8.75				8.03					
1995					7.95		7.79	8.67	7.43		7.19	7.19
1994	7.52	7.29	7.89	8.34	8.57	8.57					9.77	9.77
1993	8.67	7.97	7.84	7.86	7.56	7.21	7.42	7.11	7.27	6.94		7.49
1992	8.69	8.91	8.65	8.65	8.64	8.42	8.63	7.86	8.16	8.99	8.73	8.73
1991		9.59	9.53	9.53	9.77		9.78	9.39	8.65	9.21	8.82	9.07
1990	10.03	9.96		10.33	10.30	10.01	10.25	10.05	10.69	10.74	9.99	7.70
1989				10.75	9.65	9.93	9.86		9.51	9.61	9.85	
1988	10.74	10.33	10.07	11.06	10.51	9.88	10.79	9.88	10.75	12.06	10.30	10.21
1987	9.27	9.27	9.29	9.79	10.50	10.34	11.44		11.14	12.06	10.95	10.63
1986	11.25	10.34	9.625	9.39	10.61	10.03	9.67	9.95	10.96	10.56	9.71	9.40
1985				11.81	11.50	12.00	12.00	10.84	12.10	10.72	11.653	
1984		14.50			15.43	16.00		13.419	14.50	13.13	13.59	15.25
1983	12.94	13.33	13.02	12.41	12.58	13.28	13.75	13.45	13.13	13.50	13.23	13.94
1982	18.16		18.18		16.98		16.40	16.26	15.15	14.13	13.23	18.14
1981	15.00		16.20	17.30	17.51	16.73	17.74	18.75	18.75			
1980		15.56	14.67	14.67	12.38	13.625	13.88	15.02	14.67			
1979	10.15	10.50	10.47	10.70	10.65			10.99			13.08	12.45
1978	9.35	9.45	9.53	9.42	9.69	10.00	9.88			9.75		
1977		8.85	8.85	8.85	8.94	8.78		8.59		8.98	9.15	9.08
1976	9.90	9.60	9.50	9.61	10.00	9.92	10.10		9.45	9.00	9.10	8.61
1975				11.00	10.79		11.57				11.30	11.78
1974	8.95	8.70	9.07	9.53	9.45							
1973	7.625	8.04	8.04	7.95	7.97	8.20	8.25		8.50			8.66
1972		7.76	7.89	7.89	7.95	7.95		7.85	7.95	7.86		
1971	8.12	7.90	8.47	8.49	8.76	8.94		8.67		7.97	7.91	8.10
1970	7.625	9.57	9.54	9.37	9.37	10.47	9.53	10.08	9.81	9.82	9.75	8.95
1969	7.45		7.77	7.77	7.85		8.52		8.95	8.75	9.45	9.61
1968	6.81			7.25	7.25	7.50	7.00	6.84	6.86	6.95	7.34	7.45
1967		5.80	5.80	6.00		6.50		6.50	6.63	6.75		
1966	5.29	5.35	5.83			5.85	6.20	6.125	6.63	6.50	6.29	6.38
1965								4.94	4.96		4.95	
1964	4.81	4.97		4.81	4.74	4.71	4.62	4.80	4.65	4.75	4.55	
1963	4.80	4.45	4.43			4.81	4.63			4.54		4.83
1962		5.17		4.82	4.52	4.97	4.63		4.90		4.50	4.48
1961	4.96			5.08	5.10	5.35	5.20	5.10			4.89	5.15
1960	5.67			5.33	5.45	5.61	5.40		5.08	5.03	5.04	
1959	5.10			4.92	5.25		5.15	5.05			5.04	

MOODY'S BOND YIELDS BY RATING GROUPS

MOODY'S COMPOSITE AVERAGE OF YIELDS ON PUBLIC UTILITY BONDS (IN PERCENT)

Year	Aver.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2001	7.72	7.76	7.69	7.59	7.811	7.88	7.75	7.71	7.57		7.61	7.86	
2000	8.14	8.22	8.10	8.14	8.14	8.55	8.22	8.17	8.05	8.16	8.08	7.79	
1999	7.55	6.87	7.00	7.18	7.16	7.44	7.70	7.66	7.56	7.37	7.86	8.04	
1998	7.00	6.83	6.99	7.13	7.12	7.11	6.99	6.99	6.96	6.88	6.88	6.96	
1997	7.63	7.79	7.68	7.92	8.08	7.94	7.77	7.52	7.57	7.51	7.37	7.25	
1996	7.74	7.70	7.72	7.72	7.88	7.99	8.07	8.02	7.84	8.01	7.76	7.48	
1995	7.91	7.77	7.76	8.41	8.30	7.93	7.71	7.73	7.56	7.64	7.46	7.21	
1994	8.30	7.31	7.44	7.83	8.20	8.52	8.31	8.47	8.05	8.05	7.85	8.00	
1993	7.56	6.87	7.00	7.18	7.16	7.44	7.70	7.66	7.56	7.37	7.86	8.04	
1992	8.57	8.67	8.77	8.84	8.79	8.72	8.64	8.46	8.34	8.32	8.44	8.53	
1991	9.21	9.56	9.31	9.39	9.30	9.29	9.44	9.40	9.16	9.06	8.99	8.76	
1990	9.76	9.44	9.66	9.75	9.87	9.89	9.69	9.66	9.84	10.01	9.93	9.76	
1989	9.66	10.02	10.02	10.16	10.14	9.92	9.49	9.34	9.37	9.43	9.37	9.31	
1988	11.45	10.75	10.11	10.11	10.53	10.55	10.71	10.96	11.84	10.56	9.92	10.02	

MERGENT PUBLIC UTILITY MANUAL

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Year	Aver.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1987	9.98	8.77	8.81	8.75	9.30	9.82	9.87	10.01	10.33	11.00	11.32	10.82	10.99
1986	9.46	10.66	10.16	9.53	9.02	9.53	9.40	9.19	9.15	9.42	9.49	9.15	8.96
1985	12.29	12.28	13.00	13.42	13.42	12.89	11.91	12.28	11.93	11.95	11.43	11.43	10.82
1984	14.03	13.40	13.50	14.03	14.30	14.95	15.16	14.92	14.29	14.04	13.68	13.15	12.96
1983	13.31	13.46	13.60	13.28	13.03	13.00	13.17	13.28	13.50	13.35	13.19	13.33	13.48
1982	15.33	16.73	16.72	16.07	15.82	15.60	16.18	16.04	15.22	14.56	13.98	13.58	13.55
1981	15.62	14.22	14.84	14.86	15.32	15.84	15.27	15.87	16.33	16.89	16.76	15.90	15.77
1980	13.15	12.12	13.48	14.33	13.50	12.17	11.87	12.12	12.82	13.29	13.53	14.49	14.28
1979	10.39	9.85	9.84	10.02	10.05	10.23	10.04	9.90	9.97	10.19	11.13	11.73	11.68
1978	9.22	8.87	8.90	8.93	9.05	9.19	9.33	9.38	9.21	9.17	9.37	9.58	9.67
1977	8.58	8.59	8.63	8.66	8.65	8.64	8.53	8.48	8.47	8.43	8.56	8.61	8.65
1976	9.17	9.68	9.50	9.43	9.27	9.31	9.36	9.26	9.07	8.91	8.83	8.77	8.81
1975	9.88	10.10	9.83	9.67	9.88	9.93	9.81	9.81	9.93	9.98	9.94	9.83	9.87
1974	9.27	8.27	8.33	8.44	8.44	8.86	9.08	9.35	9.70	10.11	10.31	10.12	10.02
1973	7.83	7.51	7.61	7.64	7.64	7.63	7.69	7.81	8.06	8.09	8.04	8.11	8.17
1972	7.74	7.85	7.84	7.81	7.87	7.88	7.83	7.80	7.69	7.63	7.63	7.55	7.48
1971	8.13	8.17	7.94	8.08	8.05	8.23	8.39	8.34	8.30	8.12	8.04	7.96	7.92
1970	8.68	8.54	8.47	8.34	8.37	8.72	9.06	9.01	8.83	8.80	8.74	8.77	8.45
1969	7.49	7.02	7.05	7.23	7.26	7.15	7.38	7.49	7.40	7.62	7.91	7.94	8.39
1968	6.49	6.47	6.36	6.59	6.54	6.60	6.60	6.53	6.30	6.27	6.39	6.58	6.55
1967	5.81	5.42	5.25	5.37	5.37	5.59	5.80	5.91	5.96	6.02	6.12	6.39	6.57
1966	5.36	4.85	4.90	5.08	5.21	5.23	5.32	5.39	5.54	5.78	5.72	5.64	5.65
1965	4.60	4.52	4.51	4.51	4.51	4.53	4.56	4.58	4.60	4.64	4.67	4.71	4.82
1964	4.53	4.51	4.51	4.51	4.53	4.53	4.55	4.54	4.54	4.53	4.52	4.53	4.54
1963	4.41	4.38	4.37	4.39	4.39	4.39	4.40	4.42	4.42	4.44	4.44	4.45	4.49
1962	4.51	4.61	4.62	4.60	4.56	4.50	4.47	4.48	4.50	4.49	4.46	4.42	4.41
1961	4.57	4.57	4.51	4.43	4.46	4.49	4.52	4.60	4.67	4.67	4.66	4.63	4.62
1960	4.69	4.92	4.89	4.79	4.70	4.76	4.75	4.71	4.53	4.48	4.56	4.56	4.58
1959	4.43	3.99	3.87	3.95	3.90	3.89	3.88	3.94	4.16	4.41	4.46	4.40	4.39
1958	4.10	3.98	3.97	3.95	3.94	3.98	4.06	4.19	4.33	4.45	4.48	4.49	4.48
1957	3.54	3.28	3.26	3.27	3.38	3.44	3.44	3.48	3.60	3.73	3.82	3.86	3.93
1956	3.22	3.12	3.15	3.17	3.17	3.19	3.21	3.22	3.26	3.29	3.27	3.28	3.31
1955	3.15	3.31	3.23	3.14	3.13	3.13	3.15	3.13	3.12	3.13	3.11	3.10	3.10
1954	3.45	3.23	3.29	3.33	3.44	3.57	3.62	3.56	3.54	3.58	3.46	3.38	3.37
1953	3.50	3.23	3.19	3.21	3.19	3.20	3.20	3.20	3.20	3.19	3.22	3.19	3.19
1952	3.09	2.85	2.86	2.96	3.07	3.10	3.18	3.19	3.13	3.09	3.14	3.21	3.24
1951	2.82	2.79	2.78	2.78	2.79	2.81	2.81	2.83	2.80	2.84	2.85	2.86	2.87
1950	2.90	2.99	2.99	2.97	2.96	2.95	2.93	2.89	2.86	2.84	2.83	2.81	2.79
1948	3.03	3.03	3.03	3.01	2.97	2.95	2.96	3.02	3.07	3.07	3.07	3.09	3.06
1947	2.78	2.73	2.72	2.73	2.71	2.72	2.72	2.72	2.72	2.78	2.87	2.93	3.02
1946	2.71	2.65	2.64	2.64	2.69	2.69	2.69	2.69	2.70	2.75	2.70	2.77	2.77
1945	2.89	2.97	2.95	2.94	2.94	2.93	2.89	2.87	2.86	2.85	2.84	2.81	2.79
1944	2.97	2.99	2.98	2.97	2.97	2.97	2.96	2.95	2.94	2.94	2.96	2.96	2.96
1943	2.99	3.05	3.02	3.00	3.01	3.00	2.98	2.95	2.96	2.96	2.96	2.98	3.01
1942	3.11	3.13	3.15	3.17	3.13	3.13	3.12	3.09	3.09	3.08	3.07	3.06	3.07
1941	3.11	3.17	3.19	3.17	3.16	3.16	3.10	3.07	3.06	3.03	3.05	3.04	3.12
1940	3.25	3.35	3.33	3.29	3.24	3.30	3.33	3.23	3.23	3.19	3.18	3.14	3.13
1939	3.48	3.57	3.52	3.48	3.51	3.45	3.42	3.39	3.40	3.40	3.41	3.41	3.38
1938	3.87	4.01	4.07	4.05	4.11	3.90	3.90	3.79	3.76	3.82	3.73	3.65	3.63
1937	3.93	3.68	3.76	3.90	3.99	3.95	3.97	3.92	3.89	3.96	4.08	4.06	4.03
1936	3.88	4.02	3.98	3.98	3.97	3.95	3.91	3.86	3.85	3.83	3.80	3.74	3.69
1935	4.18	4.97	4.76	4.65	4.60	4.45	4.37	4.26	4.28	4.27	4.24	4.17	4.12
1934	5.40	6.24	5.88	5.50	5.31	5.27	5.24	5.23	5.37	5.43	5.32	5.22	5.15
1933	6.25	5.56	5.90	6.41	6.82	6.34	5.99	5.78	5.90	6.31	6.38	6.82	6.82
1932	6.30	6.20	6.36	6.10	6.66	6.98	7.21	6.97	6.03	5.69	5.72	5.84	5.80
1931	5.27	5.09	5.09	4.99	4.97	4.97	5.04	5.00	5.01	5.24	5.79	5.72	5.31
1930	5.05	5.17	5.20	5.10	5.08	5.04	5.03	5.00	4.94	4.87	4.93	5.05	5.21
1929	5.14	4.96	5.00	5.07	5.09	5.09	5.16	5.16	5.22	5.29	5.25	5.24	5.17
1928	4.87	4.79	4.77	4.75	4.75	4.79	4.90	4.93	4.97	4.96	4.93	4.90	4.95
1927	4.96	5.02	5.05	5.03	4.98	4.98	4.98	4.98	4.94	4.92	4.89	4.88	4.84
1926	5.11	5.20	5.15	5.17	5.12	5.08	5.06	5.08	5.09	5.10	5.11	5.07	5.05
1925	5.29	5.44	5.41	5.39	5.35	5.22	5.20	5.25	5.28	5.26	5.24	5.24	5.25
1924	5.61	5.82	5.77	5.76	5.74	5.67	5.59	5.62	5.51	5.52	5.48	5.49	5.46
1923	5.84	5.72	5.73	5.80	5.83	5.88	5.89	5.89	5.77	5.85	5.85	5.86	5.86
1922	5.93	6.40	6.31	6.20	6.05	5.87	5.87	5.83	5.78	5.68	5.67	5.77	5.76
1921	7.17	7.43	7.35	7.35	7.34	7.38	7.41	7.42	7.34	7.08	6.95	6.58	6.37
1920	7.19	6.63	6.76	6.83	7.03	7.30	7.35	7.37	7.48	7.40	7.28	7.31	7.49
1919	6.21	6.08	6.11	6.14	6.09	6.08	6.08	6.10	6.19	6.30	6.28	6.43	6.58

MOODY'S AVERAGE OF YIELDS ON Aaa PUBLIC UTILITY BONDS (IN PERCENT)

Year	Aver.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2001	7.47	7.53	7.46	7.31	7.53	7.61	7.50	7.46	7.36	7.26	7.15	7.45	7.53
2000	7.88	7.95	7.82	7.87	7.87	7.87	7.96	8.00	7.89	7.92	7.80	7.71	7.51
1999	7.49	7.41	7.56	7.81	7.80	7.79	7.93	8.00	7.54	7.55	7.37	7.56	7.74
1998	6.77	6.85	6.91	6.96	6.94	6.94	6.80	6.80	6.75	6.66	6.63	6.59	6.43
1997	7.42	7.53	7.43	7.70	7.87	7.72	7.55	7.29	7.39	7.33	7.18	7.09	6.99
1996	7.49	6.92	7.11	7.45	7.60	7.73	7.83	7.78	7.59	7.76	7.50	7.21	7.33
1995	7.68	8.53	8.33	8.18	8.08	8.71	8.07	7.51	7.66	7.42	7.23	7.13	6.94
1994	8.07	7.05	7.19	7.60	8.00	8.11	8.39	8.21	8.15	8.41	8.65	8.77	8.55
1993	7.94	7.94	7.75	7.64	7.64	7.64	7.77	7.77	7.65	7.64	7.67	7.66	7.17
1992	8.19	8.22	8.30	8.39	8.36	8.32	8.26	8.12	8.04	8.04	8.06	8.11	8.01
1991	8.85	9.17	8.92	9.04	8.95	8.93	9.10	8.81	8.81	8.65	8.57	8.38	8.38
1990	9.45	9.08	9.35	9.48	9.60	9.58	9.38	9.36	9.34	9.73	9.66	9.43	9.18
1989	9.32	9.72	9.71	9.87	9.88	9.80	9.13	8.98	9.02	9.10	9.01	8.92	8.92
1988	10.85	10.59	9.77	9.72	10.87	10.29	10.27	10.27	10.27	10.27	10.27	9.61	9.87
1987	9.52	8.23	8.29	8.21	8.83	9.34	9.37	9.56	9.56	9.52	10.53	10.43	10.64
1986	8.92	10.14	9.65	8.75	8.45	9.07	9.02	8.66	8.99	8.91	8.84	8.59	8.41
1985	11.68	12.47	12.61	13.08	12.77	12.18	11.17	11.18	11.23	11.27	11.23	10.71	10.24
1984	12.72	12.29	12.48	12.15	12.15	12.15	12.23	12.23	12.23	12.23	12.23	12.66	12.49
1983	12.52	12.79	12.88	12.19	12.00	12.81	12.23	12.69	13.04	12.85	12.62	12.82	13.00
1982	14.22	13.79	13.88	13.05	14.85	14.68	13.32	14.96	13.98	13.24	12.42	12.11	12.32
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Corporate Bond Yield Averages

AV. CORP.	CORPORATE BY RATINGS				CORPORATE BY GROUPS			PUBLIC UTILITY BONDS				INDUSTRIAL BONDS				RAILROAD BONDS						
	Aaa	Aa	A	Baa	P.U.	IND.	R.R.	Aaa	Aa	A	Baa	Aaa	Aa	A	Baa	Aaa	Aa	A	Baa			
2000																						
Jan.	8.06	7.78	7.96	8.15	8.33	8.22	7.89	Jan.	7.95	8.17	8.35	8.40	Jan.	7.60	7.74	7.94	8.26	Jan.	---	---	---	---
Feb.	7.96	7.68	7.82	8.06	8.29	8.10	7.82	Feb.	7.82	7.99	8.25	8.33	Feb.	7.53	7.65	7.87	8.24	Feb.	---	---	---	---
Mar.	7.99	7.68	7.83	8.07	8.37	8.14	7.83	Mar.	7.87	7.99	8.28	8.40	Mar.	7.48	7.66	7.84	8.34	Mar.	---	---	---	---
Apr.	7.98	7.64	7.82	8.07	8.40	8.14	7.82	Apr.	7.87	8.00	8.29	8.40	Apr.	7.41	7.63	7.84	8.40	Apr.	---	---	---	---
May	8.41	7.99	8.24	8.49	8.90	8.55	8.25	May	8.22	8.44	8.70	8.86	May	7.76	8.03	8.28	8.94	May	---	---	---	---
June	8.05	7.67	7.87	8.18	8.48	8.22	7.87	June	7.96	8.10	8.36	8.47	June	7.37	7.63	8.00	8.49	June	---	---	---	---
July	7.98	7.65	7.81	8.11	8.35	8.17	7.78	July	8.09	8.10	8.25	8.33	July	7.30	7.51	7.97	8.36	July	---	---	---	---
Aug.	7.88	7.55	7.70	8.02	8.26	8.05	7.70	Aug.	7.89	7.95	8.13	8.25	Aug.	7.20	7.44	7.91	8.26	Aug.	---	---	---	---
Sept.	7.98	7.62	7.83	8.13	8.35	8.16	7.81	Sept.	7.92	8.11	8.23	8.32	Sept.	7.29	7.54	8.03	8.37	Sept.	---	---	---	---
Oct.	7.95	7.55	7.81	8.11	8.34	8.08	7.82	Oct.	7.80	8.08	8.14	8.29	Oct.	7.29	7.55	8.08	8.38	Oct.	---	---	---	---
Nov.	7.90	7.45	7.75	8.09	8.28	8.03	7.76	Nov.	7.71	8.03	8.11	8.25	Nov.	7.19	7.47	8.07	8.31	Nov.	---	---	---	---
Dec.	7.65	7.21	7.48	7.88	8.02	7.79	7.50	Dec.	7.51	7.79	7.84	8.01	Dec.	6.90	7.16	7.90	8.03	Dec.	---	---	---	---
2001																						
Jan.	7.55	7.15	7.38	7.75	7.93	7.76	7.34	Jan.	7.53	7.73	7.80	7.99	Jan.	6.76	7.02	7.70	7.86	Jan.	---	---	---	---
Feb.	7.50	7.10	7.32	7.69	7.87	7.69	7.30	Feb.	7.46	7.62	7.74	7.94	Feb.	6.74	7.01	7.64	7.80	Feb.	---	---	---	---
Mar.	7.41	6.98	7.22	7.61	7.84	7.59	7.23	Mar.	7.31	7.51	7.68	7.85	Mar.	6.64	6.92	7.55	7.83	Mar.	---	---	---	---
Apr.	7.63	7.20	7.43	7.82	8.07	7.81	7.45	Apr.	7.53	7.72	7.94	8.06	Apr.	6.86	7.14	7.74	8.08	Apr.	---	---	---	---
May	7.69	7.29	7.50	7.88	8.07	7.88	7.49	May	7.61	7.79	7.99	8.11	May	6.96	7.20	7.75	8.03	May	---	---	---	---
June	7.56	7.18	7.34	7.73	7.97	7.75	7.36	June	7.50	7.62	7.85	8.02	June	6.85	7.05	7.60	7.92	June	---	---	---	---
July	7.51	7.13	7.27	7.65	7.97	7.71	7.30	July	7.46	7.55	7.78	8.05	July	6.80	6.99	7.52	7.89	July	---	---	---	---
Aug.	7.37	7.02	7.11	7.48	7.85	7.57	7.16	Aug.	7.36	7.39	7.59	7.95	Aug.	6.67	6.83	7.37	7.74	Aug.	---	---	---	---
Sept.	7.54	7.17	7.27	7.67	8.03	7.73	7.34	Sept.	7.52	7.55	7.75	8.12	Sept.	6.83	7.00	7.60	7.93	Sept.	---	---	---	---
Oct.	7.41	7.03	7.13	7.59	7.91	7.64	7.18	Oct.	7.45	7.47	7.63	8.02	Oct.	6.60	6.79	7.54	7.79	Oct.	---	---	---	---
Nov.	7.32	6.97	7.01	7.49	7.81	7.61	7.03	Nov.	7.45	7.45	7.57	7.96	Nov.	6.48	6.56	7.40	7.66	Nov.	---	---	---	---
Dec.	7.55	6.76	7.19	7.70	8.05	7.86	7.23	Dec.	7.53	7.53	7.83	8.27	Dec.	6.67	6.85	7.56	7.82	Dec.	---	---	---	---
2002																						
Jan.	7.38	6.55	7.03	7.50	7.87	7.69	7.07	Jan.	---	7.28	7.66	8.13	Jan.	6.55	6.78	7.35	7.60	Jan.	---	---	---	---
Feb.	7.32	6.51	6.95	7.37	7.89	7.62	7.02	Feb.	---	7.14	7.54	8.18	Feb.	6.51	6.76	7.20	7.59	Feb.	---	---	---	---
Mar.	7.57	6.81	7.22	7.62	8.11	7.83	7.30	Mar.	---	7.42	7.76	8.32	Mar.	6.81	7.02	7.47	7.89	Mar.	---	---	---	---
Apr.	7.49	6.76	7.16	7.49	8.04	7.74	7.23	Apr.	---	7.38	7.57	8.26	Apr.	6.76	6.93	7.40	7.81	Apr.	---	---	---	---
May	7.49	6.75	7.20	7.43	8.09	7.76	7.22	May	---	7.43	7.52	8.33	May	6.75	6.95	7.33	7.84	May	---	---	---	---
June	7.36	6.64	7.08	7.25	7.96	7.67	7.06	June	---	7.33	7.42	8.26	June	6.64	6.83	7.09	7.67	June	---	---	---	---
July	7.27	6.53	6.98	7.14	7.90	7.54	6.99	July	---	7.22	7.31	8.07	July	6.53	6.74	6.97	7.71	July	---	---	---	---
Aug.	7.06	6.37	6.84	6.95	7.58	7.34	6.77	Aug.	---	7.10	7.17	7.74	Aug.	6.37	6.57	6.73	7.42	Aug.	---	---	---	---
Sept.	6.87	6.15	6.63	6.76	7.40	7.23	6.51	Sept.	---	6.98	7.08	7.62	Sept.	6.15	6.27	6.43	7.17	Sept.	---	---	---	---
Oct.	7.08	6.33	6.74	6.95	7.74	7.43	6.72	Oct.	---	7.07	7.23	8.00	Oct.	6.33	6.40	6.67	7.48	Oct.	---	---	---	---
Nov.	7.01	6.31	6.71	6.89	7.62	7.31	6.70	Nov.	---	7.03	7.14	7.76	Nov.	6.31	6.39	6.63	7.47	Nov.	---	---	---	---
Dec.	6.90	6.21	6.63	6.80	7.45	7.20	6.59	Dec.	---	6.94	7.07	7.61	Dec.	6.21	6.32	6.53	7.28	Dec.	---	---	---	---
2003																						
Jan.	6.84	6.17	6.59	6.76	7.35	7.13	6.54	Jan.	---	6.87	7.06	7.47	Jan.	6.17	6.30	6.46	7.23	Jan.	---	---	---	---
Feb.	6.62	5.95	6.34	6.63	7.06	6.92	6.31	Feb.	---	6.66	6.93	7.17	Feb.	5.95	6.02	6.33	6.94	Feb.	---	---	---	---
Mar.	6.53	5.89	6.28	6.54	6.95	6.80	6.26	Mar.	---	6.56	6.79	7.05	Mar.	5.89	6.04	6.30	6.84	Mar.	---	---	---	---
Apr.	6.44	5.74	6.22	6.45	6.85	6.68	6.18	Apr.	---	6.47	6.64	6.94	Apr.	5.74	5.97	6.26	6.76	Apr.	---	---	---	---
May	6.02	5.22	5.85	6.08	6.38	6.35	5.70	May	---	6.20	6.36	6.47	May	5.22	5.48	5.79	6.29	May	---	---	---	---
June	5.85	4.97	5.72	5.92	6.19	6.21	5.49	June	---	6.12	6.21	6.30	June	4.97	5.31	5.62	6.07	June	---	---	---	---
July	6.26	5.49	6.07	6.34	6.62	6.54	5.98	July	---	6.37	6.57	6.67	July	5.49	5.77	6.11	6.56	July	---	---	---	---
Aug.	6.57	5.87	6.31	6.63	7.01	6.78	6.35	Aug.	---	6.48	6.78	7.08	Aug.	5.87	6.13	6.48	6.92	Aug.	---	---	---	---
Sept.	6.37	5.72	6.13	6.42	6.79	6.58	6.16	Sept.	---	6.30	6.56	6.87	Sept.	5.72	5.95	6.27	6.71	Sept.	---	---	---	---
Oct.	6.32	5.70	6.11	6.33	6.73	6.50	6.14	Oct.	---	6.28	6.43	6.79	Oct.	5.70	5.94	6.23	6.67	Oct.	---	---	---	---
Nov.	6.27	5.65	6.08	6.28	6.66	6.44	6.09	Nov.	---	6.26	6.37	6.69	Nov.	5.65	5.91	6.18	6.63	Nov.	---	---	---	---
Dec.	6.20	5.65	6.02	6.19	6.60	6.36	6.04	Dec.	---	6.18	6.27	6.61	Dec.	5.62	5.85	6.11	6.58	Dec.	---	---	---	---
2004																						
Jan.	6.08	5.54	5.91	6.08	6.44	6.23	5.92	Jan.	---	6.06	6.15	6.47	Jan.	5.54	5.74	6.02	6.40	Jan.	---	---	---	---
Feb.	6.00	5.50	5.87	6.04	6.27	6.17	5.83	Feb.	---	6.10	6.15	6.28	Feb.	5.50	5.65	5.93	6.24	Feb.	---	---	---	---
Mar.	5.84	5.33	5.70	5.86	6.11	6.01	5.67	Mar.	---	5.93	5.97	6.12	Mar.	5.33	5.48	5.75	6.10	Mar.	---	---	---	---
Apr.	6.22	5.73	6.10	6.25	6.46	6.38	6.05	Apr.	---	6.33	6.35	6.46	Apr.	5.73	5.85	6.15	6.45	Apr.	---	---	---	---
May	6.51	6.04	6.40	6.54	6.75	6.68	6.34	May	---	6.66	6.62	6.75	May	6.04	6.13	6.45	6.73	May	---	---	---	---
June	6.42	6.01	6.21	6.42	6.78	6.53	6.31	June	---	6.30	6.46	6.84	June	6.01	6.12	6.37	6.72	June	---	---	---	---
July	6.24	5.82	6.02	6.23	6.62	6.34	6.13	July	---	6.09	6.27	6.67	July	5.94	6.18	6.57	6.72	July	---	---	---	---
Aug.	6.08	5.65	5.87	6.08	6.48	6.18	5.98	Aug.	---	5.95	6.14	6.45	Aug.	5.65	5.79	6.02	6.47	Aug.	---	---	---	---
Sept.	5.91	5.46	5.73	5.91	6.27	6.01	5.81	Sept.	---	5.79	5.98	6.27	Sept.	5.46	5.67							

Corporate Bond Yield Averages

AV. CORP.	CORPORATE BY RATINGS				CORPORATE BY GROUPS			PUBLIC UTILITY BONDS				INDUSTRIAL BONDS				RAILROAD BONDS					
	Aaa	Aa	A	Baa	P.U.	IND.	R.R.	Aaa	Aa	A	Baa	Aaa	Aa	A	Baa	Aaa	Aa	A	Baa		
2003																					
Jan.	6.84	6.17	6.59	6.76	7.35	7.13	6.54	Jan.	6.87	7.06	7.47	Jan.	6.17	6.30	6.46	7.23	Jan.	6.17	6.30	6.46	7.23
Feb.	6.62	5.95	6.34	6.63	7.06	6.92	6.31	Feb.	6.66	6.93	7.17	Feb.	5.95	6.02	6.33	6.94	Feb.	5.95	6.02	6.33	6.94
Mar.	6.53	5.89	6.28	6.54	6.95	6.80	6.26	Mar.	6.56	6.79	7.05	Mar.	5.89	6.04	6.30	6.84	Mar.	5.89	6.04	6.30	6.84
Apr.	6.44	5.74	6.22	6.45	6.85	6.68	6.18	Apr.	6.47	6.64	6.94	Apr.	5.74	5.97	6.26	6.76	Apr.	5.74	5.97	6.26	6.76
May	6.02	5.22	5.85	6.08	6.38	6.35	5.70	May	6.20	6.36	6.47	May	5.22	5.48	5.79	6.29	May	5.22	5.48	5.79	6.29
June	5.85	4.97	5.72	5.92	6.19	6.21	5.49	June	6.12	6.21	6.30	June	4.97	5.31	5.62	6.07	June	4.97	5.31	5.62	6.07
July	6.26	5.49	6.07	6.34	6.62	6.54	5.98	July	6.37	6.57	6.67	July	5.49	5.77	6.11	6.56	July	5.49	5.77	6.11	6.56
Aug.	6.57	5.87	6.31	6.63	7.01	6.78	6.35	Aug.	6.48	6.78	7.08	Aug.	5.87	6.13	6.48	6.92	Aug.	5.87	6.13	6.48	6.92
Sep.	6.37	5.72	6.13	6.42	6.79	6.58	6.16	Sep.	6.30	6.56	6.87	Sep.	5.72	5.95	6.27	6.71	Sep.	5.72	5.95	6.27	6.71
Oct.	6.32	5.70	6.11	6.33	6.73	6.50	6.14	Oct.	6.28	6.43	6.79	Oct.	5.70	5.94	6.23	6.67	Oct.	5.70	5.94	6.23	6.67
Nov.	6.27	5.65	6.08	6.28	6.66	6.44	6.09	Nov.	6.26	6.37	6.69	Nov.	5.65	5.91	6.18	6.63	Nov.	5.65	5.91	6.18	6.63
Dec.	6.20	5.65	6.02	6.19	6.60	6.36	6.04	Dec.	6.18	6.27	6.61	Dec.	5.62	5.85	6.11	6.58	Dec.	5.62	5.85	6.11	6.58
2004																					
Jan.	6.08	5.54	5.91	6.08	6.44	6.23	5.92	Jan.	6.06	6.15	6.47	Jan.	5.54	5.74	6.02	6.40	Jan.	5.54	5.74	6.02	6.40
Feb.	6.00	5.50	5.87	6.04	6.27	6.17	5.83	Feb.	6.10	6.15	6.28	Feb.	5.50	5.65	5.93	6.24	Feb.	5.50	5.65	5.93	6.24
Mar.	5.84	5.33	5.70	5.86	6.11	6.01	5.67	Mar.	5.93	5.97	6.12	Mar.	5.33	5.48	5.75	6.10	Mar.	5.33	5.48	5.75	6.10
Apr.	6.22	5.73	6.10	6.25	6.46	6.38	6.05	Apr.	6.33	6.35	6.46	Apr.	5.73	5.85	6.15	6.45	Apr.	5.73	5.85	6.15	6.45
May	6.51	6.04	6.40	6.54	6.75	6.68	6.34	May	6.66	6.62	6.75	May	6.04	6.13	6.45	6.73	May	6.04	6.13	6.45	6.73
June	6.42	6.01	6.21	6.42	6.78	6.53	6.31	June	6.30	6.46	6.84	June	6.01	6.12	6.37	6.72	June	6.01	6.12	6.37	6.72
July	6.24	5.82	6.02	6.23	6.62	6.34	6.13	July	6.09	6.27	6.67	July	5.82	5.94	6.18	6.57	July	5.82	5.94	6.18	6.57
Aug.	6.08	5.65	5.87	6.08	6.48	6.18	5.98	Aug.	5.95	6.14	6.45	Aug.	5.65	5.79	6.02	6.47	Aug.	5.65	5.79	6.02	6.47
Sep.	5.91	5.46	5.73	5.91	6.27	6.01	5.81	Sep.	5.79	5.98	6.27	Sep.	5.46	5.67	5.84	6.27	Sep.	5.46	5.67	5.84	6.27
Oct.	5.87	5.47	5.69	5.86	6.21	5.95	5.78	Oct.	5.74	5.94	6.17	Oct.	5.47	5.63	5.78	6.24	Oct.	5.47	5.63	5.78	6.24
Nov.	5.89	5.52	5.72	5.88	6.21	5.97	5.80	Nov.	5.79	5.97	6.16	Nov.	5.52	5.65	5.78	6.25	Nov.	5.52	5.65	5.78	6.25
Dec.	5.84	5.47	5.69	5.82	6.15	5.93	5.75	Dec.	5.78	5.92	6.10	Dec.	5.47	5.60	5.72	6.20	Dec.	5.47	5.60	5.72	6.20
2005																					
Jan.	5.72	5.36	5.58	5.68	6.02	5.80	5.63	Jan.	5.68	5.78	5.95	Jan.	5.36	5.48	5.58	6.08	Jan.	5.36	5.48	5.58	6.08
Feb.	5.55	5.20	5.44	5.51	5.82	5.64	5.45	Feb.	5.55	5.61	5.76	Feb.	5.20	5.32	5.40	5.87	Feb.	5.20	5.32	5.40	5.87
Mar.	5.77	5.40	5.64	5.73	6.06	5.86	5.67	Mar.	5.76	5.83	6.01	Mar.	5.40	5.53	5.63	6.11	Mar.	5.40	5.53	5.63	6.11
Apr.	5.65	5.33	5.44	5.58	6.05	5.72	5.58	Apr.	5.56	5.64	5.95	Apr.	5.33	5.31	5.52	6.15	Apr.	5.33	5.31	5.52	6.15
May	5.54	5.15	5.29	5.49	6.01	5.60	5.48	May	5.39	5.53	5.88	May	5.15	5.18	5.45	6.13	May	5.15	5.18	5.45	6.13
June	5.35	4.96	5.02	5.33	5.86	5.39	5.31	June	5.05	5.40	5.70	June	4.96	4.99	5.26	6.01	June	4.96	4.99	5.26	6.01
July	5.46	5.06	5.14	5.44	5.95	5.50	5.41	July	5.18	5.51	5.81	July	5.06	5.10	5.37	6.10	July	5.06	5.10	5.37	6.10
Aug.	5.49	5.09	5.20	5.48	5.96	5.51	5.46	Aug.	5.23	5.50	5.80	Aug.	5.09	5.16	5.45	6.12	Aug.	5.09	5.16	5.45	6.12
Sept.	5.53	5.13	5.24	5.50	6.03	5.54	5.51	Sept.	5.27	5.52	5.83	Sept.	5.13	5.21	5.47	6.22	Sept.	5.13	5.21	5.47	6.22
Oct.	5.77	5.34	5.46	5.75	6.29	5.79	5.74	Oct.	5.50	5.79	6.08	Oct.	5.34	5.42	5.70	6.49	Oct.	5.34	5.42	5.70	6.49
Nov.	5.86	5.42	5.55	5.83	6.39	5.88	5.83	Nov.	5.59	5.88	6.19	Nov.	5.42	5.52	5.78	6.59	Nov.	5.42	5.52	5.78	6.59
Dec.	5.81	5.38	5.51	5.84	6.33	5.83	5.80	Dec.	5.55	5.80	6.14	Dec.	5.38	5.45	5.88	6.51	Dec.	5.38	5.45	5.88	6.51
2006																					
Jan.	5.75	5.29	5.45	5.79	6.24	5.77	5.73	Jan.	5.50	5.75	6.06	Jan.	5.29	5.39	5.83	6.41	Jan.	5.29	5.39	5.83	6.41
Feb.	5.80	5.35	5.51	5.85	6.27	5.83	5.78	Feb.	5.55	5.82	6.11	Feb.	5.35	5.46	5.87	6.43	Feb.	5.35	5.46	5.87	6.43
Mar.	5.95	5.52	5.67	5.98	6.41	5.98	5.92	Mar.	5.71	5.98	6.26	Mar.	5.52	5.64	5.96	6.55	Mar.	5.52	5.64	5.96	6.55
Apr.	6.26	5.84	6.00	6.27	6.68	6.28	6.23	Apr.	6.02	6.29	6.54	Apr.	5.84	5.98	6.26	6.82	Apr.	5.84	5.98	6.26	6.82
May	6.36	5.95	6.13	6.40	6.75	6.39	6.33	May	6.16	6.42	6.59	May	5.95	6.10	6.37	6.90	May	5.95	6.10	6.37	6.90
June	6.35	5.89	6.11	6.39	6.78	6.39	6.31	June	6.16	6.40	6.61	June	5.89	6.05	6.36	6.94	June	5.89	6.05	6.36	6.94
July	6.33	5.85	6.08	6.36	6.76	6.37	6.28	July	6.13	6.37	6.61	July	5.85	6.02	6.35	6.91	July	5.85	6.02	6.35	6.91
Aug.	6.16	5.68	5.91	6.19	6.59	6.20	6.11	Aug.	5.97	6.20	6.43	Aug.	5.68	5.85	6.18	6.74	Aug.	5.68	5.85	6.18	6.74
Sept.	5.98	5.51	5.75	5.98	6.43	6.03	5.94	Sept.	5.81	6.00	6.26	Sept.	5.51	5.68	5.95	6.59	Sept.	5.51	5.68	5.95	6.59
Oct.	5.87	5.51	5.74	5.94	6.42	6.01	5.93	Oct.	5.80	5.98	6.24	Oct.	5.51	5.68	5.90	6.60	Oct.	5.51	5.68	5.90	6.60
Nov.	5.78	5.33	5.57	5.76	6.20	5.82	5.73	Nov.	5.61	5.80	6.04	Nov.	5.33	5.52	5.72	6.36	Nov.	5.33	5.52	5.72	6.36
Dec.	5.79	5.29	5.58	5.78	6.22	5.83	5.74	Dec.	5.62	5.81	6.05	Dec.	5.29	5.53	5.75	6.38	Dec.	5.29	5.53	5.75	6.38
2007																					
Jan.	5.92	5.40	5.75	5.93	6.34	5.96	5.88	Jan.	5.78	5.96	6.16	Jan.	5.40	5.71	5.91	6.52	Jan.	5.40	5.71	5.91	6.52
Feb.	5.88	5.39	5.72	5.88	6.28	5.91	5.85	Feb.	5.73	5.90	6.10	Feb.	5.39	5.70	5.86	6.44	Feb.	5.39	5.70	5.86	6.44
Mar.	5.84	5.30	5.66	5.84	6.27	5.87	5.80	Mar.	5.66	5.85	6.10	Mar.	5.30	5.66	5.83	6.43	Mar.	5.30	5.66	5.83	6.43
Apr.	5.99	5.47	5.83	5.99	6.39	6.01	5.96	Apr.	5.83	5.97	6.24	Apr.	5.47	5.82	6.00	6.54	Apr.	5.47	5.82	6.00	6.54
May	6.00	5.47	5.85	6.01	6.39	6.03	5.97	May	5.86	5.99	6.23	May	5.47	5.84	6.04	6.54	May	5.47	5.84	6.04	6.54
June	6.32	5.79	6.17	6.33	6.70	6.34	6.29	June	6.18	6.30	6.54	June	5.79	6.15	6.36	6.84	June	5.79	6.15	6.36	6.84
July	6.26	5.73	6.09	6.30	6.65																

