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June 9, 2022

KPOW-10311

Electronically Filed in TPUC Docket
Room on June 9, 2022 at 3:48 p.m.

Mr. Jerry Kettles
Director Economic Analysis
Tennessee Public Utility Commission
502 Deaderick Street, 4th Floor
Nashville, TN 37243

VIA EMAIL

Re: IN RE: PETITION OF KINGSFORT POWER
COMPANY d/b/a AEP APPALACHIAN POWER
FOR A GENERAL RATE CASE
DOCKET NO.: 21-00107

Dear Mr. Kettles:

We submit the following in response to Staff inquiries as contained in your letter of June 7, 2022:

1. Provide the orders and/or other underlying source materials for the data on recent state commission equity return decisions depicted in Figure 1 of the Rebuttal Testimony of William K. Castle.

Response: See EXHIBIT 1 supplied herewith.

2. Provide data for daily interest rates for U.S. Treasury securities spanning the time period January 1, 2022 through June 1, 2022. The data should include all U.S. Treasury securities with maturities of one-month to thirty years as included in Table H.15 – Selected Interest Rates made available by the Board of Governors of the Federal Reserve System.

Response: See EXHIBIT 2 supplied herewith.

The original and four copies are being sent by overnight delivery on Friday, June 10, 2022.

Please contact the writer with any questions/concerns.