April 2009

MERGENT BOND RECORD

Corporate Bond Yield Averages

REDEMPTION DATE (continued)	AV. CORP.	CORPORATE BY RATINGS				CORPORATE BY GROUPS			PUBLIC UTILITY BONDS				INDUSTRIAL BONDS				RAILROAD BONDS		
		Aaa	Aa	A	Baa	P.U.	IND.	R.R.	Aaa	Aa	A	Baa	Aaa	Aa	A	Baa	Aaa	Aa	A
01/26	6.08	5.54	5.91	6.08	6.44	6.23	5.92	6.06	6.15	6.47	5.54	5.74	6.02	6.40					
03/16	6.00	5.50	5.87	6.04	6.27	6.17	5.83	6.10	6.15	6.28	5.50	5.65	5.93	6.24					
02/25	5.84	5.33	5.70	5.86	6.11	6.01	5.67	5.93	5.97	6.12	5.33	5.48	5.75	6.10					
01/26	6.22	5.73	6.10	6.25	6.46	6.38	6.05	6.33	6.35	6.46	5.73	5.85	6.15	6.45					
01/26	6.51	6.04	6.40	6.54	6.75	6.68	6.34	6.66	6.62	6.75	6.04	6.13	6.45	6.73					
01/26	6.42	6.01	6.21	6.42	6.78	6.53	6.31	6.30	6.46	6.84	6.01	6.12	6.37	6.72					
01/26	6.24	5.82	6.02	6.23	6.62	6.34	6.13	6.09	6.27	6.67	5.82	5.94	6.18	6.57					
02/25	6.08	5.65	5.87	6.08	6.48	6.18	5.98	5.95	6.14	6.45	5.65	5.79	6.02	6.47					
02/25	5.91	5.46	5.73	5.91	6.27	6.01	5.81	5.79	5.98	6.27	5.46	5.67	5.84	6.27					
02/25	5.87	5.47	5.69	5.86	6.21	5.95	5.78	5.74	5.94	6.17	5.47	5.63	5.78	6.24					
02/25	5.89	5.52	5.72	5.88	6.21	5.97	5.80	5.79	5.97	6.16	5.52	5.65	5.78	6.25					
02/25	5.84	5.47	5.69	5.82	6.15	5.93	5.75	5.78	5.92	6.10	5.47	5.60	5.72	6.20					
03/16	5.72	5.36	5.58	5.68	6.02	5.80	5.63	5.68	5.78	5.95	5.36	5.48	5.58	6.08					
01/26	5.55	5.20	5.44	5.51	5.82	5.64	5.45	5.55	5.61	5.76	5.20	5.32	5.40	5.87					
02/25	5.77	5.40	5.64	5.73	6.06	5.86	5.67	5.76	5.83	6.01	5.40	5.53	5.63	6.11					
03/27	5.65	5.33	5.44	5.58	6.05	5.72	5.58	5.56	5.64	5.95	5.33	5.31	5.52	6.15					
03/27	5.54	5.15	5.29	5.49	6.01	5.60	5.48	5.39	5.53	5.88	5.15	5.18	5.45	6.13					
01/24	5.35	4.96	5.02	5.33	5.86	5.39	5.31	5.05	5.40	5.70	4.96	4.99	5.26	6.01					
01/24	5.46	5.06	5.14	5.44	5.95	5.50	5.41	5.18	5.51	5.81	5.06	5.10	5.37	6.10					
01/22	5.49	5.09	5.20	5.48	5.96	5.51	5.46	5.23	5.50	5.80	5.09	5.16	5.45	6.12					
02/21	5.53	5.13	5.24	5.50	6.03	5.54	5.51	5.27	5.52	5.83	5.13	5.21	5.47	6.22					
02/12	5.77	5.34	5.46	5.75	6.29	5.79	5.74	5.50	5.79	6.08	5.34	5.42	5.70	6.49					
01/12	5.86	5.42	5.55	5.83	6.39	5.88	5.83	5.59	5.88	6.19	5.42	5.52	5.78	6.59					
01/12	5.81	5.38	5.51	5.84	6.33	5.83	5.80	5.35	5.80	6.14	5.38	5.45	5.88	6.51					
01/12	5.75	5.29	5.45	5.79	6.24	5.77	5.73	5.50	5.75	6.06	5.29	5.39	5.83	6.41					
01/30	5.80	5.35	5.51	5.85	6.27	5.83	5.78	5.55	5.82	6.11	5.35	5.46	5.87	6.43					
02/27	5.95	5.52	5.67	5.98	6.41	5.98	5.92	5.71	5.98	6.26	5.52	5.64	5.96	6.55					
01/29	6.26	5.84	6.00	6.27	6.68	6.28	6.23	6.02	6.29	6.54	5.84	5.98	6.26	6.82					
01/29	6.36	5.95	6.13	6.40	6.75	6.39	6.33	6.16	6.42	6.59	5.95	6.10	6.37	6.90					
01/29	6.35	5.89	6.11	6.39	6.78	6.39	6.31	6.16	6.40	6.61	5.89	6.05	6.36	6.94					
02/19	6.33	5.85	6.08	6.36	6.76	6.37	6.28	6.13	6.37	6.61	5.85	6.02	6.35	6.91					
01/22	6.16	5.68	5.91	6.19	6.59	6.20	6.11	5.97	6.20	6.43	5.68	5.85	6.18	6.74					
01/12	5.98	5.51	5.75	5.98	6.43	6.03	5.94	5.81	6.08	6.26	5.51	5.68	5.95	6.59					
01/12	5.97	5.51	5.74	5.94	6.42	6.01	5.93	5.80	5.98	6.24	5.51	5.68	5.90	6.60					
03/23	5.78	5.33	5.57	5.76	6.20	5.82	5.73	5.61	5.80	6.04	5.33	5.52	5.72	6.36					
01/02	5.79	5.29	5.58	5.78	6.22	5.83	5.74	5.62	5.81	6.05	5.29	5.53	5.75	6.38					
02/09	5.92	5.40	5.75	5.93	6.34	5.96	5.88	5.78	5.96	6.16	5.40	5.71	5.91	6.52					
02/20	5.88	5.39	5.72	5.88	6.28	5.91	5.85	5.73	5.90	6.10	5.39	5.70	5.86	6.44					
01/15	5.84	5.30	5.66	5.84	6.27	5.87	5.80	5.66	5.85	6.10	5.30	5.66	5.83	6.43					
03/16	5.99	5.47	5.83	5.99	6.39	6.01	5.96	5.83	5.97	6.24	5.47	5.82	6.00	6.54					
01/15	6.00	5.47	5.85	6.01	6.39	6.03	5.97	5.86	5.99	6.23	5.47	5.84	6.04	6.54					
01/15	6.32	5.79	6.17	6.33	6.70	6.34	6.29	6.18	6.30	6.54	5.79	6.15	6.36	6.84					
03/16	6.26	5.73	6.09	6.30	6.65	6.28	6.24	6.11	6.25	6.49	5.73	6.07	6.34	6.81					
01/15	6.26	5.79	6.06	6.29	6.65	6.28	6.23	6.11	6.24	6.51	5.79	6.01	6.35	6.79					
01/15	6.21	5.74	6.02	6.23	6.59	6.24	6.17	6.10	6.18	6.45	5.74	5.93	6.28	6.73					
01/15	6.12	5.66	5.94	6.13	6.48	6.17	6.06	6.04	6.11	6.36	5.66	5.84	6.14	6.60					
01/15	5.97	5.44	5.78	5.97	6.40	6.04	5.90	5.87	5.97	6.27	5.44	5.67	5.97	6.51					
01/15	6.15	5.49	5.91	6.19	6.65	6.23	6.07	6.03	6.16	6.51	5.49	5.78	6.28	6.78					
01/15	6.02	5.33	5.78	6.06	6.54	6.08	5.96	5.87	6.02	6.35	5.33	5.68	6.10	6.73					
01/15	6.24	5.53	5.97	6.26	6.82	6.28	6.19	6.04	6.21	6.60	5.53	5.90	6.30	7.04					
01/15	6.24	5.51	5.90	6.24	6.89	6.29	6.17	5.99	6.21	6.68	5.51	5.80	6.27	7.10					
01/15	6.29	5.55	5.93	6.30	6.97	6.36	6.21	5.99	6.29	6.81	5.55	5.86	6.31	7.12					
01/15	6.30	5.57	6.00	6.30	6.92	6.38	6.22	6.07	6.27	6.79	5.57	5.93	6.33	7.05					
01/15	6.42	5.68	6.11	6.43	7.07	6.50	6.35	6.19	6.38	6.93	5.68	6.02	6.48	7.22					
01/15	6.44	5.67	6.05	6.47	7.16	6.50	6.38	6.13	6.40	6.97	5.67	5.97	6.34	7.35					
01/15	6.42	5.64	6.01	6.46	7.15	6.48	6.35	6.09	6.37	6.98	5.64	5.92	6.55	7.31					
01/15	6.50	5.65	6.03	6.55	7.31	6.59	6.41	6.13	6.49	7.15	5.65	5.93	6.60	7.47					
01/15	7.56	6.28	6.79	7.58	8.88	7.70	7.42	6.95	7.56	8.58	6.28	6.63	7.60	9.17					
01/15	7.65	6.12	6.73	7.68	9.21	7.80	7.49	6.83	7.60	8.98	6.12	6.63	7.76	9.44					
01/15	6.73	5.06	5.81	6.70	8.45	6.87	6.59	5.93	6.54	8.13	5.06	5.68	6.85	8.76					
01/15	6.59	5.05	5.84	6.46	8.14	6.77	6.41	6.01	6.39	7.90	5.05	5.67	6.52	8.39					
01/15	6.64	5.27	6.02	6.47	8.08	6.72	6.56	6.11	6.30	7.74	5.27	5.93	6.62	8.42					
01/15	6.84	5.50	6.11	6.66	8.42	6.85	6.83	6.14	6.42	8.00	5.50	6.07	6.90	8.84					

Notes: Moody's Long-Term Corporate Bond Yield Averages have been published daily since 1929. They are derived from pricing data on a regularly replenished population of nearly 75,000 corporate bonds in the US market, each with current outstanding over \$100 million. The bonds have maturities as close as possible to 30 years; they are dropped from the list if their remaining term is less than 20 years, if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual basis observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations. Because of the dearth of Aaa-rated railroad term bond issues, Moody's Aaa railroad bond yield average was discontinued as of December 18, 1967. Moody's Aaa public utility average suspended Jan. 1984 thru Sept. 1984. Oct. 1984 figure for last 14 business days only. The Railroad Bond Averages were discontinued as of July 17, 1989 because of insufficient frequently tradable bond July figures were based on

MERGENT-BOND RECORD

Corporate Bond Yield Averages

AV. CORP.	CORPORATE BY RATINGS				CORPORATE BY GROUPS			PUBLIC UTILITY BONDS				INDUSTRIAL BONDS				RAILROAD BONDS				
	Aaa	Aa	A	Baa	P.U.	IND.	R-FL	Aaa	Aa	A	Baa	Aaa	Aa	A	Baa	Aaa	Aa	A	Baa	
2004																				
Jan.	6.08	5.54	5.91	6.08	6.44	6.23	5.92	Jan.	6.06	6.15	6.47	Jan.	5.54	5.74	6.02	6.40	Jan.			
Feb.	6.00	5.50	5.87	6.04	6.27	6.17	5.83	Feb.	6.10	6.15	6.28	Feb.	5.50	5.65	5.93	6.24	Feb.			
Mar.	5.84	5.33	5.70	5.86	6.11	6.01	5.67	Mar.	5.93	5.97	6.12	Mar.	5.33	5.48	5.75	6.10	Mar.			
Apr.	6.22	5.73	6.10	6.25	6.46	6.38	6.05	Apr.	6.33	6.35	6.46	Apr.	5.73	5.85	6.15	6.45	Apr.			
May	6.51	6.04	6.40	6.54	6.75	6.68	6.34	May	6.66	6.62	6.75	May	6.04	6.13	6.45	6.73	May			
June	6.42	6.01	6.21	6.42	6.78	6.53	6.31	June	6.30	6.46	6.84	June	6.01	6.12	6.37	6.72	June			
July	6.24	5.82	6.02	6.23	6.62	6.34	6.13	July	6.09	6.27	6.67	July	5.82	5.94	6.18	6.57	July			
Aug.	6.08	5.65	5.87	6.08	6.48	6.18	5.98	Aug.	5.95	6.14	6.45	Aug.	5.65	5.79	6.02	6.47	Aug.			
Sept.	5.91	5.46	5.73	5.91	6.27	6.01	5.81	Sept.	5.79	5.98	6.27	Sept.	5.46	5.67	5.84	6.27	Sept.			
Oct.	5.87	5.47	5.69	5.86	6.21	5.95	5.78	Oct.	5.74	5.94	6.17	Oct.	5.47	5.63	5.78	6.24	Oct.			
Nov.	5.89	5.52	5.72	5.88	6.21	5.97	5.80	Nov.	5.79	5.97	6.16	Nov.	5.52	5.65	5.78	6.25	Nov.			
Dec.	5.84	5.47	5.69	5.82	6.15	5.93	5.75	Dec.	5.78	5.92	6.10	Dec.	5.47	5.60	5.72	6.20	Dec.			
2005																				
Jan.	5.72	5.36	5.58	5.68	6.02	5.80	5.63	Jan.	5.68	5.78	5.95	Jan.	5.36	5.48	5.58	6.08	Jan.			
Feb.	5.55	5.20	5.44	5.51	5.82	5.64	5.45	Feb.	5.55	5.61	5.76	Feb.	5.20	5.32	5.40	5.87	Feb.			
Mar.	5.77	5.40	5.64	5.73	6.06	5.86	5.67	Mar.	5.76	5.83	6.01	Mar.	5.40	5.53	5.63	6.11	Mar.			
Apr.	5.65	5.33	5.44	5.58	6.05	5.72	5.58	Apr.	5.56	5.64	5.95	Apr.	5.33	5.31	5.52	6.15	Apr.			
May	5.54	5.15	5.29	5.49	6.01	5.60	5.48	May	5.39	5.53	5.88	May	5.15	5.18	5.45	6.13	May			
June	5.35	4.96	5.02	5.33	5.86	5.39	5.31	June	5.05	5.40	5.70	June	4.96	4.99	5.26	6.01	June			
July	5.46	5.06	5.14	5.44	5.95	5.50	5.41	July	5.18	5.51	5.81	July	5.06	5.10	5.37	6.10	July			
Aug.	5.49	5.09	5.20	5.48	5.96	5.51	5.46	Aug.	5.23	5.50	5.80	Aug.	5.09	5.16	5.45	6.12	Aug.			
Sept.	5.53	5.13	5.24	5.50	6.03	5.54	5.51	Sept.	5.27	5.52	5.83	Sept.	5.13	5.21	5.47	6.22	Sept.			
Oct.	5.77	5.34	5.46	5.75	6.29	5.79	5.74	Oct.	5.50	5.79	6.08	Oct.	5.34	5.42	5.70	6.49	Oct.			
Nov.	5.86	5.42	5.55	5.83	6.39	5.88	5.83	Nov.	5.59	5.88	6.19	Nov.	5.42	5.52	5.78	6.59	Nov.			
Dec.	5.81	5.38	5.51	5.84	6.33	5.83	5.80	Dec.	5.55	5.80	6.14	Dec.	5.38	5.45	5.88	6.51	Dec.			
2006																				
Jan.	5.75	5.29	5.45	5.79	6.24	5.77	5.73	Jan.	5.50	5.75	6.06	Jan.	5.29	5.39	5.83	6.41	Jan.			
Feb.	5.80	5.35	5.51	5.85	6.27	5.83	5.78	Feb.	5.55	5.82	6.11	Feb.	5.35	5.46	5.87	6.43	Feb.			
Mar.	5.95	5.52	5.67	5.98	6.41	5.98	5.92	Mar.	5.71	5.98	6.26	Mar.	5.52	5.64	5.96	6.55	Mar.			
Apr.	6.26	5.84	6.00	6.27	6.68	6.28	6.23	Apr.	6.02	6.29	6.54	Apr.	5.84	5.98	6.26	6.82	Apr.			
May	6.36	5.95	6.13	6.40	6.75	6.39	6.33	May	6.16	6.42	6.59	May	5.99	6.10	6.37	6.90	May			
June	6.35	5.89	6.11	6.39	6.78	6.39	6.31	June	6.16	6.40	6.61	June	5.85	6.05	6.36	6.94	June			
July	6.33	5.85	6.08	6.36	6.76	6.37	6.28	July	6.13	6.37	6.61	July	5.85	6.02	6.35	6.91	July			
Aug.	6.16	5.68	5.91	6.19	6.59	6.20	6.11	Aug.	5.97	6.20	6.43	Aug.	5.68	5.85	6.18	6.74	Aug.			
Sept.	5.98	5.51	5.75	5.98	6.43	6.03	5.94	Sept.	5.81	6.00	6.26	Sept.	5.51	5.68	5.95	6.59	Sept.			
Oct.	5.97	5.51	5.74	5.94	6.42	6.01	5.93	Oct.	5.80	5.98	6.24	Oct.	5.51	5.68	5.90	6.60	Oct.			
Nov.	5.78	5.33	5.57	5.76	6.20	5.82	5.73	Nov.	5.61	5.80	6.04	Nov.	5.33	5.52	5.72	6.36	Nov.			
Dec.	5.79	5.29	5.58	5.78	6.22	5.83	5.74	Dec.	5.62	5.81	6.05	Dec.	5.29	5.53	5.75	6.38	Dec.			
2007																				
Jan.	5.92	5.40	5.75	5.93	6.34	5.96	5.88	Jan.	5.78	5.96	6.16	Jan.	5.40	5.71	5.91	6.52	Jan.			
Feb.	5.88	5.39	5.72	5.88	6.28	5.91	5.85	Feb.	5.73	5.90	6.10	Feb.	5.39	5.70	5.86	6.44	Feb.			
Mar.	5.84	5.30	5.66	5.84	6.27	5.87	5.80	Mar.	5.66	5.85	6.10	Mar.	5.30	5.66	5.83	6.43	Mar.			
Apr.	5.99	5.47	5.83	5.99	6.39	6.01	5.96	Apr.	5.83	5.97	6.24	Apr.	5.47	5.82	6.00	6.54	Apr.			
May	6.00	5.47	5.85	6.01	6.39	6.03	5.97	May	5.86	5.99	6.23	May	5.47	5.84	6.04	6.54	May			
June	6.32	5.79	6.17	6.33	6.70	6.34	6.29	June	6.18	6.30	6.54	June	5.79	6.15	6.36	6.84	June			
July	6.26	5.73	6.09	6.30	6.65	6.28	6.24	July	6.11	6.25	6.49	July	5.73	6.07	6.34	6.81	July			
Aug.	6.26	5.79	6.06	6.29	6.65	6.28	6.23	Aug.	6.11	6.24	6.51	Aug.	5.79	6.01	6.35	6.79	Aug.			
Sept.	6.21	5.74	6.02	6.23	6.59	6.24	6.17	Sept.	6.10	6.18	6.45	Sept.	5.74	5.93	6.28	6.73	Sept.			
Oct.	6.12	5.66	5.94	6.13	6.48	6.17	6.06	Oct.	6.04	6.11	6.36	Oct.	5.66	5.84	6.14	6.60	Oct.			
Nov.	5.97	5.44	5.78	5.97	6.40	6.04	5.90	Nov.	5.87	5.97	6.27	Nov.	5.44	5.67	5.97	6.51	Nov.			
Dec.	6.15	5.49	5.91	6.19	6.65	6.23	6.07	Dec.	6.03	6.16	6.51	Dec.	5.49	5.78	6.22	6.58	Dec.			
2008																				
Jan.	6.02	5.33	5.78	6.06	6.54	6.08	5.96	Jan.	5.87	6.02	6.35	Jan.	5.33	5.68	6.10	6.73	Jan.			
Feb.	6.24	5.53	5.97	6.26	6.82	6.28	6.19	Feb.	6.04	6.21	6.60	Feb.	5.53	5.90	6.30	7.04	Feb.			
Mar.	6.24	5.51	5.90	6.24	6.89	6.29	6.17	Mar.	5.99	6.21	6.68	Mar.	5.51	5.80	6.27	7.10	Mar.			
Apr.	6.29	5.55	5.93	6.30	6.97	6.36	6.21	Apr.	5.99	6.29	6.81	Apr.	5.55	5.86	6.31	7.12	Apr.			
May	6.30	5.57	6.00	6.30	6.92	6.38	6.22	May	6.07	6.27	6.79	May	5.57	5.93	6.33	7.05	May			
June	6.42	5.68	6.11	6.43	7.07	6.50	6.35	June	6.19	6.38	6.93	June	5.68	6.02	6.48	7.22	June			
July	6.44	5.67	6.05	6.47	7.16	6.50	6.38	July	6.13	6.40	6.97	July	5.67	5.97	6.54	7.35	July			
Aug.	6.42	5.64	6.01	6.46	7.15	6.48	6.35	Aug.	6.09	6.37	6.98	Aug.	5.64	5.92	6.55	7.31	Aug.			
Sept.	6.50	5.65	6.03	6.55	7.31	6.59	6.41	Sept.	6.13	6.49	7.15	Sept.	5.65	5.93	6.60	7.47	Sept.			
Oct.	7.56	6.28	6.79	7.58	8.88	7.70	7.42	Oct.	6.95	7.56	8.58	Oct.	6.28	6.63	7.60	9.17	Oct.			
Nov.	7.65	6.12	6.73	7.68	9.21	7.80	7.49	Nov.	6.83	7.60	8.98	Nov.	6.12	6.63	7.76	9.44	Nov.			
Dec.	6.73	5.06	5.81	6.70	8.45	6.87	6.59	Dec.	5.93	6.54	8.13	Dec.	5.06	5.68	6.85	8.76	Dec.			
2009																				
Jan.	6.59	5.05	5.84	6.46	8.14	6.77	6.41	Jan.	6.01	6.39	7.90	Jan.	5.05	5.67	6.52	8.39	Jan.			
Feb.	6.64	5.27	6.02	6.47	8.08	6.72	6.56	Feb.	6.11</											

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields (%)	12/11/2009	12/10/2009	12/9/2009	12/8/2009	12/7/2009	Past 12 Months		Monthly Average	
						High	Low	Dec-09	Nov-09
Avg. Corporate	5.81	5.81	5.73	5.72	5.75	6.85	5.61	5.83	5.68
Aaa	5.31	5.31	5.22	5.19	5.22	5.61	5.05	5.70	5.19
Aa	5.45	5.45	5.38	5.37	5.40	6.24	5.21	5.33	5.29
A	5.78	5.78	5.70	5.68	5.72	6.70	5.56	5.77	5.64
Baa	6.41	6.42	6.34	6.32	6.37	8.42	6.29	6.35	6.32
Avg. Industrial	5.74	5.74	5.66	5.64	5.68	6.83	5.61	5.65	5.64
Aaa	5.31	5.31	5.22	5.19	5.22	5.61	5.05	5.70	5.19
Aa	5.37	5.38	5.29	5.28	5.31	6.24	5.25	5.39	5.26
A	5.76	5.76	5.68	5.65	5.69	6.90	5.58	5.73	5.64
Baa	6.50	6.52	6.45	6.44	6.50	8.84	6.44	6.47	6.46
Avg. Public Utility	5.88	5.88	5.80	5.79	5.82	6.90	5.60	5.89	5.71
Aaa								5.89	
Aa	5.53	5.52	5.46	5.45	5.48	6.23	5.15	5.54	5.33
A	5.79	5.80	5.72	5.71	5.74	6.49	5.53	5.71	5.63
Baa	6.31	6.31	6.23	6.20	6.23	8.03	6.12	6.21	6.18

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.
 Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields (%)	1/4/2010	1/1/2010	12/31/2009	12/30/2009	12/29/2009	Past 12 Months		Monthly Average	
						High	Low	Jan-10	Dec-09
Avg. Corporate	5.85	ND	5.84	5.81	5.86	6.85	5.61	5.65	5.78
Aaa	5.35	ND	5.33	5.30	5.34	5.61	5.13	5.15	5.26
Aa	5.53	ND	5.49	5.46	5.53	6.24	5.21	5.13	5.44
A	5.84	ND	5.84	5.81	5.86	6.70	5.56	5.59	5.77
Baa	6.39	ND	6.39	6.36	6.41	8.42	6.29	6.29	6.37
Avg. Industrial	5.77	ND	5.77	5.74	5.77	6.83	5.61	5.67	5.71
Aaa	5.35	ND	5.33	5.30	5.34	5.61	5.13	5.15	5.26
Aa	5.46	ND	5.44	5.41	5.44	6.24	5.25	5.16	5.35
A	5.82	ND	5.82	5.79	5.82	6.90	5.58	5.52	5.74
Baa	6.46	ND	6.47	6.44	6.48	8.84	6.44	6.46	6.47
Avg. Public Utility	5.92	ND	5.90	5.87	5.95	6.90	5.60	5.92	5.86
Aaa									
Aa	5.59	ND	5.54	5.51	5.62	6.23	5.15	5.19	5.52
A	5.86	ND	5.86	5.82	5.89	6.49	5.53	5.56	5.79
Baa	6.31	ND	6.31	6.28	6.34	8.03	6.12	6.11	6.26

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields (%)	2/5/2010	2/4/2010	2/3/2010	2/2/2010	2/1/2010	Past 12 Months		Monthly Average	
						High	Low	Feb-10	Jan-10
Avg. Corporate	5.74	5.77	5.85	5.77	5.79	6.85	5.61	5.78	5.76
Aaa	5.24	5.27	5.36	5.28	5.30	5.61	5.13	5.29	5.26
Aa	5.51	5.54	5.61	5.54	5.57	6.24	5.21	5.55	5.50
A	5.72	5.76	5.84	5.75	5.77	6.70	5.56	5.77	5.76
Baa	6.21	6.24	6.31	6.23	6.25	8.42	6.25	6.25	6.25
Avg. Industrial	5.67	5.71	5.79	5.71	5.73	6.83	5.61	5.72	5.69
Aaa	5.24	5.27	5.36	5.28	5.30	5.61	5.13	5.29	5.26
Aa	5.43	5.48	5.56	5.49	5.52	6.24	5.25	5.50	5.44
A	5.70	5.73	5.81	5.73	5.75	6.90	5.58	5.74	5.73
Baa	6.32	6.35	6.41	6.33	6.36	8.84	6.33	6.35	6.33
Avg. Public Utility	5.81	5.83	5.91	5.83	5.85	6.90	5.60	5.85	5.83
Aaa									
Aa	5.58	5.59	5.66	5.59	5.61	6.23	5.15	5.61	5.55
A	5.74	5.78	5.86	5.77	5.79	6.49	5.53	5.79	5.77
Baa	6.10	6.13	6.21	6.13	6.14	8.03	6.12	6.14	6.16

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields (%)	3/3/2010	3/2/2010	3/1/2010	2/26/2010	2/25/2010	Past 12 Months		Monthly Average	
						High	Low	Mar-10	Feb-10
Avg. Corporate	5.79	5.78	5.78	5.75	5.80	6.85	5.61	5.78	5.85
Aaa	5.25	5.23	5.22	5.21	5.26	5.61	5.13	5.23	5.35
Aa	5.54	5.53	5.54	5.51	5.56	6.24	5.21	5.54	5.62
A	5.77	5.76	5.75	5.73	5.78	6.70	5.56	5.76	5.84
Baa	6.26	6.26	6.26	6.23	6.28	8.39	6.25	6.26	6.34
Avg. Industrial	5.69	5.68	5.68	5.66	5.71	6.79	5.61	5.68	5.79
Aaa	5.25	5.23	5.22	5.21	5.26	5.61	5.13	5.23	5.35
Aa	5.47	5.45	5.46	5.43	5.48	6.24	5.25	5.46	5.55
A	5.73	5.72	5.71	5.69	5.74	6.90	5.58	5.72	5.80
Baa	6.31	6.30	6.31	6.29	6.35	8.74	6.31	6.31	6.43
Avg. Public Utility	5.88	5.87	5.87	5.84	5.89	6.90	5.60	5.87	5.94
Aaa									
Aa	5.61	5.60	5.61	5.58	5.63	6.23	5.15	5.61	5.69
A	5.81	5.79	5.79	5.77	5.82	6.49	5.53	5.80	5.87
Baa	6.21	6.21	6.20	6.17	6.21	8.03	6.12	6.21	6.25

Yields & spreads: US long-term corporates - Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations. Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields(%)	4/9/2010	4/8/2010	4/7/2010	4/6/2010	4/5/2010	Past 12 Months		Monthly Average	
						High	Low	Apr-10	Mar-10
Avg. Corporate	5.87	5.88	5.87	5.97	5.97	6.79	5.61	5.91	5.81
Aaa	5.34	5.35	5.34	5.45	5.44	5.61	5.13	5.38	5.27
Aa	5.62	5.64	5.62	5.73	5.73	6.24	5.21	5.66	5.57
A	5.86	5.87	5.87	5.97	5.97	6.67	5.56	5.90	5.80
Baa	6.33	6.34	6.33	6.44	6.44	8.06	6.25	6.37	6.27
Avg. Industrial	5.78	5.79	5.78	5.89	5.88	6.75	5.61	5.82	5.71
Aaa	5.34	5.35	5.34	5.45	5.44	5.61	5.13	5.38	5.27
Aa	5.56	5.57	5.56	5.67	5.66	6.24	5.25	5.60	5.49
A	5.81	5.83	5.82	5.92	5.92	6.84	5.58	5.86	5.75
Baa	6.39	6.40	6.39	6.50	6.50	8.36	6.32	6.43	6.32
Avg. Public Utility	5.95	5.96	5.95	6.05	6.06	6.83	5.60	5.99	5.90
Aaa									
Aa	5.68	5.70	5.68	5.78	5.80	6.23	5.15	5.73	5.64
A	5.90	5.91	5.91	6.01	6.02	6.49	5.53	5.95	5.84
Baa	6.26	6.28	6.26	6.37	6.37	7.76	6.12	6.30	6.22

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields (%)	5/7/2010	5/6/2010	5/5/2010	5/4/2010	5/3/2010	Past 12 Months		Monthly Average	
						High	Low	May-10	Apr-10
Avg. Corporate	5.50	5.33	5.51	5.54	5.64	6.52	5.50	5.50	5.80
Aaa	4.95	4.80	5.03	5.06	5.15	5.61	5.00	5.00	5.29
Aa	5.26	5.09	5.28	5.32	5.41	6.12	5.21	5.27	5.57
A	5.48	5.31	5.48	5.51	5.61	6.39	5.48	5.48	5.78
Baa	6.00	5.82	5.98	6.01	6.09	7.49	5.98	5.98	6.25
Avg. Industrial	5.43	5.26	5.45	5.48	5.57	6.49	5.44	5.44	5.71
Aaa	4.95	4.80	5.03	5.06	5.15	5.61	5.00	5.00	5.29
Aa	5.19	5.02	5.22	5.26	5.35	6.11	5.21	5.21	5.50
A	5.46	5.29	5.47	5.50	5.59	6.58	5.46	5.46	5.74
Baa	6.12	5.92	6.07	6.09	6.17	7.69	6.07	6.07	6.32
Avg. Public Utility	5.56	5.39	5.57	5.60	5.70	6.54	5.56	5.56	5.87
Aaa									
Aa	5.32	5.15	5.33	5.37	5.46	6.13	5.15	5.33	5.62
A	5.49	5.32	5.49	5.52	5.62	6.19	5.49	5.49	5.81
Baa	5.88	5.71	5.89	5.92	6.01	7.30	5.88	5.88	6.19

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields (%)							Past 12 Months		Monthly Average	
	6/30/2010	6/29/2010	6/28/2010	6/25/2010	6/24/2010	High	Low	Jun-10	May-10	
Avg. Corporate	5.30	5.33	5.40	5.46	5.48	6.17	5.52	5.52	5.61	
Aaa	4.66	4.71	4.78	4.83	4.85	5.41	4.88	4.88	5.00	
Aa	4.91	4.94	5.01	5.06	5.10	5.71	5.16	5.16	5.30	
A	5.19	5.23	5.30	5.36	5.38	6.09	5.44	5.44	5.57	
Baa	6.05	6.09	6.15	6.21	6.22	7.09	6.13	6.23	6.23	
Avg. Industrial	5.20	5.23	5.30	5.36	5.38	6.18	5.42	5.42	5.53	
Aaa	4.66	4.71	4.78	4.83	4.85	5.41	4.88	4.88	5.00	
Aa	4.86	4.88	4.95	5.00	5.03	5.78	5.11	5.11	5.25	
A	5.17	5.21	5.28	5.33	5.36	6.20	5.42	5.42	5.56	
Baa	6.10	6.13	6.19	6.26	6.26	7.30	6.21	6.28	6.30	
Avg. Public Utility	5.39	5.43	5.49	5.55	5.58	6.15	5.60	5.62	5.69	
Aaa										
Aa	4.95	4.99	5.06	5.11	5.16	5.68	5.15	5.22	5.34	
A	5.21	5.25	5.31	5.38	5.40	5.97	5.46	5.46	5.57	
Baa	6.00	6.04	6.10	6.15	6.17	6.87	6.06	6.18	6.15	

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields (%)	8/2/2010	7/30/2010	7/29/2010	7/28/2010	7/27/2010	Past 12 Months		Monthly Average	
						High	Low	Aug-10	Jul-10
Avg. Corporate	5.29	5.22	5.32	5.32	5.34	5.86	5.29	5.29	5.32
Aaa	4.78	4.70	4.80	4.76	4.81	5.32	4.72	4.78	4.72
Aa	4.95	4.87	4.97	4.97	4.99	5.61	4.95	4.95	4.96
A	5.25	5.16	5.26	5.27	5.29	5.84	5.25	5.25	5.25
Baa	5.89	5.85	5.95	5.95	5.98	6.36	5.89	5.89	6.01
Avg. Industrial	5.23	5.15	5.25	5.23	5.26	5.77	5.23	5.23	5.23
Aaa	4.78	4.70	4.80	4.76	4.81	5.32	4.72	4.78	4.72
Aa	4.93	4.86	4.96	4.94	4.96	5.54	4.92	4.93	4.92
A	5.23	5.14	5.24	5.24	5.27	5.79	5.23	5.23	5.23
Baa	5.98	5.90	6.00	5.99	6.01	6.50	5.98	5.98	6.04
Avg. Public Utility	5.34	5.28	5.39	5.40	5.42	5.94	5.34	5.34	5.41
Aaa									
Aa	4.96	4.87	4.98	5.00	5.02	5.68	4.96	4.96	4.99
A	5.26	5.17	5.28	5.29	5.31	5.88	5.26	5.26	5.26
Baa	5.80	5.80	5.90	5.91	5.94	6.27	5.80	5.80	5.98

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields(%)	9/1/2010	8/31/2010	8/30/2010	8/27/2010	8/26/2010	Past 12 Months		Monthly Average	
						High	Low	Sep-10	Aug-10
Avg. Corporate	4.96	4.84	4.90	4.98	4.82	5.86	4.96	4.96	5.04
Aaa	4.38	4.26	4.34	4.41	4.24	5.32	4.38	4.38	4.49
Aa	4.62	4.51	4.56	4.65	4.49	5.61	4.62	4.62	4.72
A	4.91	4.78	4.85	4.93	4.77	5.84	4.91	4.91	5.00
Baa	5.59	5.48	5.53	5.62	5.45	6.36	5.59	5.59	5.66
Avg. Industrial	4.90	4.78	4.84	4.92	4.76	5.77	4.90	4.90	4.98
Aaa	4.38	4.26	4.34	4.41	4.24	5.32	4.38	4.38	4.49
Aa	4.60	4.48	4.54	4.62	4.46	5.54	4.60	4.60	4.68
A	4.90	4.78	4.84	4.92	4.75	5.79	4.90	4.90	4.98
Baa	5.71	5.60	5.65	5.73	5.57	6.50	5.71	5.71	5.77
Avg. Public Utility	5.01	4.89	4.95	5.04	4.87	5.94	5.01	5.01	5.10
Aaa									
Aa	4.64	4.53	4.58	4.68	4.51	5.68	4.64	4.64	4.75
A	4.91	4.78	4.86	4.94	4.78	5.88	4.91	4.91	5.01
Baa	5.47	5.36	5.41	5.50	5.33	6.27	5.47	5.47	5.55

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields (%)	10/4/2010	10/1/2010	9/30/2010	9/29/2010	9/28/2010	Past 12 Months		Monthly Average	
						High	Low	Oct-10	Sep-10
Avg. Corporate	5.02	5.02	4.99	4.98	4.94	5.86	5.02	5.02	5.05
Aaa	4.57	4.57	4.54	4.51	4.47	5.32	4.49	4.57	4.53
Aa	4.69	4.70	4.67	4.65	4.61	5.61	4.69	4.69	4.72
A	4.96	4.96	4.93	4.93	4.88	5.84	4.96	4.96	5.01
Baa	5.60	5.61	5.58	5.58	5.54	6.35	5.61	5.61	5.66
Avg. Industrial	4.97	4.98	4.95	4.94	4.90	5.77	4.97	4.97	5.00
Aaa	4.57	4.57	4.54	4.51	4.47	5.32	4.49	4.57	4.53
Aa	4.64	4.65	4.62	4.61	4.57	5.54	4.65	4.65	4.70
A	4.95	4.96	4.93	4.92	4.87	5.79	4.95	4.95	5.00
Baa	5.72	5.73	5.70	5.71	5.67	6.43	5.72	5.72	5.78
Avg. Public Utility	5.06	5.06	5.03	5.02	4.98	5.94	5.06	5.06	5.10
Aaa									
Aa	4.74	4.75	4.71	4.69	4.65	5.68	4.74	4.74	4.74
A	4.96	4.96	4.93	4.93	4.88	5.88	4.96	4.96	5.01
Baa	5.48	5.48	5.45	5.45	5.41	6.27	5.48	5.48	5.53

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields (%)	10/29/2010	10/28/2010	10/27/2010	10/26/2010	10/25/2010	Past 12 Months		Monthly Average	
						High	Low	Oct-10	Sep-10
Avg. Corporate	5.23	5.30	5.28	5.25	5.16	5.86	5.04	5.14	5.05
Aaa	4.75	4.81	4.80	4.78	4.69	5.32	4.49	4.68	4.53
Aa	4.93	4.99	4.98	4.94	4.85	5.61	4.72	4.83	4.72
A	5.19	5.25	5.24	5.19	5.11	5.84	5.00	5.09	5.01
Baa	5.78	5.85	5.84	5.80	5.72	6.35	5.66	5.72	5.66
Avg. Industrial	5.17	5.23	5.22	5.18	5.09	5.77	4.98	5.08	5.00
Aaa	4.75	4.81	4.80	4.78	4.69	5.32	4.49	4.68	4.53
Aa	4.89	4.95	4.93	4.88	4.79	5.54	4.68	4.77	4.70
A	5.17	5.23	5.21	5.16	5.08	5.79	4.98	5.07	5.00
Baa	5.86	5.93	5.93	5.89	5.81	6.43	5.77	5.81	5.78
Avg. Public Utility	5.29	5.36	5.34	5.31	5.22	5.94	5.10	5.20	5.10
Aaa									
Aa	4.97	5.03	5.02	4.99	4.91	5.68	4.74	4.89	4.74
A	5.21	5.27	5.26	5.22	5.13	5.88	5.01	5.10	5.01
Baa	5.70	5.77	5.75	5.71	5.63	6.27	5.53	5.62	5.53

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields(%)	12/7/2010	12/6/2010	12/3/2010	12/2/2010	12/1/2010	Past 12 Months		Monthly Average	
						High	Low	Dec-10	Nov-10
Avg. Corporate	5.59	5.42	5.49	5.44	5.42	5.86	5.04	5.47	5.37
Aaa	5.09	4.93	5.00	4.95	4.92	5.32	4.49	4.98	4.87
Aa	5.29	5.11	5.18	5.14	5.12	5.61	4.72	5.17	5.07
A	5.55	5.38	5.45	5.40	5.38	5.84	5.00	5.43	5.33
Baa	6.14	5.97	6.05	6.00	5.98	6.34	5.66	6.03	5.92
Avg. Industrial	5.51	5.34	5.42	5.37	5.35	5.77	4.98	5.40	5.29
Aaa	5.09	4.93	5.00	4.95	4.92	5.32	4.49	4.98	4.87
Aa	5.23	5.06	5.13	5.09	5.07	5.54	4.68	5.12	5.02
A	5.50	5.33	5.41	5.36	5.35	5.79	4.98	5.39	5.29
Baa	6.21	6.05	6.13	6.08	6.07	6.40	5.77	6.11	5.99
Avg. Public Utility	5.67	5.49	5.56	5.51	5.49	5.94	5.10	5.54	5.45
Aaa									
Aa	5.34	5.16	5.23	5.19	5.17	5.68	4.74	5.22	5.12
A	5.59	5.42	5.48	5.44	5.41	5.88	5.01	5.47	5.37
Baa	6.07	5.89	5.96	5.91	5.89	6.27	5.53	5.94	5.85

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields (%)	1/10/2011	1/7/2011	1/6/2011	1/5/2011	1/4/2011	Past 12 Months		Monthly Average	
						High	Low	Jan-11	Dec-10
Avg. Corporate	5.52	5.53	5.57	5.61	5.52	5.86	5.04	5.54	5.55
Aaa	4.99	5.02	5.06	5.09	4.97	5.32	4.49	5.01	5.02
Aa	5.21	5.22	5.26	5.29	5.22	5.61	4.72	5.23	5.26
A	5.50	5.50	5.54	5.58	5.48	5.84	5.00	5.51	5.52
Baa	6.07	6.07	6.11	6.17	6.07	6.34	5.66	6.09	6.10
Avg. Industrial	5.43	5.43	5.48	5.51	5.41	5.77	4.98	5.44	5.46
Aaa	4.99	5.02	5.06	5.09	4.97	5.32	4.49	5.01	5.02
Aa	5.17	5.18	5.22	5.25	5.16	5.54	4.68	5.18	5.19
A	5.45	5.45	5.49	5.53	5.42	5.79	4.98	5.46	5.47
Baa	6.09	6.08	6.13	6.18	6.08	6.40	5.77	6.10	6.15
Avg. Public Utility	5.61	5.62	5.66	5.70	5.62	5.94	5.10	5.63	5.64
Aaa									
Aa	5.25	5.26	5.30	5.33	5.27	5.68	4.74	5.28	5.32
A	5.54	5.55	5.59	5.63	5.53	5.88	5.01	5.56	5.56
Baa	6.04	6.05	6.09	6.15	6.05	6.27	5.53	6.07	6.04

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields (%)	1/31/2011	1/28/2011	1/27/2011	1/26/2011	1/25/2011	Past 12 Months		Monthly Average	
						High	Low	Jan-11	Dec-10
Avg. Corporate	5.60	5.55	5.58	5.62	5.49	5.86	5.04	5.56	5.55
Aaa	5.12	5.07	5.09	5.12	4.98	5.32	4.49	5.04	5.02
Aa	5.31	5.26	5.29	5.33	5.21	5.61	4.72	5.26	5.26
A	5.57	5.52	5.54	5.58	5.46	5.84	5.00	5.53	5.52
Baa	6.10	6.06	6.09	6.13	6.01	6.34	5.66	6.09	6.10
Avg. Industrial	5.52	5.47	5.49	5.53	5.40	5.77	4.98	5.46	5.46
Aaa	5.12	5.07	5.09	5.12	4.98	5.32	4.49	5.04	5.02
Aa	5.28	5.21	5.24	5.29	5.17	5.54	4.68	5.22	5.19
A	5.52	5.47	5.49	5.53	5.41	5.79	4.98	5.48	5.47
Baa	6.15	6.11	6.12	6.17	6.04	6.40	5.77	6.11	6.15
Avg. Public Utility	5.67	5.62	5.66	5.70	5.57	5.94	5.10	5.64	5.64
Aaa									
Aa	5.34	5.30	5.33	5.37	5.24	5.68	4.74	5.29	5.32
A	5.61	5.56	5.59	5.63	5.50	5.88	5.01	5.57	5.56
Baa	6.05	6.01	6.05	6.09	5.98	6.27	5.53	6.06	6.04

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields (%)	3/1/2011	2/28/2011	2/25/2011	2/24/2011	2/23/2011	Past 12 Months		Monthly Average	
						High	Low	Mar-11	Feb-11
Avg. Corporate	5.51	5.51	5.54	5.56	5.61	5.67	5.04	5.57	5.66
Aaa	5.09	5.09	5.12	5.14	5.20	5.22	4.49	5.09	5.22
Aa	5.23	5.22	5.25	5.27	5.32	5.43	4.72	5.23	5.37
A	5.48	5.48	5.52	5.54	5.59	5.64	5.00	5.48	5.64
Baa	6.00	5.99	6.02	6.05	6.09	6.23	5.66	6.00	6.15
Avg. Industrial	5.45	5.44	5.47	5.49	5.53	5.59	4.98	5.45	5.58
Aaa	5.09	5.09	5.12	5.14	5.20	5.22	4.49	5.09	5.22
Aa	5.19	5.17	5.20	5.21	5.25	5.37	4.68	5.19	5.31
A	5.44	5.45	5.48	5.50	5.55	5.61	4.98	5.44	5.59
Baa	6.06	6.06	6.08	6.10	6.13	6.30	5.77	6.06	6.19
Avg. Public Utility	5.57	5.57	5.60	5.63	5.68	5.73	5.10	5.57	5.73
Aaa									
Aa	5.27	5.27	5.30	5.32	5.38	5.49	4.74	5.27	5.42
A	5.52	5.51	5.55	5.57	5.62	5.68	5.01	5.52	5.68
Baa	5.93	5.92	5.96	5.99	6.04	6.18	5.53	5.93	6.10

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields (%)	4/5/2011	4/4/2011	4/1/2011	3/31/2011	3/30/2011	Past 12 Months		Monthly Average	
						High	Low	Apr-11	Mar-11
Avg. Corporate	5.57	5.55	5.56	5.57	5.59	5.66	5.04	5.56	5.55
Aaa	5.15	5.13	5.13	5.15	5.16	5.22	4.49	5.14	5.13
Aa	5.29	5.27	5.28	5.30	5.32	5.37	4.72	5.29	5.28
A	5.53	5.51	5.52	5.54	5.56	5.64	5.00	5.51	5.52
Baa	6.05	6.03	6.04	6.05	6.06	6.23	5.66	6.04	6.03
Avg. Industrial	5.50	5.48	5.49	5.50	5.52	5.58	4.98	5.49	5.48
Aaa	5.15	5.13	5.13	5.15	5.16	5.22	4.49	5.14	5.13
Aa	5.25	5.23	5.23	5.25	5.26	5.31	4.68	5.24	5.22
A	5.49	5.48	5.49	5.50	5.52	5.59	4.98	5.49	5.48
Baa	6.10	6.08	6.09	6.11	6.12	6.30	5.77	6.09	6.09
Avg. Public Utility	5.63	5.61	5.62	5.64	5.65	5.73	5.10	5.62	5.62
Aaa								5.32	
Aa	5.33	5.31	5.33	5.35	5.37	5.42	4.74	5.32	5.33
A	5.57	5.54	5.55	5.57	5.59	5.68	5.01	5.54	5.56
Baa	6.00	5.98	5.98	5.99	6.00	6.18	5.53	5.99	5.97

Yields & spreads: US long-term corporates - Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations. Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Yields (%)	5/3/2011	5/2/2011	4/29/2011	4/28/2011	4/27/2011	Past 12 Months		Monthly Average	
						High	Low	May-11	Apr-11
Avg. Corporate	5.40	5.43	5.45	5.47	5.52	5.66	5.04	5.41	5.56
Aaa	5.03	5.08	5.09	5.11	5.17	5.22	4.49	5.06	5.16
Aa	5.12	5.16	5.18	5.20	5.25	5.37	4.72	5.14	5.29
A	5.36	5.40	5.42	5.44	5.48	5.64	5.00	5.38	5.52
Baa	5.85	5.88	5.90	5.93	5.96	6.23	5.66	5.87	6.02
Avg. Industrial	5.33	5.37	5.39	5.41	5.46	5.58	4.98	5.35	5.49
Aaa	5.03	5.08	5.09	5.11	5.17	5.22	4.49	5.06	5.16
Aa	5.08	5.12	5.15	5.17	5.21	5.31	4.68	5.10	5.25
A	5.32	5.36	5.38	5.40	5.44	5.59	4.98	5.44	5.48
Baa	5.87	5.91	5.93	5.96	6.00	6.28	5.77	5.89	6.06
Avg. Public Utility	5.46	5.49	5.51	5.53	5.57	5.73	5.10	5.47	5.62
Aaa									
Aa	5.16	5.19	5.20	5.22	5.28	5.42	4.74	5.11	5.32
A	5.40	5.44	5.46	5.47	5.51	5.68	5.01	5.42	5.55
Baa	5.82	5.85	5.86	5.89	5.92	6.18	5.53	5.84	5.98

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

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Updated by 11 am EST with data from the previous business day.