Very sincerely yours,

HUNTER, SMITH & DAVIS, LLP



William C. Bovender

Enclosure: As stated

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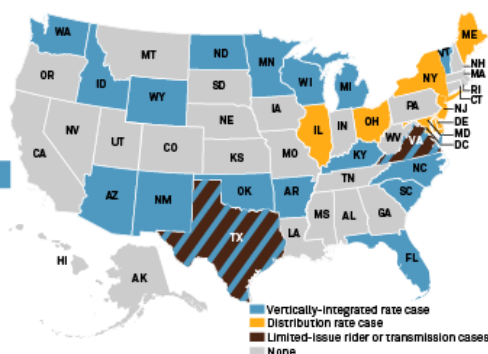
2022-03-25	0.53	0.98	0.17	1.62	0.17	0.55	1.01	1.67	2.3	2.51	2.55	2.56	2.48	2.74	2.6
2022-03-28	0.6	1.06	0.18	1.63	0.19	0.59	1.08	1.69	2.35	2.55	2.54	2.55	2.46	2.72	2.57
2022-03-29	0.56	1.03	0.17	1.62	0.18	0.55	1.06	1.67	2.35	2.54	2.49	2.5	2.41	2.68	2.53
2022-03-30	0.55	1.01	0.13	1.58	0.16	0.55	1.04	1.64	2.31	2.49	2.44	2.43	2.35	2.63	2.48
2022-03-31	0.51	1.02	0.17	1.57	0.17	0.52	1.06	1.63	2.28	2.45	2.42	2.4	2.32	2.59	2.44
2022-04-01	0.52	1.05	0.15	1.65	0.15	0.53	1.09	1.72	2.44	2.61	2.55	2.5	2.39	2.6	2.44
2022-04-04	0.67	1.12	0.17	1.65	0.18	0.66	1.14	1.72	2.43	2.61	2.56	2.52	2.42	2.64	2.48
2022-04-05	0.65	1.11	0.17	1.69	0.18	0.65	1.13	1.77	2.51	2.69	2.69	2.65	2.54	2.74	2.57
2022-04-06	0.67	1.13	0.19	1.71	0.21	0.67	1.15	1.79	2.5	2.67	2.7	2.69	2.61	2.81	2.63
2022-04-07	0.68	1.12	0.21	1.69	0.21	0.68	1.15	1.78	2.47	2.66	2.7	2.73	2.66	2.87	2.69
2022-04-08	0.69	1.16	0.2	1.72	0.2	0.7	1.19	1.81	2.53	2.73	2.76	2.79	2.72	2.94	2.76
2022-04-11	0.78	1.22	0.21	1.75	0.22	0.77	1.23	1.85	2.5	2.73	2.79	2.84	2.79	3.02	2.84
2022-04-12	0.74	1.18	0.19	1.67	0.21	0.74	1.2	1.77	2.39	2.58	2.66	2.73	2.72	2.99	2.82
2022-04-13	0.75	1.17	0.23	1.67	0.26	0.75	1.2	1.78	2.37	2.57	2.66	2.71	2.7	2.97	2.81
2022-04-14	0.78	1.22	0.37	1.73	0.37	0.79	1.25	1.84	2.47	2.67	2.79	2.84	2.83	3.09	2.92
2022-04-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2022-04-18	0.82	1.25	0.37	1.72	0.38	0.81	1.27	1.84	2.46	2.68	2.79	2.85	2.85	3.12	2.95
2022-04-19	0.82	1.26	0.35	1.89	0.37	0.81	1.28	1.94	2.61	2.81	2.91	2.95	2.93	3.19	3.01
2022-04-20	0.82	1.26	0.33	1.88	0.35	0.82	1.29	1.93	2.6	2.79	2.87	2.88	2.85	3.08	2.9
2022-04-21	0.82	1.29	0.5	1.96	0.5	0.83	1.32	2.01	2.68	2.87	2.96	2.96	2.9	3.12	2.94
2022-04-22	0.82	1.3	0.46	2	0.46	0.83	1.34	2.06	2.72	2.88	2.94	2.95	2.9	3.14	2.95
2022-04-25	0.93	1.4	0.39	1.96	0.4	0.91	1.42	2.03	2.63	2.79	2.84	2.85	2.81	3.06	2.88
2022-04-26	0.84	1.37	0.36	1.92	0.38	0.83	1.4	1.99	2.54	2.72	2.79	2.8	2.77	3.03	2.86