Yields(%)	6/2/2011	6/1/2011	5/31/2011	5/30/2011	5/27/2011	Past 12 Months		Monthly Average	
						High	Low	Jun-11	May-11
Avg. Corporate	5.31	5.20	5.26	na	5.28	5.66	5.04	5.25	5.33
Aaa	4.99	4.88	4.94	na	4.95	5.22	4.49	4.93	4.96
Aa	5.05	4.94	5.01	na	5.02	5.37	4.72	5.00	5.06
A	5.26	5.16	5.22	na	5.24	5.64	5.00	5.21	5.29
Baa	5.74	5.64	5.70	na	5.72	6.15	5.66	5.69	5.78
Avg. Industrial	5.28	5.17	5.23	na	5.24	5.58	4.98	5.23	5.27
Aaa	4.99	4.88	4.94	na	4.95	5.22	4.49	4.93	4.96
Aa	5.06	4.94	5.01	na	5.01	5.31	4.68	5.00	5.04
A	5.25	5.15	5.21	na	5.22	5.59	4.98	5.20	5.26
Baa	5.80	5.69	5.75	na	5.77	6.19	5.75	5.75	5.81
Avg. Public Utility	5.33	5.22	5.29	na	5.31	5.73	5.10	5.27	5.38
Aaa								5.27	
Aa	5.03	4.93	5.00	na	5.02	5.42	4.74	4.98	5.08
A	5.27	5.16	5.23	na	5.25	5.68	5.01	5.21	5.32
Baa	5.68	5.58	5.64	na	5.67	6.10	5.53	5.63	5.74

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

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Yields (%)	7/8/2011	7/7/2011	7/6/2011	7/5/2011	7/4/2011	Past 12 Months		Monthly Average	
						High	Low	Jul-11	Jun-11
Avg. Corporate	5.32	5.41	5.41	5.45	na	5.66	5.04	5.41	5.30
Aaa	4.98	5.07	5.08	5.13	na	5.22	4.49	5.08	4.99
Aa	5.05	5.15	5.14	5.18	na	5.37	4.72	5.14	5.04
A	5.27	5.37	5.37	5.40	na	5.64	5.00	5.37	5.26
Baa	5.76	5.86	5.85	5.90	na	6.15	5.66	5.85	5.75
Avg. Industrial	5.27	5.36	5.37	5.41	na	5.58	4.98	5.37	5.27
Aaa	4.98	5.07	5.08	5.13	na	5.22	4.49	5.08	4.99
Aa	5.01	5.11	5.11	5.15	na	5.31	4.68	5.11	5.02
A	5.26	5.36	5.36	5.39	na	5.59	4.98	5.36	5.25
Baa	5.81	5.91	5.91	5.96	na	6.19	5.77	5.91	5.82
Avg. Public Utility	5.36	5.46	5.44	5.48	na	5.73	5.10	5.45	5.33
Aaa									
Aa	5.09	5.18	5.17	5.20	na	5.42	4.74	5.17	5.04
A	5.28	5.38	5.37	5.40	na	5.68	5.01	5.37	5.26
Baa	5.71	5.81	5.79	5.83	na	6.10	5.53	5.80	5.67

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

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 Updated by 11 am EST with data from the previous business day.

Yields(%)	8/1/2011	7/29/2011	7/28/2011	7/27/2011	7/26/2011	Past 12 Months		Monthly Average	
						High	Low	Aug-11	Jul-11
Avg. Corporate	5.04	5.12	5.24	5.27	5.28	5.66	5.04	5.04	5.30
Aaa	4.59	4.67	4.84	4.88	4.88	5.22	4.53	4.59	4.93
Aa	4.77	4.86	4.98	5.00	5.02	5.37	4.72	4.77	5.03
A	5.02	5.09	5.21	5.24	5.24	5.64	5.01	5.02	5.26
Baa	5.54	5.59	5.71	5.74	5.75	6.15	5.54	5.54	5.76
Avg. Industrial	4.98	5.05	5.18	5.22	5.23	5.58	4.98	4.98	5.25
Aaa	4.59	4.67	4.84	4.88	4.88	5.22	4.53	4.59	4.93
Aa	4.74	4.81	4.93	4.95	4.98	5.31	4.70	4.74	4.99
A	5.01	5.08	5.20	5.24	5.24	5.59	5.00	5.01	5.25
Baa	5.59	5.64	5.76	5.79	5.81	6.19	5.59	5.59	5.81
Avg. Public Utility	5.10	5.18	5.30	5.32	5.32	5.73	5.10	5.10	5.34
Aaa									
Aa	4.80	4.90	5.03	5.05	5.05	5.42	4.74	4.80	5.05
A	5.02	5.09	5.21	5.24	5.24	5.68	5.01	5.02	5.27
Baa	5.48	5.54	5.66	5.68	5.68	6.10	5.48	5.48	5.70

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

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 Updated by 11 am EST with data from the previous business day.

Yields (%)							Past 12 Months		Monthly Average	
	9/2/2011	9/1/2011	8/31/2011	8/30/2011	8/29/2011	High	Low	Sep-11	Aug-11	
Avg. Corporate	4.59	4.78	4.86	4.78	4.89	5.66	4.69	4.69	4.79	
Aaa	4.13	4.33	4.41	4.33	4.48	5.22	4.23	4.23	4.37	
Aa	4.25	4.44	4.51	4.43	4.54	5.37	4.35	4.35	4.47	
A	4.54	4.73	4.80	4.73	4.83	5.64	4.64	4.64	4.74	
Baa	5.20	5.38	5.48	5.41	5.53	6.15	5.29	5.29	5.36	
Avg. Industrial	4.59	4.78	4.86	4.79	4.91	5.58	4.69	4.69	4.79	
Aaa	4.13	4.33	4.41	4.33	4.48	5.22	4.23	4.23	4.37	
Aa	4.27	4.46	4.54	4.46	4.57	5.31	4.37	4.37	4.50	
A	4.60	4.78	4.86	4.79	4.90	5.59	4.69	4.69	4.79	
Baa	5.36	5.53	5.62	5.57	5.70	6.19	5.45	5.45	5.49	
Avg. Public Utility	4.58	4.77	4.85	4.77	4.87	5.73	4.67	4.67	4.78	
Aaa										
Aa	4.22	4.42	4.48	4.40	4.51	5.42	4.32	4.32	4.44	
A	4.47	4.67	4.74	4.66	4.76	5.68	4.57	4.57	4.69	
Baa	5.04	5.23	5.33	5.25	5.35	6.10	5.14	5.14	5.22	

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

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Yields (%)	10/3/2011	9/30/2011	9/29/2011	9/28/2011	9/27/2011	Past 12 Months		Monthly Average	
						High	Low	Oct-11	Sep-11
Avg. Corporate	4.35	4.49	4.57	4.66	4.69	5.66	4.35	4.35	4.60
Aaa	3.80	3.96	4.01	4.10	4.15	5.22	3.80	3.80	4.09
Aa	3.91	4.07	4.15	4.26	4.29	5.37	3.91	3.91	4.23
A	4.28	4.43	4.51	4.60	4.62	5.64	4.28	4.28	4.54
Baa	5.11	5.22	5.29	5.38	5.39	6.15	5.11	5.11	5.27
Avg. Industrial	4.32	4.45	4.52	4.62	4.64	5.58	4.32	4.32	4.58
Aaa	3.80	3.96	4.01	4.10	4.15	5.22	3.80	3.80	4.09
Aa	3.85	4.01	4.09	4.21	4.23	5.31	3.85	3.85	4.21
A	4.33	4.47	4.55	4.64	4.66	5.59	4.33	4.33	4.59
Baa	5.29	5.36	5.43	5.51	5.53	6.19	5.29	5.29	5.42
Avg. Public Utility	4.37	4.53	4.61	4.70	4.73	5.73	4.37	4.37	4.61
Aaa									
Aa	3.97	4.13	4.21	4.30	4.35	5.42	3.97	3.97	4.24
A	4.22	4.38	4.46	4.55	4.58	5.68	4.22	4.22	4.48
Baa	4.92	5.07	5.15	5.24	5.25	6.10	4.92	4.92	5.11

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.
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Yields (%)	11/4/2011	11/3/2011	11/2/2011	11/1/2011	10/31/2011	Past 12 Months		Monthly Average	
						High	Low	Nov-11	Oct-11
Avg. Corporate	4.39	4.41	4.33	4.30	4.46	5.66	4.36	4.36	4.60
Aaa	3.88	3.90	3.82	3.73	3.88	5.22	3.83	3.83	3.98
Aa	3.96	3.98	3.91	3.87	4.02	5.37	3.93	3.93	4.16
A	4.33	4.35	4.28	4.25	4.43	5.64	4.30	4.30	4.54
Baa	5.12	5.13	5.06	5.04	5.19	6.15	5.09	5.09	5.37
Avg. Industrial	4.36	4.38	4.31	4.26	4.41	5.58	4.33	4.33	4.54
Aaa	3.88	3.90	3.82	3.73	3.88	5.22	3.83	3.83	3.98
Aa	3.96	3.98	3.92	3.87	4.03	5.31	3.93	3.93	4.11
A	4.35	4.37	4.31	4.28	4.43	5.59	4.33	4.33	4.56
Baa	5.26	5.27	5.20	5.17	5.29	6.19	5.23	5.23	5.50
Avg. Public Utility	4.41	4.43	4.35	4.33	4.50	5.73	4.38	4.38	4.66
Aaa									
Aa	3.96	3.97	3.90	3.87	4.01	5.42	3.93	3.93	4.21
A	4.30	4.32	4.24	4.22	4.42	5.68	4.27	4.27	4.52
Baa	4.97	4.99	4.92	4.90	5.08	6.10	4.94	4.94	5.24

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

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Yields(%)	11/30/2011	11/29/2011	11/28/2011	11/25/2011	11/24/2011	Past 12 Months		Monthly Average	
						High	Low	Nov-11	Oct-11
Avg. Corporate	4.57	4.46	4.40	4.38	na	5.66	4.39	4.39	4.60
Aaa	4.07	3.96	3.89	3.85	na	5.22	3.87	3.87	3.98
Aa	4.17	4.05	3.98	3.96	na	5.37	3.97	3.97	4.16
A	4.51	4.41	4.34	4.33	na	5.64	4.34	4.34	4.54
Baa	5.32	5.22	5.16	5.15	na	6.15	5.14	5.14	5.37
Avg. Industrial	4.64	4.54	4.47	4.44	na	5.58	4.41	4.41	4.54
Aaa	4.07	3.96	3.89	3.85	na	5.22	3.87	3.87	3.98
Aa	4.29	4.18	4.09	4.04	na	5.31	4.01	4.01	4.11
A	4.64	4.53	4.48	4.47	na	5.59	4.43	4.43	4.56
Baa	5.57	5.47	5.40	5.39	na	6.19	5.34	5.34	5.50
Avg. Public Utility	4.50	4.38	4.32	4.32	na	5.73	4.37	4.37	4.66
Aaa									
Aa	4.04	3.91	3.87	3.88	na	5.42	3.92	3.92	4.21
A	4.38	4.28	4.19	4.19	na	5.68	4.25	4.25	4.52
Baa	5.07	4.96	4.91	4.90	na	6.10	4.93	4.93	5.24

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Updated by 11 am EST with data from the previous business day.

Yields (%)	12/30/2011	12/29/2011	12/28/2011	12/27/2011	12/26/2011	Past 12 Months		Monthly Average	
						High	Low	Dec-11	Nov-11
Avg. Corporate	4.36	4.39	4.38	4.52	na	5.66	4.39	4.47	4.39
Aaa	3.77	3.80	3.79	3.94	na	5.22	3.87	3.93	3.87
Aa	3.91	3.94	3.93	4.08	na	5.37	3.97	4.03	3.97
A	4.29	4.31	4.30	4.44	na	5.64	4.34	4.40	4.34
Baa	5.16	5.19	5.18	5.32	na	6.15	5.14	5.25	5.14
Avg. Industrial	4.34	4.36	4.36	4.50	na	5.58	4.41	4.47	4.41
Aaa	3.77	3.80	3.79	3.94	na	5.22	3.87	3.93	3.87
Aa	3.90	3.93	3.93	4.09	na	5.31	4.01	4.06	4.01
A	4.34	4.36	4.35	4.49	na	5.59	4.43	4.46	4.43
Baa	5.33	5.36	5.35	5.49	na	6.19	5.34	5.43	5.34
Avg. Public Utility	4.38	4.41	4.40	4.54	na	5.73	4.37	4.47	4.37
Aaa									
Aa	3.91	3.94	3.93	4.07	na	5.42	3.92	4.00	3.92
A	4.24	4.26	4.25	4.39	na	5.68	4.25	4.33	4.25
Baa	4.99	5.02	5.01	5.15	na	6.10	4.93	5.07	4.93

Credit Trends

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

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Yields (%)	Past 12 Months Monthly Average								
	8/3/2015	7/31/2015	7/30/2015	7/29/2015	7/28/2015	High	Low	Aug-15	Jul-15
Avg. Corporate	4.42	4.49	4.50	4.52	4.50	4.57	3.84	4.42	4.57
Aaa	3.99	4.07	4.05	4.09	4.06	4.19	3.46	3.99	4.15
Aa	4.09	4.15	4.15	4.17	4.15	4.27	3.54	4.09	4.25
A	4.28	4.35	4.36	4.39	4.36	4.45	3.70	4.28	4.44
Baa	5.08	5.14	5.16	5.19	5.17	5.20	4.45	5.08	5.20
Avg. Industrial	4.36	4.42	4.43	4.46	4.43	4.52	3.84	4.36	4.51
Aaa	3.99	4.07	4.05	4.09	4.06	4.19	3.46	3.99	4.15
Aa	4.06	4.11	4.12	4.15	4.13	4.25	3.55	4.06	4.22
A	4.33	4.40	4.42	4.45	4.41	4.51	3.82	4.33	4.49
Baa	5.04	5.11	5.13	5.15	5.13	5.18	4.45	5.04	5.18
Avg. Public Utility	4.48	4.55	4.56	4.58	4.56	4.63	3.83	4.48	4.63
Aaa									
Aa	4.11	4.18	4.18	4.19	4.16	4.29	3.52	4.11	4.27

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A	4.22	4.30	4.30	4.32	4.30	4.40	3.58	4.22	4.40
Baa	5.11	5.16	5.19	5.23	5.21	5.22	4.39	5.11	5.22
Spreads Above 10-yr Treasury (bp)									
						Past 12 Months Monthly Average			
	8/3/2015	7/31/2015	7/30/2015	7/29/2015	7/28/2015	High	Low	Aug-15	Jul-15
Avg. Corporate	227.10	230.90	224.00	223.30	224.90	227.10	186.04	227.10	225.89
Aaa	184.10	188.90	179.00	180.30	180.90	184.10	158.51	184.10	183.61
Aa	194.10	196.90	189.00	188.30	189.90	194.10	165.94	194.10	193.25
A	213.10	216.90	210.00	210.30	210.90	213.10	176.99	213.10	212.98
Baa	293.10	295.90	290.00	290.30	291.90	293.10	227.56	293.10	288.70
Avg. Industrial	221.10	223.90	217.00	217.30	217.90	221.10	184.18	221.10	219.48
Aaa	184.10	188.90	179.00	180.30	180.90	184.10	158.51	184.10	183.61
Aa	191.10	192.90	186.00	186.30	187.90	191.10	166.61	191.10	190.34
A	218.10	221.90	216.00	216.30	215.90	218.10	182.28	218.10	217.11
Baa	289.10	292.90	287.00	286.30	287.90	289.10	228.94	289.10	286.20
Avg. Public Utility	233.10	236.90	230.00	229.30	230.90	233.10	187.32	233.10	231.66
Aaa									
Aa	196.10	199.90	192.00	190.30	190.90	196.10	163.30	196.10	195.70
A	207.10	211.90	204.00	203.30	204.90	208.30	169.85	207.10	208.30
Baa	296.10	297.90	293.00	294.30	295.90	296.10	225.90	296.10	290.70

Credit Trends

Spreads Above 30-yr Treasury (bp)	Past 12 Months Monthly Average									
	8/3/2015	7/31/2015	7/30/2015	7/29/2015	7/28/2015	High	Low	Aug-15	Jul-15	
Avg. Corporate	156.80	158.30	155.70	152.20	153.50	156.80	112.91	156.80	150.84	
Aaa	113.80	116.30	110.70	109.20	109.50	113.80	85.39	113.80	108.57	
Aa	123.80	124.30	120.70	117.20	118.50	123.80	92.91	123.80	118.20	
A	142.80	144.30	141.70	139.20	139.50	142.80	103.87	142.80	137.93	
Baa	222.80	223.30	221.70	219.20	220.50	222.80	154.44	222.80	213.66	
Avg. Industrial	150.80	151.30	148.70	146.20	146.50	150.80	111.06	150.80	144.43	
Aaa	113.80	116.30	110.70	109.20	109.50	113.80	85.39	113.80	108.57	
Aa	120.80	120.30	117.70	115.20	116.50	120.80	93.49	120.80	115.30	
A	147.80	149.30	147.70	145.20	144.50	147.80	109.15	147.80	142.07	
Baa	218.80	220.30	218.70	215.20	216.50	218.80	155.82	218.80	211.16	
Avg. Public Utility	162.80	164.30	161.70	158.20	159.50	162.80	114.20	162.80	156.61	
Aaa										
Aa	125.80	127.30	123.70	119.20	119.50	125.80	91.87	125.80	120.66	
A	136.80	139.30	135.70	132.20	133.50	136.80	97.96	136.80	133.25	
Baa	225.80	225.30	224.70	223.20	224.50	225.80	152.77	225.80	215.66	
Past 12 Months										
Date	8/3/2015	7/31/2015	7/30/2015	7/29/2015	7/28/2015	High	Low	Aug-15	Jul-15	
30-Yr Treas. B-Mark:	2.85	2.91	2.94	3.00	2.97	3.26	2.45	2.85	3.07	
10-Yr Treas. B-Mark:	2.15	2.18	2.26	2.29	2.25	2.53	1.87	2.15	2.31	

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Treasury Yields							
Shrt	1.24	1.27	1.34	1.33	1.32	1.24	1.33
Med	1.79	1.84	1.91	1.90	1.88		
Long	2.59	2.67	2.70	2.73	2.70	2.59	2.80
Public Util. Yields							
Price	355.20	354.35	351.22	348.94	347.19	355.20	349.06
Yld	4.11	4.12	4.16	4.18	4.20	4.11	4.18
Div	14.61	14.61	14.60	14.59	14.59		
Mkt. Value ths.							
Spot Com. Index:	5,126.87	5,150.20	5,153.05	5,163.29	5,160.47	5,126.87	5,288.70
Indus. Metl. Index:	1,500.86	1,520.21	1,525.55	1,544.92	1,538.01	1,500.86	1,548.58
Moody's Analytics, Inc.							

Credit Trends

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Credit Trends

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.
 Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.
 Updated by 11 am EST with data from the previous business day.

Yields (%)	Past 12 Months Monthly Average								
	9/4/2015	9/3/2015	9/2/2015	9/1/2015	8/31/2015	High	Low	Sep-15	Aug-15
Avg. Corporate	4.54	4.61	4.62	4.61	4.61	4.60	3.84	4.60	4.48
Aaa	4.03	4.13	4.16	4.15	4.15	4.19	3.46	4.12	4.04
Aa	4.16	4.23	4.25	4.22	4.22	4.27	3.54	4.22	4.13
A	4.37	4.43	4.45	4.43	4.43	4.45	3.70	4.42	4.32
Baa	5.28	5.35	5.37	5.35	5.36	5.34	4.45	5.34	5.19
Avg. Industrial	4.44	4.52	4.54	4.53	4.53	4.52	3.84	4.51	4.42
Aaa	4.03	4.13	4.16	4.15	4.15	4.19	3.46	4.12	4.04
Aa	4.11	4.18	4.20	4.18	4.18	4.25	3.55	4.17	4.11
A	4.42	4.48	4.51	4.49	4.49	4.51	3.82	4.48	4.39
Baa	5.20	5.27	5.30	5.28	5.28	5.26	4.45	5.26	5.15
Avg. Public Utility	4.63	4.69	4.70	4.68	4.68	4.68	3.83	4.68	4.54
Aaa									
Aa	4.21	4.27	4.29	4.26	4.26	4.29	3.52	4.26	4.13
A	4.32	4.38	4.39	4.36	4.36	4.40	3.58	4.36	4.25

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	5.36	5.42	5.43	5.42	5.43	5.41	4.39	5.41	5.23
Baa									
Spreads Above 10-yr Treasury (bp)	Past 12 Months Monthly Average								
	9/4/2015	9/3/2015	9/2/2015	9/1/2015	8/31/2015	High	Low	Sep-15	Aug-15
Avg. Corporate	241.50	245.00	243.50	245.70	239.10	243.93	193.58	243.93	232.19
Aaa	190.50	197.00	197.50	199.70	193.10	196.18	158.77	196.18	187.57
Aa	203.50	207.00	206.50	206.70	200.10	205.93	165.94	205.93	196.57
A	224.50	227.00	226.50	227.70	221.10	226.43	181.57	226.43	216.00
Baa	315.50	319.00	318.50	319.70	314.10	318.18	240.13	318.18	302.80
Avg. Industrial	231.50	236.00	235.50	237.70	231.10	235.18	191.76	235.18	226.09
Aaa	190.50	197.00	197.50	199.70	193.10	196.18	158.77	196.18	187.57
Aa	198.50	202.00	201.50	202.70	196.10	201.18	168.03	201.18	195.19
A	229.50	232.00	232.50	233.70	227.10	231.93	191.49	231.93	222.61
Baa	307.50	311.00	311.50	312.70	306.10	310.68	241.49	310.68	298.61
Avg. Public Utility	250.50	253.00	251.50	252.70	246.10	251.93	193.71	251.93	237.66
Aaa									
Aa	208.50	211.00	210.50	210.70	204.10	210.18	163.30	210.18	197.38
A	219.50	222.00	220.50	220.70	214.10	220.68	169.85	220.68	208.76
Baa	323.50	326.00	324.50	326.70	321.10	325.18	238.31	325.18	306.57

Credit Trends

Treasury Yields							
Shrt	1.23	1.25	1.28	1.27	1.30	1.26	1.29
Med	1.81	1.84	1.87	1.85	1.88		
Long	2.65	2.71	2.73	2.70	2.70	2.70	2.61
Public Util. Yields							
Price	327.46	332.95	331.43	330.25	339.63	330.52	354.45
Yld	4.46	4.39	4.41	4.42	4.30	4.42	4.12
Div	14.60	14.60	14.60	14.60	14.60		
Mkt. Value ths.							
Spot Com. Index:	4,908.91	4,935.65	4,937.54	4,945.25	4,932.75	4,931.84	5,057.96
Indus. Metl. Index:	1,455.21	1,481.97	1,457.18	1,453.13	1,431.18	1,461.87	1,462.64
Moody's Analytics, Inc.							

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Credit Trends

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Updated by 11 am EST with data from the previous business day.

Yields (%)						Past 12 Months		Monthly Average	
	10/1/2015	9/30/2015	9/29/2015	9/28/2015	9/25/2015	High	Low	Oct-15	Sep-15
Avg. Corporate	4.53	4.54	4.51	4.52	4.59	4.59	3.84	4.53	4.59
Aaa	3.98	4.00	3.97	3.99	4.05	4.19	3.46	3.98	4.07
Aa	4.11	4.13	4.10	4.11	4.19	4.27	3.54	4.11	4.21
A	4.34	4.36	4.33	4.34	4.42	4.45	3.70	4.34	4.43
Baa	5.36	5.35	5.31	5.31	5.36	5.36	4.45	5.36	5.34
Avg. Industrial	4.43	4.44	4.41	4.41	4.48	4.52	3.84	4.43	4.49
Aaa	3.98	4.00	3.97	3.99	4.05	4.19	3.46	3.98	4.07
Aa	4.10	4.11	4.08	4.08	4.15	4.25	3.55	4.10	4.16
A	4.39	4.42	4.38	4.38	4.45	4.51	3.82	4.39	4.46
Baa	5.24	5.24	5.21	5.20	5.26	5.25	4.45	5.24	5.25
Avg. Public Utility	4.62	4.63	4.60	4.62	4.69	4.68	3.83	4.62	4.68
Aaa									

Credit Trends

Aa	4.12	4.14	4.11	4.14	4.23	4.29	3.52	4.12	4.25
A	4.28	4.30	4.28	4.30	4.39	4.40	3.58	4.28	4.39
Baa	5.47	5.45	5.41	5.41	5.45	5.47	4.39	5.47	5.42

Spreads Above 10- yr Treasury (bp)	Past 12 Months		Monthly Average	
	10/1/2015	9/30/2015	9/29/2015	9/28/2015

	10/1/2015	9/30/2015	9/29/2015	9/28/2015	9/25/2015	High	Low	Oct-15	Sep-15
Avg. Corporate	249.20	250.20	245.80	242.40	242.70	249.20	193.80	249.20	242.39
Aaa	194.20	196.20	191.80	189.40	188.70	194.20	158.77	194.20	190.30
Aa	207.20	209.20	204.80	201.40	202.70	207.20	165.94	207.20	204.01
A	230.20	232.20	227.80	224.40	225.70	230.20	181.57	230.20	226.15
Baa	332.20	331.20	325.80	321.40	319.70	332.20	246.57	332.20	317.53

Avg. Industrial	239.20	240.20	235.80	231.40	231.70	239.20	193.35	239.20	232.20
Aaa	194.20	196.20	191.80	189.40	188.70	194.20	158.77	194.20	190.30
Aa	206.20	207.20	202.80	198.40	198.70	206.20	168.03	206.20	199.58
A	235.20	238.20	232.80	228.40	228.70	235.20	192.07	235.20	229.82
Baa	320.20	320.20	315.80	310.40	309.70	320.20	249.63	320.20	308.77

Avg. Public Utility	258.20	259.20	254.80	252.40	252.70	258.20	193.71	258.20	251.87
Aaa									
Aa	208.20	210.20	205.80	204.40	206.70	208.20	163.30	208.20	207.96

Credit Trends

A	224.20	226.20	222.80	220.40	222.70	224.20	169.85	224.20	222.10	
Baa	343.20	341.20	335.80	331.40	328.70	343.20	242.74	343.20	325.58	
Spreads						Past 12 Months				Monthly Average
Above 30-yr Treasury (bp)										
	10/1/2015	9/30/2015	9/29/2015	9/28/2015	9/25/2015	High	Low	Oct-15	Sep-15	
Avg. Corporate	168.00	168.60	165.70	164.40	163.40	168.00	123.84	168.00	163.90	
Aaa	113.00	114.60	111.70	111.40	109.40	118.51	88.23	113.00	111.80	
Aa	126.00	127.60	124.70	123.40	123.40	127.51	99.79	126.00	125.51	
A	149.00	150.60	147.70	146.40	146.40	149.00	114.12	149.00	147.66	
Baa	251.00	249.60	245.70	243.40	240.40	251.00	174.62	251.00	239.04	
Avg. Industrial	158.00	158.60	155.70	153.40	152.40	158.00	122.23	158.00	153.70	
Aaa	113.00	114.60	111.70	111.40	109.40	118.51	88.23	113.00	111.80	
Aa	125.00	125.60	122.70	120.40	119.40	126.13	99.90	125.00	121.09	
A	154.00	156.60	152.70	150.40	149.40	154.00	122.73	154.00	151.32	
Baa	239.00	238.60	235.70	232.40	230.40	239.00	177.68	239.00	230.28	
Avg. Public Utility	177.00	177.60	174.70	174.40	173.40	177.00	124.90	177.00	173.37	
Aaa										
Aa	127.00	128.60	125.70	126.40	127.40	129.47	99.23	127.00	129.47	
A	143.00	144.60	142.70	142.40	143.40	143.61	104.90	143.00	143.61	

Credit Trends

Baa	262.00	259.60	255.70	253.40	249.40	262.00	170.79	262.00	247.09
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Past 12 Months

Date	10/1/2015	9/30/2015	9/29/2015	9/28/2015	9/25/2015	High	Low	Oct-15	Sep-15
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30-Yr Treas. B-Mark:	2.85	2.85	2.85	2.88	2.96	3.11	2.45	2.85	2.95
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10-Yr Treas. B-Mark:	2.04	2.04	2.05	2.10	2.16	2.36	1.87	2.04	2.17
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Treasury
Yields

Shrt	1.13	1.13	1.13	1.17	1.22			1.13	1.24
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Med	1.70	1.71	1.71	1.75	1.81				
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Long	2.58	2.60	2.58	2.61	2.69			2.58	2.70
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Public
Util.
Yields

Price	337.81	340.76	334.09	334.55	339.63			337.81	334.17
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Yld	4.37	4.33	4.41	4.41	4.34			4.37	4.40
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Div	14.77	14.77	14.75	14.75	14.75				
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Mkt.
Value ths.

Spot Com. Index:	4,915.50	4,912.65	4,881.41	4,857.08	4,892.39			4,915.50	4,926.75
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Credit Trends

Indus.	1,458.39	1,444.85	1,426.38	1,407.05	1,431.13	1,458.39	1,456.12
Mett.							
Index:							

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Credit Trends

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.
 Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.
 Updated by 11 am EST with data from the previous business day.

Yields (%)						Past 12 Months		Monthly Average	
	11/5/2015	11/4/2015	11/3/2015	11/2/2015	10/30/2015	High	Low	Nov-15	Oct-15
Avg. Corporate	4.61	4.59	4.60	4.56	4.54	4.59	3.84	4.59	4.52
Aaa	4.05	4.05	4.06	4.01	3.98	4.19	3.46	4.04	3.95
Aa	4.19	4.18	4.19	4.16	4.14	4.27	3.54	4.18	4.11
A	4.42	4.41	4.42	4.37	4.35	4.45	3.70	4.41	4.33
Baa	5.44	5.41	5.42	5.38	5.35	5.41	4.45	5.41	5.34
Avg. Industrial	4.50	4.49	4.50	4.46	4.43	4.52	3.84	4.49	4.40
Aaa	4.05	4.05	4.06	4.01	3.98	4.19	3.46	4.04	3.95
Aa	4.18	4.17	4.18	4.15	4.13	4.25	3.55	4.17	4.08
A	4.46	4.44	4.45	4.41	4.38	4.51	3.82	4.44	4.37
Baa	5.32	5.29	5.30	5.26	5.23	5.29	4.45	5.29	5.21
Avg. Public Utility	4.71	4.69	4.70	4.66	4.64	4.69	3.83	4.69	4.63

Credit Trends

Aaa									
Aa	4.20	4.18	4.20	4.16	4.14	4.29	3.52	4.19	4.13
A	4.38	4.37	4.38	4.33	4.32	4.40	3.58	4.37	4.29
Baa	5.55	5.53	5.53	5.49	5.47	5.53	4.39	5.53	5.47

Spreads Above 10-yr Treasury (bp)	Past 12 Months		Monthly Average							
	11/5/2015	11/4/2015	11/3/2015	11/2/2015	10/30/2015	High	Low	Nov-15	Oct-15	
Avg. Corporate	237.70	236.40	238.90	238.80	239.70	246.20	193.80	237.95	246.20	
Aaa	181.70	182.40	184.90	183.80	183.70	190.30	158.77	183.20	189.49	
Aa	195.70	195.40	197.90	198.80	199.70	205.01	165.94	196.95	205.01	
A	218.70	218.40	220.90	219.80	220.70	227.59	181.57	219.45	227.59	
Baa	320.70	318.40	320.90	320.80	320.70	328.44	250.16	320.20	328.44	
Avg. Industrial	226.70	226.40	228.90	228.80	228.70	234.68	193.35	227.70	234.68	
Aaa	181.70	182.40	184.90	183.80	183.70	190.30	158.77	183.20	189.49	
Aa	194.70	194.40	196.90	197.80	198.70	202.78	168.03	195.95	202.78	
A	222.70	221.40	223.90	223.80	223.70	231.20	192.07	222.95	231.20	
Baa	308.70	306.40	308.90	308.80	308.70	315.54	252.39	308.20	315.54	
Avg. Public Utility	247.70	246.40	248.90	248.80	249.70	257.11	193.71	247.95	257.11	
Aaa										

Credit Trends

Aa	196.70	195.40	198.90	198.80	199.70	207.96	163.30	197.45	206.82
A	214.70	214.40	216.90	215.80	217.70	223.49	169.85	215.45	223.49
Baa	331.70	330.40	331.90	331.80	332.70	340.92	246.48	331.45	340.92

Spreads Above 30-yr Treasury (bp)	Past 12 Months		Monthly Average						
	11/5/2015	11/4/2015	11/3/2015	11/2/2015	10/30/2015	High	Low	Nov-15	Oct-15

Avg. Corporate	160.90	159.90	160.80	161.50	161.70	163.90	133.65	160.78	163.45
Aaa	104.90	105.90	106.80	106.50	105.70	118.51	93.65	106.03	106.73
Aa	118.90	118.90	119.80	121.50	121.70	127.51	105.83	119.78	122.26
A	141.90	141.90	142.80	142.50	142.70	147.66	122.19	142.28	144.83
Baa	243.90	241.90	242.80	243.50	242.70	245.69	189.78	243.03	245.69

Avg. Industrial	149.90	149.90	150.80	151.50	150.70	157.03	129.46	150.53	151.92
Aaa	104.90	105.90	106.80	106.50	105.70	118.51	93.65	106.03	106.73
Aa	117.90	117.90	118.80	120.50	120.70	126.13	105.60	118.78	120.02
A	145.90	144.90	145.80	146.50	145.70	153.56	130.74	145.78	148.45
Baa	231.90	229.90	230.80	231.50	230.70	232.78	186.55	231.03	232.78

Avg. Public Utility	170.90	169.90	170.80	171.50	171.70	174.35	134.25	170.78	174.35
Aaa									
Aa	119.90	118.90	120.80	121.50	121.70	129.47	104.40	120.28	124.07

Credit Trends

A	137.90	137.90	138.80	138.50	139.70	143.61	110.25	138.28	140.73
Baa	254.90	253.90	253.80	254.50	254.70	258.16	186.55	254.28	258.16

Past 12 Months									
Date	11/5/2015	11/4/2015	11/3/2015	11/2/2015	10/30/2015	High	Low	Nov-15	Oct-15
30-Y Treas. B-Mark:	3.00	2.99	2.99	2.95	2.92	3.11	2.45	2.98	2.88
10-Yr Treas. B-Mark:	2.23	2.23	2.21	2.17	2.14	2.36	1.87	2.21	2.06

Treasury
Yields

Shrt	1.36	1.35	1.31	1.28	1.24			1.33	1.12
Med	1.93	1.92	1.90	1.87	1.82				
Long	2.75	2.73	2.73	2.69	2.66			2.73	2.60

Public
Util.
Yields

Price	344.82	347.23	347.19	344.42	343.98			345.92	348.72
Yld	4.33	4.30	4.30	4.31	4.32			4.31	4.25
Div	14.92	14.92	14.92	14.85	14.85				

Mkt.
Value
ths.

Spot Com. Index:	4,864.86	4,920.94	4,925.34	4,922.69	4,949.38			4,908.46	4,982.38
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Credit Trends

Indus.	1,397.88	1,423.97	1,423.53	1,421.81	1,426.25	1,416.80	1,470.87
Metl.							
Index:							

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Credit Trends

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97.

Updated by 11 am EST with data from the previous business day.

Yields (%)	Past 12 Months Monthly Average								
	12/2/2015	12/1/2015	11/30/2015	11/27/2015	11/26/2015	High	Low	Dec-15	Nov-15
Avg. Corporate	4.50	4.51	4.58	4.60	na	4.62	3.84	4.51	4.62
Aaa	3.89	3.92	3.99	4.00	na	4.19	3.46	3.91	4.06
Aa	4.09	4.10	4.18	4.18	na	4.27	3.54	4.10	4.21
A	4.30	4.31	4.39	4.40	na	4.45	3.70	4.31	4.43
Baa	5.35	5.36	5.41	5.44	na	5.46	4.45	5.36	5.46
Avg. Industrial	4.37	4.39	4.47	4.48	na	4.52	3.84	4.38	4.51
Aaa	3.89	3.92	3.99	4.00	na	4.19	3.46	3.91	4.06
Aa	4.08	4.09	4.17	4.17	na	4.25	3.55	4.09	4.20
A	4.30	4.31	4.40	4.41	na	4.51	3.82	4.31	4.45
Baa	5.22	5.24	5.30	5.33	na	5.34	4.45	5.23	5.34
Avg. Public Utility	4.62	4.63	4.69	4.71	na	4.73	3.83	4.63	4.73

Credit Trends

Aaa									
Aa	4.10	4.11	4.18	4.19	na	4.29	3.52	4.11	4.22
A	4.29	4.30	4.37	4.38	na	4.40	3.58	4.30	4.40
Baa	5.47	5.47	5.52	5.55	na	5.57	4.39	5.47	5.57

Spreads Above 10-yr Treasury (bp)	Past 12 Months Monthly Average								
	12/2/2015	12/1/2015	11/30/2015	11/27/2015	11/26/2015	High	Low	Dec-15	Nov-15

Avg. Corporate	231.90	236.60	237.30	237.90	na	246.20	193.80	234.25	236.58
Aaa	170.90	177.60	178.30	177.90	na	190.30	159.71	174.25	179.79
Aa	190.90	195.60	197.30	195.90	na	205.01	165.94	193.25	195.21
A	211.90	216.60	218.30	217.90	na	227.59	181.57	214.25	217.53
Baa	316.90	321.60	320.30	321.90	na	328.44	250.16	319.25	320.00

Avg. Industrial	218.90	224.60	226.30	225.90	na	234.68	193.35	221.75	225.53
Aaa	170.90	177.60	178.30	177.90	na	190.30	159.71	174.25	179.79
Aa	189.90	194.60	196.30	194.90	na	202.78	168.03	192.25	194.05
A	211.90	216.60	219.30	218.90	na	231.20	192.07	214.25	219.63
Baa	303.90	309.60	309.30	310.90	na	315.54	252.39	306.75	308.37

Avg. Public Utility	243.90	248.60	248.30	248.90	na	257.11	193.71	246.25	247.21
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Aaa

Credit Trends

Aa	191.90	196.60	197.30	196.90	na	207.96	163.30	194.25	196.00
A	210.90	215.60	216.30	215.90	na	223.49	169.85	213.25	214.53
Baa	328.90	332.60	331.30	332.90	na	340.92	246.48	330.75	331.16

Spreads Above 30-yr Treasury (bp)

Past 12 Months Monthly Average

	12/2/2015	12/1/2015	11/30/2015	11/27/2015	11/26/2015	High	Low	Dec-15	Nov-15
Avg. Corporate	159.20	160.80	160.70	160.30	na	163.90	133.92	160.00	159.56
Aaa	98.20	101.80	101.70	100.30	na	118.51	93.65	100.00	102.77
Aa	118.20	119.80	120.70	118.30	na	127.51	105.83	119.00	118.19
A	139.20	140.80	141.70	140.30	na	147.66	122.67	140.00	140.51
Baa	244.20	245.80	243.70	244.30	na	245.69	189.78	245.00	242.98

Avg. Industrial	146.20	148.80	149.70	148.30	na	157.03	129.46	147.50	148.51
Aaa	98.20	101.80	101.70	100.30	na	118.51	93.65	100.00	102.77
Aa	117.20	118.80	119.70	117.30	na	126.13	106.78	118.00	117.04
A	139.20	140.80	142.70	141.30	na	153.56	130.74	140.00	142.62
Baa	231.20	233.80	232.70	233.30	na	232.78	186.55	232.50	231.35

Avg. Public Utility	171.20	172.80	171.70	171.30	na	174.35	134.25	172.00	170.19
Aaa									
Aa	119.20	120.80	120.70	119.30	na	129.47	104.40	120.00	118.98

Credit Trends

A	138.20	139.80	139.70	138.30	na	143.61	110.25	139.00	137.51
Baa	256.20	256.80	254.70	255.30	na	258.16	186.88	256.50	254.14

Past 12 Months									
Date	12/2/2015	12/1/2015	11/30/2015	11/27/2015	11/26/2015	High	Low	Dec-15	Nov-15
30-Yr Treas. B-Mark:	2.91	2.90	2.97	3.00	na	3.11	2.45	2.91	3.03
10-Yr Treas. B-Mark:	2.18	2.14	2.21	2.22	na	2.36	1.87	2.16	2.26

Treasury Yields									
Shrt	1.38	1.34	1.39	1.39	na			1.36	1.39
Med	1.90	1.87	1.93	1.93	na				
Long	2.65	2.65	2.73	2.73	na			2.65	2.77

Public Util. Yields									
Price	329.53	337.14	334.32	333.49	na			333.33	336.94
Yld	4.53	4.43	4.46	4.47	na			4.48	4.43
Div	14.92	14.92	14.92	14.92	na				

Mkt. Value ths.									
Spot Com. Index:	4,717.88	4,742.71	4,715.44	4,715.97	na			4,730.30	4,766.30

Credit Trends

Indus.	1,344.41	1,343.39	1,337.46	1,336.57	na	1,343.90	1,362.96
Metl.							
Index:							

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Credit Trends

Yields & spreads: US long-term corporates-Averages

Based on Seasoned Bonds with Remaining Maturities of at Least 20 Years. Methodology: Derived from pricing data on a regularly-replenished population of nearly 90 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of XX years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations. Archive includes: Annual data available back to 1919. Monthly data available back to Jan-1919. Daily data available back to 01-Aug-97. Updated by 11 am EST with data from the previous business day.

Yields (%)	Past 12 Months					Monthly Average			
	1/4/2016	1/1/2016	12/31/2015	12/30/2015	12/29/2015	High	Low	Jan-16	Dec-15
Avg. Corporate	4.61	na	4.64	4.66	4.66	4.62	3.93	4.61	4.58
Aaa	4.03	na	4.04	4.03	4.04	4.19	3.52	4.03	3.97
Aa	4.20	na	4.22	4.24	4.24	4.27	3.64	4.20	4.16
A	4.41	na	4.44	4.46	4.46	4.45	3.81	4.41	4.38
Baa	5.48	na	5.50	5.54	5.54	5.48	4.48	5.48	5.46
Avg. Industrial	4.51	na	4.54	4.55	4.56	4.52	3.88	4.51	4.47
Aaa	4.03	na	4.04	4.03	4.04	4.19	3.52	4.03	3.97
Aa	4.20	na	4.23	4.24	4.24	4.25	3.65	4.20	4.16
A	4.43	na	4.46	4.49	4.49	4.51	3.89	4.43	4.40
Baa	5.39	na	5.42	5.45	5.45	5.39	4.45	5.39	5.36
Avg. Public Utility	4.71	na	4.73	4.76	4.76	4.73	3.91	4.71	4.69

Credit Trends

Aaa									
Aa	4.19	na	4.21	4.23	4.23	4.29	3.62	4.19	4.16
A	4.38	na	4.41	4.43	4.43	4.40	3.67	4.38	4.35
Baa	5.56	na	5.58	5.62	5.63	5.57	4.44	5.56	5.55

Spreads Above 10-yr Treasury (bp)					Past 12 Months		Monthly Average		
	1/4/2016	1/1/2016	12/31/2015	12/30/2015	12/29/2015	High	Low	Jan-16	Dec-15
Avg. Corporate	236.60	na	237.00	236.50	235.40	246.20	193.80	236.60	234.69
Aaa	178.60	na	177.00	173.50	173.40	190.30	159.88	178.60	173.51
Aa	195.60	na	195.00	194.50	193.40	205.01	165.94	195.60	192.60
A	216.60	na	217.00	216.50	215.40	227.59	181.57	216.60	214.10
Baa	323.60	na	323.00	324.50	323.40	328.44	250.16	323.60	321.96
Avg. Industrial	226.60	na	227.00	225.50	225.40	234.68	193.35	226.60	223.74
Aaa	178.60	na	177.00	173.50	173.40	190.30	159.88	178.60	173.51
Aa	195.60	na	196.00	194.50	193.40	202.78	168.03	195.60	192.60
A	218.60	na	219.00	219.50	218.40	231.20	192.07	218.60	215.96
Baa	314.60	na	315.00	315.50	314.40	315.54	252.39	314.60	312.05
Avg. Public Utility	246.60	na	246.00	246.50	245.40	257.11	193.71	246.60	245.19
Aaa									

Credit Trends

Aa	194.60	na	194.00	193.50	192.40	207.96	163.30	194.60	192.24
A	213.60	na	214.00	213.50	212.40	223.49	169.85	213.60	211.83
Baa	331.60	na	331.00	332.50	332.40	340.92	246.48	331.60	331.46
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Spreads Above 30-yr Treasury (bp)						Past 12 Months Monthly Average			
	1/4/2016	1/1/2016	12/31/2015	12/30/2015	12/29/2015	High	Low	Jan-16	Dec-15
Avg. Corporate	162.20	na	162.40	162.60	162.40	163.90	133.92	162.20	161.67
Aaa	104.20	na	102.40	99.60	100.40	118.51	93.65	104.20	100.49
Aa	121.20	na	120.40	120.60	120.40	127.51	105.83	121.20	119.58
A	142.20	na	142.40	142.60	142.40	147.66	122.67	142.20	141.08
Baa	249.20	na	248.40	250.60	250.40	249.20	189.78	249.20	248.95
Avg. Industrial	152.20	na	152.40	151.60	152.40	157.03	129.46	152.20	150.72
Aaa	104.20	na	102.40	99.60	100.40	118.51	93.65	104.20	100.49
Aa	121.20	na	121.40	120.60	120.40	126.13	106.78	121.20	119.58
A	144.20	na	144.40	145.60	145.40	153.56	130.74	144.20	142.95
Baa	240.20	na	240.40	241.60	241.40	240.20	186.55	240.20	239.04
Avg. Public Utility	172.20	na	171.40	172.60	172.40	174.35	134.25	172.20	172.17
Aaa									
Aa	120.20	na	119.40	119.60	119.40	129.47	104.40	120.20	119.22

Credit Trends

A	139.20	na	139.40	139.60	139.40	143.61	110.25	139.20	138.81
Baa	257.20	na	256.40	258.60	259.40	258.45	186.88	257.20	258.45

Past 12 Months

Date	1/4/2016	1/1/2016	12/31/2015	12/30/2015	12/29/2015	High	Low	Jan-16	Dec-15
30-Y Treas. B-Mark:	2.99	na	3.02	3.03	3.04	3.11	2.57	2.99	2.97
10-Yr Treas. B-Mark:	2.24	na	2.27	2.30	2.31	2.36	1.92	2.24	2.24

Treasury
Yields

Shrt	1.51	na	1.53	1.56	1.57			1.51	1.48
Med	1.98	na	2.01	2.04	2.05				
Long	2.73	na	2.76	2.78	2.78			2.73	2.71

Public
Util.
Yields

Price	333.25	na	333.33	335.89	336.65			333.25	328.98
Yld	4.48	na	4.48	4.44	4.43			4.48	4.54
Div	14.92	na	14.92	14.92	14.92				

Mkt.
Value
ths.

Spot Com. Index:	4,699.96	na	4,732.75	4,738.50	4,759.78			4,699.96	4,734.17
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Credit Trends

Indus.	1,351.75	na	1,380.96	1,379.32	1,370.85	1,351.75	1,352.28
Metl.							
Index:							

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Credit Trends

Yields & Spreads: US Long-Term Corporates

Yield index for US investment grade nonfinancial corporate bonds with long-term maturities. Based on seasoned bonds with remaining maturities of at least 20 Years. Derived from pricing data on a regularly-replenished population of over 100 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of 28 years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual and monthly data available back to 1919. Daily data available back to 01-Aug-97.

Updated by 11 am EST with data from the previous business day.

Yields (%)						Past 12 Months		Monthly Average	
	2/2/2016	2/1/2016	1/29/2016	1/28/2016	1/27/2016	High	Low	Feb-16	Jan-16
Avg. Corporate	4.47	4.57	4.53	4.57	4.57	4.62	3.93	4.52	4.56
Aaa	4.01	4.08	4.05	4.07	4.07	4.19	3.52	4.05	4.00
Aa	4.03	4.13	4.10	4.13	4.11	4.27	3.64	4.08	4.12
A	4.25	4.35	4.31	4.34	4.34	4.45	3.82	4.30	4.35
Baa	5.36	5.46	5.42	5.48	5.48	5.46	4.48	5.41	5.45
Avg. Industrial	4.46	4.55	4.52	4.55	4.54	4.52	3.88	4.51	4.50
Aaa	4.01	4.08	4.05	4.07	4.07	4.19	3.52	4.05	4.00
Aa	4.07	4.18	4.16	4.20	4.16	4.25	3.65	4.13	4.16
A	4.37	4.47	4.43	4.46	4.45	4.51	3.89	4.42	4.42
Baa	5.38	5.48	5.44	5.47	5.47	5.43	4.45	5.43	5.40
Avg. Public Utility	4.48	4.58	4.54	4.59	4.59	4.73	3.96	4.53	4.62
Aaa									

Credit Trends

Aaa	3398	4108	4104	4106	4406	4429	3368	408	409
A	4113	4122	4119	4122	4422	4440	3774	4118	427
Baa	5533	5444	5440	5449	5548	5557	4551	5389	549

Spreads Above 10- yr Treasury (bp)	Past 12 Months		Monthly Average	
	2/2/2016	2/1/2016	1/29/2016	1/28/2016

	2/2/2016	2/1/2016	1/29/2016	1/28/2016	1/27/2016	High	Low	Feb-16	Jan-16
Avg. Corporate	262.40	262.10	260.80	259.10	257.00	262.25	193.80	262.25	248.29
Aaa	216.40	213.10	212.80	209.10	207.00	214.75	150.88	214.75	192.61
Aa	218.40	218.10	217.80	215.10	211.00	218.25	165.94	218.25	204.92
A	240.40	240.10	238.80	236.10	234.00	240.25	181.57	240.25	227.88
Baa	351.40	351.10	349.80	350.10	348.00	351.25	260.16	351.25	337.24

Avg. Industrial	261.40	260.10	259.80	257.10	254.00	260.75	193.35	260.75	242.03
Aaa	216.40	213.10	212.80	209.10	207.00	214.75	150.88	214.75	192.61
Aa	222.40	223.10	223.80	222.10	216.00	222.75	168.03	222.75	207.97
A	252.40	252.10	250.80	248.10	245.00	252.25	192.07	252.25	234.34
Baa	353.40	353.10	351.80	349.10	347.00	353.25	252.39	353.25	332.55

Avg. Public Utility	263.40	263.10	261.80	261.10	259.00	263.25	193.71	263.25	253.97
Aaa	213.40	213.10	211.80	208.10	206.00	213.25	163.30	213.25	201.45

Credit Trends

	228.40	227.10	226.80	224.10	222.00	227.75	170.71	227.75	219.34
A	228.40	227.10	226.80	224.10	222.00	227.75	170.71	227.75	219.34
Baa	348.40	349.10	347.80	351.10	348.00	348.75	247.35	348.75	341.34

Spreads Above 30- yr Treasury (bp)	Past 12 Months		Monthly Average						
	2/2/2016	2/1/2016	1/29/2016	1/28/2016	1/27/2016	High	Low	Feb-16	Jan-16
Avg. Corporate	181.30	180.80	178.60	178.40	176.90	181.05	133.92	181.05	170.01
Aaa	135.30	131.80	130.60	128.40	126.90	133.55	93.65	133.55	114.32
Aa	137.30	136.80	135.60	134.40	130.90	137.05	105.83	137.05	126.64
A	159.30	158.80	156.60	155.40	153.90	159.05	122.67	159.05	148.79
Baa	270.30	269.80	267.60	269.40	267.90	270.05	189.78	270.05	258.95
Avg. Industrial	180.30	178.80	177.60	176.40	173.90	179.55	129.46	179.55	163.74
Aaa	135.30	131.80	130.60	128.40	126.90	133.55	93.65	133.55	114.32
Aa	141.30	141.80	141.60	141.40	135.90	141.55	106.78	141.55	129.69
A	171.30	170.80	168.60	167.40	164.90	171.05	130.74	171.05	156.06
Baa	272.30	271.80	269.60	268.40	266.90	272.05	186.55	272.05	254.27
Avg. Public Utility	182.30	181.80	179.60	180.40	178.90	182.05	134.80	182.05	175.69
Aaa									
Aa	132.30	131.80	129.60	127.40	125.90	132.05	104.40	132.05	123.16
A	147.30	145.80	144.60	143.40	141.90	146.55	111.80	146.55	141.06

Credit Trends

Baa	267.30	267.30	265.50	270.00	267.90	267.55	188.44	267.55	263.06
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Past 12 Months

Date	2/2/2016	2/11/2016	1/29/2016	1/28/2016	1/27/2016	High	Low	Feb 16	Jan 16
30-Yr Treas. B-Mark:	2.66	2.76	2.74	2.79	2.80	3.11	2.59	2.71	2.86
10-Yr Treas. B-Mark:	1.85	1.95	1.92	1.98	2.00	2.36	1.90	1.90	2.08

Treasury Yields

Short	1.09	1.18	1.13	1.20	1.22			1.14	1.30
Med	1.54	1.64	1.60	1.66	1.68				
Long	2.38	2.49	2.46	2.50	2.51			2.44	2.58

Public Util. Yields

Price	348.75	348.72	345.47	339.04	333.77			348.74	332.09
Yld	4.32	4.32	4.36	4.44	4.51			4.32	4.51
Div	15.06	15.06	15.06	15.06	15.06				

Mkt. Value Trs.

S&P 500 Index:	4,866.23	4,757.42	4,706.89	4,726.73	4,720.37			4,731.83	4,666.71
Indus. Mkt. Index:	1,384.58	1,365.90	1,335.33	1,341.27	1,345.55			1,325.14	1,316.23

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Credit Trends

Yields & Spreads: US Long-Term Corporates

Yield Index for US investment grade nonfinancial corporate bonds with long-term maturities. Based on seasoned bonds with remaining maturities of at least 20 Years. Derived from pricing data on a regularly-replenished population of over 100 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of 28 years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

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Yields (%)						Past 12 Months		Monthly Average	
	3/1/2016	2/29/2016	2/26/2016	2/25/2016	2/24/2016	High	Low	Mar-16	Feb-16
Avg. Corporate	4.47	4.39	4.42	4.37	4.41	4.62	3.93	4.47	4.44
Aaa	3.91	3.84	3.88	3.85	3.91	4.19	3.52	3.91	3.96
Aa	4.02	3.93	3.96	3.92	3.95	4.27	3.64	4.02	3.98
A	4.27	4.20	4.23	4.16	4.20	4.45	3.82	4.27	4.22
Baa	5.37	5.29	5.32	5.27	5.31	5.46	4.48	5.37	5.34
Avg. Industrial	4.42	4.35	4.39	4.35	4.40	4.52	3.88	4.42	4.43
Aaa	3.91	3.84	3.88	3.85	3.91	4.19	3.52	3.91	3.96
Aa	4.03	3.93	3.98	3.96	4.00	4.25	3.65	4.03	4.02
A	4.33	4.27	4.30	4.25	4.29	4.51	3.89	4.33	4.33
Baa	5.41	5.35	5.38	5.34	5.39	5.41	4.45	5.41	5.39
Avg. Public Utility	4.51	4.43	4.45	4.38	4.41	4.73	3.96	4.51	4.44
Aaa									

Credit Trends

Aa	4.00	3.92	3.94	3.88	3.90	4.29	3.63	4.00	3.94
A	4.21	4.13	4.15	4.07	4.10	4.40	3.75	4.21	4.11
Baa	5.32	5.23	5.25	5.20	5.23	5.57	4.51	5.32	5.28

Spreads Above 10-yr Treasury (bp)

Past 12 Months Monthly Average

	3/1/2016	2/29/2016	2/26/2016	2/25/2016	2/24/2016	High	Low	Mar-16	Feb-16
Avg. Corporate	264.40	265.40	265.70	265.30	266.10	266.47	200.15	264.40	266.47
Aaa	208.40	210.40	211.70	213.30	216.10	218.42	159.88	208.40	218.42
Aa	219.40	219.40	219.70	220.30	220.10	221.07	172.06	219.40	221.07
A	244.40	246.40	246.70	244.30	245.10	244.92	189.93	244.40	244.92
Baa	354.40	355.40	355.70	355.30	356.10	356.67	256.02	354.40	356.67

Avg. Industrial	259.40	261.40	262.70	263.30	265.10	265.52	195.70	259.40	265.52
Aaa	208.40	210.40	211.70	213.30	216.10	218.42	159.88	208.40	218.42
Aa	220.40	219.40	221.70	224.30	225.10	224.87	173.02	220.40	224.87
A	250.40	253.40	253.70	253.30	254.10	255.72	196.97	250.40	255.72
Baa	358.40	361.40	361.70	362.30	364.10	362.17	252.79	358.40	362.17

Avg. Public Utility	268.40	269.40	268.70	266.30	266.10	268.40	204.02	268.40	267.07
Aaa									
Aa	217.40	218.40	217.70	216.30	215.10	217.40	170.70	217.40	216.72

Credit Trends

	238.40	239.40	238.70	235.30	235.10	238.40	182.65	238.40	233.67
A									
Baa	349.40	349.40	348.70	348.30	348.10	350.67	258.65	349.40	350.67
<hr/>									
Spreads Above 30-yr Treasury (bp)						Past 12 Months		Monthly Average	
	3/1/2016	2/29/2016	2/26/2016	2/25/2016	2/24/2016	High	Low	Mar-16	Feb-16
Avg. Corporate	177.20	177.40	178.30	177.50	180.40	181.73	133.92	177.20	181.73
Aaa	121.20	122.40	124.30	125.50	130.40	133.68	93.65	121.20	133.68
Aa	132.20	131.40	132.30	132.50	134.40	136.33	105.83	132.20	136.33
A	157.20	158.40	159.30	156.50	159.40	160.18	123.69	157.20	160.18
Baa	267.20	267.40	268.30	267.50	270.40	271.93	189.78	267.20	271.93
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Avg. Industrial	172.20	173.40	175.30	175.50	179.40	180.78	129.46	172.20	180.78
Aaa	121.20	122.40	124.30	125.50	130.40	133.68	93.65	121.20	133.68
Aa	133.20	131.40	134.30	136.50	139.40	140.13	106.78	133.20	140.13
A	163.20	165.40	166.30	165.50	168.40	170.98	130.74	163.20	170.98
Baa	271.20	273.40	274.30	274.50	278.40	277.43	186.55	271.20	277.43
<hr/>									
Avg. Public Utility	181.20	181.40	181.30	178.50	180.40	182.33	137.78	181.20	182.33
Aaa									
Aa	130.20	130.40	130.30	128.50	129.40	131.98	104.46	130.20	131.98
A	151.20	151.40	151.30	147.50	149.40	151.20	116.42	151.20	148.93

Credit Trends

Baa	262.20	261.40	261.30	260.50	262.40	265.93	192.42	262.20	265.93
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Past 12 Months									
Date	3/1/2016	2/29/2016	2/26/2016	2/25/2016	2/24/2016	High	Low	Mar-16	Feb-16
30-Yr Treas. B-Mark:	2.70	2.62	2.64	2.60	2.61	3.11	2.59	2.70	2.62
10-Yr Treas. B-Mark:	1.83	1.74	1.76	1.72	1.75	2.36	1.77	1.83	1.77

Treasury
Yields

Shrt	1.22	1.13	1.15	1.06	1.12			1.22	1.07
Med	1.60	1.50	1.52	1.44	1.49				
Long	2.40	2.31	2.33	2.26	2.29			2.40	2.32

Public Util.
Yields

Price	343.26	344.85	344.16	353.78	350.15			343.26	347.80
Yld	4.42	4.40	4.41	4.29	4.33			4.42	4.35
Div	15.17	15.17	15.17	15.16	15.16				

Mkt. Value
ths.

Spot Com. Index:	4,826.73	4,833.79	4,807.38	4,809.70	4,810.50			4,826.73	4,805.68
Indus. Metl. Index:	1,434.94	1,436.80	1,415.59	1,415.78	1,405.05			1,434.94	1,398.88

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Credit Trends

Yields & Spreads: US Long-Term Corporates

Yield index for US investment grade nonfinancial corporate bonds with long-term maturities. Based on seasoned bonds with remaining maturities of at least 20 Years. Derived from pricing data on a regularly-replenished population of over 100 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of 28 years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual and monthly data available back to 1919. Daily data available back to 01-Aug-97.

Updated by 11 am EST with data from the previous business day.

Yields (%)						Past 12 Months		Monthly Average	
	3/31/2016	3/30/2016	3/29/2016	3/28/2016	3/25/2016	High	Low	Mar-16	Feb-16
Avg. Corporate	4.17	4.21	4.17	4.21	na	4.62	3.93	4.33	4.44
Aaa	3.72	3.76	3.71	3.74	na	4.19	3.52	3.82	3.96
Aa	3.77	3.80	3.76	3.82	na	4.27	3.64	3.91	3.98
A	4.03	4.07	4.02	4.07	na	4.45	3.82	4.16	4.22
Baa	4.90	4.94	4.90	4.94	na	5.46	4.48	5.13	5.34
Avg. Industrial	4.09	4.13	4.08	4.12	na	4.52	3.88	4.25	4.43
Aaa	3.72	3.76	3.71	3.74	na	4.19	3.52	3.82	3.96
Aa	3.73	3.76	3.71	3.78	na	4.25	3.65	3.89	4.02
A	4.01	4.05	4.00	4.04	na	4.51	3.89	4.16	4.33
Baa	4.91	4.94	4.89	4.92	na	5.40	4.45	5.14	5.39
Avg. Public Utility	4.25	4.29	4.25	4.30	na	4.73	3.96	4.40	4.44
Aaa									

Credit Trends

Aa	3.81	3.84	3.80	3.86	na	4.29	3.63	3.93	3.94
A	4.05	4.09	4.04	4.09	na	4.40	3.75	4.16	4.11
Baa	4.89	4.94	4.91	4.95	na	5.57	4.51	5.12	5.28

Spreads Above 10-yr Treasury (bp)						Past 12 Months		Monthly Average	
	3/31/2016	3/30/2016	3/29/2016	3/28/2016	3/25/2016	High	Low	Mar-16	Feb-16
Avg. Corporate	240.00	238.60	236.60	232.30	na	266.47	200.15	244.76	266.47
Aaa	195.00	193.60	190.60	185.30	na	218.42	159.88	193.67	218.42
Aa	200.00	197.60	195.60	193.30	na	221.07	172.06	203.04	221.07
A	226.00	224.60	221.60	218.30	na	244.92	189.93	227.85	244.92
Baa	313.00	311.60	309.60	305.30	na	356.67	256.02	324.99	356.67
Avg. Industrial	232.00	230.60	227.60	223.30	na	265.52	195.70	237.04	265.52
Aaa	195.00	193.60	190.60	185.30	na	218.42	159.88	193.67	218.42
Aa	196.00	193.60	190.60	189.30	na	224.87	173.02	200.81	224.87
A	224.00	222.60	219.60	215.30	na	255.72	196.97	228.04	255.72
Baa	314.00	311.60	308.60	303.30	na	362.17	252.79	325.49	362.17
Avg. Public Utility	248.00	246.60	244.60	241.30	na	267.07	204.02	252.04	267.07
Aaa									
Aa	204.00	201.60	199.60	197.30	na	216.72	170.70	204.63	216.72

Credit Trends

A	228.00	226.60	223.60	220.30	na	233.67	182.65	227.40	233.67
Baa	312.00	311.60	310.60	306.30	na	350.67	258.65	323.95	350.67

Spreads Above 30- yr Treasury (bp)						Past 12 Months	Monthly Average		
	3/31/2016	3/30/2016	3/29/2016	3/28/2016	3/25/2016	High	Low	Mar-16	Feb-16

Avg. Corporate	155.80	155.60	157.00	155.30	na	181.73	133.92	164.86	181.73
Aaa	110.80	110.60	111.00	108.30	na	133.68	93.65	113.77	133.68
Aa	115.80	114.60	116.00	116.30	na	136.33	105.83	123.13	136.33
A	141.80	141.60	142.00	141.30	na	160.18	123.69	147.95	160.18
Baa	228.80	228.60	230.00	228.30	na	271.93	189.78	245.09	271.93

Avg. Industrial	147.80	147.60	148.00	146.30	na	180.78	129.46	157.13	180.78
Aaa	110.80	110.60	111.00	108.30	na	133.68	93.65	113.77	133.68
Aa	111.80	110.60	111.00	112.30	na	140.13	106.78	120.90	140.13
A	139.80	139.60	140.00	138.30	na	170.98	130.74	148.13	170.98
Baa	229.80	228.60	229.00	226.30	na	277.43	186.55	245.59	277.43

Avg. Public Utility	163.80	163.60	165.00	164.30	na	182.33	137.78	172.13	182.33
Aaa									
Aa	119.80	118.60	120.00	120.30	na	131.98	104.46	124.72	131.98
A	143.80	143.60	144.00	143.30	na	148.93	116.42	147.50	148.93

Credit Trends

Baa	227.80	228.60	231.00	229.30	na	265.93	192.42	244.04	265.93
Past 12 Months									
Date	3/31/2016	3/30/2016	3/29/2016	3/28/2016	3/25/2016	High	Low	Mar-16	Feb-16
30-Y Treas. B-Mark:	2.61	2.65	2.60	2.66	na	3.11	2.59	2.68	2.62
10-Yr Treas. B-Mark:	1.77	1.82	1.80	1.89	na	2.36	1.77	1.88	1.77
Treasury Yields									
Shrt	1.08	1.13	1.15	1.24	na			1.26	1.07
Med	1.50	1.55	1.55	1.63	na				
Long	2.32	2.36	2.32	2.36	na			2.40	2.32
Public Util. Yields									
Price	366.40	363.79	364.32	359.01	na			359.16	347.80
Yld	4.07	4.10	4.09	4.15	na			4.21	4.35
Div	14.92	14.92	14.92	14.92	na				
Mkt. Value ths.									
Spot Com. Index:	4,955.22	4,973.95	4,991.44	4,991.79	na			4,973.49	4,805.68

Credit Trends

Indus.	1,410.36	1,417.66	1,422.27	1,427.31	na	1,448.40	1,398.88
Metl.							
Index:							

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Credit Trends

Yields & Spreads: US Long-Term Corporates

Yield index for US investment grade nonfinancial corporate bonds with long-term maturities. Based on seasoned bonds with remaining maturities of at least 20 Years. Derived from pricing data on a regularly-replenished population of over 100 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of 28 years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual and monthly data available back to 1919. Daily data available back to 01-Aug-97.

Updated by 11 am EST with data from the previous business day.

Yields (%)						Past 12 Months		Monthly Average	
	5/2/2016	4/29/2016	4/28/2016	4/27/2016	4/26/2016	High	Low	May-16	Apr-16
Avg. Corporate	4.09	4.05	4.07	4.07	4.13	4.62	4.09	4.09	4.09
Aaa	3.68	3.63	3.63	3.59	3.65	4.19	3.62	3.68	3.62
Aa	3.72	3.67	3.69	3.70	3.76	4.27	3.71	3.72	3.71
A	3.99	3.94	3.97	3.98	4.04	4.45	3.98	3.99	3.98
Baa	4.74	4.69	4.73	4.73	4.79	5.46	4.74	4.74	4.79
Avg. Industrial	4.03	3.98	3.99	3.99	4.05	4.52	4.01	4.03	4.01
Aaa	3.68	3.63	3.63	3.59	3.65	4.19	3.62	3.68	3.62
Aa	3.72	3.67	3.67	3.68	3.74	4.25	3.67	3.72	3.67
A	3.95	3.89	3.92	3.93	3.99	4.51	3.95	3.95	3.95
Baa	4.76	4.72	4.75	4.76	4.82	5.40	4.76	4.76	4.82
Avg. Public Utility	4.15	4.11	4.14	4.15	4.21	4.73	4.15	4.15	4.16
Aaa									

Credit Trends

Aa	3.71	3.67	3.70	3.72	3.78	4.29	3.71	3.71	3.74
A	4.02	3.99	4.01	4.02	4.08	4.40	4.00	4.02	4.00
Baa	4.71	4.66	4.70	4.70	4.76	5.57	4.71	4.71	4.75

Spreads Above 10-yr Treasury (bp)						Past 12 Months		Monthly Average	
	5/2/2016	4/29/2016	4/28/2016	4/27/2016	4/26/2016	High	Low	May-16	Apr-16
Avg. Corporate	221.70	221.60	224.50	221.80	220.30	266.47	220.30	221.70	229.28
Aaa	180.70	179.60	180.50	173.80	172.30	218.42	173.51	180.70	181.80
Aa	184.70	183.60	186.50	184.80	183.30	221.07	184.70	184.70	190.85
A	211.70	210.60	214.50	212.80	211.30	244.92	209.12	211.70	217.71
Baa	286.70	285.60	290.50	287.80	286.30	356.67	276.66	286.70	298.71
Avg. Industrial	215.70	214.60	216.50	213.80	212.30	265.52	215.70	215.70	221.61
Aaa	180.70	179.60	180.50	173.80	172.30	218.42	173.51	180.70	181.80
Aa	184.70	183.60	184.50	182.80	181.30	224.87	184.70	184.70	187.19
A	207.70	205.60	209.50	207.80	206.30	255.72	207.70	207.70	214.90
Baa	288.70	288.60	292.50	290.80	289.30	362.17	276.30	288.70	302.28
Avg. Public Utility	227.70	227.60	231.50	229.80	228.30	267.07	224.16	227.70	236.38
Aaa									
Aa	183.70	183.60	187.50	186.80	185.30	216.72	183.70	183.70	194.04

Credit Trends

A	214.70	215.60	218.50	216.80	215.30	233.67	203.03	214.70	220.00
Baa	283.70	282.60	287.50	284.80	283.30	350.67	276.66	283.70	294.71

Spreads Above 30- yr Treasury (bp)						Past 12 Months		Monthly Average	
	5/2/2016	4/29/2016	4/28/2016	4/27/2016	4/26/2016	High	Low	May-16	Apr-16
Avg. Corporate	136.50	137.20	139.00	136.90	137.60	181.73	136.50	136.50	146.86
Aaa	95.50	95.20	95.00	88.90	89.60	133.68	95.50	95.50	99.38
Aa	99.50	99.20	101.00	99.90	100.60	136.33	99.50	99.50	108.43
A	126.50	126.20	129.00	127.90	128.60	160.18	126.50	126.50	135.29
Baa	201.50	201.20	205.00	202.90	203.60	271.93	201.41	201.50	216.29
Avg. Industrial	130.50	130.20	131.00	128.90	129.60	180.78	130.50	130.50	139.19
Aaa	95.50	95.20	95.00	88.90	89.60	133.68	95.50	95.50	99.38
Aa	99.50	99.20	99.00	97.90	98.60	140.13	99.50	99.50	104.76
A	122.50	121.20	124.00	122.90	123.60	170.98	122.50	122.50	132.48
Baa	203.50	204.20	207.00	205.90	206.60	277.43	201.05	203.50	219.86
Avg. Public Utility	142.50	143.20	146.00	144.90	145.60	182.33	142.50	142.50	153.95
Aaa									
Aa	98.50	99.20	102.00	101.90	102.60	131.98	98.50	98.50	111.62
A	129.50	131.20	133.00	131.90	132.60	148.93	127.77	129.50	137.57

Credit Trends

Baa	198.50	198.20	202.00	199.90	200.60	265.93	198.50	198.50	212.29
Past 12 Months									
Date	5/2/2016	4/29/2016	4/28/2016	4/27/2016	4/26/2016	High	Low	May-16	Apr-16
30-Yr Treas. B-Mark:	2.73	2.68	2.68	2.70	2.75	3.11	2.62	2.73	2.62
10-Yr Treas. B-Mark:	1.87	1.83	1.83	1.85	1.93	2.36	1.77	1.87	1.80
Treasury Yields									
Shrt	1.13	1.10	1.12	1.16	1.22			1.13	1.10
Med	1.56	1.52	1.54	1.57	1.64				
Long	2.41	2.36	2.39	2.40	2.46			2.41	2.33
Public Util. Yields									
Price	360.17	358.00	356.66	357.28	351.76			360.17	358.44
Yld	4.17	4.220	4.21	4.20	4.27			4.17	4.18
Div	15.02	15.02	15.02	15.02	15.02				
Mkt. Value ths.									
Spot Com. Index:	5,302.10	5,305.50	5,244.62	5,261.70	5,249.66			5,302.10	5,106.42
Indus. Metl. Index:	1,523.22	1,525.17	1,484.82	1,488.75	1,485.37			1,523.22	1,454.02

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MOODUAA 3.52 As Of 06/13/16 AVERAGE YIELD

Moody's Bond Indices Utility AA

MOODUAA Index		96) Export to Excel		Page 1/1		Historical Price Table	
Range	Mid Yield	Period	High	Low	Average	Net Chg	
05/02/2016 - 05/23/2016			3.75	3.56	3.65	.00	0.00%
Date	Mid Yield	Date	Mid Yield	Date	Mid Yield		
Fr 06/03/16		Fr 05/13/16 L	3.50				
Th 06/02/16		Th 05/12/16	3.61				
We 06/01/16		We 05/11/16	3.58				
Tu 05/31/16	3.71	Tu 05/10/16	3.61				
Mo 05/30/16		Mo 05/09/16	3.61				
Fr 05/27/16	3.72	Fr 05/06/16	3.61				
Th 05/26/16	3.71	Th 05/05/16	3.59				
We 05/25/16 H	3.75	We 05/04/16	3.63				
Tu 05/24/16	3.72	Tu 05/03/16	3.65				
Mo 05/23/16	3.70	Mo 05/02/16	3.71				
Fr 05/20/16	3.70						
Th 05/19/16	3.66						
We 05/18/16	3.71						
Tu 05/17/16	3.60						
Mo 05/16/16	3.61						

Australia 61 2 3777 8600 Brazil 55 11 2295 9000 Canada 44 200 78300 78300 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
 Japan 81 3 3201 8900 Singapore 65 6212 10000 U.S. 11 2122 3318 20000
 SBN 5228555 EBDT GMT+44-0004464-5557-0 14-JUN-2016 17:01:35

MOODUA 3.73 As Of 06/13/16 AVERAGE YIELD
 Moody's Bond Indices Utility A

MOODUA Index		90 Export to Excel		Page 1/1 Historical Price Table				
Moody's Bond Indices Utility A								
Range	05/02/2016	05/21/2016	Period		High	4.02	On	05/02/16
Market	Mid Yield		Currency		Low	3.85	On	05/13/16
View	Price Table				Average	3.93		
					Net Chg	-.11		-2.74%
Date	Mid Yield	Date	Mid Yield	Date	Mid Yield			
Fr 06/03/16		Fr 05/13/16 L	3.85					
Th 06/02/16		Th 05/12/16	3.91					
We 06/01/16		We 05/11/16	3.87					
Tu 05/31/16	3.91	Tu 05/10/16	3.91					
Mo 05/30/16		Mo 05/09/16	3.93					
Fr 05/27/16	3.94	Fr 05/06/16	3.93					
Th 05/26/16	3.92	Th 05/05/16	3.91					
We 05/25/16	3.97	We 05/04/16	3.95					
Tu 05/24/16	3.94	Tu 05/03/16	3.96					
Mo 05/23/16	3.93	Mo 05/02/16 H	4.02					
Fr 05/20/16	3.94							
Th 05/19/16	3.92							
We 05/18/16	3.97							
Tu 05/17/16	3.87							
Mo 05/16/16	3.89							

MOODUBAA 4.42 As Of 06/13/16 AVERAGE YIELD

MOODUBAA Index 96 Export to Excel Page 1/1 Historical Price Table

Moody's Bond Utility BAA		High	Low	Average	Max Chg
Range	05/02/2016 - 05/31/2016	4.71	4.51	4.60	-1.91%
Market	Mid Year				
View	Price Table				

Date	Mid Yield	Date	Mid Yield
Fr 06/03/16		Fr 05/13/16 IL	4.51
Th 06/02/16		Th 05/12/16	4.57
We 06/01/16		We 05/11/16	4.55
Tu 05/31/16	4.62	Tu 05/10/16	4.58
Mo 05/30/16		Mo 05/09/16	4.57
Fr 05/27/16	4.63	Fr 05/06/16	4.58
Th 05/26/16	4.62	Th 05/05/16	4.55
We 05/25/16	4.66	We 05/04/16	4.57
Tu 05/24/16	4.63	Tu 05/03/16	4.60
Mo 05/23/16	4.61	Mo 05/02/16 H	4.71
Fr 05/20/16	4.61		
Th 05/19/16	4.60		
We 05/18/16	4.65		
Tu 05/17/16	4.55		
Mo 05/16/16	4.56		

Australia 61 2 9777 8600 Brazil 55 11 2095 9000 Europe 44 20 72300 73000 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
 Japan 81 3 3201 8900 US 1 21 22 33 99 20000
 31 99 99 99 65 62 12 10000
 38N 52293535 E80T 0811T-14:00 H464-56537-0 14 JUN 2016 17:00:56

Yields & Spreads: US Long-Term Corporates

Yield index for US investment grade nonfinancial corporate bonds with long-term maturities. Based on seasoned bonds with remaining maturities of at least 20 Years. Derived from pricing data on a regularly-replenished population of over 100 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of 28 years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual and monthly data available back to 1919. Daily data available back to 01-Aug-97.

Updated by 11 am EST with data from the previous business day.

Yields (%)	6/17/2016	6/16/2016	6/15/2016	6/14/2016	6/13/2016	Past 12 Months		Monthly Average	
						High	Low	Jun-16	May-16
Avg. Corporate	3.90	3.85	3.88	3.87	3.87	4.62	3.93	3.93	4.04
Aaa	3.47	3.43	3.43	3.45	3.47	4.15	3.50	3.50	3.65
Aa	3.60	3.54	3.57	3.55	3.56	4.25	3.61	3.61	3.70
A	3.79	3.74	3.77	3.77	3.76	4.44	3.82	3.82	3.94
Baa	4.51	4.47	4.50	4.50	4.48	5.46	4.55	4.55	4.68
Avg. Industrial	3.88	3.83	3.85	3.85	3.85	4.51	3.90	3.90	4.02
Aaa	3.47	3.43	3.43	3.45	3.47	4.15	3.50	3.50	3.65
Aa	3.65	3.59	3.60	3.59	3.59	4.22	3.64	3.64	3.73
A	3.82	3.77	3.80	3.80	3.79	4.49	3.85	3.85	3.95
Baa	4.58	4.54	4.56	4.56	4.54	5.40	4.60	4.60	4.75
Avg. Public Utility	3.91	3.86	3.90	3.89	3.89	4.73	3.95	3.95	4.06
Aaa	3.55	3.49	3.53	3.51	3.52	4.27	3.57	3.57	3.65
Aa	3.75	3.70	3.74	3.73	3.73	4.40	3.79	3.79	3.93
Baa	4.44	4.39	4.43	4.43	4.42	5.57	4.48	4.48	4.60

Yields & Spreads: US Long-Term Corporates

Yield index for US investment grade nonfinancial corporate bonds with long-term maturities. Based on seasoned bonds with remaining maturities of at least 20 Years. Derived from pricing data on a regularly-replenished population of over 100 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of 28 years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual and monthly data available back to 1919. Daily data available back to 01-Aug-97.

Updated by 11 am EST with data from the previous business day.

Yields (%)	6/30/2016	6/29/2016	6/28/2016	6/27/2016	6/24/2016	Past 12 Months		Monthly Average Jun-16
						High	Low	
Avg. Corporate	3.80	3.79	3.80	3.81	3.94	4.71	3.79	3.91
Aaa	3.39	3.37	3.42	3.42	3.55	4.29	3.37	3.50
Aa	3.50	3.48	3.49	3.50	3.62	4.38	3.48	3.60
A	3.70	3.68	3.68	3.69	3.82	4.57	3.68	3.80
Baa	4.41	4.40	4.41	4.42	4.55	5.54	4.40	4.53
Avg. Industrial	3.78	3.76	3.78	3.78	3.90	4.64	3.76	3.88
Aaa	3.39	3.37	3.42	3.42	3.55	4.29	3.37	3.50
Aa	3.56	3.52	3.54	3.54	3.64	4.35	3.52	3.63
A	3.71	3.69	3.69	3.70	3.82	4.60	3.69	3.82
Baa	4.45	4.44	4.46	4.46	4.58	5.50	4.44	4.58
Avg. Public Utility	3.82	3.82	3.82	3.83	3.98	4.81	3.82	3.93
Aaa								
Aa	3.43	3.43	3.43	3.45	3.60	4.41	3.43	3.56
A	3.68	3.67	3.67	3.68	3.82	4.54	3.67	3.78
Baa	4.36	4.36	4.36	4.37	4.51	5.63	4.36	4.47

Yields & Spreads: US Long-Term Corporates

Yield index for US investment grade nonfinancial corporate bonds with long-term maturities. Based on seasoned bonds with remaining maturities of at least 20 Years. Derived from pricing data on a regularly-replenished population of over 100 seasoned corporate bonds in the US market, each with current outstandings over \$100 million. The bonds have maturities as close as possible to 30 years, with an average maturity of 28 years; they are dropped from the list if their remaining life falls below 20 years or if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual compounding basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations.

Archive includes: Annual and monthly data available back to 1919. Daily data available back to 01-Aug-97.

Updated by 11 am EST with data from the previous business day.

Yields (%)	7/29/2016	7/28/2016	7/27/2016	7/26/2016	7/25/2016	Past 12 Months		Monthly Average Jul-16
						High	Low	
Avg. Corporate	3.63	3.67	3.66	3.70	3.70	4.71	3.58	3.67
Aaa	3.25	3.30	3.29	3.31	3.30	4.18	3.18	3.28
Aa	3.36	3.40	3.39	3.44	3.43	4.34	3.29	3.39
A	3.54	3.57	3.57	3.61	3.61	4.56	3.48	3.58
Baa	4.17	4.20	4.19	4.22	4.23	5.54	4.15	4.22
Avg. Industrial	3.61	3.65	3.64	3.67	3.66	4.61	3.55	3.64
Aaa	3.25	3.30	3.29	3.31	3.30	4.18	3.18	3.28
Aa	3.40	3.44	3.43	3.47	3.45	4.29	3.31	3.42
A	3.56	3.59	3.58	3.61	3.61	4.59	3.48	3.58
Baa	4.23	4.26	4.25	4.28	4.28	5.50	4.21	4.27
Avg. Public Utility	3.64	3.68	3.67	3.72	3.73	4.81	3.61	3.70
Aaa						0.00	0.00	
Aa	3.31	3.35	3.35	3.40	3.41	4.38	3.26	3.36
A	3.51	3.55	3.55	3.61	3.61	4.53	3.48	3.57
Baa	4.10	4.14	4.12	4.16	4.18	5.63	4.08	4.16

MOODUAA 3.35 As Of 09/06/16 AVERAGE YIELD
 Moody's Bond Indices Utility AA

MOODUAA Index 90 Export to Excel

Page 1/1 Historical Price Table

Moody's Bond Indices Utility AA
 Range 08/01/2016 - 08/31/2016 Period Daily
 Market Mid Yield Currency
 View Price Table

High 3.45 on 08/05/16
 Low 3.33 on 08/29/16
 Average 3.39
 Net Chg -.01 -0.30%

Date	Mid Yield	Date	Mid Yield	Date	Mid Yield
Fr 09/02/16		Fr 08/12/16	3.38		
Th 09/01/16		Th 08/11/16	3.42		
We 08/31/16	3.35	We 08/10/16	3.37		
Tu 08/30/16	3.35	Tu 08/09/16	3.40		
Mo 08/29/16 L	3.33	Mo 08/08/16	3.44		
Fr 08/26/16	3.42	Fr 08/05/16 H	3.45		
Th 08/25/16	3.38	Th 08/04/16	3.39		
We 08/24/16	3.36	We 08/03/16	3.42		
Tu 08/23/16	3.36	Tu 08/02/16	3.41		
Mo 08/22/16	3.36	Mo 08/01/16	3.36		
Fr 08/19/16	3.41				
Th 08/18/16	3.38				
We 08/17/16	3.41				
Tu 08/16/16	3.43				
Mo 08/15/16	3.41				

SN 560638 EDT GMT-4:00 G594-406-1 08-Sep-2016 10:23:20

MOODUA 3.54 As Of 09/06/16 AVERAGE YIELD
 Moody's Bond Indices Utility A

MOODUA Index		96 Export to Excel		Page 1/1		Historical Price Table			
Moody's Bond Indices Utility A				High	3.64	on	08/05/16		
Range	08/01/2016	-	08/31/2016	Period	Daily	Low	3.53	on	08/29/16
Market	Mid Yield	Currency		Average	3.59	Net Chg	-0.02		-0.56%
View	Price Table								
Date	Mid Yield	Date	Mid Yield	Date	Mid Yield	Date	Mid Yield		
Fr 09/02/16		Fr 08/12/16	3.57						
Th 09/01/16		Th 08/11/16	3.62						
We 08/31/16	3.54	We 08/10/16	3.56						
Tu 08/30/16	3.55	Tu 08/09/16	3.59						
Mo 08/29/16	3.53	Mo 08/08/16	3.63						
Fr 08/26/16	3.62	Fr 08/05/16	3.64						
Th 08/25/16	3.58	Th 08/04/16	3.58						
We 08/24/16	3.56	We 08/03/16	3.62						
Tu 08/23/16	3.55	Tu 08/02/16	3.61						
Mo 08/22/16	3.55	Mo 08/01/16	3.56						
Fr 08/19/16	3.60								
Th 08/18/16	3.58								
We 08/17/16	3.60								
Tu 08/16/16	3.62								
Mo 08/15/16	3.60								

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MOODUBAA 4.16 As Of **09/06/16** AVERAGE YIELD
Moody's Bond Utility BAA

MOODUBAA Index		96) Export to Excel		Page 1/1		Historical Price Table	
Moody's Bond Utility BAA				High	4.27	on	08/05/16
Range	08/01/2016 - 08/31/2016	Period	Daily	Low	4.13	on	08/29/16
Market	Mid Yield	Currency		Average	4.20		
View	Price Table			Net Chg	-05		-1.19%
Date	Mid Yield	Date	Mid Yield	Date	Mid Yield	Date	Mid Yield
Fr 09/02/16		Fr 08/12/16	4.18				
Th 09/01/16		Th 08/11/16	4.23				
We 08/31/16	4.15	We 08/10/16	4.17				
Tu 08/30/16	4.15	Tu 08/09/16	4.20				
Mo 08/29/16	4.13	Mo 08/08/16	4.26				
Fr 08/26/16	4.22	Fr 08/05/16	4.27				
Th 08/25/16	4.18	Th 08/04/16	4.22				
We 08/24/16	4.17	We 08/03/16	4.26				
Tu 08/23/16	4.16	Tu 08/02/16	4.25				
Mo 08/22/16	4.18	Mo 08/01/16	4.20				
Fr 08/19/16	4.22						
Th 08/18/16	4.20						
We 08/17/16	4.22						
Tu 08/16/16	4.23						
Mo 08/15/16	4.22						

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MOODUAVG 3.68 As Of **09/06/16** AVERAGE YIELD
Moody's Bond Indices Utility Avg

MOODUAVG Index		90 Export to Excel		Page 1/1		Historical Price Table	
Moody's Bond Indices Utility Avg				High	3.79	on	08/05/16
Range	08/01/2016	-	08/31/2016	Low	3.66	on	08/29/16
Market	Mid Yield	Period	Daily	Average	3.73		
View	Price Table	Currency		Net Chg	-.03		-0.81%
Date	Mid Yield	Date	Mid Yield	Date	Mid Yield	Date	Mid Yield
Fr 09/02/16		Fr 08/12/16	3.71				
Th 09/01/16		Th 08/11/16	3.76				
We 08/31/16	3.68	We 08/10/16	3.70				
Tu 08/30/16	3.68	Tu 08/09/16	3.73				
Mo 08/29/16	3.66	Mo 08/08/16	3.78				
Fr 08/26/16	3.75	Fr 08/05/16	3.79				
Th 08/25/16	3.71	Th 08/04/16	3.73				
We 08/24/16	3.70	We 08/03/16	3.77				
Tu 08/23/16	3.69	Tu 08/02/16	3.76				
Mo 08/22/16	3.70	Mo 08/01/16	3.71				
Fr 08/19/16	3.74						
Th 08/18/16	3.72						
We 08/17/16	3.74						
Tu 08/16/16	3.76						
Mo 08/15/16	3.74						

SN 560638 EDT GMT-4:00 0594-406-1 08-Sep-2016 10:24:37

Security MOODUAVG Index
 Start Date 9/1/2016 0:00
 End Date 9/30/2016 0:00
 Period D

Security MOODUAA Index
 Start Date 9/1/2016 0:00
 End Date 9/30/2016 0:00
 Period D

Security MOODUA Index
 Start Date 9/1/2016 0:00
 End Date 9/30/2016 0:00
 Period D

Security MOODUBAA Index
 Start Date 9/1/2016 0:00
 End Date 9/30/2016 0:00
 Period D

Date	PX_LAST	
9/30/2016	3.79	
9/29/2016	3.72	
9/28/2016	3.74	
9/27/2016	3.73	
9/26/2016	3.78	
9/23/2016	3.79	
9/22/2016	3.8	
9/21/2016	3.85	
9/20/2016	3.88	
9/19/2016	3.89	
9/16/2016	3.9	
9/15/2016	3.92	
9/14/2016	3.89	
9/13/2016	3.91	
9/12/2016	3.83	
9/9/2016	3.83	
9/8/2016	3.76	
9/7/2016	3.68	
9/6/2016	3.68	
9/2/2016	3.72	
9/1/2016	3.68	