2022-04-27	0.82	1.36	0.35	1.91	0.37	0.82	1.39	1.97	2.58	2.75	2.81	2.84	2.82	3.08	2.91
2022-04-28	0.81	1.35	0.37	1.96	0.37	0.82	1.38	2.04	2.63	2.8	2.86	2.88	2.85	3.1	2.92
2022-04-29	0.83	1.37	0.37	2.02	0.37	0.85	1.41	2.1	2.7	2.87	2.92	2.94	2.89	3.14	2.96
2022-05-02	0.9	1.45	0.38	2.01	0.41	0.9	1.49	2.1	2.73	2.93	3.01	3.04	2.99	3.26	3.07
2022-05-03	0.9	1.41	0.44	2.07	0.48	0.91	1.45	2.16	2.78	2.95	3.01	3.03	2.97	3.21	3.03
2022-05-04	0.88	1.39	0.45	1.98	0.49	0.89	1.44	2.07	2.66	2.85	2.93	2.97	2.93	3.21	3.01
2022-05-05	0.84	1.33	0.49	1.98	0.49	0.85	1.37	2.08	2.71	2.91	3.01	3.07	3.05	3.35	3.15
2022-05-06	0.84	1.36	0.48	1.98	0.48	0.85	1.41	2.08	2.72	2.94	3.06	3.13	3.12	3.43	3.23
2022-05-09	0.92	1.39	0.49	1.89	0.51	0.92	1.43	1.99	2.61	2.81	2.95	3.04	3.05	3.38	3.19
2022-05-10	0.89	1.4	0.55	1.9	0.57	0.89	1.44	2.01	2.62	2.81	2.91	2.99	2.99	3.31	3.12
2022-05-11	0.9	1.39	0.56	1.88	0.59	0.91	1.43	1.99	2.66	2.81	2.89	2.94	2.91	3.25	3.05
2022-05-12	0.95	1.39	0.6	1.85	0.61	0.96	1.44	1.96	2.56	2.73	2.81	2.86	2.84	3.22	3
2022-05-13	1.01	1.42	0.66	1.92	0.67	1.03	1.47	2.04	2.61	2.79	2.89	2.95	2.93	3.32	3.1
2022-05-16	1.07	1.5	0.62	1.96	0.64	1.07	1.54	2.07	2.58	2.75	2.83	2.89	2.88	3.3	3.09
2022-05-17	1.06	1.52	0.58	2.02	0.61	1.06	1.57	2.16	2.71	2.89	2.96	3	2.98	3.36	3.17
2022-05-18	1.02	1.52	0.5	2.1	0.56	1.03	1.56	2.16	2.68	2.84	2.89	2.91	2.89	3.24	3.07
2022-05-19	1.04	1.47	0.65	2.05	0.65	1.05	1.52	2.11	2.63	2.78	2.84	2.87	2.84	3.24	3.05
2022-05-20	1.01	1.46	0.62	2.01	0.63	1.03	1.51	2.07	2.6	2.73	2.8	2.82	2.78	3.17	2.99
2022-05-23	1.07	1.53	0.52	2.02	0.55	1.07	1.57	2.09	2.65	2.8	2.88	2.9	2.86	3.26	3.08
2022-05-24	1.05	1.49	0.51	1.95	0.55	1.06	1.53	2.02	2.5	2.66	2.76	2.8	2.76	3.16	2.98
2022-05-25	1.05	1.48	0.52	1.94	0.58	1.06	1.52	2.01	2.48	2.63	2.71	2.76	2.75	3.14	2.97
2022-05-26	1.06	1.48	0.7	1.93	0.71	1.07	1.52	1.99	2.46	2.63	2.7	2.75	2.75	3.18	2.99
2022-05-27	1.06	1.49	0.68	1.94	0.69	1.08	1.54	2.01	2.47	2.64	2.71	2.76	2.74	3.16	2.97
2022-05-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2022-05-31	1.13	1.6	0.71	2	0.73	1.16	1.64	2.08	2.53	2.71	2.81	2.87	2.85	3.28	3.07
2022-06-01	1.12	1.59	0.75	2.08	0.77	1.15	1.63	2.16	2.66	2.84	2.94	2.98	2.94	3.31	3.09