Date	PX_LAST	
9/30/2016	3.46	
9/29/2016	3.39	
9/28/2016	3.41	
9/27/2016	3.39	
9/26/2016	3.44	
9/23/2016	3.46	
9/22/2016	3.47	
9/21/2016	3.52	
9/20/2016	3.55	
9/19/2016	3.56	
9/16/2016	3.57	
9/15/2016	3.59	
9/14/2016	3.56	
9/13/2016	3.58	
9/12/2016	3.5	
9/9/2016	3.5	
9/8/2016	3.43	
9/7/2016	3.34	
9/6/2016	3.35	
9/2/2016	3.39	
9/1/2016	3.35	

Date	PX_LAST	
9/30/2016	3.64	
9/29/2016	3.58	
9/28/2016	3.6	
9/27/2016	3.59	
9/26/2016	3.64	
9/23/2016	3.65	
9/22/2016	3.66	
9/21/2016	3.71	
9/20/2016	3.74	
9/19/2016	3.75	
9/16/2016	3.76	
9/15/2016	3.78	
9/14/2016	3.75	
9/13/2016	3.77	
9/12/2016	3.7	
9/9/2016	3.69	
9/8/2016	3.63	
9/7/2016	3.54	
9/6/2016	3.54	
9/2/2016	3.58	
9/1/2016	3.54	

Date	PX_LAST	
9/30/2016	4.26	
9/29/2016	4.2	
9/28/2016	4.22	
9/27/2016	4.21	
9/26/2016	4.25	
9/23/2016	4.26	
9/22/2016	4.28	
9/21/2016	4.32	
9/20/2016	4.35	
9/19/2016	4.36	
9/16/2016	4.37	
9/15/2016	4.38	
9/14/2016	4.35	
9/13/2016	4.38	
9/12/2016	4.3	
9/9/2016	4.29	
9/8/2016	4.23	
9/7/2016	4.15	
9/6/2016	4.16	
9/2/2016	4.19	
9/1/2016	4.15	

3.47

3.66

4.27

MOODUBAA 4.66 As Of 11/09/16 AVERAGE YIELD
 Moody's Bond Utility BAA

MOODUBAA Index		96 Export to Excel		Page 1/1		Historical Price Table	
Moody's Bond Utility BAA				High	5.57	on	11/30/15
Range	11/30/2015 - 10/31/2016	Period	Monthly	Low	4.16	on	07/31/16
Market	Mid Yield	Currency		Average	4.82		
View	Price Table			Net Chg	-1.23		-22.01%
Date	Mid Yield	Date	Mid Yield	Date	Mid Yield		
12/31/16		12/31/15	5.55				
11/30/16		11/30/15 H	5.57				
10/31/16	4.34						
09/30/16	4.27						
08/31/16	4.20						
07/31/16 L	4.16						
06/30/16	4.47						
05/31/16	4.60						
04/30/16	4.75						
03/31/16	5.12						
02/29/16	5.28						
01/31/16	5.49						

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MOODUA 4.08 As Of 11/09/16 AVERAGE YIELD
 Moody's Bond Indices Utility A

MOODUA Index		90 Export to Excel		Page 1/1		Historical Price Table	
Moody's Bond Indices Utility A				High	4.40	on	11/30/15
Range	11/30/2015 - 10/31/2016	Period	Monthly	Low	3.57	on	07/31/16
Market	Mid Yield	Currency		Average	3.97		
View	Price Table			Net Chg	-.63		-14.30%
Date	Mid Yield	Date	Mid Yield	Date	Mid Yield	Date	Mid Yield
12/31/16		12/31/15	4.35				
11/30/16		11/30/15 H	4.40				
10/31/16	3.77						
09/30/16	3.66						
08/31/16	3.59						
07/31/16 L	3.57						
06/30/16	3.78						
05/31/16	3.93						
04/30/16	4.00						
03/31/16	4.16						
02/29/16	4.11						
01/31/16	4.27						

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MOODUAA 3.92 As Of 11/09/16 AVERAGE YIELD
 Moody's Bond Indices Utility AA

MOODUAA Index		90 Export to Excel		Page 1/1		Historical Price Table	
Moody's Bond Indices Utility AA				High	4.22	on	11/30/15
Range	11/30/2015 - 10/31/2016	Period	Monthly	Low	3.36	on	07/31/16
Market	Mid Yield	Currency		Average	3.76		
View	Price Table			Net Chg	-.63		-14.87%
Date	Mid Yield	Date	Mid Yield	Date	Mid Yield	Date	Mid Yield
12/31/16		12/31/15	4.16				
11/30/16		11/30/15 H	4.22				
10/31/16	3.59						
09/30/16	3.47						
08/31/16	3.39						
07/31/16 L	3.36						
06/30/16	3.56						
05/31/16	3.65						
04/30/16	3.74						
03/31/16	3.93						
02/29/16	3.94						
01/31/16	4.09						

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MOODCAAA 3.85 As Of 11/09/16 AVERAGE YIELD
Moody's Bond Indices Corporate AAA

MOODCAAA Index		96 Export to Excel		Page 1/1		Historical Price Table	
Moody's Bond Indices Corporate AAA							
Range	12/31/2015 - 09/30/2016	Period	Monthly	High	4.00	on	01/31/16
Market	Mid Yield	Currency		Low	3.28	on	07/31/16
View	Price Table			Average	3.65		
				Net Chg	-56		-14.03%
Date	Mid Yield	Date	Mid Yield	Date	Mid Yield	Date	Mid Yield
12/31/16		12/31/15	3.97				
11/30/16							
10/31/16							
09/30/16	3.41						
08/31/16	3.32						
07/31/16 L	3.28						
06/30/16	3.50						
05/31/16	3.65						
04/30/16	3.62						
03/31/16	3.82						
02/29/16	3.96						
01/31/16 H	4.00						

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Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	11/1/2016 0:00	11/1/2016 0:00	11/1/2016 0:00	11/1/2016 0:00
End Date	11/30/2016 0:00	11/30/2016 0:00	11/30/2016 0:00	11/30/2016 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
11/30/2016	4.35	4.06	4.22	4.77
11/29/2016	4.29	3.99	4.16	4.71
11/28/2016	4.32	4.02	4.19	4.74
11/25/2016	4.36	4.07	4.22	4.79
		4.07	4.22	
11/22/2016	4.34	4.04	4.21	4.78
11/21/2016	4.35	4.05	4.21	4.79
11/18/2016	4.35	4.05	4.22	4.79
11/17/2016	4.33	4.03	4.19	4.77
11/16/2016	4.27	3.97	4.14	4.71
11/15/2016	4.33	4.02	4.19	4.77
11/14/2016	4.34	4.04	4.2	4.78
11/10/2016	4.26	3.97	4.12	4.7
11/9/2016	4.22	3.92	4.08	4.66
11/8/2016	3.99	3.68	3.86	4.42
11/7/2016	3.97	3.66	3.84	4.41
11/4/2016	3.94	3.63	3.81	4.38
11/3/2016	3.97	3.66	3.84	4.4
11/2/2016	3.93	3.62	3.81	4.36
11/1/2016	3.94	3.63	3.81	4.37
Average	4.20	3.91	4.08	4.64

Security	MOODJAVG Index	MOODJAA Index	MOODJUA Index	MOODUBAA Index
Start Date	12/1/2016 0:00	12/1/2016 0:00	12/1/2016 0:00	12/1/2016 0:00
End Date	12/31/2016 0:00	12/31/2016 0:00	12/31/2016 0:00	12/31/2016 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
12/30/2016	4.3	4.02	4.19	4.7
12/29/2016	4.33	4.05	4.22	4.73
12/28/2016	4.34	4.06	4.23	4.74
12/27/2016	4.4	4.11	4.29	4.79
12/23/2016	4.37	4.08	4.26	4.77
12/22/2016	4.39	4.11	4.27	4.79
12/21/2016	4.38	4.1	4.27	4.78
12/20/2016	4.42	4.14	4.3	4.81
12/19/2016	4.39	4.11	4.27	4.78
12/16/2016	4.45	4.18	4.33	4.85
12/15/2016	4.42	4.14	4.3	4.81
12/14/2016	4.42	4.14	4.3	4.83
12/13/2016	4.43	4.15	4.31	4.84
12/12/2016	4.45	4.17	4.33	4.86
12/9/2016	4.45	4.16	4.32	4.86
12/8/2016	4.38	4.1	4.26	4.79
12/7/2016	4.34	4.06	4.21	4.74
12/6/2016	4.39	4.11	4.27	4.8
12/5/2016	4.37	4.08	4.25	4.78
12/2/2016	4.38	4.09	4.26	4.79
12/1/2016	4.42	4.13	4.29	4.83
	4.39	4.11	4.27	4.79

Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	1/1/2017 0:00	1/1/2017 0:00	1/1/2017 0:00	1/1/2017 0:00
End Date	1/31/2017 0:00	1/31/2017 0:00	1/31/2017 0:00	1/31/2017 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
1/31/2017	4.26	3.99	4.19	4.61
1/30/2017	4.29	4.01	4.21	4.64
1/27/2017	4.27	3.99	4.19	4.62
1/26/2017	4.30	4.02	4.22	4.66
1/25/2017	4.32	4.04	4.23	4.69
1/24/2017	4.26	3.98	4.17	4.64
1/23/2017	4.20	3.92	4.10	4.57
1/20/2017	4.26	3.98	4.16	4.64
1/19/2017	4.25	3.96	4.15	4.64
1/18/2017	4.20	3.91	4.10	4.60
1/17/2017	4.15	3.86	4.05	4.55
1/13/2017	4.20	3.91	4.10	4.60
1/12/2017	4.19	3.91	4.08	4.57
1/11/2017	4.19	3.92	4.08	4.57
1/10/2017	4.20	3.93	4.09	4.58
1/9/2017	4.20	3.93	4.09	4.59
1/6/2017	4.24	3.96	4.13	4.63
1/5/2017	4.21	3.92	4.10	4.60
1/4/2017	4.29	4.00	4.18	4.68
1/3/2017	4.30	4.01	4.18	4.70
Average	4.24	3.96	4.14	4.62

Security	MOODUAVG Index	MOODUAAA Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	2/1/2017 0:00	2/1/2017 0:00	2/1/2017 0:00	2/1/2017 0:00	2/1/2017 0:00
End Date	2/28/2017 0:00	2/28/2017 0:00	2/28/2017 0:00	2/28/2017 0:00	2/28/2017 0:00
Period	D	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST	PX_LAST
2/28/2017	4.17	3.92	4.11	4.11	4.49
2/27/2017	4.20	3.95	4.13	4.13	4.51
2/24/2017	4.16	3.91	4.10	4.10	4.48
2/23/2017	4.23	3.98	4.17	4.17	4.55
2/22/2017	4.25	4.00	4.18	4.18	4.57
2/21/2017	4.25	4.00	4.18	4.18	4.57
2/17/2017	4.25	4.00	4.18	4.18	4.57
2/16/2017	4.27	4.02	4.20	4.20	4.59
2/15/2017	4.31	4.06	4.24	4.24	4.63
2/14/2017	4.28	4.03	4.21	4.21	4.61
2/13/2017	4.26	4.00	4.19	4.19	4.59
2/10/2017	4.23	3.98	4.16	4.16	4.56
2/9/2017	4.23	3.97	4.16	4.16	4.56
2/8/2017	4.18	3.92	4.11	4.11	4.52
2/7/2017	4.24	3.97	4.17	4.17	4.57
2/6/2017	4.27	4.00	4.20	4.20	4.60
2/3/2017	4.33	4.06	4.25	4.25	4.68
2/2/2017	4.30	4.03	4.22	4.22	4.65
2/1/2017	4.30	4.02	4.22	4.22	4.65
	4.25	#DIV/0!	3.99	4.18	4.58

Security	MOODUAVG Index	Security	MOODUAA Index	Security	MOODUA Index	Security	MOODUBAA Index
Start Date	3/1/2017 0:00	Start Date	3/1/2017 0:00	Start Date	3/1/2017 0:00	Start Date	3/1/2017 0:00
End Date	3/31/2017 0:00	End Date	3/31/2017 0:00	End Date	3/31/2017 0:00	End Date	3/31/2017 0:00
Period	D	Period	D	Period	D	Period	D
Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST
3/31/2017	4.25	3/31/2017	4.00	3/31/2017	4.18	3/31/2017	4.58
3/30/2017	4.26	3/30/2017	4.00	3/30/2017	4.19	3/30/2017	4.59
3/29/2017	4.22	3/29/2017	3.97	3/29/2017	4.15	3/29/2017	4.55
3/28/2017	4.25	3/28/2017	3.99	3/28/2017	4.17	3/28/2017	4.58
3/27/2017	4.21	3/27/2017	3.95	3/27/2017	4.14	3/27/2017	4.54
3/24/2017	4.23	3/24/2017	3.97	3/24/2017	4.16	3/24/2017	4.55
3/23/2017	4.26	3/23/2017	4.00	3/23/2017	4.19	3/23/2017	4.58
3/22/2017	4.23	3/22/2017	3.97	3/22/2017	4.17	3/22/2017	4.56
3/21/2017	4.27	3/21/2017	4.01	3/21/2017	4.20	3/21/2017	4.59
3/20/2017	4.31	3/20/2017	4.05	3/20/2017	4.24	3/20/2017	4.63
3/17/2017	4.33	3/17/2017	4.07	3/17/2017	4.26	3/17/2017	4.65
3/16/2017	4.35	3/16/2017	4.09	3/16/2017	4.28	3/16/2017	4.67
3/15/2017	4.31	3/15/2017	4.06	3/15/2017	4.24	3/15/2017	4.64
3/14/2017	4.38	3/14/2017	4.12	3/14/2017	4.32	3/14/2017	4.70
3/13/2017	4.39	3/13/2017	4.14	3/13/2017	4.33	3/13/2017	4.71
3/10/2017	4.37	3/10/2017	4.12	3/10/2017	4.31	3/10/2017	4.69
3/9/2017	4.38	3/9/2017	4.13	3/9/2017	4.32	3/9/2017	4.70
3/8/2017	4.34	3/8/2017	4.09	3/8/2017	4.28	3/8/2017	4.65
3/7/2017	4.30	3/7/2017	4.06	3/7/2017	4.24	3/7/2017	4.61
3/6/2017	4.30	3/6/2017	4.05	3/6/2017	4.23	3/6/2017	4.61
3/3/2017	4.29	3/3/2017	4.04	3/3/2017	4.22	3/3/2017	4.60
3/2/2017	4.29	3/2/2017	4.04	3/2/2017	4.22	3/2/2017	4.60
3/1/2017	4.28	3/1/2017	4.03	3/1/2017	4.21	3/1/2017	4.59
	4.30		4.04		4.23		4.62

Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	4/1/2017 0:00	4/1/2017 0:00	4/1/2017 0:00	4/1/2017 0:00
End Date	4/30/2017 0:00	4/30/2017 0:00	4/30/2017 0:00	4/30/2017 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
4/28/2017	4.19	3.93	4.13	4.51
4/27/2017	4.21	3.95	4.15	4.52
4/26/2017	4.21	3.95	4.15	4.53
4/25/2017	4.22	3.96	4.16	4.55
4/24/2017	4.17	3.91	4.11	4.50
4/21/2017	4.14	3.88	4.08	4.47
4/20/2017	4.14	3.88	4.07	4.46
4/19/2017	4.11	3.85	4.05	4.44
4/18/2017	4.09	3.83	4.03	4.42
4/17/2017	4.16	3.90	4.09	4.49
4/13/2017	4.13	3.88	4.06	4.46
4/12/2017	4.18	3.92	4.10	4.51
4/11/2017	4.18	3.92	4.10	4.51
4/10/2017	4.23	3.98	4.16	4.56
4/7/2017	4.24	3.99	4.17	4.57
4/6/2017	4.23	3.97	4.16	4.55
4/5/2017	4.24	3.99	4.17	4.57
4/4/2017	4.23	3.98	4.16	4.56
4/3/2017	4.22	3.97	4.15	4.55
	4.19	3.93	4.12	4.51

Security	MOODUAVG Index	Security	MOODUAA Index	Security	MOODUA Index	Security	MOODUBAA Index
Start Date	5/1/2017 0:00	Start Date	5/1/2017 0:00	Start Date	5/1/2017 0:00	Start Date	5/1/2017 0:00
End Date	5/31/2017 0:00	End Date	5/31/2017 0:00	End Date	5/31/2017 0:00	End Date	5/31/2017 0:00
Period	D	Period	D	Period	D	Period	D
Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST
5/31/2017	4.07	5/31/2017	3.83	5/31/2017	4.01	5/31/2017	4.38
5/30/2017	4.1	5/30/2017	3.86	5/30/2017	4.04	5/30/2017	4.4
5/25/2017	4.14	5/25/2017	3.89	5/25/2017	4.08	5/25/2017	4.44
5/24/2017	4.15	5/24/2017	3.91	5/24/2017	4.09	5/24/2017	4.45
5/23/2017	4.16	5/23/2017	3.92	5/23/2017	4.1	5/23/2017	4.46
5/22/2017	4.14	5/22/2017	3.89	5/22/2017	4.07	5/22/2017	4.45
5/19/2017	4.13	5/19/2017	3.88	5/19/2017	4.06	5/19/2017	4.44
5/18/2017	4.13	5/18/2017	3.88	5/18/2017	4.06	5/18/2017	4.45
5/17/2017	4.12	5/17/2017	3.87	5/17/2017	4.06	5/17/2017	4.44
5/16/2017	4.22	5/16/2017	3.97	5/16/2017	4.15	5/16/2017	4.53
5/15/2017	4.23	5/15/2017	3.98	5/15/2017	4.17	5/15/2017	4.54
5/12/2017	4.22	5/12/2017	3.96	5/12/2017	4.15	5/12/2017	4.54
5/11/2017	4.26	5/11/2017	4.01	5/11/2017	4.2	5/11/2017	4.58
5/10/2017	4.26	5/10/2017	4.01	5/10/2017	4.2	5/10/2017	4.58
5/9/2017	4.26	5/9/2017	4.01	5/9/2017	4.2	5/9/2017	4.58
5/8/2017	4.24	5/8/2017	3.98	5/8/2017	4.18	5/8/2017	4.56
5/5/2017	4.22	5/5/2017	3.96	5/5/2017	4.16	5/5/2017	4.54
5/4/2017	4.23	5/4/2017	3.98	5/4/2017	4.17	5/4/2017	4.55
5/3/2017	4.19	5/3/2017	3.94	5/3/2017	4.13	5/3/2017	4.51
5/2/2017	4.22	5/2/2017	3.96	5/2/2017	4.16	5/2/2017	4.53
5/1/2017	4.25	5/1/2017	3.99	5/1/2017	4.19	5/1/2017	4.56
	4.19	3.94	3.94	4.13	4.13	4.50	4.50

Security			MOODJAVG Index			MOODUAA Index			MOODUA Index			MOODUBAA Index		
Start Date	End Date	Period	Start Date	End Date	Period	Start Date	End Date	Period	Start Date	End Date	Period	Start Date	End Date	Period
Date	PX_LAST	D	Date	PX_LAST	D	Date	PX_LAST	D	Date	PX_LAST	D	Date	PX_LAST	D
6/30/2017	4.05		6/30/2017	3.81		6/30/2017	3.98		6/30/2017	4.36		6/30/2017	4.36	
6/29/2017	4.03		6/29/2017	3.79		6/29/2017	3.96		6/29/2017	4.34		6/29/2017	4.34	
6/28/2017	3.99		6/28/2017	3.75		6/28/2017	3.92		6/28/2017	4.31		6/28/2017	4.31	
6/27/2017	3.96		6/27/2017	3.72		6/27/2017	3.89		6/27/2017	4.28		6/27/2017	4.28	
6/26/2017	3.92		6/26/2017	3.67		6/26/2017	3.84		6/26/2017	4.25		6/26/2017	4.25	
6/23/2017	3.94		6/23/2017	3.69		6/23/2017	3.86		6/23/2017	4.26		6/23/2017	4.26	
6/22/2017	3.95		6/22/2017	3.70		6/22/2017	3.87		6/22/2017	4.27		6/22/2017	4.27	
6/21/2017	3.94		6/21/2017	3.69		6/21/2017	3.87		6/21/2017	4.27		6/21/2017	4.27	
6/20/2017	3.96		6/20/2017	3.71		6/20/2017	3.88		6/20/2017	4.28		6/20/2017	4.28	
6/19/2017	4.00		6/19/2017	3.75		6/19/2017	3.93		6/19/2017	4.32		6/19/2017	4.32	
6/16/2017	4.00		6/16/2017	3.75		6/16/2017	3.93		6/16/2017	4.31		6/16/2017	4.31	
6/15/2017	3.99		6/15/2017	3.75		6/15/2017	3.93		6/15/2017	4.29		6/15/2017	4.29	
6/14/2017	3.99		6/14/2017	3.75		6/14/2017	3.92		6/14/2017	4.29		6/14/2017	4.29	
6/13/2017	4.07		6/13/2017	3.83		6/13/2017	4.00		6/13/2017	4.37		6/13/2017	4.37	
6/12/2017	4.08		6/12/2017	3.84		6/12/2017	4.01		6/12/2017	4.38		6/12/2017	4.38	
6/9/2017	4.06		6/9/2017	3.82		6/9/2017	4.00		6/9/2017	4.37		6/9/2017	4.37	
6/8/2017	4.07		6/8/2017	3.84		6/8/2017	4.00		6/8/2017	4.37		6/8/2017	4.37	
6/7/2017	4.05		6/7/2017	3.82		6/7/2017	3.98		6/7/2017	4.36		6/7/2017	4.36	
6/6/2017	4.03		6/6/2017	3.79		6/6/2017	3.96		6/6/2017	4.34		6/6/2017	4.34	
6/5/2017	4.06		6/5/2017	3.81		6/5/2017	3.99		6/5/2017	4.37		6/5/2017	4.37	
6/2/2017	4.03		6/2/2017	3.79		6/2/2017	3.97		6/2/2017	4.34		6/2/2017	4.34	
6/1/2017	4.09		6/1/2017	3.85		6/1/2017	4.02		6/1/2017	4.40		6/1/2017	4.40	
Average	4.01		3.77			3.94			3.94			4.32		

Security	MOODUAVG Index	Security	MOODUAA Index	Security	MOODUA Index	Security	MOODUBAA Index
Start Date	7/1/2017 0:00	Start Date	7/1/2017 0:00	Start Date	7/1/2017 0:00	Start Date	7/1/2017 0:00
End Date	7/31/2017 0:00	End Date	7/31/2017 0:00	End Date	7/31/2017 0:00	End Date	7/31/2017 0:00
Period	D	Period	D	Period	D	Period	D
Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST
7/31/2017	4.03	7/31/2017	3.80	7/31/2017	3.97	7/31/2017	4.33
7/28/2017	4.03	7/28/2017	3.79	7/28/2017	3.97	7/28/2017	4.32
7/27/2017	4.06	7/27/2017	3.82	7/27/2017	4.00	7/27/2017	4.36
7/26/2017	4.04	7/26/2017	3.80	7/26/2017	3.98	7/26/2017	4.33
7/25/2017	4.06	7/25/2017	3.82	7/25/2017	4.00	7/25/2017	4.35
7/24/2017	3.99	7/24/2017	3.75	7/24/2017	3.93	7/24/2017	4.29
7/21/2017	3.97	7/21/2017	3.72	7/21/2017	3.91	7/21/2017	4.27
7/20/2017	4.00	7/20/2017	3.76	7/20/2017	3.95	7/20/2017	4.30
7/19/2017	4.01	7/19/2017	3.77	7/19/2017	3.96	7/19/2017	4.31
7/18/2017	4.02	7/18/2017	3.77	7/18/2017	3.96	7/18/2017	4.32
7/17/2017	4.06	7/17/2017	3.82	7/17/2017	4.00	7/17/2017	4.37
7/14/2017	4.09	7/14/2017	3.84	7/14/2017	4.02	7/14/2017	4.40
7/13/2017	4.11	7/13/2017	3.87	7/13/2017	4.04	7/13/2017	4.41
7/12/2017	4.09	7/12/2017	3.86	7/12/2017	4.02	7/12/2017	4.40
7/11/2017	4.12	7/11/2017	3.88	7/11/2017	4.05	7/11/2017	4.42
7/10/2017	4.12	7/10/2017	3.88	7/10/2017	4.05	7/10/2017	4.43
7/7/2017	4.13	7/7/2017	3.89	7/7/2017	4.06	7/7/2017	4.44
7/6/2017	4.10	7/6/2017	3.87	7/6/2017	4.03	7/6/2017	4.41
7/5/2017	4.06	7/5/2017	3.82	7/5/2017	3.99	7/5/2017	4.37
7/3/2017	4.07	7/3/2017	3.83	7/3/2017	4.00	7/3/2017	4.38
	4.06		3.82		3.99		4.36

Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	8/1/2017 0:00	8/1/2017 0:00	8/1/2017 0:00	8/1/2017 0:00
End Date	8/31/2017 0:00	8/31/2017 0:00	8/31/2017 0:00	8/31/2017 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
8/31/2017	3.87	3.63	3.81	4.18
8/30/2017	3.90	3.65	3.83	4.21
8/29/2017	3.89	3.65	3.83	4.20
8/28/2017	3.89	3.65	3.83	4.20
8/25/2017	3.89	3.65	3.83	4.20
8/24/2017	3.91	3.67	3.85	4.22
8/23/2017	3.89	3.64	3.83	4.20
8/21/2017	3.90	3.68	3.84	4.21
8/18/2017	3.91	3.64	3.85	4.22
8/17/2017	3.91	3.65	3.85	4.22
8/16/2017	3.93	3.66	3.88	4.24
8/15/2017	3.96	3.67	3.91	4.27
8/14/2017	3.93	3.71	3.87	4.24
8/11/2017	3.91	3.67	3.86	4.22
8/10/2017	3.91	3.65	3.85	4.22
8/9/2017	3.93	3.66	3.87	4.25
8/8/2017	3.98	3.68	3.92	4.29
8/7/2017	3.95	3.73	3.89	4.27
8/4/2017	3.96	3.70	3.90	4.27
8/3/2017	3.92	3.71	3.86	4.24
8/2/2017	3.96	3.67	3.90	4.28
8/1/2017	3.98	3.71	3.91	4.29
8/1/2017	3.74	3.67	3.86	4.23
Average	3.92	3.67	3.86	4.23

Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	9/1/2017 0:00	9/1/2017 0:00	9/1/2017 0:00	9/1/2017 0:00
End Date	9/30/2017 0:00	9/30/2017 0:00	9/30/2017 0:00	9/30/2017 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
9/29/2017	3.99	3.77	3.92	4.28
9/28/2017	4.01	3.78	3.94	4.30
9/27/2017	4.01	3.78	3.94	4.31
9/26/2017	3.92	3.69	3.85	4.22
9/25/2017	3.92	3.68	3.85	4.22
9/22/2017	3.95	3.72	3.88	4.25
9/21/2017	3.96	3.73	3.89	4.26
9/20/2017	3.98	3.75	3.91	4.28
9/19/2017	3.97	3.75	3.90	4.27
9/18/2017	3.97	3.75	3.90	4.26
9/15/2017	3.94	3.72	3.86	4.23
9/14/2017	3.95	3.73	3.87	4.24
9/13/2017	3.96	3.74	3.89	4.26
9/12/2017	3.94	3.71	3.87	4.25
9/11/2017	3.90	3.67	3.83	4.21
9/8/2017	3.85	3.61	3.78	4.15
9/7/2017	3.83	3.59	3.77	4.14
9/6/2017	3.88	3.63	3.82	4.19
9/5/2017	3.84	3.59	3.78	4.15
9/1/2017	3.92	3.67	3.85	4.23
	3.93	3.70	3.87	4.24

MOODUAVG Index			MOODUAA Index			MOODUA Index			MOODUBAA Index		
Security	Start Date	End Date	Security	Start Date	End Date	Security	Start Date	End Date	Security	Start Date	End Date
Period	D	PX_LAST	Period	D	PX_LAST	Period	D	PX_LAST	Period	D	PX_LAST
10/31/2017		3.93	10/31/2017		3.70	10/31/2017		3.88	10/31/2017		4.21
10/30/2017		3.94	10/30/2017		3.71	10/30/2017		3.88	10/30/2017		4.22
10/27/2017		4.0	10/27/2017		3.77	10/27/2017		3.94	10/27/2017		4.28
10/26/2017		4.02	10/26/2017		3.80	10/26/2017		3.96	10/26/2017		4.30
10/25/2017		4.02	10/25/2017		3.79	10/25/2017		3.96	10/25/2017		4.30
10/24/2017		3.99	10/24/2017		3.77	10/24/2017		3.93	10/24/2017		4.28
10/23/2017		3.96	10/23/2017		3.73	10/23/2017		3.91	10/23/2017		4.25
10/20/2017		3.97	10/20/2017		3.74	10/20/2017		3.91	10/20/2017		4.26
10/19/2017		3.91	10/19/2017		3.67	10/19/2017		3.86	10/19/2017		4.20
10/18/2017		3.94	10/18/2017		3.71	10/18/2017		3.88	10/18/2017		4.22
10/17/2017		3.9	10/17/2017		3.67	10/17/2017		3.84	10/17/2017		4.18
10/16/2017		3.92	10/16/2017		3.69	10/16/2017		3.86	10/16/2017		4.20
10/13/2017		3.91	10/13/2017		3.68	10/13/2017		3.85	10/13/2017		4.19
10/12/2017		3.95	10/12/2017		3.72	10/12/2017		3.89	10/12/2017		4.24
10/11/2017		3.97	10/11/2017		3.75	10/11/2017		3.91	10/11/2017		4.26
10/10/2017		3.98	10/10/2017		3.75	10/10/2017		3.92	10/10/2017		4.27
10/9/2017		4.0	10/9/2017		3.77	10/9/2017		3.95	10/9/2017		4.29
10/6/2017		4.01	10/6/2017		3.79	10/6/2017		3.95	10/6/2017		4.30
10/5/2017		4.01	10/5/2017		3.79	10/5/2017		3.94	10/5/2017		4.30
10/4/2017		4.0	10/4/2017		3.77	10/4/2017		3.94	10/4/2017		4.30
10/3/2017		4.0	10/3/2017		3.77	10/3/2017		3.93	10/3/2017		4.29
10/2/2017		3.99	10/2/2017		3.77	10/2/2017		3.93	10/2/2017		4.28
		3.97			3.74			3.91			4.26

Security	MOODUAVG Index	Security	MOODUAA Index	Security	MOODUA Index	Security	MOODUBAA Index
Start Date	11/1/2017 0:00	Start Date	11/1/2017 0:00	Start Date	11/1/2017 0:00	Start Date	11/1/2017 0:00
End Date	11/30/2017 0:00	End Date	11/30/2017 0:00	End Date	11/30/2017 0:00	End Date	11/30/2017 0:00
Period	D	Period	D	Period	D	Period	D
Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST
11/30/2017	3.92	11/30/2017	3.68	11/30/2017	3.87	11/30/2017	4.21
11/29/2017	3.91	11/29/2017	3.68	11/29/2017	3.86	11/29/2017	4.20
11/28/2017	3.87	11/28/2017	3.64	11/28/2017	3.81	11/28/2017	4.15
11/27/2017	3.87	11/27/2017	3.64	11/27/2017	3.81	11/27/2017	4.15
11/24/2017	3.86	11/24/2017	3.63	11/24/2017	3.81	11/24/2017	4.15
11/22/2017	3.85	11/22/2017	3.62	11/22/2017	3.79	11/22/2017	4.13
11/21/2017	3.86	11/21/2017	3.63	11/21/2017	3.80	11/21/2017	4.14
11/20/2017	3.89	11/20/2017	3.66	11/20/2017	3.84	11/20/2017	4.18
11/17/2017	3.89	11/17/2017	3.68	11/17/2017	3.83	11/17/2017	4.17
11/16/2017	3.90	11/16/2017	3.68	11/16/2017	3.85	11/16/2017	4.18
11/15/2017	3.88	11/15/2017	3.66	11/15/2017	3.82	11/15/2017	4.16
11/14/2017	3.93	11/14/2017	3.70	11/14/2017	3.88	11/14/2017	4.20
11/13/2017	3.95	11/13/2017	3.72	11/13/2017	3.90	11/13/2017	4.22
11/9/2017	3.86	11/9/2017	3.61	11/9/2017	3.83	11/9/2017	4.15
11/8/2017	3.84	11/8/2017	3.59	11/8/2017	3.80	11/8/2017	4.12
11/7/2017	3.82	11/7/2017	3.58	11/7/2017	3.78	11/7/2017	4.11
11/6/2017	3.85	11/6/2017	3.61	11/6/2017	3.80	11/6/2017	4.13
11/3/2017	3.87	11/3/2017	3.63	11/3/2017	3.83	11/3/2017	4.15
11/2/2017	3.88	11/2/2017	3.64	11/2/2017	3.83	11/2/2017	4.17
11/1/2017	3.92	11/1/2017	3.69	11/1/2017	3.87	11/1/2017	4.20
	3.88		3.65		3.83		4.16

Security	MOODUAVG Index	Security	MOODUAA Index	Security	MOODJUA Index	Security	MOODUBAA Index
Start Date	12/1/2017 0:00	Start Date	12/1/2017 0:00	Start Date	12/1/2017 0:00	Start Date	12/1/2017 0:00
End Date	12/31/2017 0:00	End Date	12/31/2017 0:00	End Date	12/31/2017 0:00	End Date	12/31/2017 0:00
Period	D	Period	D	Period	D	Period	D
Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST
12/29/2017	3.81	12/29/2017	3.57	12/29/2017	3.76	12/29/2017	4.10
12/28/2017	3.82	12/28/2017	3.59	12/28/2017	3.77	12/28/2017	4.11
12/27/2017	3.81	12/27/2017	3.58	12/27/2017	3.76	12/27/2017	4.10
12/26/2017	3.88	12/26/2017	3.65	12/26/2017	3.83	12/26/2017	4.17
12/22/2017	3.91	12/22/2017	3.68	12/22/2017	3.85	12/22/2017	4.19
12/21/2017	3.90	12/21/2017	3.68	12/21/2017	3.84	12/21/2017	4.19
12/20/2017	3.94	12/20/2017	3.72	12/20/2017	3.89	12/20/2017	4.22
12/19/2017	3.90	12/19/2017	3.67	12/19/2017	3.85	12/19/2017	4.18
12/18/2017	3.82	12/18/2017	3.59	12/18/2017	3.77	12/18/2017	4.11
12/15/2017	3.77	12/15/2017	3.54	12/15/2017	3.72	12/15/2017	4.06
12/14/2017	3.79	12/14/2017	3.56	12/14/2017	3.74	12/14/2017	4.08
12/13/2017	3.82	12/13/2017	3.59	12/13/2017	3.76	12/13/2017	4.10
12/12/2017	3.87	12/12/2017	3.64	12/12/2017	3.81	12/12/2017	4.15
12/11/2017	3.86	12/11/2017	3.64	12/11/2017	3.80	12/11/2017	4.14
12/8/2017	3.87	12/8/2017	3.65	12/8/2017	3.81	12/8/2017	4.16
12/7/2017	3.87	12/7/2017	3.64	12/7/2017	3.81	12/7/2017	4.16
12/6/2017	3.81	12/6/2017	3.58	12/6/2017	3.75	12/6/2017	4.10
12/5/2017	3.82	12/5/2017	3.59	12/5/2017	3.77	12/5/2017	4.11
12/4/2017	3.86	12/4/2017	3.63	12/4/2017	3.80	12/4/2017	4.15
12/1/2017	3.85	12/1/2017	3.61	12/1/2017	3.80	12/1/2017	4.15
			3.62		3.79		4.14

Security			MOODUAVG Index			MOODUAA Index			MOODUA Index			MOODUBAA Index		
Start Date	End Date	Period	Start Date	End Date	Period	Start Date	End Date	Period	Start Date	End Date	Period	Start Date	End Date	Period
Date	Date	D	Date	Date	D	Date	Date	D	Date	Date	D	Date	Date	D
	PX_LAST			PX_LAST			PX_LAST			PX_LAST			PX_LAST	
1/31/2018	3.95		1/31/2018	3.74		1/31/2018	3.91		1/31/2018	4.21		1/31/2018	4.21	
1/30/2018	3.99		1/30/2018	3.78		1/30/2018	3.94		1/30/2018	4.24		1/30/2018	4.24	
1/29/2018	3.96		1/29/2018	3.75		1/29/2018	3.91		1/29/2018	4.21		1/29/2018	4.21	
1/26/2018	3.93		1/26/2018	3.72		1/26/2018	3.88		1/26/2018	4.19		1/26/2018	4.19	
1/25/2018	3.90		1/25/2018	3.69		1/25/2018	3.85		1/25/2018	4.16		1/25/2018	4.16	
1/24/2018	3.96		1/24/2018	3.75		1/24/2018	3.91		1/24/2018	4.22		1/24/2018	4.22	
1/23/2018	3.93		1/23/2018	3.72		1/23/2018	3.88		1/23/2018	4.19		1/23/2018	4.19	
1/22/2018	3.95		1/22/2018	3.74		1/22/2018	3.90		1/22/2018	4.22		1/22/2018	4.22	
1/19/2018	3.94		1/19/2018	3.72		1/19/2018	3.89		1/19/2018	4.21		1/19/2018	4.21	
1/18/2018	3.92		1/18/2018	3.70		1/18/2018	3.87		1/18/2018	4.19		1/18/2018	4.19	
1/17/2018	3.88		1/17/2018	3.66		1/17/2018	3.83		1/17/2018	4.16		1/17/2018	4.16	
1/16/2018	3.87		1/16/2018	3.64		1/16/2018	3.82		1/16/2018	4.14		1/16/2018	4.14	
1/12/2018	3.89		1/12/2018	3.67		1/12/2018	3.84		1/12/2018	4.16		1/12/2018	4.16	
1/11/2018	3.89		1/11/2018	3.68		1/11/2018	3.84		1/11/2018	4.14		1/11/2018	4.14	
1/10/2018	3.93		1/10/2018	3.71		1/10/2018	3.88		1/10/2018	4.21		1/10/2018	4.21	
1/9/2018	3.93		1/9/2018	3.71		1/9/2018	3.88		1/9/2018	4.21		1/9/2018	4.21	
1/8/2018	3.87		1/8/2018	3.64		1/8/2018	3.82		1/8/2018	4.15		1/8/2018	4.15	
1/5/2018	3.87		1/5/2018	3.64		1/5/2018	3.82		1/5/2018	4.15		1/5/2018	4.15	
1/4/2018	3.85		1/4/2018	3.62		1/4/2018	3.79		1/4/2018	4.13		1/4/2018	4.13	
1/3/2018	3.85		1/3/2018	3.62		1/3/2018	3.79		1/3/2018	4.13		1/3/2018	4.13	
1/2/2018	3.87		1/2/2018	3.64		1/2/2018	3.82		1/2/2018	4.16		1/2/2018	4.16	
				3.69			3.86			4.18			4.18	

Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	2/1/2018 0:00	2/1/2018 0:00	2/1/2018 0:00	2/1/2018 0:00
End Date	2/28/2018 0:00	2/28/2018 0:00	2/28/2018 0:00	2/28/2018 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
2/28/2018	4.17	3.97	4.10	4.45
2/27/2018	4.21	4.01	4.14	4.49
2/26/2018	4.18	3.97	4.12	4.46
2/23/2018	4.19	3.98	4.12	4.46
2/22/2018	4.23	4.02	4.16	4.50
2/21/2018	4.24	4.04	4.18	4.51
2/20/2018	4.18	3.97	4.11	4.45
2/16/2018	4.16	3.95	4.10	4.43
2/15/2018	4.16	3.95	4.10	4.43
2/14/2018	4.20	3.99	4.13	4.47
2/13/2018	4.14	3.93	4.08	4.42
2/12/2018	4.14	3.94	4.08	4.41
2/9/2018	4.14	3.94	4.08	4.41
2/8/2018	4.14	3.93	4.08	4.40
2/7/2018	4.12	3.91	4.06	4.38
2/6/2018	4.05	3.83	3.99	4.32
2/5/2018	4.06	3.86	4.01	4.32
2/2/2018	4.09	3.89	4.04	4.35
2/1/2018	4.01	3.80	3.96	4.27
	4.15	3.94	4.09	4.42

Security	MOODJAVG Index	MOODJAA Index	MOODUA Index	MOODUBAA Index
Start Date	3/1/2018 0:00	3/1/2018 0:00	3/1/2018 0:00	3/1/2018 0:00
End Date	3/31/2018 0:00	3/31/2018 0:00	3/31/2018 0:00	3/31/2018 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
3/29/2018	4.15	3.90	4.07	4.48
3/28/2018	4.19	3.95	4.11	4.52
3/27/2018	4.20	3.95	4.12	4.53
3/26/2018	4.24	3.98	4.15	4.58
3/23/2018	4.23	3.97	4.15	4.57
3/22/2018	4.21	3.96	4.13	4.55
3/21/2018	4.27	4.02	4.18	4.60
3/20/2018	4.24	4.00	4.16	4.57
3/19/2018	4.20	3.96	4.12	4.53
3/16/2018	4.20	3.95	4.12	4.52
3/15/2018	4.18	3.94	4.10	4.51
3/14/2018	4.17	3.93	4.10	4.48
3/13/2018	4.21	3.97	4.13	4.52
3/12/2018	4.23	4.00	4.15	4.53
3/9/2018	4.25	4.03	4.18	4.55
3/8/2018	4.22	4.00	4.15	4.52
3/7/2018	4.24	3.75	4.16	4.54
3/6/2018	4.22	3.99	4.15	4.53
3/5/2018	4.21	4.01	4.14	4.48
3/2/2018	4.19	3.99	4.12	4.46
3/1/2018	4.14	3.95	4.07	4.41
		3.96	4.13	4.52

MOODJAVG Index			MOODJAA Index			MOODUA Index			MOODUBAA Index		
Start Date	End Date	Period	Start Date	End Date	Period	Start Date	End Date	Period	Start Date	End Date	Period
Date	PX_LAST	D	Date	PX_LAST	D	Date	PX_LAST	D	Date	PX_LAST	D
4/30/2018	4.28		4/30/2018	4.01		4/30/2018	4.19		4/30/2018	4.63	
4/27/2018	4.30		4/27/2018	4.04		4/27/2018	4.22		4/27/2018	4.65	
4/26/2018	4.35		4/26/2018	4.09		4/26/2018	4.27		4/26/2018	4.69	
4/25/2018	4.38		4/25/2018	4.12		4/25/2018	4.30		4/25/2018	4.71	
4/24/2018	4.33		4/24/2018	4.07		4/24/2018	4.26		4/24/2018	4.66	
4/23/2018	4.31		4/23/2018	4.05		4/23/2018	4.24		4/23/2018	4.64	
4/20/2018	4.30		4/20/2018	4.04		4/20/2018	4.23		4/20/2018	4.64	
4/19/2018	4.27		4/19/2018	4.01		4/19/2018	4.20		4/19/2018	4.60	
4/18/2018	4.21		4/18/2018	3.95		4/18/2018	4.14		4/18/2018	4.54	
4/17/2018	4.17		4/17/2018	3.91		4/17/2018	4.10		4/17/2018	4.49	
4/16/2018	4.20		4/16/2018	3.94		4/16/2018	4.13		4/16/2018	4.52	
4/13/2018	4.20		4/13/2018	3.95		4/13/2018	4.13		4/13/2018	4.53	
4/12/2018	4.21		4/12/2018	3.95		4/12/2018	4.14		4/12/2018	4.54	
4/11/2018	4.18		4/11/2018	3.92		4/11/2018	4.10		4/11/2018	4.51	
4/10/2018	4.20		4/10/2018	3.95		4/10/2018	4.12		4/10/2018	4.52	
4/9/2018	4.20		4/9/2018	3.96		4/9/2018	4.12		4/9/2018	4.53	
4/6/2018	4.20		4/6/2018	3.96		4/6/2018	4.12		4/6/2018	4.53	
4/5/2018	4.26		4/5/2018	4.01		4/5/2018	4.17		4/5/2018	4.59	
4/4/2018	4.21		4/4/2018	3.97		4/4/2018	4.13		4/4/2018	4.54	
4/3/2018	4.20		4/3/2018	3.96		4/3/2018	4.12		4/3/2018	4.53	
4/2/2018	4.16		4/2/2018	3.92		4/2/2018	4.07		4/2/2018	4.49	
	4.24			3.99			4.17			4.58	