Vertically integrated cases

AR	Entergy Arkansas LLC	9.65
AZ	Arizona Public Service Co.	8.70
FL	Duke Energy Florida LLC	9.85
	Tampa Electric Co.	9.95
	Florida Power & Light Co.	10.60
ID	Avista Corp.	9.40
	Kentucky Power Co.	9.30
KY	Kentucky Utilities Co.	9.43
	Louisville Gas and Electric Co.	9.43
MI	Consumers Energy Co.	9.90
MN	Otter Tail Power Co.	9.48
NC	Duke Energy Carolinas LLC	9.60
	Duke Energy Progress LLC	9.60
ND	Northern States Power Co.	9.50
NM	El Paso Electric Co.	9.00
OK	Public Service Co. of Oklahoma	9.40
SC	Dominion Energy South Carolina Inc.	9.50
TX	Southwestern Electric Power Co.	9.25
VA	Virginia Electric and Power Co.	9.35
VT	Green Mountain Power Corp.	8.57
WA	Avista Corp.	9.40
	Northern States Power Co.	10.00
WI	Wisconsin Power and Light Co.	10.00
	Madison Gas and Electric Co.	9.80
WY	PacifiCorp	9.50

Data compiled Feb. 22, 2022.
Source: Regulatory Research Associates, a group within S&P Global Market Intelligence

Electric ROE authorizations in 2021



Distribution-only cases

OH	Ohio Power Co.	9.70
NY	Central Hudson Gas & Electric Corp.	9.00
	Rockland Electric Co.	9.60
	Atlantic City Electric Co.	9.60
NJ		
ME	Versant Power	9.35
MD	Potomac Electric Power Co.	9.55
	Ameren Illinois Co.	7.36
IL	Commonwealth Edison Co.	7.36
DE	Delmarva Power & Light Co.	9.60
DC	Potomac Electric Power Co.	9.28

Limited-Issue rider cases

	Virginia Electric and Power Co.	9.20
	Virginia Electric and Power Co.	9.20
	Appalachian Power Co.	9.20
	Virginia Electric and Power Co.	9.20
	Virginia Electric and Power Co.	9.20
	Appalachian Power Co.	9.20
	Virginia Electric and Power Co.	9.20
	Virginia Electric and Power Co.	10.20
	Virginia Electric and Power Co.	9.20
	Virginia Electric and Power Co.	9.20
	Virginia Electric and Power Co.	9.20
	Virginia Electric and Power Co.	9.20
	Virginia Electric and Power Co.	9.20
	Virginia Electric and Power Co.	9.20
	Virginia Electric and Power Co.	9.20
	Virginia Electric and Power Co.	9.20
	Virginia Electric and Power Co.	9.20
	Virginia Electric and Power Co.	9.34
	Virginia Electric and Power Co.	10.20
	Virginia Electric and Power Co.	10.20