Security	MOODUAVG Index	MOODUAAA Index	MOODUUA Index	MOODUBAA Index
Start Date	5/1/2018 0:00	5/1/2018 0:00	5/1/2018 0:00	5/1/2018 0:00
End Date	5/31/2018 0:00	5/31/2018 0:00	5/31/2018 0:00	5/31/2018 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
5/31/2018	4.25	3.99	4.17	4.60
5/30/2018	4.28	4.01	4.20	4.63
5/29/2018	4.26	3.96	4.17	4.65
5/25/2018	4.32	4.06	4.24	4.65
5/24/2018	4.36	4.10	4.28	4.69
5/23/2018	4.40	4.14	4.32	4.73
5/22/2018	4.44	4.18	4.36	4.77
5/21/2018	4.43	4.18	4.35	4.77
5/18/2018	4.44	4.19	4.36	4.78
5/17/2018	4.47	4.22	4.39	4.81
5/16/2018	4.45	4.19	4.37	4.78
5/15/2018	4.44	4.18	4.36	4.78
5/14/2018	4.36	4.10	4.28	4.70
5/11/2018	4.35	4.09	4.26	4.69
5/10/2018	4.36	4.10	4.27	4.70
5/9/2018	4.39	4.13	4.29	4.74
5/8/2018	4.36	4.09	4.26	4.72
5/7/2018	4.34	4.08	4.25	4.69
5/4/2018	4.33	4.07	4.24	4.69
5/3/2018	4.33	4.07	4.23	4.68
5/2/2018	4.33	4.06	4.24	4.68
5/1/2018	4.32	4.05	4.24	4.68
	4.36	4.10	4.28	4.71

Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	6/1/2018 0:00	6/1/2018 0:00	6/1/2018 0:00	6/1/2018 0:00
End Date	6/30/2018 0:00	6/30/2018 0:00	6/30/2018 0:00	6/30/2018 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
6/29/2018	4.36	4.12	4.27	4.69
6/28/2018	4.36	4.12	4.27	4.69
6/27/2018	4.34	4.10	4.25	4.67
6/26/2018	4.38	4.14	4.29	4.72
6/25/2018	4.38	4.14	4.27	4.72
6/22/2018	4.39	4.15	4.28	4.73
6/21/2018	4.38	4.14	4.28	4.72
6/20/2018	4.38	4.14	4.29	4.72
6/19/2018	4.34	4.10	4.25	4.68
6/18/2018	4.36	4.11	4.27	4.70
6/15/2018	4.34	4.09	4.25	4.68
6/14/2018	4.36	4.10	4.27	4.71
6/13/2018	4.39	4.13	4.30	4.74
6/12/2018	4.38	4.12	4.29	4.72
6/11/2018	4.38	4.12	4.29	4.74
6/8/2018	4.36	4.10	4.27	4.72
6/7/2018	4.36	4.10	4.27	4.71
6/6/2018	4.41	4.14	4.32	4.77
6/5/2018	4.36	4.09	4.27	4.71
6/4/2018	4.36	4.10	4.27	4.71
6/1/2018	4.32	4.06	4.24	4.67
Average	4.37	4.11	4.27	4.71

MOODJAVG Index				MOODJAA Index				MOODUA Index				MOODUBAA Index			
Security	Start Date	End Date	Period	Security	Start Date	End Date	Period	Security	Start Date	End Date	Period	Security	Start Date	End Date	Period
	7/1/2018 0:00	7/31/2018 0:00	D		7/1/2018 0:00	7/31/2018 0:00	D		7/1/2018 0:00	7/31/2018 0:00	D		7/1/2018 0:00	7/31/2018 0:00	D
Date	PX_LAST			Date	PX_LAST			Date	PX_LAST			Date	PX_LAST		
	4.38				4.13				4.31				4.69		
7/31/2018		7/31/2018		7/31/2018		7/31/2018		7/31/2018		7/31/2018		7/31/2018		7/31/2018	
7/30/2018	4.40	7/30/2018		7/30/2018	4.16	7/30/2018		7/30/2018	4.33	7/30/2018		7/30/2018	4.72	7/30/2018	
7/27/2018	4.39	7/27/2018		7/27/2018	4.15	7/27/2018		7/27/2018	4.32	7/27/2018		7/27/2018	4.70	7/27/2018	
7/26/2018	4.40	7/26/2018		7/26/2018	4.16	7/26/2018		7/26/2018	4.33	7/26/2018		7/26/2018	4.72	7/26/2018	
7/25/2018	4.37	7/25/2018		7/25/2018	4.13	7/25/2018		7/25/2018	4.30	7/25/2018		7/25/2018	4.69	7/25/2018	
7/24/2018	4.39	7/24/2018		7/24/2018	4.15	7/24/2018		7/24/2018	4.32	7/24/2018		7/24/2018	4.71	7/24/2018	
7/23/2018	4.42	7/23/2018		7/23/2018	4.18	7/23/2018		7/23/2018	4.35	7/23/2018		7/23/2018	4.74	7/23/2018	
7/20/2018	4.36	7/20/2018		7/20/2018	4.11	7/20/2018		7/20/2018	4.29	7/20/2018		7/20/2018	4.67	7/20/2018	
7/19/2018	4.30	7/19/2018		7/19/2018	4.04	7/19/2018		7/19/2018	4.23	7/19/2018		7/19/2018	4.62	7/19/2018	
7/18/2018	4.33	7/18/2018		7/18/2018	4.07	7/18/2018		7/18/2018	4.25	7/18/2018		7/18/2018	4.66	7/18/2018	
7/17/2018	4.31	7/17/2018		7/17/2018	4.05	7/17/2018		7/17/2018	4.24	7/17/2018		7/17/2018	4.64	7/17/2018	
7/16/2018	4.32	7/16/2018		7/16/2018	4.06	7/16/2018		7/16/2018	4.25	7/16/2018		7/16/2018	4.64	7/16/2018	
7/13/2018	4.28	7/13/2018		7/13/2018	4.03	7/13/2018		7/13/2018	4.21	7/13/2018		7/13/2018	4.61	7/13/2018	
7/12/2018	4.30	7/12/2018		7/12/2018	4.05	7/12/2018		7/12/2018	4.23	7/12/2018		7/12/2018	4.63	7/12/2018	
7/11/2018	4.31	7/11/2018		7/11/2018	4.06	7/11/2018		7/11/2018	4.23	7/11/2018		7/11/2018	4.64	7/11/2018	
7/10/2018	4.33	7/10/2018		7/10/2018	4.08	7/10/2018		7/10/2018	4.26	7/10/2018		7/10/2018	4.66	7/10/2018	
7/9/2018	4.33	7/9/2018		7/9/2018	4.08	7/9/2018		7/9/2018	4.26	7/9/2018		7/9/2018	4.66	7/9/2018	
7/6/2018	4.31	7/6/2018		7/6/2018	4.06	7/6/2018		7/6/2018	4.23	7/6/2018		7/6/2018	4.64	7/6/2018	
7/5/2018	4.33	7/5/2018		7/5/2018	4.08	7/5/2018		7/5/2018	4.25	7/5/2018		7/5/2018	4.65	7/5/2018	
7/3/2018	4.34	7/3/2018		7/3/2018	4.09	7/3/2018		7/3/2018	4.26	7/3/2018		7/3/2018	4.68	7/3/2018	
7/2/2018	4.37	7/2/2018		7/2/2018	4.12	7/2/2018		7/2/2018	4.28	7/2/2018		7/2/2018	4.70	7/2/2018	
	4.35				4.10				4.27				4.67		

8/1/2018 0:00 8/31/2018 0:00 D	8/1/2018 0:00 8/31/2018 0:00 D	8/1/2018 0:00 8/31/2018 0:00 D	8/1/2018 0:00 8/31/2018 0:00 D	8/1/2018 0:00 8/31/2018 0:00 D
PX_LAST	PX_LAST	PX_LAST	PX_LAST	PX_LAST
Date	Date	Date	Date	Date
4.31	4.06	4.24	4.63	4.63
4.32	4.08	4.25	4.64	4.64
4.33	4.09	4.26	4.65	4.65
4.30	4.05	4.23	4.61	4.61
4.28	4.03	4.21	4.59	4.59
4.28	4.03	4.21	4.59	4.59
4.28	4.03	4.22	4.60	4.60
4.29	4.04	4.23	4.61	4.61
4.28	4.03	4.21	4.59	4.59
4.32	4.07	4.25	4.64	4.64
4.32	4.07	4.26	4.64	4.64
4.32	4.06	4.25	4.64	4.64
4.34	4.09	4.27	4.67	4.67
4.32	4.06	4.25	4.66	4.66
4.29	4.03	4.22	4.61	4.61
4.34	4.09	4.28	4.66	4.66
4.37	4.12	4.31	4.68	4.68
4.37	4.12	4.31	4.68	4.68
4.35	4.10	4.29	4.65	4.65
4.37	4.13	4.30	4.68	4.68
4.40	4.15	4.33	4.71	4.71
4.42	4.17	4.35	4.73	4.73
4.33	4.08	4.26	4.64	4.64

Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	9/1/2018 0:00	9/1/2018 0:00	9/1/2018 0:00	9/1/2018 0:00
End Date	9/30/2018 0:00	9/30/2018 0:00	9/30/2018 0:00	9/30/2018 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
9/28/2018	4.42	4.19	4.33	4.75
9/27/2018	4.42	4.19	4.33	4.75
9/26/2018	4.43	4.19	4.34	4.76
9/25/2018	4.47	4.24	4.37	4.79
9/24/2018	4.46	4.23	4.36	4.78
9/21/2018	4.45	4.22	4.36	4.77
9/20/2018	4.46	4.23	4.37	4.78
9/19/2018	4.49	4.26	4.40	4.82
9/18/2018	4.46	4.22	4.36	4.79
9/17/2018	4.40	4.17	4.30	4.73
9/14/2018	4.40	4.17	4.30	4.74
9/13/2018	4.37	4.14	4.27	4.70
9/12/2018	4.38	4.14	4.29	4.71
9/11/2018	4.40	4.17	4.30	4.73
9/10/2018	4.37	4.13	4.27	4.70
9/7/2018	4.38	4.14	4.29	4.72
9/6/2018	4.35	4.10	4.28	4.68
9/5/2018	4.39	4.14	4.31	4.71
9/4/2018	4.38	4.13	4.30	4.70
	4.41	4.18	4.32	4.74

Start Date	10/1/2018 0:00	Start Date	10/1/2018 0:00	Start Date	10/1/2018 0:00	Start Date	10/1/2018 0:00
End Date	10/31/2018 0:00	End Date	10/31/2018 0:00	End Date	10/31/2018 0:00	End Date	10/31/2018 0:00
Period	D	Period	D	Period	D	Period	D
Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST
10/31/2018	4.63	10/31/2018	4.39	10/31/2018	4.51	10/31/2018	5.00
10/30/2018	4.60	10/30/2018	4.35	10/30/2018	4.48	10/30/2018	4.96
10/29/2018	4.56	10/29/2018	4.31	10/29/2018	4.45	10/29/2018	4.92
10/26/2018	4.55	10/26/2018	4.30	10/26/2018	4.44	10/26/2018	4.91
10/25/2018	4.57	10/25/2018	4.32	10/25/2018	4.46	10/25/2018	4.94
10/24/2018	4.55	10/24/2018	4.29	10/24/2018	4.44	10/24/2018	4.91
10/23/2018	4.58	10/23/2018	4.33	10/23/2018	4.47	10/23/2018	4.95
10/22/2018	4.59	10/22/2018	4.33	10/22/2018	4.48	10/22/2018	4.95
10/19/2018	4.59	10/19/2018	4.33	10/19/2018	4.48	10/19/2018	4.95
10/18/2018	4.56	10/18/2018	4.31	10/18/2018	4.46	10/18/2018	4.92
10/17/2018	4.55	10/17/2018	4.30	10/17/2018	4.45	10/17/2018	4.91
10/16/2018	4.53	10/16/2018	4.28	10/16/2018	4.43	10/16/2018	4.88
10/15/2018	4.54	10/15/2018	4.29	10/15/2018	4.44	10/15/2018	4.89
10/12/2018	4.52	10/12/2018	4.27	10/12/2018	4.42	10/12/2018	4.88
10/11/2018	4.52	10/11/2018	4.26	10/11/2018	4.42	10/11/2018	4.87
10/10/2018	4.59	10/10/2018	4.35	10/10/2018	4.49	10/10/2018	4.93
10/9/2018	4.57	10/9/2018	4.33	10/9/2018	4.47	10/9/2018	4.91
10/8/2018	4.61	10/8/2018	4.37	10/8/2018	4.51	10/8/2018	4.94
10/5/2018	4.61	10/5/2018	4.37	10/5/2018	4.52	10/5/2018	4.94
10/4/2018	4.56	10/4/2018	4.32	10/4/2018	4.47	10/4/2018	4.89
10/3/2018	4.52	10/3/2018	4.28	10/3/2018	4.43	10/3/2018	4.85
10/2/2018	4.42	10/2/2018	4.18	10/2/2018	4.33	10/2/2018	4.76
10/1/2018	4.46	10/1/2018	4.22	10/1/2018	4.37	10/1/2018	4.79
	4.56		4.31		4.45		4.91

Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	11/1/2018 0:00	11/1/2018 0:00	11/1/2018 0:00	11/1/2018 0:00
End Date	11/30/2018 0:00	11/30/2018 0:00	11/30/2018 0:00	11/30/2018 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
11/30/2018	4.68	4.45	4.53	5.07
11/29/2018	4.69	4.43	4.54	5.09
11/28/2018	4.68	4.42	4.54	5.07
11/27/2018	4.66	4.39	4.53	5.05
11/26/2018	4.64	4.38	4.51	5.02
11/23/2018	4.63	4.37	4.49	5.02
11/21/2018	4.63	4.37	4.49	5.02
11/20/2018	4.62	4.36	4.48	5.02
11/19/2018	4.62	4.36	4.48	5.01
11/16/2018	4.62	4.38	4.49	5.00
11/15/2018	4.65	4.40	4.52	5.04
11/14/2018	4.62	4.35	4.50	5.02
11/13/2018	4.62	4.36	4.51	5.00
11/9/2018	4.64	4.38	4.53	5.00
11/8/2018	4.67	4.41	4.56	5.03
11/7/2018	4.66	4.41	4.55	5.01
11/6/2018	4.66	4.42	4.55	5.02
11/5/2018	4.68	4.43	4.57	5.04
11/2/2018	4.70	4.45	4.58	5.06
11/1/2018	4.63	4.38	4.52	4.99
	4.65	4.40	4.52	5.03

MOODUAVG Index		MOODUAA Index		MOODUA Index		MOODUBAA Index	
Security Start Date	12/1/2018 0:00	Security Start Date	12/1/2018 0:00	Security Start Date	12/1/2018 0:00	Security Start Date	12/1/2018 0:00
End Date	12/31/2018 0:00	End Date	12/31/2018 0:00	End Date	12/31/2018 0:00	End Date	12/31/2018 0:00
Period	D	Period	D	Period	D	Period	D
Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST
12/28/2018	4.49	12/28/2018	4.20	12/28/2018	4.35	12/28/2018	4.91
12/27/2018	4.46	12/27/2018	4.15	12/27/2018	4.33	12/27/2018	4.89
12/26/2018	4.47	12/26/2018	4.17	12/26/2018	4.34	12/26/2018	4.91
12/24/2018	4.42	12/24/2018	4.12	12/24/2018	4.29	12/24/2018	4.86
12/21/2018	4.45	12/21/2018	4.15	12/21/2018	4.31	12/21/2018	4.88
12/20/2018	4.42	12/20/2018	4.13	12/20/2018	4.29	12/20/2018	4.85
12/19/2018	4.42	12/19/2018	4.13	12/19/2018	4.29	12/19/2018	4.83
12/18/2018	4.47	12/18/2018	4.19	12/18/2018	4.35	12/18/2018	4.88
12/17/2018	4.51	12/17/2018	4.23	12/17/2018	4.39	12/17/2018	4.91
12/14/2018	4.54	12/14/2018	4.27	12/14/2018	4.41	12/14/2018	4.94
12/13/2018	4.56	12/13/2018	4.30	12/13/2018	4.43	12/13/2018	4.96
12/12/2018	4.56	12/12/2018	4.30	12/12/2018	4.42	12/12/2018	4.95
12/11/2018	4.55	12/11/2018	4.30	12/11/2018	4.40	12/11/2018	4.94
12/10/2018	4.55	12/10/2018	4.30	12/10/2018	4.40	12/10/2018	4.95
12/7/2018	4.56	12/7/2018	4.31	12/7/2018	4.41	12/7/2018	4.95
12/6/2018	4.55	12/6/2018	4.31	12/6/2018	4.39	12/6/2018	4.94
12/4/2018	4.57	12/4/2018	4.33	12/4/2018	4.43	12/4/2018	4.95
12/3/2018	4.65	12/3/2018	4.41	12/3/2018	4.52	12/3/2018	5.03
Average	4.51	4.24	4.38	4.92			

Security	MOODUAVG Index	Security	MOODUAA Index	Security	MOODUA Index	Security	MOODUBAA Index
Start Date	1/1/2019 0:00	Start Date	1/1/2019 0:00	Start Date	1/1/2019 0:00	Start Date	1/1/2019 0:00
End Date	1/31/2019 0:00	End Date	1/31/2019 0:00	End Date	1/31/2019 0:00	End Date	1/31/2019 0:00
Period	D	Period	D	Period	D	Period	D
Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST
1/31/2019	4.39	1/31/2019	4.09	1/31/2019	4.27	1/31/2019	4.82
1/30/2019	4.45	1/30/2019	4.15	1/30/2019	4.32	1/30/2019	4.88
1/29/2019	4.45	1/29/2019	4.14	1/29/2019	4.32	1/29/2019	4.89
1/28/2019	4.48	1/28/2019	4.17	1/28/2019	4.35	1/28/2019	4.91
1/25/2019	4.48	1/25/2019	4.18	1/25/2019	4.35	1/25/2019	4.91
1/24/2019	4.46	1/24/2019	4.16	1/24/2019	4.34	1/24/2019	4.89
1/23/2019	4.50	1/23/2019	4.19	1/23/2019	4.38	1/23/2019	4.93
1/22/2019	4.49	1/22/2019	4.19	1/22/2019	4.37	1/22/2019	4.92
1/18/2019	4.55	1/18/2019	4.26	1/18/2019	4.42	1/18/2019	4.97
1/17/2019	4.54	1/17/2019	4.24	1/17/2019	4.41	1/17/2019	4.98
1/16/2019	4.55	1/16/2019	4.25	1/16/2019	4.41	1/16/2019	4.98
1/15/2019	4.55	1/15/2019	4.25	1/15/2019	4.41	1/15/2019	4.98
1/14/2019	4.54	1/14/2019	4.24	1/14/2019	4.40	1/14/2019	4.97
1/11/2019	4.51	1/11/2019	4.22	1/11/2019	4.37	1/11/2019	4.93
1/10/2019	4.53	1/10/2019	4.23	1/10/2019	4.39	1/10/2019	4.96
1/9/2019	4.50	1/9/2019	4.20	1/9/2019	4.36	1/9/2019	4.93
1/8/2019	4.46	1/8/2019	4.16	1/8/2019	4.33	1/8/2019	4.90
1/7/2019	4.46	1/7/2019	4.16	1/7/2019	4.32	1/7/2019	4.89
1/4/2019	4.45	1/4/2019	4.15	1/4/2019	4.31	1/4/2019	4.88
1/3/2019	4.36	1/3/2019	4.06	1/3/2019	4.23	1/3/2019	4.80
	4.49	1/2/2019	4.14		4.35		4.92

Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	2/1/2019 0:00	2/1/2019 0:00	2/1/2019 0:00	2/1/2019 0:00
End Date	2/28/2019 0:00	2/28/2019 0:00	2/28/2019 0:00	2/28/2019 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
2/28/2019	4.38	4.11	4.27	4.76
2/27/2019	4.36	4.10	4.25	4.74
2/26/2019	4.31	4.04	4.20	4.69
2/25/2019	4.33	4.06	4.23	4.71
2/22/2019	4.32	4.05	4.22	4.70
2/21/2019	4.35	4.07	4.25	4.73
2/20/2019	4.31	4.03	4.21	4.69
2/19/2019	4.31	3.98	4.22	4.72
2/15/2019	4.33	4.01	4.23	4.74
2/14/2019	4.34	4.02	4.24	4.76
2/13/2019	4.37	4.04	4.27	4.79
2/12/2019	4.35	4.03	4.25	4.78
2/11/2019	4.33	4.01	4.23	4.75
2/8/2019	4.32	4.00	4.22	4.74
2/7/2019	4.35	4.03	4.24	4.78
2/6/2019	4.40	4.09	4.29	4.81
2/5/2019	4.39	4.09	4.28	4.81
2/4/2019	4.43	4.11	4.32	4.85
2/1/2019	4.41	4.10	4.29	4.83
	4.35	4.05	4.25	4.76

Security	MOODJAVG Index	MOODJAA Index	MOODUA Index	MOODUBAA Index
Start Date	3/1/2019 0:00	3/1/2019 0:00	3/1/2019 0:00	3/1/2019 0:00
End Date	3/31/2019 0:00	3/31/2019 0:00	3/31/2019 0:00	3/31/2019 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
3/29/2019	4.10	3.81	3.99	4.49
3/28/2019	4.09	3.80	3.99	4.48
3/27/2019	4.10	3.81	4.00	4.49
3/26/2019	4.14	3.86	4.04	4.53
3/25/2019	4.15	3.86	4.05	4.53
3/22/2019	4.16	3.87	4.07	4.55
3/21/2019	4.24	3.95	4.14	4.63
3/20/2019	4.25	3.97	4.15	4.64
3/19/2019	4.31	4.02	4.21	4.69
3/18/2019	4.30	4.01	4.20	4.68
3/15/2019	4.30	4.01	4.21	4.68
3/14/2019	4.33	4.04	4.24	4.70
3/13/2019	4.29	4.01	4.20	4.67
3/12/2019	4.28	3.99	4.18	4.66
3/11/2019	4.32	4.03	4.22	4.72
3/8/2019	4.30	4.01	4.19	4.70
3/7/2019	4.31	4.03	4.21	4.70
3/6/2019	4.35	4.06	4.25	4.75
3/5/2019	4.37	4.08	4.27	4.76
3/4/2019	4.39	4.13	4.27	4.76
3/1/2019	4.41	4.15	4.30	4.79
	4.26	3.98	4.16	4.65

MOODJAVG Index			MOODJAA Index			MOODUA Index			MOODUBAA Index		
Security	Start Date	End Date	Security	Start Date	End Date	Security	Start Date	End Date	Security	Start Date	End Date
Period	D		Period	D		Period	D		Period	D	
Date	PX_LAST		Date	PX_LAST		Date	PX_LAST		Date	PX_LAST	
5/31/2019	3.95		5/31/2019	3.68		5/31/2019	3.83		5/31/2019	4.33	
5/30/2019	4.00		5/30/2019	3.75		5/30/2019	3.87		5/30/2019	4.38	
5/29/2019	4.02		5/29/2019	3.77		5/29/2019	3.88		5/29/2019	4.41	
5/28/2019	4.03		5/28/2019	3.76		5/28/2019	3.91		5/28/2019	4.42	
5/24/2019	4.08		5/24/2019	3.81		5/24/2019	3.95		5/24/2019	4.47	
5/23/2019	4.05		5/23/2019	3.79		5/23/2019	3.93		5/23/2019	4.43	
5/22/2019	4.12		5/22/2019	3.86		5/22/2019	4.00		5/22/2019	4.50	
5/21/2019	4.14		5/21/2019	3.89		5/21/2019	4.01		5/21/2019	4.51	
5/20/2019	4.13		5/20/2019	3.88		5/20/2019	4.00		5/20/2019	4.50	
5/17/2019	4.11		5/17/2019	3.85		5/17/2019	3.99		5/17/2019	4.48	
5/16/2019	4.12		5/16/2019	3.87		5/16/2019	4.00		5/16/2019	4.49	
5/15/2019	4.11		5/15/2019	3.85		5/15/2019	3.99		5/15/2019	4.48	
5/14/2019	4.13		5/14/2019	3.89		5/14/2019	4.01		5/14/2019	4.50	
5/13/2019	4.12		5/13/2019	3.86		5/13/2019	3.99		5/13/2019	4.50	
5/10/2019	4.13		5/10/2019	3.88		5/10/2019	4.01		5/10/2019	4.51	
5/9/2019	4.13		5/9/2019	3.88		5/9/2019	4.02		5/9/2019	4.50	
5/8/2019	4.14		5/8/2019	3.88		5/8/2019	4.03		5/8/2019	4.50	
5/7/2019	4.09		5/7/2019	3.82		5/7/2019	3.99		5/7/2019	4.45	
5/6/2019	4.13		5/6/2019	3.87		5/6/2019	4.03		5/6/2019	4.49	
5/3/2019	4.14		5/3/2019	3.88		5/3/2019	4.05		5/3/2019	4.50	
5/2/2019	4.15		5/2/2019	3.88		5/2/2019	4.06		5/2/2019	4.51	
5/1/2019	4.12		5/1/2019	3.85		5/1/2019	4.03		5/1/2019	4.48	
	4.10			3.84			3.98			4.47	

Security MOODUAVG Index
 Start Date 6/1/2019 0:00
 End Date 6/30/2019 0:00
 Period D

Security MOODUAAA Index
 Start Date 6/1/2019 0:00
 End Date 6/30/2019 0:00
 Period D

Security MOODUAA Index
 Start Date 6/1/2019 0:00
 End Date 6/30/2019 0:00
 Period D

Security MOODUA Index
 Start Date 6/1/2019 0:00
 End Date 6/30/2019 0:00
 Period D

Security MOODUBAA Index
 Start Date 6/1/2019 0:00
 End Date 6/30/2019 0:00
 Period D

Date	PX_LAST
6/28/2019	3.81
6/27/2019	3.81
6/26/2019	3.86
6/25/2019	3.83
6/24/2019	3.86
6/21/2019	3.91
6/20/2019	3.86
6/19/2019	3.90
6/18/2019	3.92
6/17/2019	3.95
6/14/2019	3.97
6/13/2019	3.98
6/12/2019	4.00
6/11/2019	3.99
6/10/2019	4.00
6/7/2019	3.95
6/6/2019	4.00
6/5/2019	4.01
6/4/2019	3.98
6/3/2019	3.92
June 2019	
Utility	3.93

Date	PX_LAST
6/28/2019	3.52
6/27/2019	3.53
6/26/2019	3.57
6/25/2019	3.53
6/24/2019	3.58
6/21/2019	3.64
6/20/2019	3.58
6/19/2019	3.61
6/18/2019	3.64
6/17/2019	3.67
6/14/2019	3.69
6/13/2019	3.69
6/12/2019	3.72
6/11/2019	3.72
6/10/2019	3.73
6/7/2019	3.67
6/6/2019	3.73
6/5/2019	3.74
6/4/2019	3.71
6/3/2019	3.65
June 2019	
Utility	3.65

Date	PX_LAST
6/28/2019	3.72
6/27/2019	3.72
6/26/2019	3.77
6/25/2019	3.74
6/24/2019	3.76
6/21/2019	3.80
6/20/2019	3.76
6/19/2019	3.78
6/18/2019	3.81
6/17/2019	3.84
6/14/2019	3.86
6/13/2019	3.87
6/12/2019	3.89
6/11/2019	3.88
6/10/2019	3.89
6/7/2019	3.84
6/6/2019	3.88
6/5/2019	3.90
6/4/2019	3.86
6/3/2019	3.80
June 2019	
Utility	3.82

Date	PX_LAST
6/28/2019	4.19
6/27/2019	4.19
6/26/2019	4.24
6/25/2019	4.21
6/24/2019	4.23
6/21/2019	4.30
6/20/2019	4.25
6/19/2019	4.30
6/18/2019	4.32
6/17/2019	4.35
6/14/2019	4.36
6/13/2019	4.37
6/12/2019	4.39
6/11/2019	4.38
6/10/2019	4.39
6/7/2019	4.35
6/6/2019	4.39
6/5/2019	4.40
6/4/2019	4.37
6/3/2019	4.31
June 2019	
Utility	4.31

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MOODJAVG Index			MOODJAA Index			MOODUA Index			MOODUBAA Index		
Security	Start Date	End Date	Security	Start Date	End Date	Security	Start Date	End Date	Security	Start Date	End Date
Period	D	PX_LAST	Period	D	PX_LAST	Period	D	PX_LAST	Period	D	PX_LAST
	Date		Date			Date			Date		
	7/1/2019	3.83	7/1/2019	3.54	7/1/2019	3.74	7/1/2019	3.74	7/1/2019	4.20	4.20
	7/2/2019	3.77	7/2/2019	3.48	7/2/2019	3.68	7/2/2019	3.68	7/2/2019	4.16	4.16
	7/3/2019	3.73	7/3/2019	3.45	7/3/2019	3.64	7/3/2019	3.64	7/3/2019	4.11	4.11
	7/5/2019	3.81	7/5/2019	3.53	7/5/2019	3.72	7/5/2019	3.72	7/5/2019	4.19	4.19
	7/8/2019	3.78	7/8/2019	3.50	7/8/2019	3.68	7/8/2019	3.68	7/8/2019	4.16	4.16
	7/9/2019	3.79	7/9/2019	3.51	7/9/2019	3.69	7/9/2019	3.69	7/9/2019	4.17	4.17
	7/10/2019	3.82	7/10/2019	3.54	7/10/2019	3.72	7/10/2019	3.72	7/10/2019	4.20	4.20
	7/11/2019	3.88	7/11/2019	3.61	7/11/2019	3.78	7/11/2019	3.78	7/11/2019	4.26	4.26
	7/12/2019	3.87	7/12/2019	3.60	7/12/2019	3.76	7/12/2019	3.76	7/12/2019	4.24	4.24
	7/15/2019	3.84	7/15/2019	3.57	7/15/2019	3.73	7/15/2019	3.73	7/15/2019	4.22	4.22
	7/16/2019	3.86	7/16/2019	3.59	7/16/2019	3.75	7/16/2019	3.75	7/16/2019	4.23	4.23
	7/17/2019	3.80	7/17/2019	3.53	7/17/2019	3.69	7/17/2019	3.69	7/17/2019	4.17	4.17
	7/18/2019	3.80	7/18/2019	3.52	7/18/2019	3.69	7/18/2019	3.69	7/18/2019	4.18	4.18
	7/19/2019	3.80	7/19/2019	3.53	7/19/2019	3.69	7/19/2019	3.69	7/19/2019	4.18	4.18
	7/22/2019	3.79	7/22/2019	3.52	7/22/2019	3.68	7/22/2019	3.68	7/22/2019	4.16	4.16
	7/23/2019	3.81	7/23/2019	3.55	7/23/2019	3.71	7/23/2019	3.71	7/23/2019	4.18	4.18
	7/24/2019	3.73	7/24/2019	3.53	7/24/2019	3.66	7/24/2019	3.66	7/24/2019	3.99	3.99
	7/25/2019	3.75	7/25/2019	3.55	7/25/2019	3.69	7/25/2019	3.69	7/25/2019	4.01	4.01
	7/26/2019	3.75	7/26/2019	3.55	7/26/2019	3.68	7/26/2019	3.68	7/26/2019	4.01	4.01
	7/29/2019	3.72	7/29/2019	3.53	7/29/2019	3.65	7/29/2019	3.65	7/29/2019	3.99	3.99
	7/30/2019	3.72	7/30/2019	3.53	7/30/2019	3.65	7/30/2019	3.65	7/30/2019	3.99	3.99
	7/31/2019	3.66	7/31/2019	3.46	7/31/2019	3.59	7/31/2019	3.59	7/31/2019	3.93	3.93
		3.79		3.53		3.69		3.69		4.13	4.13

Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	8/1/2019 0:00	8/1/2019 0:00	8/1/2019 0:00	8/1/2019 0:00
End Date	8/31/2019 0:00	8/31/2019 0:00	8/31/2019 0:00	8/31/2019 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
8/30/2019	3.26	3.07	3.19	3.53
8/29/2019	3.27	3.07	3.19	3.54
8/28/2019	3.23	3.03	3.15	3.50
8/27/2019	3.25	3.05	3.18	3.52
8/26/2019	3.32	3.12	3.25	3.59
8/23/2019	3.30	3.10	3.23	3.56
8/22/2019	3.38	3.19	3.31	3.64
8/21/2019	3.34	3.14	3.27	3.61
8/20/2019	3.34	3.14	3.26	3.61
8/19/2019	3.38	3.18	3.31	3.65
8/16/2019	3.30	3.11	3.23	3.55
8/15/2019	3.27	3.09	3.20	3.52
8/14/2019	3.31	3.13	3.25	3.56
8/13/2019	3.37	3.17	3.31	3.64
8/12/2019	3.36	3.16	3.29	3.63
8/9/2019	3.45	3.26	3.38	3.71
8/8/2019	3.43	3.24	3.36	3.70
8/7/2019	3.40	3.21	3.32	3.68
8/6/2019	3.45	3.26	3.37	3.72
8/5/2019	3.46	3.27	3.39	3.73
8/2/2019	3.54	3.35	3.47	3.81
8/1/2019	3.58	3.38	3.51	3.84
		3.17	3.29	3.63

Moody's Corporate, Industrial, and Utility Bond Yields

Mnemonic:	IRJTL.D.IUSA	IRAAUD.IUSA	IRAAUD.IUSA	IRAUD.IUSA	IRBAAUD.IUSA
Description:	Moody's Daily Corporate Bond Yield Averages: Average Utility - Based on bonds with maturities 20 years and above, (% p.a., NSA)	Moody's Daily Corporate Bond Yield Averages: Aa Utility - Based on bonds with maturities 20 years and above, (% p.a., NSA)	Moody's Daily Corporate Bond Yield Averages: Aa Utility - Based on bonds with maturities 20 years and above, (% p.a., NSA)	Moody's Daily Corporate Bond Yield Averages: A Utility - Based on bonds with maturities 20 years and above, (% p.a., NSA)	Moody's Daily Corporate Bond Yield Averages: Baa Utility - Based on bonds with maturities 20 years and above, (% p.a., NSA)
Source:	Moody's Analytics	Moody's Analytics	Moody's Analytics	Moody's Analytics	Moody's Analytics
Native Frequency:	BUSINESS	BUSINESS	BUSINESS	BUSINESS	BUSINESS
Geography:	United States	United States	United States	United States	United States
	na	na	na	na	na
09/02/2019	3.25	3.06	3.06	3.17	3.51
09/03/2019	3.25	3.06	3.06	3.18	3.52
09/04/2019	3.35	3.16	3.16	3.27	3.62
09/05/2019	3.32	3.13	3.13	3.24	3.58
09/06/2019	3.39	3.20	3.20	3.31	3.66
09/09/2019	3.47	3.28	3.28	3.40	3.74
09/10/2019	3.49	3.30	3.30	3.42	3.76
09/11/2019	3.54	3.35	3.35	3.47	3.81
09/12/2019	3.65	3.45	3.45	3.57	3.92
09/13/2019	3.58	3.38	3.38	3.51	3.85
09/16/2019	3.56	3.35	3.35	3.49	3.83
09/17/2019	3.52	3.31	3.31	3.45	3.79
09/18/2019	3.50	3.29	3.29	3.43	3.77
09/19/2019	3.47	3.26	3.26	3.41	3.75
09/20/2019	3.43	3.23	3.23	3.37	3.70
09/23/2019	3.38	3.17	3.17	3.31	3.65
09/24/2019	3.46	3.26	3.26	3.40	3.73
09/25/2019	3.41	3.20	3.20	3.36	3.68
09/26/2019	3.41	3.21	3.21	3.35	3.68
09/27/2019	3.41	3.21	3.21	3.35	3.68
09/30/2019	3.44	3.24	3.24	3.37	3.71
September Average					

Privileged & Confidential Attorney Client Work Product

Moody's Corporate, Industrial, and Utility Bond Yields

Mnemonic:	IRJTL.D.IUSA	IRAAUD.IUSA	IRAUD.IUSA	IRBAAUD.IUSA
Description:	Moody's Daily Corporate Bond Yield	Moody's Daily Corporate Bond Yield	Moody's Daily Corporate Bond Yield	Moody's Daily Corporate Bond Yield
Source:	Averages: Average Utility - Based on bonds with maturities 20 years and above, (% p.a., NSA)	Averages: Aa Utility - Based on bonds with maturities 20 years and above, (% p.a., NSA)	Averages: A Utility - Based on bonds with maturities 20 years and above, (% p.a., NSA)	Averages: Baa Utility - Based on bonds with maturities 20 years and above, (% p.a., NSA)
Native Frequency:	Moody's Analytics	Moody's Analytics	Moody's Analytics	Moody's Analytics
Geography:	BUSINESS United States	BUSINESS United States	BUSINESS United States	BUSINESS United States
09/02/2019	na	na	na	na
09/03/2019	3.25	3.06	3.17	3.51
09/04/2019	3.25	3.06	3.18	3.52
09/05/2019	3.35	3.16	3.27	3.62
09/06/2019	3.32	3.13	3.24	3.58
09/09/2019	3.39	3.20	3.31	3.66
09/10/2019	3.47	3.28	3.40	3.74
09/11/2019	3.49	3.30	3.42	3.76
09/12/2019	3.54	3.35	3.47	3.81
09/13/2019	3.65	3.45	3.57	3.92
09/16/2019	3.58	3.38	3.51	3.85
09/17/2019	3.56	3.35	3.49	3.83
09/18/2019	3.52	3.31	3.45	3.79
09/19/2019	3.50	3.29	3.43	3.77
09/20/2019	3.47	3.26	3.41	3.75
09/23/2019	3.43	3.23	3.37	3.70
09/24/2019	3.38	3.17	3.31	3.65
09/25/2019	3.46	3.26	3.40	3.73
09/26/2019	3.41	3.20	3.36	3.68
09/27/2019	3.41	3.21	3.35	3.68
09/30/2019	3.41	3.21	3.35	3.68
September Average	3.44	3.24	3.37	3.71

Security	MOODUAVG Index	Security	MOODUAA Index	Security	MOODUA Index	Security	MOODUBAA Index
Start Date	10/1/2019 0:00	Start Date	10/1/2019 0:00	Start Date	10/1/2019 0:00	Start Date	10/1/2019 0:00
End Date	11/30/2019 0:00	End Date	11/30/2019 0:00	End Date	11/30/2019 0:00	End Date	11/30/2019 0:00
Period	D	Period	D	Period	D	Period	D
Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST
10/31/2019	3.39	10/31/2019	3.16	10/31/2019	3.33	10/31/2019	3.67
10/30/2019	3.47	10/30/2019	3.25	10/30/2019	3.42	10/30/2019	3.75
10/29/2019	3.52	10/29/2019	3.30	10/29/2019	3.47	10/29/2019	3.80
10/28/2019	3.55	10/28/2019	3.32	10/28/2019	3.50	10/28/2019	3.82
10/25/2019	3.5	10/25/2019	3.28	10/25/2019	3.44	10/25/2019	3.77
10/24/2019	3.47	10/24/2019	3.26	10/24/2019	3.41	10/24/2019	3.75
10/23/2019	3.48	10/23/2019	3.28	10/23/2019	3.41	10/23/2019	3.76
10/22/2019	3.49	10/22/2019	3.28	10/22/2019	3.41	10/22/2019	3.77
10/21/2019	3.52	10/21/2019	3.31	10/21/2019	3.46	10/21/2019	3.8
10/18/2019	3.49	10/18/2019	3.27	10/18/2019	3.43	10/18/2019	3.77
10/17/2019	3.49	10/17/2019	3.28	10/17/2019	3.43	10/17/2019	3.77
10/16/2019	3.49	10/16/2019	3.28	10/16/2019	3.43	10/16/2019	3.76
10/15/2019	3.51	10/15/2019	3.3	10/15/2019	3.44	10/15/2019	3.78
10/11/2019	3.5	10/11/2019	3.3	10/11/2019	3.43	10/11/2019	3.77
10/10/2019	3.45	10/10/2019	3.25	10/10/2019	3.38	10/10/2019	3.72
10/9/2019	3.39	10/9/2019	3.19	10/9/2019	3.32	10/9/2019	3.66
10/8/2019	3.35	10/8/2019	3.14	10/8/2019	3.28	10/8/2019	3.62
10/7/2019	3.35	10/7/2019	3.14	10/7/2019	3.28	10/7/2019	3.63
10/4/2019	3.33	10/4/2019	3.13	10/4/2019	3.26	10/4/2019	3.6
10/3/2019	3.34	10/3/2019	3.13	10/3/2019	3.28	10/3/2019	3.62
10/2/2019	3.39	10/2/2019	3.18	10/2/2019	3.32	10/2/2019	3.66
10/1/2019	3.4	10/1/2019	3.2	10/1/2019	3.34	10/1/2019	3.67
	3.45		3.24		3.39		3.72

Security	MOODUAVG Index	Security	MOODUAA Index	Security	MOODUA Index	Security	MOODUBAA Index
Start Date	10/1/2019 0:00	Start Date	10/1/2019 0:00	Start Date	10/1/2019 0:00	Start Date	10/1/2019 0:00
End Date	11/30/2019 0:00	End Date	11/30/2019 0:00	End Date	11/30/2019 0:00	End Date	11/30/2019 0:00
Period	D	Period	D	Period	D	Period	D
Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST
11/26/2019	3.38	11/26/2019	3.15	11/26/2019	3.33	11/26/2019	3.67
11/25/2019	3.42	11/25/2019	3.18	11/25/2019	3.37	11/25/2019	3.71
11/22/2019	3.44	11/22/2019	3.21	11/22/2019	3.39	11/22/2019	3.73
11/21/2019	3.45	11/21/2019	3.22	11/21/2019	3.40	11/21/2019	3.73
11/20/2019	3.41	11/20/2019	3.18	11/20/2019	3.36	11/20/2019	3.70
11/19/2019	3.45	11/19/2019	3.23	11/19/2019	3.40	11/19/2019	3.73
11/18/2019	3.49	11/18/2019	3.27	11/18/2019	3.44	11/18/2019	3.77
11/15/2019	3.50	11/15/2019	3.28	11/15/2019	3.45	11/15/2019	3.78
11/14/2019	3.49	11/14/2019	3.27	11/14/2019	3.43	11/14/2019	3.76
11/13/2019	3.54	11/13/2019	3.32	11/13/2019	3.48	11/13/2019	3.81
11/12/2019	3.57	11/12/2019	3.35	11/12/2019	3.51	11/12/2019	3.84
11/8/2019	3.60	11/8/2019	3.38	11/8/2019	3.55	11/8/2019	3.88
11/7/2019	3.59	11/7/2019	3.37	11/7/2019	3.54	11/7/2019	3.87
11/6/2019	3.49	11/6/2019	3.27	11/6/2019	3.44	11/6/2019	3.76
11/5/2019	3.54	11/5/2019	3.32	11/5/2019	3.49	11/5/2019	3.82
11/4/2019	3.48	11/4/2019	3.26	11/4/2019	3.43	11/4/2019	3.76
11/1/2019	3.42	11/1/2019	3.20	11/1/2019	3.36	11/1/2019	3.70
	3.49		3.26		3.43		3.77

Security	MOODJAVG Index	MOODJAA Index	MOODUA Index	MOODUBAA Index
Start Date	12/1/2019 0:00	12/1/2019 0:00	12/1/2019 0:00	12/1/2019 0:00
End Date	12/31/2019 0:00	12/31/2019 0:00	12/31/2019 0:00	12/31/2019 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
12/31/2019	3.49	3.26	3.44	3.76
12/30/2019	3.46	3.23	3.41	3.73
12/27/2019	3.43	3.21	3.38	3.70
12/26/2019	3.45	3.23	3.40	3.73
12/24/2019	3.45	3.23	3.40	3.73
12/23/2019	3.48	3.26	3.42	3.75
12/20/2019	3.47	3.25	3.41	3.74
12/19/2019	3.47	3.24	3.42	3.74
12/18/2019	3.48	3.26	3.43	3.75
12/17/2019	3.46	3.23	3.41	3.74
12/16/2019	3.46	3.23	3.41	3.74
12/13/2019	3.40	3.17	3.36	3.68
12/12/2019	3.48	3.24	3.43	3.77
12/11/2019	3.39	3.15	3.34	3.67
12/10/2019	3.42	3.19	3.38	3.70
12/9/2019	3.44	3.21	3.39	3.72
12/6/2019	3.46	3.24	3.41	3.74
12/5/2019	3.44	3.22	3.39	3.72
12/4/2019	3.44	3.22	3.39	3.72
12/3/2019	3.38	3.15	3.34	3.66
12/2/2019	3.48	3.25	3.43	3.77
	3.45	3.22	3.40	3.73