Transmission case

TX	Sharyland Utilities LLC	9.38
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Of the 54 ROE determinations in 2021, 25 were authorized in vertically integrated cases, 10 were authorized in distribution-only cases, 18 were authorized in limited-issue rider proceedings, and one was authorized in a transmission case. In 2021, 29 of the 54 cases with ROE determinations were fully litigated and 25 were settled.

In the 25 vertically integrated cases decided in 2021, authorized returns ranged from 8.57% to 10.60%, averaging 9.53% with a median of 9.50%.

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H.15 Selected Interest Rates for Jun 07, 2022

Series Description	3-month T	6-month T	4-week Tr	1-year Tre	Market yiel	Market yiel	Market yiel	Market yiel
Unit:	Percent: _F	Percent: _F	Percent: _F	Percent: _F	Percent: _F	Percent: _F	Percent: _F	Percent: _F
Multiplier:	1	1	1	1	1	1	1	1
Currency:	NA	NA	NA	NA	NA	NA	NA	NA
Unique Identifier:	H15/H15/F	H15/H15/F	H15/H15/F	H15/H15/F	H15/H15/F	H15/H15/F	H15/H15/F	H15/H15/F
Time Period	RIFSGFS	RIFSGFS	RIFSGFS	RIFSGFS	RIFLGFC	RIFLGFC	RIFLGFC	RIFLGFC
2022-01-03	0.09	0.22	0.05	0.39	0.05	0.08	0.22	0.4
2022-01-04	0.08	0.23	0.06	0.37	0.06	0.08	0.22	0.38
2022-01-05	0.09	0.23	0.05	0.4	0.05	0.09	0.22	0.41
2022-01-06	0.1	0.23	0.04	0.43	0.04	0.1	0.23	0.45
2022-01-07	0.1	0.24	0.05	0.41	0.05	0.1	0.24	0.43
2022-01-10	0.13	0.29	0.05	0.44	0.05	0.13	0.28	0.46
2022-01-11	0.12	0.28	0.04	0.44	0.04	0.11	0.28	0.46
2022-01-12	0.12	0.28	0.04	0.45	0.04	0.12	0.27	0.48
2022-01-13	0.12	0.28	0.05	0.45	0.05	0.12	0.28	0.47
2022-01-14	0.13	0.3	0.05	0.48	0.05	0.13	0.3	0.51
2022-01-17	ND	ND	ND	ND	ND	ND	ND	ND
2022-01-18	0.17	0.37	0.05	0.55	0.05	0.16	0.37	0.58
2022-01-19	0.17	0.36	0.05	0.53	0.05	0.17	0.36	0.57
2022-01-20	0.18	0.36	0.05	0.56	0.05	0.17	0.36	0.6
2022-01-21	0.17	0.35	0.05	0.54	0.05	0.17	0.35	0.58
2022-01-24	0.2	0.39	0.05	0.55	0.05	0.19	0.39	0.58
2022-01-25	0.2	0.39	0.05	0.64	0.05	0.19	0.39	0.65
2022-01-26	0.19	0.4	0.05	0.69	0.06	0.19	0.4	0.7
2022-01-27	0.2	0.43	0.04	0.74	0.04	0.2	0.43	0.75
2022-01-28	0.19	0.43	0.04	0.74	0.04	0.19	0.43	0.75
2022-01-31	0.24	0.49	0.03	0.76	0.03	0.22	0.49	0.78
2022-02-01	0.2	0.48	0.04	0.76	0.04	0.19	0.48	0.78
2022-02-02	0.2	0.45	0.04	0.74	0.04	0.19	0.45	0.76
2022-02-03	0.21	0.48	0.03	0.75	0.03	0.2	0.48	0.78
2022-02-04	0.23	0.55	0.05	0.86	0.05	0.23	0.56	0.89
2022-02-07	0.28	0.59	0.03	0.85	0.03	0.27	0.58	0.88
2022-02-08	0.27	0.59	0.03	0.87	0.03	0.25	0.59	0.91
2022-02-09	0.27	0.57	0.03	0.87	0.04	0.26	0.57	0.91
2022-02-10	0.41	0.74	0.05	1.09	0.05	0.4	0.74	1.14
2022-02-11	0.37	0.7	0.03	1.03	0.03	0.36	0.71	1.07
2022-02-14	0.45	0.77	0.03	1.08	0.03	0.43	0.76	1.13
2022-02-15	0.41	0.72	0.02	1.05	0.02	0.4	0.72	1.11
2022-02-16	0.39	0.67	0.03	1.04	0.03	0.38	0.67	1.09
2022-02-17	0.37	0.65	0.06	0.99	0.06	0.36	0.65	1.05
2022-02-18	0.35	0.65	0.03	0.97	0.03	0.35	0.65	1.03
2022-02-21	ND	ND	ND	ND	ND	ND	ND	ND
2022-02-22	0.39	0.74	0.03	1.15	0.03	0.37	0.73	1.17
2022-02-23	0.36	0.74	0.02	1.14	0.02	0.34	0.74	1.16
2022-02-24	0.33	0.64	0.05	1.06	0.05	0.32	0.65	1.08
2022-02-25	0.33	0.71	0.03	1.11	0.03	0.33	0.71	1.13
2022-02-28	0.37	0.68	0.06	0.98	0.06	0.35	0.69	1.01
2022-03-01	0.32	0.59	0.1	0.88	0.11	0.32	0.6	0.91
2022-03-02	0.33	0.66	0.12	1.03	0.13	0.34	0.68	1.06
2022-03-03	0.37	0.67	0.19	1.05	0.19	0.38	0.69	1.08