Security	MOODUAVG Index	Security	MOODUJAA Index	Security	MOODUUA Index	Security	MOODUBAA Index
Start Date	1/1/2020 0:00	Start Date	1/1/2020 0:00	Start Date	1/1/2020 0:00	Start Date	1/1/2020 0:00
End Date	1/31/2020 0:00	End Date	1/31/2020 0:00	End Date	1/31/2020 0:00	End Date	1/31/2020 0:00
Period	D	Period	D	Period	D	Period	D
Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST
1/31/2020	3.17	1/31/2020	2.95	1/31/2020	3.13	1/31/2020	3.44
1/30/2020	3.18	1/30/2020	2.96	1/30/2020	3.13	1/30/2020	3.45
1/29/2020	3.19	1/29/2020	2.98	1/29/2020	3.14	1/29/2020	3.46
1/28/2020	3.23	1/28/2020	3.02	1/28/2020	3.19	1/28/2020	3.49
1/27/2020	3.18	1/27/2020	2.96	1/27/2020	3.13	1/27/2020	3.45
1/24/2020	3.23	1/24/2020	3.02	1/24/2020	3.18	1/24/2020	3.49
1/23/2020	3.28	1/23/2020	3.06	1/23/2020	3.23	1/23/2020	3.54
1/22/2020	3.31	1/22/2020	3.09	1/22/2020	3.27	1/22/2020	3.57
1/21/2020	3.32	1/21/2020	3.10	1/21/2020	3.28	1/21/2020	3.58
1/17/2020	3.39	1/17/2020	3.17	1/17/2020	3.35	1/17/2020	3.65
1/16/2020	3.37	1/16/2020	3.15	1/16/2020	3.32	1/16/2020	3.63
1/15/2020	3.36	1/15/2020	3.14	1/15/2020	3.31	1/15/2020	3.62
1/14/2020	3.39	1/14/2020	3.17	1/14/2020	3.34	1/14/2020	3.66
1/13/2020	3.43	1/13/2020	3.21	1/13/2020	3.38	1/13/2020	3.69
1/10/2020	3.40	1/10/2020	3.18	1/10/2020	3.36	1/10/2020	3.67
1/9/2020	3.46	1/9/2020	3.25	1/9/2020	3.41	1/9/2020	3.73
1/8/2020	3.49	1/8/2020	3.27	1/8/2020	3.44	1/8/2020	3.77
1/7/2020	3.44	1/7/2020	3.23	1/7/2020	3.39	1/7/2020	3.71
1/6/2020	3.41	1/6/2020	3.19	1/6/2020	3.35	1/6/2020	3.68
1/3/2020	3.37	1/3/2020	3.14	1/3/2020	3.32	1/3/2020	3.64
1/2/2020	3.45	1/2/2020	3.23	1/2/2020	3.40	1/2/2020	3.72
	3.34		3.12		3.29		3.60

Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	2/1/2020 0:00	2/1/2020 0:00	2/1/2020 0:00	2/1/2020 0:00
End Date	2/29/2020 0:00	2/29/2020 0:00	2/29/2020 0:00	2/29/2020 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
2/28/2020	3.03	2.84	2/28/2020	2/28/2020
2/27/2020	3.08	2.88	2/27/2020	2/27/2020
2/26/2020	3.05	2.84	2/26/2020	2/26/2020
2/25/2020	3.05	2.86	2/25/2020	2/25/2020
2/24/2020	3.05	2.85	2/24/2020	2/24/2020
2/21/2020	3.11	2.92	2/21/2020	2/21/2020
2/20/2020	3.14	2.93	2/20/2020	2/20/2020
2/19/2020	3.18	2.98	2/19/2020	2/19/2020
2/18/2020	3.16	2.96	2/18/2020	2/18/2020
2/14/2020	3.20	3.00	2/14/2020	2/14/2020
2/13/2020	3.23	3.02	2/13/2020	2/13/2020
2/12/2020	3.24	3.03	2/12/2020	2/12/2020
2/11/2020	3.20	2.99	2/11/2020	2/11/2020
2/10/2020	3.18	2.96	2/10/2020	2/10/2020
2/7/2020	3.20	2.98	2/7/2020	2/7/2020
2/6/2020	3.27	3.05	2/6/2020	2/6/2020
2/5/2020	3.29	3.08	2/5/2020	2/5/2020
2/4/2020	3.25	3.03	2/4/2020	2/4/2020
2/3/2020	3.17	2.95	2/3/2020	2/3/2020
	3.16	2.96		3.11
				3.42

Security #NAME?	MOODJAVG Index	MOODJAA Index	MOODUA Index	MOODUBAA Index
Start Date	Start Date	Start Date	Start Date	Start Date
End Date	End Date	End Date	End Date	End Date
Period	Period	Period	Period	Period
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
3/31/2020	3.81	3.35	3.69	4.39
3/30/2020	3.80	3.32	3.71	4.36
3/27/2020	3.96	3.50	3.94	4.45
3/26/2020	4.12	3.64	4.08	4.63
3/25/2020	4.27	3.87	4.21	4.73
3/24/2020	4.25	3.97	4.18	4.61
3/23/2020	4.23	3.95	4.11	4.62
3/20/2020	4.33	4.11	4.18	4.69
3/19/2020	4.27	3.96	4.12	4.74
3/18/2020	4.24	4.03	4.09	4.61
3/17/2020	3.77	3.50	3.62	4.18
3/16/2020	3.37	3.12	3.26	3.72
3/13/2020	3.53	3.26	3.44	3.90
3/12/2020	3.39	3.15	3.30	3.73
3/11/2020	3.14	2.89	3.06	3.47
3/10/2020	3.02	2.77	2.97	3.31
3/9/2020	2.75	2.55	2.63	3.06
3/6/2020	2.73	2.51	2.68	3.01
3/5/2020	2.95	2.76	2.91	3.18
3/4/2020	3.00	2.80	2.96	3.25
3/3/2020	3.00	2.81	2.95	3.24
3/2/2020	3.02	2.83	2.96	3.28
	3.59	3.30	3.50	3.96

Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	4/1/2020 0:00	4/1/2020 0:00	4/1/2020 0:00	4/1/2020 0:00
End Date	4/30/2020 0:00	4/30/2020 0:00	4/30/2020 0:00	4/30/2020 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
4/30/2020	3.05	2.71	2.95	3.50
4/29/2020	3.04	2.68	2.95	3.50
4/28/2020	3.03	2.64	2.94	3.50
4/27/2020	3.08	2.71	2.98	3.56
4/24/2020	3.03	2.66	2.93	3.49
4/23/2020	3.06	2.71	2.95	3.52
4/22/2020	3.11	2.76	2.99	3.59
4/21/2020	3.04	2.69	2.91	3.51
4/20/2020	3.09	2.74	2.96	3.57
4/17/2020	3.14	2.79	3.02	3.60
4/16/2020	3.08	2.74	2.93	3.58
4/15/2020	3.17	2.79	3.02	3.70
4/14/2020	3.34	2.93	3.19	3.89
4/13/2020	3.41	3.00	3.30	3.92
4/9/2020	3.58	3.18	3.47	4.08
4/8/2020	3.69	3.27	3.55	4.24
4/7/2020	3.72	3.32	3.57	4.28
4/6/2020	3.73	3.32	3.57	4.31
4/3/2020	3.70	3.28	3.55	4.26
4/2/2020	3.72	3.30	3.58	4.27
4/1/2020	3.72	3.22	3.61	4.33
	3.31	2.93	3.19	3.82

Security	MOODUAVG Index	Security	MOODUAA Index	Security	MOODUA Index	Security	MOODUBAA Index
Start Date	5/1/2020 0:00	Start Date	5/1/2020 0:00	Start Date	5/1/2020 0:00	Start Date	5/1/2020 0:00
End Date	5/31/2020 0:00	End Date	5/31/2020 0:00	End Date	5/31/2020 0:00	End Date	5/31/2020 0:00
Period	D	Period	D	Period	D	Period	D
Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST
5/29/2020	3.14	5/29/2020	2.83	5/29/2020	3.11	5/29/2020	3.47
5/28/2020	3.20	5/28/2020	2.89	5/28/2020	3.18	5/28/2020	3.54
5/27/2020	3.19	5/27/2020	2.88	5/27/2020	3.16	5/27/2020	3.53
5/26/2020	3.22	5/26/2020	2.90	5/26/2020	3.18	5/26/2020	3.57
5/22/2020	3.20	5/22/2020	2.85	5/22/2020	3.14	5/22/2020	3.61
5/21/2020	3.21	5/21/2020	2.86	5/21/2020	3.16	5/21/2020	3.62
5/20/2020	3.26	5/20/2020	2.90	5/20/2020	3.19	5/20/2020	3.69
5/19/2020	3.31	5/19/2020	2.94	5/19/2020	3.23	5/19/2020	3.75
5/18/2020	3.37	5/18/2020	3.02	5/18/2020	3.28	5/18/2020	3.80
5/15/2020	3.27	5/15/2020	2.93	5/15/2020	3.17	5/15/2020	3.70
5/14/2020	3.25	5/14/2020	2.92	5/14/2020	3.14	5/14/2020	3.69
5/13/2020	3.28	5/13/2020	2.96	5/13/2020	3.17	5/13/2020	3.72
5/12/2020	3.30	5/12/2020	2.99	5/12/2020	3.18	5/12/2020	3.72
5/11/2020	3.35	5/11/2020	3.05	5/11/2020	3.23	5/11/2020	3.76
5/8/2020	3.26	5/8/2020	2.97	5/8/2020	3.13	5/8/2020	3.68
5/7/2020	3.14	5/7/2020	2.81	5/7/2020	3.04	5/7/2020	3.58
5/6/2020	3.20	5/6/2020	2.86	5/6/2020	3.10	5/6/2020	3.63
5/5/2020	3.11	5/5/2020	2.77	5/5/2020	3.01	5/5/2020	3.55
5/4/2020	3.09	5/4/2020	2.75	5/4/2020	2.99	5/4/2020	3.53
5/1/2020	3.06	5/1/2020	2.72	5/1/2020	2.95	5/1/2020	3.50
	3.22		2.89		3.14		3.63

Security Start Date	MOODJAVG Index	MOODJAA Index	MOODUA Index	MOODUBAA Index
End Date	Security Start Date	Security Start Date	Security Start Date	Security Start Date
Period	End Date	End Date	End Date	End Date
D	Period	Period	Period	Period
Date	Date	Date	Date	Date
PX_LAST	PX_LAST	PX_LAST	PX_LAST	PX_LAST
6/1/2020	3.17	2.87	3.13	3.52
6/2/2020	3.18	2.87	3.15	3.53
6/3/2020	3.23	2.91	3.19	3.58
6/4/2020	3.26	2.94	3.24	3.61
6/5/2020	3.26	2.95	3.23	3.60
6/8/2020	3.20	2.90	3.20	3.50
6/9/2020	3.13	2.83	3.12	3.45
6/10/2020	3.09	2.78	3.06	3.42
6/11/2020	3.02	2.72	2.98	3.37
6/12/2020	3.08	2.78	3.05	3.41
6/15/2020	3.08	2.77	3.05	3.43
6/16/2020	3.14	2.83	3.12	3.46
6/17/2020	3.10	2.80	3.05	3.44
6/18/2020	3.04	2.74	2.99	3.39
6/19/2020	3.05	2.74	3.00	3.40
6/22/2020	3.04	2.73	3.00	3.39
6/23/2020	3.05	2.75	3.01	3.40
6/24/2020	3.04	2.75	3.00	3.38
6/25/2020	3.03	2.73	2.98	3.39
6/26/2020	3.00	2.69	2.95	3.35
6/29/2020	3.03	2.74	2.97	3.37
6/30/2020	3.05	2.77	3.00	3.38
Average	3.10	2.80	3.07	3.44

Security	MOODJAVG Index	MOODJAA Index	MOODUA Index	MOODUBAA Index
Start Date	7/1/2020 0:00	7/1/2020 0:00	7/1/2020 0:00	7/1/2020 0:00
End Date	7/31/2020 0:00	7/31/2020 0:00	7/31/2020 0:00	7/31/2020 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
7/31/2020	2.60	2.30	2.56	2.93
7/30/2020	2.60	2.30	2.57	2.92
7/29/2020	2.64	2.35	2.60	2.97
7/28/2020	2.62	2.32	2.58	2.95
7/27/2020	2.64	2.34	2.61	2.97
7/24/2020	2.63	2.32	2.59	2.97
7/23/2020	2.63	2.31	2.60	2.97
7/22/2020	2.68	2.36	2.66	3.01
7/21/2020	2.71	2.41	2.70	3.01
7/20/2020	2.74	2.44	2.71	3.06
7/17/2020	2.77	2.46	2.76	3.09
7/16/2020	2.75	2.44	2.74	3.07
7/15/2020	2.79	2.48	2.78	3.12
7/14/2020	2.78	2.48	2.76	3.10
7/13/2020	2.82	2.51	2.81	3.13
7/10/2020	2.82	2.51	2.80	3.15
7/9/2020	2.81	2.52	2.80	3.12
7/8/2020	2.89	2.58	2.89	3.21
7/7/2020	2.91	2.59	2.89	3.24
7/6/2020	3.00	2.70	2.97	3.33
7/2/2020	3.03	2.73	2.99	3.36
7/1/2020	3.05	2.76	3.01	3.37
	2.77	2.46	2.74	3.09

Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	8/1/2020 0:00	8/1/2020 0:00	8/1/2020 0:00	8/1/2020 0:00
End Date	8/31/2020 0:00	8/31/2020 0:00	8/31/2020 0:00	8/31/2020 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
8/31/2020	2.89	2.63	2.86	3.18
8/28/2020	2.95	2.70	2.92	3.24
8/27/2020	2.95	2.70	2.91	3.23
8/26/2020	2.85	2.60	2.82	3.13
8/25/2020	2.82	2.57	2.79	3.10
8/24/2020	2.78	2.53	2.74	3.06
8/21/2020	2.77	2.52	2.74	3.06
8/20/2020	2.79	2.54	2.76	3.07
8/19/2020	2.82	2.56	2.79	3.10
8/18/2020	2.80	2.54	2.77	3.09
8/17/2020	2.81	2.54	2.78	3.11
8/14/2020	2.81	2.54	2.79	3.11
8/13/2020	2.79	2.52	2.77	3.09
8/12/2020	2.73	2.46	2.71	3.03
8/11/2020	2.72	2.44	2.69	3.02
8/10/2020	2.63	2.34	2.61	2.93
8/7/2020	2.61	2.32	2.59	2.93
8/6/2020	2.59	2.30	2.56	2.91
8/5/2020	2.60	2.31	2.58	2.92
8/4/2020	2.58	2.28	2.56	2.91
8/3/2020	2.64	2.34	2.60	2.97
	2.76	2.49	2.73	3.06

Security	MOODUAVG Index	Security	MOODJAA Index	Security	MOODUA Index	Security	MOODUBAA Index
Start Date	8/1/2020 0:00	Start Date	8/1/2020 0:00	Start Date	8/1/2020 0:00	Start Date	8/1/2020 0:00
End Date	10/2/2020 0:00	End Date	10/2/2020 0:00	End Date	10/2/2020 0:00	End Date	10/2/2020 0:00
Period	D	Period	D	Period	D	Period	D
Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST
01/09/2020	2.86	01/09/2020	2.59	01/09/2020	2.83	01/09/2020	3.15
02/09/2020	2.80	02/09/2020	2.53	02/09/2020	2.77	02/09/2020	3.10
03/09/2020	2.77	03/09/2020	2.51	03/09/2020	2.74	03/09/2020	3.07
04/09/2020	2.9	04/09/2020	2.65	04/09/2020	2.87	04/09/2020	3.19
08/09/2020	2.86	08/09/2020	2.6	08/09/2020	2.83	08/09/2020	3.16
09/09/2020	2.91	09/09/2020	2.65	09/09/2020	2.87	09/09/2020	3.2
10/09/2020	2.89	10/09/2020	2.63	10/09/2020	2.85	10/09/2020	3.18
11/09/2020	2.87	11/09/2020	2.61	11/09/2020	2.83	11/09/2020	3.16
14/09/2020	2.86	14/09/2020	2.6	14/09/2020	2.83	14/09/2020	3.14
15/09/2020	2.87	15/09/2020	2.62	15/09/2020	2.84	15/09/2020	3.16
16/09/2020	2.89	16/09/2020	2.63	16/09/2020	2.86	16/09/2020	3.17
17/09/2020	2.86	17/09/2020	2.59	17/09/2020	2.84	17/09/2020	3.15
18/09/2020	2.89	18/09/2020	2.62	18/09/2020	2.86	18/09/2020	3.18
21/09/2020	2.86	21/09/2020	2.6	21/09/2020	2.84	21/09/2020	3.15
22/09/2020	2.86	22/09/2020	2.6	22/09/2020	2.83	22/09/2020	3.15
23/09/2020	2.87	23/09/2020	2.61	23/09/2020	2.84	23/09/2020	3.17
24/09/2020	2.88	24/09/2020	2.64	24/09/2020	2.84	24/09/2020	3.17
25/09/2020	2.91	25/09/2020	2.67	25/09/2020	2.86	25/09/2020	3.19
28/09/2020	2.92	28/09/2020	2.66	28/09/2020	2.88	28/09/2020	3.23
29/09/2020	2.9	29/09/2020	2.64	29/09/2020	2.86	29/09/2020	3.21
30/09/2020	2.95	30/09/2020	2.68	30/09/2020	2.91	30/09/2020	3.25
	2.88		2.62		2.84		3.17

MOODUAVG Index				MOODUAA Index				MOODUA Index				MOODUBAA Index			
Security	Start Date	End Date	Period	Security	Start Date	End Date	Period	Security	Start Date	End Date	Period	Security	Start Date	End Date	Period
			D				D				D				D
			PX_LAST				PX_LAST				PX_LAST				PX_LAST
	10/30/2020	10/1/2020 0:00	3.03		10/30/2020	10/1/2020 0:00	2.76		10/30/2020	10/1/2020 0:00	2.99		10/30/2020	10/1/2020 0:00	3.35
	10/29/2020	10/31/2020 0:00	3.01		10/29/2020	10/31/2020 0:00	2.75		10/29/2020	10/31/2020 0:00	2.98		10/29/2020	10/31/2020 0:00	3.30
	10/28/2020	10/31/2020 0:00	2.96		10/28/2020	10/31/2020 0:00	2.71		10/28/2020	10/31/2020 0:00	2.93		10/28/2020	10/31/2020 0:00	3.24
	10/27/2020	10/31/2020 0:00	2.94		10/27/2020	10/31/2020 0:00	2.68		10/27/2020	10/31/2020 0:00	2.91		10/27/2020	10/31/2020 0:00	3.22
	10/26/2020	10/31/2020 0:00	2.96		10/26/2020	10/31/2020 0:00	2.70		10/26/2020	10/31/2020 0:00	2.93		10/26/2020	10/31/2020 0:00	3.24
	10/23/2020	10/31/2020 0:00	3.00		10/23/2020	10/31/2020 0:00	2.75		10/23/2020	10/31/2020 0:00	2.98		10/23/2020	10/31/2020 0:00	3.28
	10/22/2020	10/31/2020 0:00	3.03		10/22/2020	10/31/2020 0:00	2.78		10/22/2020	10/31/2020 0:00	3.00		10/22/2020	10/31/2020 0:00	3.32
	10/21/2020	10/31/2020 0:00	3.02		10/21/2020	10/31/2020 0:00	2.76		10/21/2020	10/31/2020 0:00	2.99		10/21/2020	10/31/2020 0:00	3.30
	10/20/2020	10/31/2020 0:00	2.99		10/20/2020	10/31/2020 0:00	2.73		10/20/2020	10/31/2020 0:00	2.97		10/20/2020	10/31/2020 0:00	3.28
	10/19/2020	10/31/2020 0:00	2.94		10/19/2020	10/31/2020 0:00	2.68		10/19/2020	10/31/2020 0:00	2.92		10/19/2020	10/31/2020 0:00	3.22
	10/16/2020	10/31/2020 0:00	2.94		10/16/2020	10/31/2020 0:00	2.67		10/16/2020	10/31/2020 0:00	2.90		10/16/2020	10/31/2020 0:00	3.24
	10/15/2020	10/31/2020 0:00	2.92		10/15/2020	10/31/2020 0:00	2.66		10/15/2020	10/31/2020 0:00	2.89		10/15/2020	10/31/2020 0:00	3.22
	10/14/2020	10/31/2020 0:00	2.92		10/14/2020	10/31/2020 0:00	2.66		10/14/2020	10/31/2020 0:00	2.89		10/14/2020	10/31/2020 0:00	3.20
	10/13/2020	10/31/2020 0:00	2.94		10/13/2020	10/31/2020 0:00	2.67		10/13/2020	10/31/2020 0:00	2.91		10/13/2020	10/31/2020 0:00	3.23
	10/9/2020	10/31/2020 0:00	3.00		10/9/2020	10/31/2020 0:00	2.74		10/9/2020	10/31/2020 0:00	2.97		10/9/2020	10/31/2020 0:00	3.30
	10/8/2020	10/31/2020 0:00	2.99		10/8/2020	10/31/2020 0:00	2.73		10/8/2020	10/31/2020 0:00	2.96		10/8/2020	10/31/2020 0:00	3.29
	10/7/2020	10/31/2020 0:00	3.03		10/7/2020	10/31/2020 0:00	2.77		10/7/2020	10/31/2020 0:00	2.99		10/7/2020	10/31/2020 0:00	3.34
	10/6/2020	10/31/2020 0:00	2.99		10/6/2020	10/31/2020 0:00	2.74		10/6/2020	10/31/2020 0:00	2.94		10/6/2020	10/31/2020 0:00	3.29
	10/5/2020	10/31/2020 0:00	3.03		10/5/2020	10/31/2020 0:00	2.77		10/5/2020	10/31/2020 0:00	2.99		10/5/2020	10/31/2020 0:00	3.34
	10/2/2020	10/31/2020 0:00	2.97		10/2/2020	10/31/2020 0:00	2.70		10/2/2020	10/31/2020 0:00	2.93		10/2/2020	10/31/2020 0:00	3.28
	10/1/2020	10/31/2020 0:00	2.94		10/1/2020	10/31/2020 0:00	2.67		10/1/2020	10/31/2020 0:00	2.90		10/1/2020	10/31/2020 0:00	3.25
			2.98				2.72				2.95				3.27

Security	MOODUAVG Index	MOODUAA Index	MOODUA Index	MOODUBAA Index
Start Date	11/1/2020 0:00	11/1/2020 0:00	11/1/2020 0:00	11/1/2020 0:00
End Date	11/30/2020 0:00	11/30/2020 0:00	11/30/2020 0:00	11/30/2020 0:00
Period	D	D	D	D
Date	PX_LAST	PX_LAST	PX_LAST	PX_LAST
11/30/2020	2.75	2.51	2.72	3.01
11/27/2020	2.77	2.54	2.74	3.03
11/25/2020	2.82	2.58	2.79	3.08
11/24/2020	2.80	2.57	2.78	3.06
11/23/2020	2.78	2.52	2.74	3.08
11/20/2020	2.76	2.49	2.72	3.08
11/19/2020	2.81	2.55	2.78	3.11
11/18/2020	2.86	2.61	2.82	3.16
11/17/2020	2.88	2.63	2.84	3.17
11/16/2020	2.92	2.67	2.89	3.21
11/13/2020	2.92	2.66	2.89	3.21
11/12/2020	2.92	2.66	2.89	3.22
11/10/2020	3.03	2.77	3.00	3.32
11/9/2020	3.03	2.76	2.99	3.33
11/6/2020	2.92	2.67	2.89	3.21
11/5/2020	2.89	2.64	2.86	3.17
11/4/2020	2.92	2.65	2.89	3.21
11/3/2020	3.04	2.77	3.01	3.33
11/2/2020	3.01	2.74	2.98	3.32
	2.89	2.63	2.85	3.17

MOODUAA Index

Date	Last Price
12/31/2020	2.54
12/30/2020	2.56
12/29/2020	2.56
12/28/2020	2.57
12/24/2020	2.58
12/23/2020	2.61
12/22/2020	2.56
12/21/2020	2.6
12/18/2020	2.6
12/17/2020	2.58
12/16/2020	2.57
12/15/2020	2.57
12/14/2020	2.53
12/11/2020	2.52
12/10/2020	2.53
12/9/2020	2.58
12/8/2020	2.54
12/7/2020	2.58
12/4/2020	2.63
12/3/2020	2.56
12/2/2020	2.61
12/1/2020	2.61

2.57

MOODUA Index

Date	Last Price
12/31/2020	2.74
12/30/2020	2.75
12/29/2020	2.77
12/28/2020	2.77
12/24/2020	2.77
12/23/2020	2.81
12/22/2020	2.77
12/21/2020	2.79
12/18/2020	2.81
12/17/2020	2.78
12/16/2020	2.76
12/15/2020	2.77
12/14/2020	2.73
12/11/2020	2.72
12/10/2020	2.73
12/9/2020	2.79
12/8/2020	2.76
12/7/2020	2.79
12/4/2020	2.83
12/3/2020	2.77
12/2/2020	2.82
12/1/2020	2.81

2.77

MOODUBAA Index

Date	Last Price
12/31/2020	3
12/30/2020	3.03
12/29/2020	3.06
12/28/2020	3.07
12/24/2020	3.07
12/23/2020	3.1
12/22/2020	3.05
12/21/2020	3.07
12/18/2020	3.08
12/17/2020	3.07
12/16/2020	3.05
12/15/2020	3.06
12/14/2020	3.01
12/11/2020	3
12/10/2020	3.01
12/9/2020	3.05
12/8/2020	3.01
12/7/2020	3.04
12/4/2020	3.09
12/3/2020	3.03
12/2/2020	3.07
12/1/2020	3.08

3.05

MOODUAA Index

Date	Last Price
1/29/2021	2.75
1/28/2021	2.72
1/27/2021	2.69
1/26/2021	2.7
1/25/2021	2.69
1/22/2021	2.75
1/21/2021	2.77
1/20/2021	2.73
1/19/2021	2.73
1/15/2021	2.75
1/14/2021	2.78
1/13/2021	2.72
1/12/2021	2.78
1/11/2021	2.78
1/8/2021	2.78
1/7/2021	2.76
1/6/2021	2.74
1/5/2021	2.62
1/4/2021	2.57

2.73

MOODUA Index

Date	Last Price
1/29/2021	2.93
1/28/2021	2.9
1/27/2021	2.86
1/26/2021	2.88
1/25/2021	2.87
1/22/2021	2.92
1/21/2021	2.94
1/20/2021	2.9
1/19/2021	2.91
1/15/2021	2.93
1/14/2021	2.95
1/13/2021	2.9
1/12/2021	2.97
1/11/2021	2.97
1/8/2021	2.96
1/7/2021	2.96
1/6/2021	2.94
1/5/2021	2.82
1/4/2021	2.76

2.91

MOODUBAA Index

Date	Last Price
1/29/2021	3.23
1/28/2021	3.19
1/27/2021	3.15
1/26/2021	3.15
1/25/2021	3.14
1/22/2021	3.18
1/21/2021	3.19
1/20/2021	3.16
1/19/2021	3.17
1/15/2021	3.2
1/14/2021	3.23
1/13/2021	3.18
1/12/2021	3.27
1/11/2021	3.26
1/8/2021	3.24
1/7/2021	3.22
1/6/2021	3.22
1/5/2021	3.09
1/4/2021	3.02

3.18

MOODUAA Index

Date	Last Price
2/26/2021	3.07
2/25/2021	3.19
2/24/2021	3.13
2/23/2021	3.1
2/22/2021	3.05
2/19/2021	3.01
2/18/2021	2.94
2/17/2021	2.93
2/16/2021	2.95
2/12/2021	2.9
2/11/2021	2.84
2/10/2021	2.81
2/9/2021	2.84
2/8/2021	2.84
2/5/2021	2.88
2/4/2021	2.85
2/3/2021	2.82
2/2/2021	2.78
2/1/2021	2.74

2.93

MOODUA Index

Date	Last Price
2/26/2021	3.23
2/25/2021	3.35
2/24/2021	3.29
2/23/2021	3.25
2/22/2021	3.2
2/19/2021	3.16
2/18/2021	3.09
2/17/2021	3.09
2/16/2021	3.11
2/12/2021	3.06
2/11/2021	3
2/10/2021	2.97
2/9/2021	3
2/8/2021	3
2/5/2021	3.03
2/4/2021	2.99
2/3/2021	2.97
2/2/2021	2.94
2/1/2021	2.91

3.09

MOODUBAA Index

Date	Last Price
2/26/2021	3.52
2/25/2021	3.62
2/24/2021	3.55
2/23/2021	3.51
2/22/2021	3.49
2/19/2021	3.44
2/18/2021	3.38
2/17/2021	3.38
2/16/2021	3.41
2/12/2021	3.35
2/11/2021	3.29
2/10/2021	3.26
2/9/2021	3.28
2/8/2021	3.28
2/5/2021	3.33
2/4/2021	3.28
2/3/2021	3.27
2/2/2021	3.25
2/1/2021	3.23

3.37

MOODUAA Index

Date	Last Price
3/31/2021	3.31
3/30/2021	3.3
3/29/2021	3.35
3/26/2021	3.3
3/25/2021	3.27
3/24/2021	3.25
3/23/2021	3.29
3/22/2021	3.31
3/19/2021	3.39
3/18/2021	3.42
3/17/2021	3.39
3/16/2021	3.35
3/15/2021	3.33
3/12/2021	3.35
3/11/2021	3.25
3/10/2021	3.2
3/9/2021	3.22
3/8/2021	3.24
3/5/2021	3.21
3/4/2021	3.2
3/3/2021	3.15
3/2/2021	3.1
3/1/2021	3.1
	3.27

MOODUA Index

Date	Last Price
3/31/2021	3.49
3/30/2021	3.47
3/29/2021	3.52
3/26/2021	3.47
3/25/2021	3.45
3/24/2021	3.42
3/23/2021	3.45
3/22/2021	3.49
3/19/2021	3.56
3/18/2021	3.59
3/17/2021	3.56
3/16/2021	3.52
3/15/2021	3.49
3/12/2021	3.51
3/11/2021	3.39
3/10/2021	3.36
3/9/2021	3.37
3/8/2021	3.39
3/5/2021	3.36
3/4/2021	3.36
3/3/2021	3.3
3/2/2021	3.26
3/1/2021	3.27
	3.44

MOODUBAA Index

Date	Last Price
3/31/2021	3.75
3/30/2021	3.75
3/29/2021	3.79
3/26/2021	3.73
3/25/2021	3.71
3/24/2021	3.69
3/23/2021	3.72
3/22/2021	3.74
3/19/2021	3.82
3/18/2021	3.86
3/17/2021	3.84
3/16/2021	3.8
3/15/2021	3.78
3/12/2021	3.81
3/11/2021	3.7
3/10/2021	3.67
3/9/2021	3.69
3/8/2021	3.69
3/5/2021	3.64
3/4/2021	3.63
3/3/2021	3.57
3/2/2021	3.54
3/1/2021	3.54
	3.72

MOODUAA Index

Date	Last Price
4/30/2021	3.14
4/29/2021	3.14
4/28/2021	3.13
4/27/2021	3.12
4/26/2021	3.08
4/23/2021	3.1
4/22/2021	3.09
4/21/2021	3.11
4/20/2021	3.1
4/19/2021	3.13
4/16/2021	3.09
4/15/2021	3.03
4/14/2021	3.13
4/13/2021	3.13
4/12/2021	3.16
4/9/2021	3.16
4/8/2021	3.14
4/7/2021	3.17
4/6/2021	3.15
4/5/2021	3.2
4/1/2021	3.2

3.13

MOODUA Index

Date	Last Price
4/30/2021	3.31
4/29/2021	3.31
4/28/2021	3.3
4/27/2021	3.3
4/26/2021	3.24
4/23/2021	3.25
4/22/2021	3.24
4/21/2021	3.27
4/20/2021	3.27
4/19/2021	3.29
4/16/2021	3.26
4/15/2021	3.2
4/14/2021	3.31
4/13/2021	3.3
4/12/2021	3.34
4/9/2021	3.33
4/8/2021	3.33
4/7/2021	3.34
4/6/2021	3.33
4/5/2021	3.38
4/1/2021	3.38

3.30

MOODUBAA Index

Date	Last Price
4/30/2021	3.56
4/29/2021	3.58
4/28/2021	3.57
4/27/2021	3.57
4/26/2021	3.52
4/23/2021	3.53
4/22/2021	3.52
4/21/2021	3.54
4/20/2021	3.53
4/19/2021	3.56
4/16/2021	3.52
4/15/2021	3.47
4/14/2021	3.58
4/13/2021	3.57
4/12/2021	3.6
4/9/2021	3.6
4/8/2021	3.58
4/7/2021	3.6
4/6/2021	3.59
4/5/2021	3.63
4/1/2021	3.65

3.57

MOODUAA Index

Date	Last Price
5/28/2021	3.13
5/27/2021	3.15
5/26/2021	3.12
5/25/2021	3.13
5/24/2021	3.18
5/21/2021	3.2
5/20/2021	3.2
5/19/2021	3.27
5/18/2021	3.24
5/17/2021	3.23
5/14/2021	3.23
5/13/2021	3.25
5/12/2021	3.28
5/11/2021	3.19
5/10/2021	3.16
5/7/2021	3.11
5/6/2021	3.08
5/5/2021	3.1
5/4/2021	3.11
5/3/2021	3.13

3.17

MOODUA Index

Date	Last Price
5/28/2021	3.28
5/27/2021	3.3
5/26/2021	3.27
5/25/2021	3.27
5/24/2021	3.32
5/21/2021	3.35
5/20/2021	3.36
5/19/2021	3.41
5/18/2021	3.39
5/17/2021	3.38
5/14/2021	3.38
5/13/2021	3.41
5/12/2021	3.43
5/11/2021	3.36
5/10/2021	3.33
5/7/2021	3.29
5/6/2021	3.25
5/5/2021	3.27
5/4/2021	3.28
5/3/2021	3.29

3.33

MOODUBAA Index

Date	Last Price
5/28/2021	3.53
5/27/2021	3.55
5/26/2021	3.53
5/25/2021	3.54
5/24/2021	3.58
5/21/2021	3.6
5/20/2021	3.62
5/19/2021	3.67
5/18/2021	3.65
5/17/2021	3.64
5/14/2021	3.63
5/13/2021	3.66
5/12/2021	3.67
5/11/2021	3.61
5/10/2021	3.57
5/7/2021	3.53
5/6/2021	3.5
5/5/2021	3.52
5/4/2021	3.53
5/3/2021	3.54

3.58

MOODUAA Index

Date	Last Price
6/30/2021	2.91
6/29/2021	2.94
6/28/2021	2.94
6/25/2021	3.01
6/24/2021	2.94
6/23/2021	2.96
6/22/2021	2.95
6/21/2021	2.94
6/18/2021	2.87
6/17/2021	2.93
6/16/2021	3.04
6/15/2021	3.03
6/14/2021	3.03
6/11/2021	3
6/10/2021	3.02
6/9/2021	3.02
6/8/2021	3.06
6/7/2021	3.1
6/4/2021	3.09
6/3/2021	3.14
6/2/2021	3.12
6/1/2021	3.14

3.01

MOODUA Index

Date	Last Price
6/30/2021	3.05
6/29/2021	3.08
6/28/2021	3.08
6/25/2021	3.16
6/24/2021	3.09
6/23/2021	3.1
6/22/2021	3.1
6/21/2021	3.09
6/18/2021	3.02
6/17/2021	3.09
6/16/2021	3.2
6/15/2021	3.19
6/14/2021	3.19
6/11/2021	3.16
6/10/2021	3.16
6/9/2021	3.18
6/8/2021	3.22
6/7/2021	3.26
6/4/2021	3.24
6/3/2021	3.3
6/2/2021	3.29
6/1/2021	3.31

3.16

MOODUBAA Index

Date	Last Price
6/30/2021	3.29
6/29/2021	3.33
6/28/2021	3.35
6/25/2021	3.41
6/24/2021	3.34
6/23/2021	3.36
6/22/2021	3.35
6/21/2021	3.35
6/18/2021	3.26
6/17/2021	3.33
6/16/2021	3.45
6/15/2021	3.44
6/14/2021	3.44
6/11/2021	3.41
6/10/2021	3.42
6/9/2021	3.42
6/8/2021	3.47
6/7/2021	3.51
6/4/2021	3.5
6/3/2021	3.56
6/2/2021	3.54
6/1/2021	3.56

3.41

Security	MOODUAVG Index	Security	MOODUAAA Index	Security	MOODUAA Index	Security	MOODUA Index	Security	MOODUBAA Index
Start Date	7/1/2021 0:00	Start Date	7/1/2021 0:00	Start Date	7/1/2021 0:00	Start Date	7/1/2021 0:00	Start Date	7/1/2021 0:00
End Date	7/31/2021 0:00	End Date	7/31/2021 0:00	End Date	7/31/2021 0:00	End Date	7/31/2021 0:00	End Date	7/31/2021 0:00
Period	D	Period	D	Period	D	Period	D	Period	D
Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST	Date	PX_LAST
#NAME?		#NAME?		#NAME?		#NAME?		#NAME?	
	2.93		2.75		2.90		2.90		3.15
7/29/2021		7/29/2021	2.77	7/29/2021	2.92	7/29/2021	2.92	7/29/2021	3.18
7/28/2021	2.96	7/28/2021	2.77	7/28/2021	2.92	7/28/2021	2.92	7/28/2021	3.18
7/27/2021	2.93	7/27/2021	2.75	7/27/2021	2.89	7/27/2021	2.89	7/27/2021	3.16
7/26/2021	2.96	7/26/2021	2.77	7/26/2021	2.93	7/26/2021	2.93	7/26/2021	3.19
7/23/2021	2.98	7/23/2021	2.80	7/23/2021	2.95	7/23/2021	2.95	7/23/2021	3.19
7/22/2021	2.96	7/22/2021	2.78	7/22/2021	2.93	7/22/2021	2.93	7/22/2021	3.18
7/21/2021	3.00	7/21/2021	2.81	7/21/2021	2.96	7/21/2021	2.96	7/21/2021	3.22
7/20/2021	2.94	7/20/2021	2.74	7/20/2021	2.91	7/20/2021	2.91	7/20/2021	3.16
7/19/2021	2.87	7/19/2021	2.68	7/19/2021	2.83	7/19/2021	2.83	7/19/2021	3.11
7/16/2021	2.98	7/16/2021	2.79	7/16/2021	2.94	7/16/2021	2.94	7/16/2021	3.20
7/15/2021	2.96	7/15/2021	2.77	7/15/2021	2.93	7/15/2021	2.93	7/15/2021	3.19
7/14/2021	3.02	7/14/2021	2.84	7/14/2021	2.99	7/14/2021	2.99	7/14/2021	3.24
7/13/2021	3.08	7/13/2021	2.89	7/13/2021	3.04	7/13/2021	3.04	7/13/2021	3.30
7/12/2021	3.04	7/12/2021	2.86	7/12/2021	3.00	7/12/2021	3.00	7/12/2021	3.25
7/9/2021	3.03	7/9/2021	2.85	7/9/2021	3.00	7/9/2021	3.00	7/9/2021	3.24
7/8/2021	2.95	7/8/2021	2.77	7/8/2021	2.92	7/8/2021	2.92	7/8/2021	3.16
7/7/2021	2.97	7/7/2021	2.80	7/7/2021	2.94	7/7/2021	2.94	7/7/2021	3.18
7/6/2021	3.03	7/6/2021	2.85	7/6/2021	3.00	7/6/2021	3.00	7/6/2021	3.23
7/2/2021	3.07	7/2/2021	2.89	7/2/2021	3.04	7/2/2021	3.04	7/2/2021	3.27
7/1/2021	3.10	7/1/2021	2.93	7/1/2021	3.07	7/1/2021	3.07	7/1/2021	3.31
			2.80		2.95		2.95		3.20

MOODUAA Index

Date	Last Price
8/31/2021	2.83
8/30/2021	2.8
8/27/2021	2.83
8/26/2021	2.85
8/25/2021	2.87
8/24/2021	2.84
8/23/2021	2.81
8/20/2021	2.8
8/19/2021	2.79
8/18/2021	2.83
8/17/2021	2.83
8/16/2021	2.82
8/13/2021	2.86
8/12/2021	2.93
8/11/2021	2.9
8/10/2021	2.88
8/9/2021	2.85
8/6/2021	2.82
8/5/2021	2.74
8/4/2021	2.72
8/3/2021	2.72
8/2/2021	2.73

2.82

MOODUA Index

Date	Last Price
8/31/2021	2.96
8/30/2021	2.93
8/27/2021	2.95
8/26/2021	2.98
8/25/2021	3
8/24/2021	2.95
8/23/2021	2.93
8/20/2021	2.93
8/19/2021	2.93
8/18/2021	2.95
8/17/2021	2.95
8/16/2021	2.94
8/13/2021	2.98
8/12/2021	3.05
8/11/2021	3.04
8/10/2021	3.02
8/9/2021	2.99
8/6/2021	2.96
8/5/2021	2.88
8/4/2021	2.86
8/3/2021	2.87
8/2/2021	2.86

2.95

MOODUBAA Index

Date	Last Price
8/31/2021	3.2
8/30/2021	3.17
8/27/2021	3.18
8/26/2021	3.21
8/25/2021	3.23
8/24/2021	3.18
8/23/2021	3.17
8/20/2021	3.17
8/19/2021	3.17
8/18/2021	3.2
8/17/2021	3.2
8/16/2021	3.19
8/13/2021	3.23
8/12/2021	3.31
8/11/2021	3.3
8/10/2021	3.27
8/9/2021	3.24
8/6/2021	3.2
8/5/2021	3.13
8/4/2021	3.11
8/3/2021	3.12
8/2/2021	3.1

3.19

MOODUAA Index

Date	Last Price
#NAME?	3.01
9/29/2021	2.99
9/28/2021	2.97
9/27/2021	2.9
9/24/2021	2.9
9/23/2021	2.84
9/22/2021	2.77
9/21/2021	2.78
9/20/2021	2.76
9/17/2021	2.82
9/16/2021	2.79
9/15/2021	2.77
9/14/2021	2.74
9/13/2021	2.8
9/10/2021	2.83
9/9/2021	2.8
9/8/2021	2.85
9/7/2021	2.87
9/3/2021	2.84
9/2/2021	2.8
9/1/2021	2.81

2.84

MOODUA Index

Date	Last Price
#NAME?	3.11
9/29/2021	3.1
9/28/2021	3.08
9/27/2021	3.01
9/24/2021	3.01
9/23/2021	2.95
9/22/2021	2.87
9/21/2021	2.89
9/20/2021	2.88
9/17/2021	2.94
9/16/2021	2.9
9/15/2021	2.9
9/14/2021	2.88
9/13/2021	2.93
9/10/2021	2.97
9/9/2021	2.93
9/8/2021	2.98
9/7/2021	3.01
9/3/2021	2.97
9/2/2021	2.94
9/1/2021	2.94

2.96

MOODUBAA Index

Date	Last Price
#NAME?	3.33
9/29/2021	3.32
9/28/2021	3.3
9/27/2021	3.23
9/24/2021	3.23
9/23/2021	3.18
9/22/2021	3.11
9/21/2021	3.12
9/20/2021	3.11
9/17/2021	3.16
9/16/2021	3.13
9/15/2021	3.11
9/14/2021	3.1
9/13/2021	3.15
9/10/2021	3.19
9/9/2021	3.15
9/8/2021	3.21
9/7/2021	3.24
9/3/2021	3.2
9/2/2021	3.17
9/1/2021	3.18

3.19

MOODUAA Index

Date	Last Price
10/29/2021	2.88
10/28/2021	2.9
10/27/2021	2.85
10/26/2021	2.97
10/25/2021	3
10/22/2021	3.01
10/21/2021	3.05
10/20/2021	3.03
10/19/2021	3.02
10/18/2021	2.94
10/15/2021	2.98
10/14/2021	2.97
10/13/2021	2.99
10/12/2021	3.06
10/8/2021	3.09
10/7/2021	3.03
10/6/2021	2.99
10/5/2021	3.02
10/4/2021	2.97
10/1/2021	2.96

2.99

MOODUA Index

Date	Last Price
10/29/2021	2.98
10/28/2021	2.99
10/27/2021	2.96
10/26/2021	3.07
10/25/2021	3.1
10/22/2021	3.11
10/21/2021	3.15
10/20/2021	3.13
10/19/2021	3.12
10/18/2021	3.05
10/15/2021	3.08
10/14/2021	3.06
10/13/2021	3.08
10/12/2021	3.14
10/8/2021	3.19
10/7/2021	3.16
10/6/2021	3.1
10/5/2021	3.12
10/4/2021	3.07
10/1/2021	3.06

3.09

MOODUBAA Index

Date	Last Price
10/29/2021	3.21
10/28/2021	3.23
10/27/2021	3.2
10/26/2021	3.31
10/25/2021	3.34
10/22/2021	3.34
10/21/2021	3.38
10/20/2021	3.36
10/19/2021	3.33
10/18/2021	3.28
10/15/2021	3.32
10/14/2021	3.29
10/13/2021	3.31
10/12/2021	3.37
10/8/2021	3.41
10/7/2021	3.39
10/6/2021	3.33
10/5/2021	3.35
10/4/2021	3.3
10/1/2021	3.29

3.32

MOODUAA Index

Date	Last Price
11/30/2021	2.9
11/29/2021	2.97
11/26/2021	2.94
11/24/2021	2.97
11/23/2021	3.02
11/22/2021	2.97
11/19/2021	2.91
11/18/2021	2.96
11/17/2021	2.97
11/16/2021	2.98
11/15/2021	2.95
11/12/2021	2.9
11/10/2021	2.84
11/9/2021	2.75
11/8/2021	2.8
11/5/2021	2.8
11/4/2021	2.9
11/3/2021	2.92
11/2/2021	2.9
11/1/2021	2.9