2022-03-04	0.33	0.66	0.15	1.02	0.15	0.34	0.69	1.05
2022-03-07	0.38	0.73	0.17	1.03	0.17	0.38	0.75	1.07
2022-03-08	0.36	0.7	0.15	1.07	0.16	0.36	0.72	1.12
2022-03-09	0.38	0.73	0.17	1.1	0.18	0.38	0.75	1.15
2022-03-10	0.38	0.73	0.19	1.13	0.19	0.39	0.75	1.19
2022-03-11	0.39	0.75	0.17	1.15	0.17	0.4	0.78	1.22
2022-03-14	0.45	0.84	0.22	1.2	0.23	0.45	0.86	1.28
2022-03-15	0.46	0.84	0.21	1.19	0.22	0.46	0.86	1.28
2022-03-16	0.43	0.84	0.23	1.26	0.24	0.44	0.86	1.35
2022-03-17	0.4	0.79	0.2	1.2	0.2	0.4	0.81	1.3
2022-03-18	0.41	0.8	0.19	1.19	0.19	0.42	0.83	1.29
2022-03-21	0.55	0.93	0.21	1.28	0.22	0.54	0.95	1.4
2022-03-22	0.51	0.94	0.2	1.56	0.2	0.51	0.96	1.59
2022-03-23	0.5	0.9	0.14	1.49	0.15	0.5	0.93	1.52
2022-03-24	0.5	0.93	0.16	1.51	0.16	0.52	0.96	1.55
2022-03-25	0.53	0.98	0.17	1.62	0.17	0.55	1.01	1.67
2022-03-28	0.6	1.06	0.18	1.63	0.19	0.59	1.08	1.69
2022-03-29	0.56	1.03	0.17	1.62	0.18	0.55	1.06	1.67
2022-03-30	0.55	1.01	0.13	1.58	0.16	0.55	1.04	1.64
2022-03-31	0.51	1.02	0.17	1.57	0.17	0.52	1.06	1.63
2022-04-01	0.52	1.05	0.15	1.65	0.15	0.53	1.09	1.72
2022-04-04	0.67	1.12	0.17	1.65	0.18	0.66	1.14	1.72
2022-04-05	0.65	1.11	0.17	1.69	0.18	0.65	1.13	1.77
2022-04-06	0.67	1.13	0.19	1.71	0.21	0.67	1.15	1.79
2022-04-07	0.68	1.12	0.21	1.69	0.21	0.68	1.15	1.78
2022-04-08	0.69	1.16	0.2	1.72	0.2	0.7	1.19	1.81
2022-04-11	0.78	1.22	0.21	1.75	0.22	0.77	1.23	1.85
2022-04-12	0.74	1.18	0.19	1.67	0.21	0.74	1.2	1.77
2022-04-13	0.75	1.17	0.23	1.67	0.26	0.75	1.2	1.78
2022-04-14	0.78	1.22	0.37	1.73	0.37	0.79	1.25	1.84
2022-04-15	ND	ND	ND	ND	ND	ND	ND	ND
2022-04-18	0.82	1.25	0.37	1.72	0.38	0.81	1.27	1.84
2022-04-19	0.82	1.26	0.35	1.89	0.37	0.81	1.28	1.94
2022-04-20	0.82	1.26	0.33	1.88	0.35	0.82	1.29	1.93
2022-04-21	0.82	1.29	0.5	1.96	0.5	0.83	1.32	2.01
2022-04-22	0.82	1.3	0.46	2	0.46	0.83	1.34	2.06
2022-04-25	0.93	1.4	0.39	1.96	0.4	0.91	1.42	2.03
2022-04-26	0.84	1.37	0.36	1.92	0.38	0.83	1.4	1.99
2022-04-27	0.82	1.36	0.35	1.91	0.37	0.82	1.39	1.97
2022-04-28	0.81	1.35	0.37	1.96	0.37	0.82	1.38	2.04
2022-04-29	0.83	1.37	0.37	2.02	0.37	0.85	1.41	2.1
2022-05-02	0.9	1.45	0.38	2.01	0.41	0.9	1.49	2.1
2022-05-03	0.9	1.41	0.44	2.07	0.48	0.91	1.45	2.16
2022-05-04	0.88	1.39	0.45	1.98	0.49	0.89	1.44	2.07
2022-05-05	0.84	1.33	0.49	1.98	0.49	0.85	1.37	2.08
2022-05-06	0.84	1.36	0.48	1.98	0.48	0.85	1.41	2.08
2022-05-09	0.92	1.39	0.49	1.89	0.51	0.92	1.43	1.99
2022-05-10	0.89	1.4	0.55	1.9	0.57	0.89	1.44	2.01
2022-05-11	0.9	1.39	0.56	1.88	0.59	0.91	1.43	1.99
2022-05-12	0.95	1.39	0.6	1.85	0.61	0.96	1.44	1.96
2022-05-13	1.01	1.42	0.66	1.92	0.67	1.03	1.47	2.04
2022-05-16	1.07	1.5	0.62	1.96	0.64	1.07	1.54	2.07

2022-05-17		1.06	1.52	0.58	2.02	0.61	1.06	1.57	2.16
2022-05-18		1.02	1.52	0.5	2.1	0.56	1.03	1.56	2.16
2022-05-19		1.04	1.47	0.65	2.05	0.65	1.05	1.52	2.11
2022-05-20		1.01	1.46	0.62	2.01	0.63	1.03	1.51	2.07
2022-05-23		1.07	1.53	0.52	2.02	0.55	1.07	1.57	2.09
2022-05-24		1.05	1.49	0.51	1.95	0.55	1.06	1.53	2.02
2022-05-25		1.05	1.48	0.52	1.94	0.58	1.06	1.52	2.01
2022-05-26		1.06	1.48	0.7	1.93	0.71	1.07	1.52	1.99
2022-05-27		1.06	1.49	0.68	1.94	0.69	1.08	1.54	2.01
2022-05-30	ND	ND	ND	ND	ND	ND	ND	ND	
2022-05-31		1.13	1.6	0.71	2	0.73	1.16	1.64	2.08
2022-06-01		1.12	1.59	0.75	2.08	0.77	1.15	1.63	2.16

Market yield Market yield Market yield Market yield Market yield Market yield Market yield on U.S. Treasury securities at 3
Percent: _F Percent: _F Percent: _F Percent: _F Percent: _F Percent: _F Percent: _Per_Year

1 1 1 1 1 1 1
NA NA NA NA NA NA NA
H15/H15/F H15/H15/F H15/H15/F H15/H15/F H15/H15/F H15/H15/F H15/H15/RIFLGFCY30_N.B
RIFLGFCY RIFLGFCY RIFLGFCY RIFLGFCY RIFLGFCY RIFLGFCY RIFLGFCY30_N.B

0.78	1.04	1.37	1.55	1.63	2.05	2.01
0.77	1.02	1.37	1.57	1.66	2.1	2.07
0.83	1.1	1.43	1.62	1.71	2.12	2.09
0.88	1.15	1.47	1.66	1.73	2.12	2.09
0.87	1.17	1.5	1.69	1.76	2.15	2.11
0.92	1.21	1.53	1.71	1.78	2.15	2.11
0.9	1.22	1.51	1.69	1.75	2.13	2.08
0.92	1.21	1.5	1.67	1.74	2.13	2.08
0.91	1.18	1.47	1.64	1.7	2.1	2.05
0.99	1.26	1.55	1.72	1.78	2.18	2.12
ND	ND	ND	ND	ND	ND	ND
1.06	1.35	1.65	1.82	1.87	2.24	2.18
1.04	1.33	1.62	1.78	1.83	2.2	2.14
1.08	1.34	1.62	1.77	1.83	2.19	2.14
1.01	1.28	1.54	1.7	1.75	2.13	2.07
0.99	1.25	1.53	1.69	1.75	2.15	2.1
1.02	1.28	1.56	1.73	1.78	2.18	2.12
1.13	1.39	1.66	1.81	1.85	2.22	2.16
1.18	1.43	1.66	1.78	1.81	2.17	2.09
1.15	1.38	1.61	1.74	1.78	2.14	2.07
1.18	1.39	1.62	1.75	1.79	2.17	2.11
1.18	1.39	1.63	1.76	1.81	2.19	2.12
1.16	1.38	1.6	1.74	1.78	2.17	2.11
1.19	1.42	1.66	1.78	1.82	2.2	2.14
1.31	1.55	1.78	1.9	1.93	2.29	2.23
1.3	1.54	1.76	1.88	1.92	2.28	2.22
1.35	1.59	1.81	1.93	1.96	2.31	2.25
1.36	1.61	1.82	1.92	1.94	2.31	2.25
1.61	1.82	1.96	2.03	2.03	2.37	2.3
1.5	1.71	1.84	1.92	1.92	2.3	2.24
1.58	1.8	1.9	1.98	1.98	2.35	2.29
1.58	1.8	1.94	2.03	2.05	2.42	2.37
1.52	1.75	1.9	2	2.03	2.39	2.34
1.49	1.7	1.85	1.94	1.97	2.35	2.31
1.47	1.68	1.82	1.9	1.92	2.3	2.24
ND	ND	ND	ND	ND	ND	ND
1.56	1.74	1.85	1.93	1.94	2.31	2.24
1.58	1.78	1.89	1.98	1.99	2.36	2.29
1.54	1.73	1.84	1.94	1.96	2.36	2.28
1.55	1.76	1.86	1.96	1.97	2.37	2.29
1.44	1.62	1.71	1.81	1.83	2.25	2.17
1.31	1.47	1.56	1.67	1.72	2.19	2.11
1.5	1.67	1.74	1.83	1.86	2.32	2.24
1.53	1.69	1.74	1.82	1.86	2.32	2.24