2.91

MOODUA Index

Date	Last Price
11/30/2021	2.99
11/29/2021	3.07
11/26/2021	3.03
11/24/2021	3.08
11/23/2021	3.13
11/22/2021	3.08
11/19/2021	3.01
11/18/2021	3.06
11/17/2021	3.08
11/16/2021	3.09
11/15/2021	3.07
11/12/2021	3.01
11/10/2021	2.97
11/9/2021	2.86
11/8/2021	2.93
11/5/2021	2.92
11/4/2021	3
11/3/2021	3.02
11/2/2021	2.99
11/1/2021	3

3.02

MOODUBAA Index

Date	Last Price
11/30/2021	3.21
11/29/2021	3.31
11/26/2021	3.28
11/24/2021	3.33
11/23/2021	3.37
11/22/2021	3.31
11/19/2021	3.24
11/18/2021	3.28
11/17/2021	3.3
11/16/2021	3.32
11/15/2021	3.29
11/12/2021	3.24
11/10/2021	3.19
11/9/2021	3.1
11/8/2021	3.16
11/5/2021	3.15
11/4/2021	3.23
11/3/2021	3.27
11/2/2021	3.24
11/1/2021	3.24

3.25

MOODUAA Index

Date	Last Price
12/30/2021	3.01
12/29/2021	3.03
12/28/2021	2.99
12/27/2021	2.98
12/23/2021	2.99
12/22/2021	2.94
12/21/2021	2.98
12/20/2021	2.94
12/17/2021	2.91
12/16/2021	2.94
12/15/2021	2.94
12/14/2021	2.89
12/13/2021	2.86
12/10/2021	2.93
12/9/2021	2.92
12/8/2021	2.92
12/7/2021	2.85
12/6/2021	2.82
12/3/2021	2.76
12/2/2021	2.85
12/1/2021	2.85

2.92

MOODUA Index

Date	Last Price
12/30/2021	3.13
12/29/2021	3.16
12/28/2021	3.12
12/27/2021	3.1
12/23/2021	3.12
12/22/2021	3.07
12/21/2021	3.11
12/20/2021	3.06
12/17/2021	3.03
12/16/2021	3.06
12/15/2021	3.05
12/14/2021	3.02
12/13/2021	2.99
12/10/2021	3.06
12/9/2021	3.04
12/8/2021	3.04
12/7/2021	2.96
12/6/2021	2.95
12/3/2021	2.88
12/2/2021	2.96
12/1/2021	2.96

3.04

MOODUBAA Index

Date	Last Price
12/30/2021	3.36
12/29/2021	3.39
12/28/2021	3.34
12/27/2021	3.33
12/23/2021	3.34
12/22/2021	3.3
12/21/2021	3.34
12/20/2021	3.29
12/17/2021	3.25
12/16/2021	3.28
12/15/2021	3.27
12/14/2021	3.23
12/13/2021	3.22
12/10/2021	3.29
12/9/2021	3.28
12/8/2021	3.29
12/7/2021	3.21
12/6/2021	3.19
12/3/2021	3.13
12/2/2021	3.21
12/1/2021	3.21

3.27

Start Date 12/31/2021
 End Date 1/31/2022
 Field PX_LAST

MOODUAA Index

Date	Last Price
1/31/2022	3.31
1/28/2022	3.29
1/27/2022	3.27
1/26/2022	3.29
1/25/2022	3.29
1/24/2022	3.24
1/21/2022	3.22
1/20/2022	3.23
1/19/2022	3.21
1/18/2022	3.26
1/14/2022	3.17
1/13/2022	3.12
1/12/2022	3.13
1/11/2022	3.12
1/10/2022	3.16
1/7/2022	3.14
1/6/2022	3.12
1/5/2022	3.12
1/4/2022	3.13
1/3/2022	3.07

3.36

MOODUA Index

Date	Last Price
1/31/2022	3.42
1/28/2022	3.41
1/27/2022	3.39
1/26/2022	3.42
1/25/2022	3.42
1/24/2022	3.36
1/21/2022	3.34
1/20/2022	3.35
1/19/2022	3.34
1/18/2022	3.39
1/14/2022	3.3
1/13/2022	3.24
1/12/2022	3.26
1/11/2022	3.25
1/10/2022	3.29
1/7/2022	3.3
1/6/2022	3.27
1/5/2022	3.27
1/4/2022	3.27
1/3/2022	3.22

3.33

MOODUBAA Index

Date	Last Price
1/31/2022	3.69
1/28/2022	3.65
1/27/2022	3.64
1/26/2022	3.68
1/25/2022	3.68
1/24/2022	3.62
1/21/2022	3.58
1/20/2022	3.6
1/19/2022	3.59
1/18/2022	3.64
1/14/2022	3.56
1/13/2022	3.49
1/12/2022	3.51
1/11/2022	3.51
1/10/2022	3.53
1/7/2022	3.54
1/6/2022	3.51
1/5/2022	3.51
1/4/2022	3.5
1/3/2022	3.45

3.57

Start Date 1/31/2022
 End Date 2/28/2022
 Field PX_LAST

MOODUAA Index

Date	Last Price
2/28/2022	3.73
2/25/2022	3.73
2/24/2022	3.83
2/23/2022	3.69
2/22/2022	3.65
2/18/2022	3.65
2/17/2022	3.67
2/16/2022	3.65
2/15/2022	3.6
2/14/2022	3.53
2/11/2022	3.48
2/10/2022	3.52
2/9/2022	3.44
2/8/2022	3.48
2/7/2022	3.46
2/4/2022	3.44
2/3/2022	3.37
2/2/2022	3.31
2/1/2022	3.35
3.73	3.56

MOODUA Index

Date	Last Price
2/28/2022	3.86
2/25/2022	3.86
2/24/2022	3.93
2/23/2022	3.79
2/22/2022	3.75
2/18/2022	3.74
2/17/2022	3.79
2/16/2022	3.77
2/15/2022	3.75
2/14/2022	3.68
2/11/2022	3.63
2/10/2022	3.67
2/9/2022	3.58
2/8/2022	3.6
2/7/2022	3.57
2/4/2022	3.55
2/3/2022	3.47
2/2/2022	3.42
2/1/2022	3.45
3.68	

MOODUBAA Index

Date	Last Price
2/28/2022	4.16
2/25/2022	4.16
2/24/2022	4.2
2/23/2022	4.06
2/22/2022	4.04
2/18/2022	4.02
2/17/2022	4.07
2/16/2022	4.05
2/15/2022	4.01
2/14/2022	3.94
2/11/2022	3.89
2/10/2022	3.92
2/9/2022	3.84
2/8/2022	3.85
2/7/2022	3.83
2/4/2022	3.83
2/3/2022	3.72
2/2/2022	3.67
2/1/2022	3.71
3.95	

Start Date 3/1/2022
 End Date 3/31/2022
 Field PX_LAST

MOODUAA Index

Date	Last Price
3/31/2022	3.72
3/30/2022	3.74
3/29/2022	3.81
3/28/2022	3.88
3/25/2022	3.94
3/24/2022	3.85
3/23/2022	3.84
3/22/2022	3.91
3/21/2022	3.87
3/18/2022	3.77
3/17/2022	3.82
3/16/2022	3.95
3/15/2022	4
3/14/2022	3.97
3/11/2022	3.85
3/10/2022	3.88
3/9/2022	3.81
3/8/2022	3.76
3/7/2022	3.66
3/4/2022	3.59
3/3/2022	3.67
3/2/2022	3.68
3/1/2022	3.55
4.02	3.81

MOODUA Index

Date	Last Price
3/31/2022	3.96
3/30/2022	3.99
3/29/2022	4.03
3/28/2022	4.1
3/25/2022	4.14
3/24/2022	4.06
3/23/2022	4.04
3/22/2022	4.09
3/21/2022	4.06
3/18/2022	3.95
3/17/2022	4.05
3/16/2022	4.11
3/15/2022	4.17
3/14/2022	4.15
3/11/2022	4.02
3/10/2022	4.04
3/9/2022	3.95
3/8/2022	3.9
3/7/2022	3.8
3/4/2022	3.74
3/3/2022	3.79
3/2/2022	3.8
3/1/2022	3.69
3.98	

MOODUBAA Index

Date	Last Price
3/31/2022	4.24
3/30/2022	4.27
3/29/2022	4.32
3/28/2022	4.4
3/25/2022	4.43
3/24/2022	4.34
3/23/2022	4.35
3/22/2022	4.42
3/21/2022	4.38
3/18/2022	4.26
3/17/2022	4.35
3/16/2022	4.4
3/15/2022	4.48
3/14/2022	4.43
3/11/2022	4.32
3/10/2022	4.33
3/9/2022	4.24
3/8/2022	4.19
3/7/2022	4.09
3/4/2022	4.03
3/3/2022	4.1
3/2/2022	4.09
3/1/2022	3.96
4.28	

Start Date 4/1/2022
 End Date 4/30/2022
 Field PX_LAST

MOODUAA Index

Date	Last Price
4/29/2022	4.39
4/28/2022	4.34
4/27/2022	4.32
4/26/2022	4.27
4/25/2022	4.24
4/22/2022	4.28
4/21/2022	4.25
4/20/2022	4.19
4/19/2022	4.3
4/18/2022	4.23
4/14/2022	4.17
4/13/2022	4.06
4/12/2022	4.05
4/11/2022	4.03
4/8/2022	3.95
4/7/2022	3.9
4/6/2022	3.85
4/5/2022	3.78
4/4/2022	3.71
4/1/2022	3.71

4.34 4.10

MOODUA Index

Date	Last Price
4/29/2022	4.58
4/28/2022	4.55
4/27/2022	4.52
4/26/2022	4.48
4/25/2022	4.45
4/22/2022	4.49
4/21/2022	4.46
4/20/2022	4.39
4/19/2022	4.49
4/18/2022	4.44
4/14/2022	4.4
4/13/2022	4.28
4/12/2022	4.28
4/11/2022	4.27
4/8/2022	4.19
4/7/2022	4.13
4/6/2022	4.07
4/5/2022	4.02
4/4/2022	3.95
4/1/2022	3.92

4.32

MOODUBAA Index

Date	Last Price
4/29/2022	4.88
4/28/2022	4.85
4/27/2022	4.82
4/26/2022	4.78
4/25/2022	4.77
4/22/2022	4.8
4/21/2022	4.78
4/20/2022	4.71
4/19/2022	4.79
4/18/2022	4.74
4/14/2022	4.71
4/13/2022	4.59
4/12/2022	4.59
4/11/2022	4.55
4/8/2022	4.45
4/7/2022	4.4
4/6/2022	4.34
4/5/2022	4.28
4/4/2022	4.21
4/1/2022	4.18

4.61

Start Date 5/1/2022
 End Date 5/31/2022
 Field PX_LAST

MOODUAA Index

Date	Last Price
5/31/2022	4.42
5/27/2022	4.4
5/26/2022	4.4
5/25/2022	4.48
5/24/2022	4.52
5/23/2022	4.63
5/20/2022	4.57
5/19/2022	4.65
5/18/2022	4.64
5/17/2022	4.69
5/16/2022	4.62
5/13/2022	4.63
5/12/2022	4.49
5/11/2022	4.53
5/10/2022	4.61
5/9/2022	4.68
5/6/2022	4.65
5/5/2022	4.59
5/4/2022	4.43
5/3/2022	4.45
5/2/2022	4.51

4.79 4.55

MOODUA Index

Date	Last Price
5/31/2022	4.65
5/27/2022	4.62
5/26/2022	4.62
5/25/2022	4.66
5/24/2022	4.7
5/23/2022	4.8
5/20/2022	4.74
5/19/2022	4.82
5/18/2022	4.8
5/17/2022	4.88
5/16/2022	4.79
5/13/2022	4.8
5/12/2022	4.69
5/11/2022	4.72
5/10/2022	4.8
5/9/2022	4.87
5/6/2022	4.87
5/5/2022	4.81
5/4/2022	4.65
5/3/2022	4.67
5/2/2022	4.71

4.75

MOODUBAA Index

Date	Last Price
5/31/2022	5.01
5/27/2022	4.97
5/26/2022	4.97
5/25/2022	5
5/24/2022	5.05
5/23/2022	5.14
5/20/2022	5.08
5/19/2022	5.16
5/18/2022	5.14
5/17/2022	5.21
5/16/2022	5.12
5/13/2022	5.12
5/12/2022	5
5/11/2022	5.03
5/10/2022	5.1
5/9/2022	5.17
5/6/2022	5.17
5/5/2022	5.11
5/4/2022	4.96
5/3/2022	4.97
5/2/2022	5.01

5.07

Start Date 6/1/2022
 End Date 6/30/2022
 Field PX_LAST

MOODUAA Index

Date	Last Price
6/30/2022	4.66
6/29/2022	4.69
6/28/2022	4.79
6/27/2022	4.78
6/24/2022	4.73
6/23/2022	4.67
6/22/2022	4.72
6/21/2022	4.82
6/17/2022	4.73
6/16/2022	4.79
6/15/2022	4.81
6/14/2022	4.84
6/13/2022	4.77
6/10/2022	4.57
6/9/2022	4.51
6/8/2022	4.5
6/7/2022	4.45
6/6/2022	4.51
6/3/2022	4.43
6/2/2022	4.42
6/1/2022	4.43

4.91 4.65

MOODUA Index

Date	Last Price
6/30/2022	4.84
6/29/2022	4.9
6/28/2022	4.99
6/27/2022	4.97
6/24/2022	4.93
6/23/2022	4.86
6/22/2022	4.9
6/21/2022	5.03
6/17/2022	4.97
6/16/2022	5.01
6/15/2022	5.02
6/14/2022	5.06
6/13/2022	4.99
6/10/2022	4.79
6/9/2022	4.73
6/8/2022	4.72
6/7/2022	4.67
6/6/2022	4.74
6/3/2022	4.66
6/2/2022	4.63
6/1/2022	4.64

4.86

MOODUBAA Index

Date	Last Price
6/30/2022	5.22
6/29/2022	5.28
6/28/2022	5.35
6/27/2022	5.33
6/24/2022	5.3
6/23/2022	5.23
6/22/2022	5.27
6/21/2022	5.38
6/17/2022	5.35
6/16/2022	5.35
6/15/2022	5.37
6/14/2022	5.41
6/13/2022	5.35
6/10/2022	5.14
6/9/2022	5.07
6/8/2022	5.07
6/7/2022	5.02
6/6/2022	5.09
6/3/2022	5.03
6/2/2022	5
6/1/2022	5.01

5.22

Start Date 7/1/2022
 End Date 7/31/2022
 Field PX_LAST

MOODUAA Index

Date	Last Price
7/29/2022	4.39
7/28/2022	4.46
7/27/2022	4.42
7/26/2022	4.45
7/25/2022	4.47
7/22/2022	4.4
7/21/2022	4.5
7/20/2022	4.58
7/19/2022	4.63
7/18/2022	4.59
7/15/2022	4.58
7/14/2022	4.61
7/13/2022	4.6
7/12/2022	4.63
7/11/2022	4.68
7/8/2022	4.77
7/7/2022	4.71
7/6/2022	4.66
7/5/2022	4.6
7/1/2022	4.66

4.84 4.57

MOODUA Index

Date	Last Price
7/29/2022	4.62
7/28/2022	4.68
7/27/2022	4.65
7/26/2022	4.67
7/25/2022	4.69
7/22/2022	4.64
7/21/2022	4.72
7/20/2022	4.82
7/19/2022	4.85
7/18/2022	4.8
7/15/2022	4.79
7/14/2022	4.81
7/13/2022	4.77
7/12/2022	4.84
7/11/2022	4.89
7/8/2022	4.98
7/7/2022	4.92
7/6/2022	4.87
7/5/2022	4.77
7/1/2022	4.85

4.78

MOODUBAA Index

Date	Last Price
7/29/2022	4.97
7/28/2022	5.04
7/27/2022	5.02
7/26/2022	5.04
7/25/2022	5.06
7/22/2022	4.99
7/21/2022	5.1
7/20/2022	5.19
7/19/2022	5.21
7/18/2022	5.18
7/15/2022	5.18
7/14/2022	5.21
7/13/2022	5.18
7/12/2022	5.21
7/11/2022	5.25
7/8/2022	5.34
7/7/2022	5.28
7/6/2022	5.25
7/5/2022	5.16
7/1/2022	5.23

5.15

Start Date 8/1/2022
 End Date 8/31/2022
 Field PX_LAST

MOODUAA Index

Date	Last Price
8/31/2022	4.72
8/30/2022	4.68
8/29/2022	4.7
8/26/2022	4.63
8/25/2022	4.65
8/24/2022	4.74
8/23/2022	4.68
8/22/2022	4.67
8/19/2022	4.63
8/18/2022	4.52
8/17/2022	4.53
8/16/2022	4.49
8/15/2022	4.47
8/12/2022	4.52
8/11/2022	4.57
8/10/2022	4.44
8/9/2022	4.43
8/8/2022	4.4
8/5/2022	4.49
8/4/2022	4.38
8/3/2022	4.4
8/2/2022	4.41
8/1/2022	4.34
4.80	4.54

MOODUA Index

Date	Last Price
#NAME?	4.93
8/30/2022	4.89
8/29/2022	4.91
8/26/2022	4.85
8/25/2022	4.87
8/24/2022	4.96
8/23/2022	4.9
8/22/2022	4.89
8/19/2022	4.85
8/18/2022	4.76
8/17/2022	4.76
8/16/2022	4.72
8/15/2022	4.7
8/12/2022	4.74
8/11/2022	4.79
8/10/2022	4.68
8/9/2022	4.66
8/8/2022	4.64
8/5/2022	4.71
8/4/2022	4.59
8/3/2022	4.61
8/2/2022	4.62
8/1/2022	4.56
4.76	

MOODUBAA Index

Date	Last Price
#NAME?	5.25
8/30/2022	5.22
8/29/2022	5.25
8/26/2022	5.17
8/25/2022	5.19
8/24/2022	5.28
8/23/2022	5.22
8/22/2022	5.2
8/19/2022	5.17
8/18/2022	5.07
8/17/2022	5.08
8/16/2022	5.04
8/15/2022	5.01
8/12/2022	5.07
8/11/2022	5.11
8/10/2022	5.01
8/9/2022	4.99
8/8/2022	4.96
8/5/2022	5.06
8/4/2022	4.94
8/3/2022	4.96
8/2/2022	4.97
8/1/2022	4.92
5.09	

Start Date 9/1/2022
 End Date 9/30/2022
 Field PX_LAST

MOODUAA Index

Date	Last Price
9/30/2022	5.47
9/29/2022	5.4
9/28/2022	5.35
9/27/2022	5.43
9/26/2022	5.28
9/23/2022	5.18
9/22/2022	5.17
9/21/2022	5.04
9/20/2022	5.09
9/19/2022	5.03
9/16/2022	5.04
9/15/2022	4.97
9/14/2022	4.95
9/13/2022	4.98
9/12/2022	4.96
9/9/2022	4.92
9/8/2022	4.94
9/7/2022	4.91
9/6/2022	4.98
9/2/2022	4.83
9/1/2022	4.86

5.33 5.08

MOODUA Index

Date	Last Price
9/30/2022	5.65
9/29/2022	5.6
9/28/2022	5.52
9/27/2022	5.62
9/26/2022	5.46
9/23/2022	5.36
9/22/2022	5.36
9/21/2022	5.23
9/20/2022	5.29
9/19/2022	5.22
9/16/2022	5.22
9/15/2022	5.17
9/14/2022	5.16
9/13/2022	5.18
9/12/2022	5.18
9/9/2022	5.14
9/8/2022	5.14
9/7/2022	5.11
9/6/2022	5.18
9/2/2022	5.04
9/1/2022	5.06

5.28

MOODUBAA Index

Date	Last Price
9/30/2022	5.97
9/29/2022	5.91
9/28/2022	5.87
9/27/2022	5.95
9/26/2022	5.81
9/23/2022	5.7
9/22/2022	5.71
9/21/2022	5.56
9/20/2022	5.63
9/19/2022	5.57
9/16/2022	5.56
9/15/2022	5.51
9/14/2022	5.49
9/13/2022	5.54
9/12/2022	5.51
9/9/2022	5.45
9/8/2022	5.46
9/7/2022	5.43
9/6/2022	5.51
9/2/2022	5.36
9/1/2022	5.38

5.61

Start Date 10/1/2022
 End Date 10/31/2022
 Field PX_LAST

MOODUAA Index

Date	Last Price
#NAME?	5.82
10/28/2022	5.75
10/27/2022	5.72
10/26/2022	5.81
10/25/2022	5.91
10/24/2022	6.01
10/21/2022	5.99
10/20/2022	5.91
10/19/2022	5.82
10/18/2022	5.7
10/17/2022	5.73
10/14/2022	5.69
10/13/2022	5.65
10/12/2022	5.6
10/11/2022	5.58
10/10/2022	5.57
10/7/2022	5.47
10/6/2022	5.43
10/5/2022	5.42
10/4/2022	5.34
10/3/2022	5.41

5.91 5.68

MOODUA Index

Date	Last Price
#NAME?	6.03
10/28/2022	5.96
10/27/2022	5.93
10/26/2022	6.02
10/25/2022	6.11
10/24/2022	6.22
10/21/2022	6.19
10/20/2022	6.1
10/19/2022	6.01
10/18/2022	5.9
10/17/2022	5.91
10/14/2022	5.89
10/13/2022	5.84
10/12/2022	5.78
10/11/2022	5.78
10/10/2022	5.77
10/7/2022	5.67
10/6/2022	5.62
10/5/2022	5.6
10/4/2022	5.51
10/3/2022	5.56

5.88

MOODUBAA Index

Date	Last Price
#NAME?	6.34
10/28/2022	6.27
10/27/2022	6.24
10/26/2022	6.31
10/25/2022	6.4
10/24/2022	6.52
10/21/2022	6.49
10/20/2022	6.39
10/19/2022	6.3
10/18/2022	6.21
10/17/2022	6.21
10/14/2022	6.19
10/13/2022	6.17
10/12/2022	6.07
10/11/2022	6.07
10/10/2022	6.09
10/7/2022	5.99
10/6/2022	5.92
10/5/2022	5.9
10/4/2022	5.82
10/3/2022	5.88

6.18

Start Date 11/1/2022
 End Date 11/30/2022
 Field PX_LAST

MOODUAA Index

Date	Last Price
11/30/2022	5.31
11/29/2022	5.29
11/28/2022	5.21
11/25/2022	5.25
11/23/2022	5.21
11/22/2022	5.32
11/21/2022	5.42
11/18/2022	5.45
11/17/2022	5.42
11/16/2022	5.4
11/15/2022	5.51
11/14/2022	5.62
11/10/2022	5.63
11/9/2022	5.9
11/8/2022	5.83
11/7/2022	5.9
11/4/2022	5.84
11/3/2022	5.77
11/2/2022	5.7
11/1/2022	5.73

5.78 5.54

MOODUA Index

Date	Last Price
11/30/2022	5.52
11/29/2022	5.51
11/28/2022	5.46
11/25/2022	5.46
11/23/2022	5.44
11/22/2022	5.54
11/21/2022	5.63
11/18/2022	5.66
11/17/2022	5.65
11/16/2022	5.62
11/15/2022	5.74
11/14/2022	5.84
11/10/2022	5.86
11/9/2022	6.11
11/8/2022	6.05
11/7/2022	6.11
11/4/2022	6.05
11/3/2022	5.97
11/2/2022	5.92
11/1/2022	5.94

5.75

MOODUBAA Index

Date	Last Price
11/30/2022	5.81
11/29/2022	5.8
11/28/2022	5.73
11/25/2022	5.74
11/23/2022	5.72
11/22/2022	5.82
11/21/2022	5.91
11/18/2022	5.95
11/17/2022	5.95
11/16/2022	5.91
11/15/2022	6.03
11/14/2022	6.14
11/10/2022	6.16
11/9/2022	6.42
11/8/2022	6.34
11/7/2022	6.41
11/4/2022	6.35
11/3/2022	6.28
11/2/2022	6.25
11/1/2022	6.24

6.05

Start Date 12/1/2022
 End Date 12/31/2022
 Field PX_LAST

MOODUAA Index

Date	Last Price
12/30/2022	5.29
12/27/2022	5.28
12/23/2022	5.2
12/22/2022	5.11
12/21/2022	5.14
12/20/2022	5.13
12/19/2022	5.01
12/16/2022	4.92
12/15/2022	4.89
12/14/2022	4.89
12/13/2022	4.9
12/12/2022	4.96
12/9/2022	4.94
12/8/2022	4.86
12/7/2022	4.85
12/6/2022	4.97
12/5/2022	5.08
12/2/2022	5.05
12/1/2022	5.31

5.29 5.04

MOODUA Index

Date	Last Price
12/30/2022	5.53
12/27/2022	5.53
12/23/2022	5.42
12/22/2022	5.32
12/21/2022	5.35
12/20/2022	5.34
12/19/2022	5.23
12/16/2022	5.15
12/15/2022	5.11
12/14/2022	5.14
12/13/2022	5.13
12/12/2022	5.19
12/9/2022	5.17
12/8/2022	5.09
12/7/2022	5.08
12/6/2022	5.2
12/5/2022	5.29
12/2/2022	5.26
12/1/2022	5.52

5.27

MOODUBAA Index

Date	Last Price
12/30/2022	5.83
12/27/2022	5.83
12/23/2022	5.72
12/22/2022	5.63
12/21/2022	5.66
12/20/2022	5.65
12/19/2022	5.52
12/16/2022	5.43
12/15/2022	5.39
12/14/2022	5.42
12/13/2022	5.41
12/12/2022	5.47
12/9/2022	5.45
12/8/2022	5.38
12/7/2022	5.35
12/6/2022	5.48
12/5/2022	5.59
12/2/2022	5.54
12/1/2022	5.81

5.56

Kentucky Power Company
KPSC Case No. 2023-00159
Joint Intervenors' Second Set of Data Request
Dated September 11, 2023

DATA REQUEST

JI 2_17 Please refer to the direct testimony of Alex E. Vaughan, pages 27–34, regarding the Company's Distributed Solar Garden proposal, and the Company's response to Joint Intervenors' Request 1-25.

a. Does the Company have any plans to upgrade or increase the number of substations on its distribution system in connection with installation of Company-owned solar garden facilities?

b. If a Company-owned solar garden facility gets to or above the maximum load of an associated substation, will other customers still be able to invest in customer-sited distributed solar utilizing the Company's distribution system?

RESPONSE

a. Each prospective facility in the solar garden program will undergo an interconnection study and the appropriate actions or upgrades will be made for the facilities.

b. Please refer to the Company's response to part a. Furthermore, any hypothetical future customer generator would be subject to the distribution system capacity and other conditions at the time of their actual application and interconnection study.

Witness: Alex E. Vaughan

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DATA REQUEST

- JI 2_18** Please refer to Section II, Exhibit D of the Company's Application, tariff sheets 2-14–2-15. For Residential Service customer billing:
- a. Please confirm that the Service and Energy Charges are reported as one combined charge on customer bills and are not being reported separately.
 - b. If so, please explain the reasoning for combining the Service and Energy Charges and reporting them as one combined charge on the bill. Please further explain how customers are able to know which portions of their bill are tied to volumetric energy consumption (kWh) and which are fixed charges?
 - c. Has the Company considered reporting these charges separately on customer bills, and would the Company be willing to do so? Please explain why or why not.

RESPONSE

- a. Confirmed.
- b. The Company's current staff are unaware as to the underlying reasoning for the way these charges are displayed on customer bills.

The energy and fixed charges could be manually separately calculated. For instance, the monthly customer charge (service charge), which is available in the Company's tariff, can be subtracted from the combined customer and energy charges to identify the energy charges.

- c. On July 25, 2023, a Company representative met with representatives of Mountain Association (one of the members of the Joint Intervenors) to discuss this issue. Breaking out the demand charge on customer bills was discussed at that time. Following up on that request, the Company contacted its billing support team to understand if it was possible to switch the billing format to separate the customer charge from the demand charge on customer bills within the timeline of this case. The billing support team concluded that the change was possible and, accordingly, the Company is amenable to breaking out the demand charge on its bills starting with the effective date of new rates in this case.

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Regarding the other charges included in the “rate billing” line item, the Company is committed to its customers and ensuring that customer bills provide the information customers want in a format that is best for them. The Company will continue to work with customers to update its bill format as necessary.

Witness: Lerah M. Kahn

Witness: Stevi N. Cobern

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DATA REQUEST

JI 2_19 Please refer to Section II, Exhibit D of the Company's Application, tariff sheets 2-16–2-17. For General Service customer billing:

- a. Please confirm that the Monthly Service Charge, Energy Charge and Demand Charge are reported as one combined charge on customer bills and are not being reported separately.
- b. If so, please explain the reasoning for combining the Service, Energy, and Demand Charges and reporting them as one combined charge on the bill. Please further explain how customers are able to know which portions of their bill are tied to volumetric energy consumption (kWh) and which are fixed charges?
- c. Has the Company considered reporting these charges separately on customer bills, and would the Company be willing to do so? Please explain why or why not.

RESPONSE

a.-c. Please see the Company's response to Joint Intervenors 2-18(a)-(c).

Witness: Lerah M. Kahn

Witness: Stevi N. Cobern

Kentucky Power Company
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DATA REQUEST

JI 2_20 Please refer to Section II, Exhibit D of the Company's Application, tariff sheets 2-18-2-19. For the Large General Service customer billing:

a. Please confirm that the Monthly Service Charge, Energy Charge, Demand Charge, Excess Reactive Charge per KVA are reported as one combined charge on customer bills and are not being reported separately.

b. If so, please explain the reasoning for combining the Service, Energy, Demand, and Excess Reactive Charges and reporting them as one combined charge on the bill. Please further explain how customers are able to know which portions of their bill are tied to volumetric energy consumption (kWh) and which are fixed charges?

c. Has the Company considered reporting these charges separately on customer bills, and would the Company be willing to do so? Please explain why or why not.

RESPONSE

a.-c. Please see the Company's response to Joint Intervenors 2-18(a)-(c).

Witness: Lerah M. Kahn

Witness: Stevi N. Cobern

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DATA REQUEST

- JI 2_21** Please refer to the Company's response to Joint Intervenors' Request 1.28, including KPCO_R_JI_1_28_Attachment1.
- a. Of the customers primarily heating their home with electric heating, please further specify what type of electric heating is used by the customer, such as boiler, furnace, heat pump, electric resistance, unit heater, or infrared. Please provide any analysis or work paper that supports your answer.
- b. Has the Company considered specifically targeting energy efficiency measures toward customers who primarily heat their homes with electric resistance heating?
- i. If yes, please explain how the Company has considered this and provide copies of any workpapers or other documents that support your answer.
- ii. If not, please explain in detail why not.

RESPONSE

- a. The Company does not maintain and is unable to provide the requested information because it does not have complete information regarding its customers' internal heating systems or the specific manner in which each of its electric heating customers heats their home.
- b. The Company's Targeted Energy Efficiency (TEE) program provides heat pump incentives to income-qualified customers in a two-tiered system. Existing heat pumps upgraded to a high efficiency heat pump may receive a maximum of \$1,600 as incentive while an electric resistance heating system upgraded to a high efficiency heat pump may receive a maximum of \$2,600 as incentive.

The Company's market potential study (MPS) recommends expanding its DSM portfolio to offer additional incentives for new high efficiency heat pumps. The residential measure assumptions, baseline equipment for each measure and corresponding total

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resource cost (TRC) values can be seen starting on page 63 of the MPS filed on August 11, 2023, in Case No. 2022-00392. The Company intends to file a DSM application in the second quarter of 2024 at the latest which will expand on the proposed programs and incentive structures.

Witness: Scott E. Bishop

Witness: Michael M. Spaeth

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DATA REQUEST

- JI 2_22** Please refer to Ms. Cobern's Direct Testimony at pages 9–10, discussing the Company's Demand Side Management ("DSM") programs.
- a. Please confirm that the "DSM Market Potential Study" referenced in Ms. Cobern's testimony is the study filed on August 11, 2023, in Docket No. 2022-00392, available at https://psc.ky.gov/pscecf/2022-00392/mmcaldwell@aep.com/08112023035039/Closed/Notice_of_Filing_Market_Potential_Study.pdf.
- b. Has the Company evaluated the potential for additional DSM programs or additional funding of the current DSM programs to reduce the impact to customers of the rate increase requested in this rate case?
- i. If so, please provide any relevant analysis or workpapers. If such analysis is in the DSM Market Potential Study identified above, please identify any relevant portions of the Study.
- ii. If not, please explain why not.
- c. On page 10, lines 3–4, Ms. Cobern states, "The Company intends to file an application to expand its DSM Programs within the next year." Please identify with more specificity when during the next year the Company plans to file an application to expand its DSM Programs.

RESPONSE

- a. Confirmed.
- b. The filed market potential study provides recommendations for additional DSM programs in section 5 beginning on page 39. The Company released a request for proposal (RFP) on September 20, 2023 to determine how potential programs will be structured and to determine potential administrative costs.
- c. The Company intends to file an application to expand its DSM programs in the second quarter 2024.

Witness: Scott E. Bishop

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DATA REQUEST

JI 2_23

Please refer to the Company's response to Joint Intervenors' Request 1.25(d). Please provide the following information for Kentucky Power's COGEN/SPP I and COGEN/SPP II customers, for the test year and each of the years between 2020 and 2022:

a. For each year that COGEN/SPP I and COGEN/SPP II service customer meter reads fall within, the total delivered kWh and received kWh by rate class with connection behind the meter and total COGEN/SPP I generation and COGEN/SPP II generation when connection is in front of meter.

b. List the number COGEN/SPP I and COGEN/SPP II customers by specific rate class with connection behind the meter and total COGEN/SPP I customers and COGEN/SPP II customers with connections in front of the meter.

c. List total installed generation capacity (AC and DC) for customers receiving COGEN/SPP I and COGEN/SPP II customers by specific rate class with connection behind the meter and total COGEN/SPP I customers and COGEN/SPP II customers with connections in front of the meter.

d. For a customer that first began taking COGEN/SPP I with connection behind the meter in this timeframe, did that require replacing their meter or was COGEN/SPP I service achieved with reprogramming the existing meter? Does that answer depend on the existing rate class of customer-generator taking COGEN/SPP I service?

e. For a customer that first began taking COGEN/SPP II with connection behind the meter in this timeframe, did that require replacing their meter or was COGEN/SPP II service achieved with reprogramming the existing meter? Does that answer depend on the existing rate class of customer-generator taking COGEN/SPP II service?

f. What was the capacity (system size in KW AC) of each COGEN/SPP I service customer for each year?

g. What was the capacity (system size in KW AC) of each COGEN/SPP II service customer for each year?

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- h. For behind-the-meter connections, what was the total combined capacity for each rate class of COGEN/SPP I customers?
- i. For behind-the-meter connections, what was the total combined capacity for each rate class of COGEN/SPP II customers?
- j. For front-of-meter connections, what was the total combined capacity for each rate class of COGEN/SPP I customers?
- k. For front-of-meter connections, what was the total combined capacity for each rate class of COGEN/SPP II customers?
- l. What percentage of Kentucky Power's single-hour peak load for the previous year did COGEN/SPP I service represent for each year?
- m. What percentage of Kentucky Power's single-hour peak load for the previous year did COGEN/SPP II service represent for each year?
- n. Please provide any additional data concerning COGEN/SPP I or COGEN/SPP II service for the years 2020 through 2022 which Kentucky Power has reported to the U.S. Energy Information Administration, Federal Energy Regulatory Commission, the Kentucky Energy and Environment Cabinet, or any other regulatory agency.

RESPONSE

- a.-c. Please refer to KPCO_R_JI_2_23_Attachment1 for the requested information.
- d.-e. Yes, all customers on the tariff require a bi-directional meter. The Company's AMR meters are not reprogrammable to measure bi-directional flows.
- f. The Company has only one customer currently taking service under Tariff COGEN/SPP I, and its capacity is 90 kW. This customer signed onto the tariff in March 2023 but has not yet produced kWh in any of the years requested.
- g. 2020 – 6800 kW and 151 kW;
2021 – 6800 kW and 151 kW;
2022 – 6800 kW, 151 kW, and 174 kW;
Test Year – 6800 kW, 151 kW, 174 kW and 100 kW.

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h.-k. Please refer to KPCO_R_JI_2_23_Attachment1 for the requested information.

l. Not applicable as the facility was not in operation during this period.

m. The following are the percentage of the Company's single hour peak that the installed capacity of COGEN/SPP systems represent:

2020: 0.6%
2021: 0.65%
2022: 0.52%

It should also be noted that the COGEN/SPP systems had zero kWh output during the Kentucky Power system peak hour in the years 2020 through 2022.

n. Any additional information reported is publicly and equally available to Joint Intervenors.

Witness: Alex E. Vaughan

Witness: Michael M. Spaeth

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DATA REQUEST

JI 2_24 Has the company explored ways to support customer investments in backup power to address customer ability to cope with distribution circuit challenges? For instance, meter socket-mounted transfer switches for customer invested backup power and storage, or replacing Open Delta three phase transformer services with appropriate service types that customer can connect customer invested interconnect distributed generation and storage to?

RESPONSE

Kentucky Power already supports a customer's investment in backup power for a variety of unique reasons as determined by each individual customer. Kentucky Power supports and facilitates customer requests to install meter attachment equipment, such as the Generlink meter collar switch, which allows customers to more easily connect backup generators to their homes during power outages. Kentucky Power follows its tariff provisions and applicable state law when supporting a customer's backup power interconnection.

Witness: Everett G. Phillips

Witness: Stephen D. Blankenship



Blankenship Verification Form.doc

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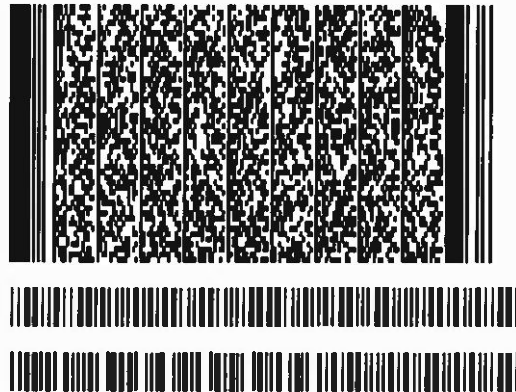
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E-Signature Summary

E-Signature 1: Stephen Blankenship (SB)
September 22, 2023 08:26:52 -8:00 [B54667C83372] [167.239.221.101]
sjblank1@aep.com (Principal) (Personally Known)

E-Signature Notary: Marilyn Michelle Caldwell (MMC)
September 22, 2023 08:26:52 -8:00 [5BC29AD4F409] [167.239.221.104]
mmcaldwell@aep.com
I, Marilyn Michelle Caldwell, did witness the participants named above electronically sign this document.



VERIFICATION

The undersigned, Stephen D. Blankenship, being duly sworn, deposes and says he is the Region Support Manager, for Kentucky Power, that he has personal knowledge of the matters set forth in the foregoing responses and the information contained therein is true and correct to the best of his information, knowledge, and belief.

Stephen Blankenship

Stephen D. Blankenship

Commonwealth of Kentucky)

County of Boyd)

Case No. 2023-00159

Subscribed and sworn to before me, a Notary Public in and before said County

and State, by Stephen D. Blankenship, on September 22, 2023.

MARILYN MICHELLE CALDWELL
ONLINE NOTARY PUBLIC
STATE AT LARGE KENTUCKY
Commission # KYNP71841
My Commission Expires May 05, 2027

Marilyn Michelle Caldwell

Notary Public

arial act performed by audio-visual communication

My Commission Expires May 5, 2027

Notary ID Number KYNP71841



VERIFICATION

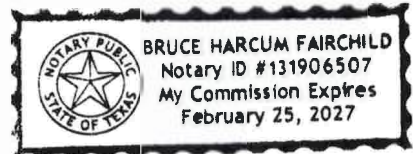
The undersigned, Adrien M. McKenzie, being duly sworn, deposes and says he is the President of FINCAP, Incorporated, that he has personal knowledge of the matters set forth in the foregoing responses and the information contained therein is true and correct to the best of his information, knowledge, and belief.

Adrien M. McKenzie
Adrien M. McKenzie

State of Texas)
) Case No. 2023-00159
County of Travis)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Adrien M. McKenzie, on 9/19/2023.

Bruce Harcum Fairchild
Notary Public



My Commission Expires 2/25/2027

Notary ID Number 131906507

VERIFICATION

The undersigned, Franz D. Messner, being duly sworn, deposes and says he is the Managing Director of Corporate Finance for American Electric Power Service Corporation, that he has personal knowledge of the matters set forth in the foregoing responses and the information contained therein is true and correct to the best of his information, knowledge, and belief.



Franz D. Messner

_____)
_____)
_____)

Case No. 2023-00159

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Franz D. Messner, on September 21, 2023.



Notary Public

My Commission



David C. House, Attorney At Law
NOTARY PUBLIC - STATE OF OHIO
My commission has no expiration date
Sec. 147.03 R.C.

Notary ID Number _____

VERIFICATION

The undersigned, Michael M. Spaeth, being duly sworn, deposes and says he is the Regulatory Pricing and Analysis Manager for American Electric Power Service Corporation, that he has personal knowledge of the matters set forth in the foregoing responses and the information contained therein is true and correct to the best of his information, knowledge, and belief.



Michael M. Spaeth

Franklin County)
Ohio)

Case No. 2023-00159

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Michael M. Spaeth, on 9/12/23.



Notary Public

My Commission Expires Never

Notary ID Number No ID



Paul D. Flory
Attorney At Law
Notary Public, State of Ohio
My commission has no expiration date
Sec. 147.03 R.C.

VERIFICATION

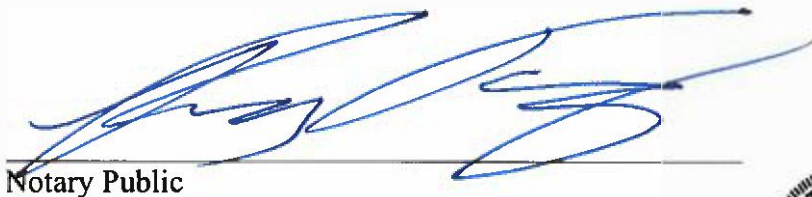
The undersigned, Alex E. Vaughan, being duly sworn, deposes and says he is the Managing Director for Renewables and Fuel Strategy for American Electric Power Service Corporation, that he has personal knowledge of the matters set forth in the foregoing responses and the information contained therein is true and correct to the best of his information, knowledge, and belief.


Alex E. Vaughan

Franklin County)
Ohio)

Case No. 2023-00159

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Alex E. Vaughan, on 9/20/23.


Notary Public

My Commission Expires Never

Notary ID Number NO ID



Paul D. Flory
Attorney At Law
Notary Public, State of Ohio
My commission has no expiration date
Sec.147.03 R.C.

VERIFICATION

The undersigned, Katharine I. Walsh, being duly sworn, deposes and says she is a Director of Regulatory Pricing and Analysis for American Electric Power Service Corporation, that she has personal knowledge of the matters set forth in the foregoing responses and the information contained therein is true and correct to the best of her information, knowledge, and belief.

Katharine I. Walsh

Katharine I. Walsh

Franklin County)
Ohio)

Case No. 2023-00159

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Katharine I. Walsh, on 9/20/23.

Paul D. Flory

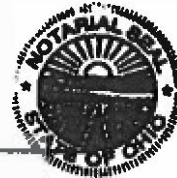
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Paul D. Flory
Attorney At Law
Notary Public, State of Ohio
My commission has no expiration date
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E-Signature Summary

E-Signature 1: Heather M. Whitney (HMW)
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 hmwhitney@aep.com (Principal) (Personally Known)

E-Signature Notary: Marilyn Michelle Caldwell (MMC)
 September 22, 2023 07:12:40 -8:00 [5F5FFD3F1EF5] [167.239.221.104]
 mmcaldwell@aep.com
 I, Marilyn Michelle Caldwell, did witness the participants named above electronically sign this document.



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VERIFICATION

The undersigned, Heather M. Whitney, being duly sworn, deposes and says she is a Director in Regulatory Accounting Services for American Electric Power Service Corporation, that she has personal knowledge of the matters set forth in the foregoing responses and the information contained therein is true and correct to the best of her information, knowledge, and belief.

Heather M. Whitney
Signed on 2023/09/22 07:12:40 -0500

Heather M. Whitney

Commonwealth of Kentucky)
)
County of Boyd)

Case No. 2023-00159

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Heather M. Whitney, on September 22, 2023.

Notary Pub Marilyn Caldwell
Signed on 2023/09/22 07:12:40 -0500

MARILYN MICHELLE CALDWELL
ONLINE NOTARY PUBLIC
STATE AT LARGE KENTUCKY
Commission # KYNP71841
My Commission Expires May 05, 2027
Notary Public 2023/09/22 07:12:40 -0500

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My Commission Expires _____

Notary ID Number _____

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