	1.5	1.62	1.65	1.7	1.74	2.23	2.16
	1.55	1.68	1.71	1.77	1.78	2.29	2.19
	1.63	1.78	1.8	1.85	1.86	2.34	2.24
	1.68	1.83	1.87	1.92	1.94	2.38	2.29
	1.72	1.88	1.92	1.98	1.98	2.45	2.38
	1.75	1.91	1.96	2.01	2	2.45	2.36
	1.87	2.04	2.1	2.16	2.14	2.56	2.47
	1.85	2.04	2.1	2.16	2.15	2.57	2.49
	1.95	2.14	2.18	2.22	2.19	2.56	2.46
	1.94	2.14	2.17	2.22	2.2	2.6	2.5
	1.97	2.15	2.14	2.17	2.14	2.53	2.42
	2.14	2.34	2.33	2.36	2.32	2.67	2.55
	2.18	2.38	2.39	2.42	2.38	2.71	2.6
	2.13	2.32	2.34	2.37	2.32	2.65	2.52
	2.13	2.35	2.37	2.39	2.34	2.63	2.51
	2.3	2.51	2.55	2.56	2.48	2.74	2.6
	2.35	2.55	2.54	2.55	2.46	2.72	2.57
	2.35	2.54	2.49	2.5	2.41	2.68	2.53
	2.31	2.49	2.44	2.43	2.35	2.63	2.48
	2.28	2.45	2.42	2.4	2.32	2.59	2.44
	2.44	2.61	2.55	2.5	2.39	2.6	2.44
	2.43	2.61	2.56	2.52	2.42	2.64	2.48
	2.51	2.69	2.69	2.65	2.54	2.74	2.57
	2.5	2.67	2.7	2.69	2.61	2.81	2.63
	2.47	2.66	2.7	2.73	2.66	2.87	2.69
	2.53	2.73	2.76	2.79	2.72	2.94	2.76
	2.5	2.73	2.79	2.84	2.79	3.02	2.84
	2.39	2.58	2.66	2.73	2.72	2.99	2.82
	2.37	2.57	2.66	2.71	2.7	2.97	2.81
	2.47	2.67	2.79	2.84	2.83	3.09	2.92
ND	ND	ND	ND	ND	ND	ND	ND
	2.46	2.68	2.79	2.85	2.85	3.12	2.95
	2.61	2.81	2.91	2.95	2.93	3.19	3.01
	2.6	2.79	2.87	2.88	2.85	3.08	2.9
	2.68	2.87	2.96	2.96	2.9	3.12	2.94
	2.72	2.88	2.94	2.95	2.9	3.14	2.95
	2.63	2.79	2.84	2.85	2.81	3.06	2.88
	2.54	2.72	2.79	2.8	2.77	3.03	2.86
	2.58	2.75	2.81	2.84	2.82	3.08	2.91
	2.63	2.8	2.86	2.88	2.85	3.1	2.92
	2.7	2.87	2.92	2.94	2.89	3.14	2.96
	2.73	2.93	3.01	3.04	2.99	3.26	3.07
	2.78	2.95	3.01	3.03	2.97	3.21	3.03
	2.66	2.85	2.93	2.97	2.93	3.21	3.01
	2.71	2.91	3.01	3.07	3.05	3.35	3.15
	2.72	2.94	3.06	3.13	3.12	3.43	3.23
	2.61	2.81	2.95	3.04	3.05	3.38	3.19
	2.62	2.81	2.91	2.99	2.99	3.31	3.12
	2.66	2.81	2.89	2.94	2.91	3.25	3.05
	2.56	2.73	2.81	2.86	2.84	3.22	3
	2.61	2.79	2.89	2.95	2.93	3.32	3.1
	2.58	2.75	2.83	2.89	2.88	3.3	3.09

	2.71	2.89	2.96	3	2.98	3.36	3.17
	2.68	2.84	2.89	2.91	2.89	3.24	3.07
	2.63	2.78	2.84	2.87	2.84	3.24	3.05
	2.6	2.73	2.8	2.82	2.78	3.17	2.99
	2.65	2.8	2.88	2.9	2.86	3.26	3.08
	2.5	2.66	2.76	2.8	2.76	3.16	2.98
	2.48	2.63	2.71	2.76	2.75	3.14	2.97
	2.46	2.63	2.7	2.75	2.75	3.18	2.99
	2.47	2.64	2.71	2.76	2.74	3.16	2.97
ND	ND	ND	ND	ND	ND	ND	
	2.53	2.71	2.81	2.87	2.85	3.28	3.07
	2.66	2.84	2.94	2.98	2.94	3.31	3.09

0-year constant maturity, quoted on investment basis