

HLB Option Sensitivity Analysis for HLB-Option, Flipper, and Knockout Advances

The Federal Home Loan Bank of Boston (Bank) is providing estimated valuations of the specific aforementioned advances for members' information and convenience only. The estimated valuations are generated by models obtained from external sources which are used for the Bank's own asset/liability management purposes. The models include the use of specific assumptions, for example, market volatility and discount curve adjusted for the Bank's spread, to estimate the value of the advance. The valuations represent theoretical market values only and should not be construed as a liquidation price for the aforementioned advances.

It is expressly understood that in providing this valuation information to members, the Bank is not performing any advisory service. The valuations are being provided without representation or warranty and the member shall be solely responsible for any decision it makes or actions it takes based on the valuations provided. It is recommended that institutions maintain independent capabilities to value their asset/liability positions, including the aforementioned advances.

The table depicts valuation estimates resulting from immediate, parallel interest-rate movements. In order to rule out negative interest rates, our model applies an effective floor of plus ten basis points to the yield curve for all down-rate scenarios. As a result, large down-rate shocks will reflect valuation at the floor rate of ten basis points in place of any negative interest rates that would otherwise be produced. Please note that the valuation estimates are from the Bank's perspective. Since the member holds the advance as a liability, positive price changes in the table correspond to the advance having a negative impact on the member's estimated market value of portfolio equity (and vice versa). The theoretical argument follows that as interest rates rise, the value of the advance to the Bank falls. In the case of an HLB-Option or a Flipper advance, the Bank would likely exercise its option to cancel the advance as the value falls below 100. In the case of a Knockout advance, the Bank is obligated to terminate the advance on any specified cancellation date if LIBOR is equal to or greater than the predetermined "strike rate." In either case, the member's cost to prepay the advance increases as interest rates fall.

To identify your advance, locate the appropriate start date and maturity date and then verify the coupon rate. The report is sorted in ascending order by start date, followed by coupon. Once the appropriate structure is determined, read across to view the sensitivity analysis that has been performed on the advance.

If you have any questions or would like further explanation of this analysis, contact Member Financial Strategies at 1-800-292-9644.

Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
7/30/2007	1/30/2019	10/30/2017	3.99000	105.72973	105.72973	104.96412	103.53282	102.12837	100.76634	99.99648	99.83707
9/4/2007	9/5/2017	9/5/2017	3.89000	100.05403	100.05403	100.05225	100.03854	100.02491	100.01134	99.99785	99.98442
9/10/2007	9/11/2017	9/11/2017	3.69000	100.11274	100.11274	100.10884	100.07873	100.04878	100.01899	99.98935	99.95987
9/11/2007	9/11/2017	9/11/2017	3.59000	100.10969	100.10969	100.10579	100.07568	100.04573	100.01594	99.98631	99.95682
9/13/2007	9/13/2017	9/13/2017	3.99000	100.14407	100.14407	100.13946	100.10388	100.06848	100.03327	99.99824	99.96340
9/27/2007	9/27/2017	9/27/2017	3.65000	100.27366	100.27366	100.26413	100.19021	100.11670	100.04360	99.97091	99.89863
10/11/2007	10/11/2017	10/11/2017	3.99000	100.45430	100.45430	100.43987	100.32885	100.21839	100.10860	99.99946	99.89098
10/15/2007	10/16/2017	10/16/2017	3.99000	100.50972	100.50972	100.49325	100.36723	100.24191	100.11741	99.99366	99.87068
10/26/2007	10/26/2017	10/26/2017	3.39000	100.52721	100.52721	100.50676	100.35333	100.20087	100.04942	99.89894	99.74942
11/5/2007	11/6/2017	11/6/2017	4.39000	100.81690	100.81690	100.79151	100.60764	100.42494	100.24361	100.06342	99.88444
11/6/2007	11/6/2017	11/6/2017	3.48000	100.64754	100.64754	100.62218	100.43854	100.25607	100.07496	99.89500	99.71625
11/19/2007	11/20/2017	11/20/2017	4.29000	100.96512	100.96512	100.93231	100.70971	100.48862	100.26905	100.05121	99.83480
11/20/2007	11/20/2017	11/20/2017	3.74000	100.84137	100.84137	100.80859	100.58618	100.36528	100.14589	99.92823	99.71201
11/23/2007	11/24/2017	11/24/2017	3.99000	100.94195	100.94195	100.90662	100.67340	100.44182	100.21189	99.98367	99.75707
11/29/2007	11/29/2017	11/29/2017	2.95000	100.73737	100.73737	100.69884	100.45225	100.20746	99.96452	99.72326	99.48384
11/30/2007	11/30/2017	11/30/2017	3.19000	100.80623	100.80623	100.76687	100.51674	100.26847	100.02208	99.77737	99.53456
12/10/2007	12/11/2017	9/11/2017	3.45000	100.97737	100.97737	100.92910	100.64936	100.37174	100.09625	99.95332	99.92385
12/24/2007	12/26/2017	12/24/2012	3.99000	101.29662	101.29662	101.23232	100.91097	100.59223	100.27605	99.96242	99.65130
1/7/2008	1/8/2018	10/10/2017	2.59000	100.93515	100.93515	100.85399	100.49797	100.14496	99.94483	99.83660	99.72901
1/8/2008	1/8/2018	10/10/2017	2.57000	100.92792	100.92792	100.84677	100.49077	100.13777	99.94261	99.83438	99.72680
1/8/2008	1/8/2018	10/10/2017	2.64000	100.95320	100.95320	100.87204	100.51598	100.16293	99.95037	99.84213	99.73454
1/11/2008	1/11/2018	10/11/2017	2.72000	101.00476	101.00476	100.91924	100.55491	100.19368	99.95827	99.84735	99.73709
1/14/2008	1/16/2018	10/16/2017	3.24000	101.24187	101.24187	101.14849	100.77001	100.39481	100.02906	99.89534	99.77171
1/16/2008	1/16/2018	10/16/2017	2.38000	100.91220	100.91220	100.81896	100.44124	100.06733	99.91019	99.78592	99.66240
1/17/2008	1/17/2018	10/17/2017	2.25000	100.86862	100.86862	100.77385	100.39351	100.02574	99.89020	99.76290	99.63638
1/18/2008	1/18/2018	10/18/2017	2.29000	100.89042	100.89042	100.79409	100.41099	100.03691	99.89326	99.76328	99.63409
2/14/2008	2/14/2018	2/24/2012	3.19000	101.47967	101.47967	101.33449	100.87651	100.42285	99.97348	99.52831	99.08726
3/7/2008	3/7/2018	9/7/2017	3.55000	101.85375	101.85375	101.66606	101.14995	100.63899	100.13666	99.96090	99.94213
3/14/2008	3/14/2018	9/14/2017	2.40000	101.29987	101.29987	101.09836	100.56495	100.06728	99.95414	99.91647	99.87900
3/17/2008	3/19/2018	9/18/2017	3.30000	101.83320	101.83320	101.62113	101.07248	100.52949	100.03726	99.93574	99.88755
4/28/2008	4/30/2018	10/30/2017	2.15000	101.44513	101.44513	101.15111	100.49001	100.01206	99.85086	99.69110	99.53237
4/30/2008	4/30/2018	4/30/2013	3.74000	102.51396	102.51396	102.21867	101.55351	100.89598	100.24593	99.60326	98.96784
5/23/2008	5/23/2018	11/24/2017	3.27000	102.40692	102.40692	102.06976	101.34254	100.62411	100.04717	99.81815	99.59222
6/30/2008	7/2/2018	6/30/2011	3.69000	103.12605	103.12605	102.72089	101.88181	101.05376	100.23652	99.42990	98.63372
7/11/2008	7/11/2018	7/11/2012	3.75000	103.27062	103.27062	102.85066	101.98563	101.13218	100.29008	99.45914	98.63914
7/14/2008	7/16/2018	10/16/2017	2.50000	102.21506	102.21506	101.78984	100.91705	100.13147	99.92548	99.80119	99.67766
7/14/2008	7/16/2018	10/16/2017	3.25000	102.87964	102.87964	102.45321	101.57726	100.71315	100.03850	99.89661	99.77298
7/17/2008	7/17/2018	7/17/2013	3.75000	103.33311	103.33311	102.90431	102.02349	101.15457	100.29735	99.45161	98.61715
8/15/2008	8/15/2018	11/15/2017	3.83000	103.71270	103.71270	103.23964	102.27797	101.33004	100.39999	99.95563	99.75335
12/27/2011	12/27/2021	12/29/2014	3.55000	115.56976	115.56976	111.81818	107.43020	103.24264	99.24534	95.42869	91.78362
7/18/2012	7/18/2018	7/20/2015	2.72000	102.42511	102.42511	101.99644	101.11720	100.24989	99.39428	98.55016	97.71733
10/1/2012	10/1/2019	4/1/2015	2.25000	104.75584	104.75584	103.44766	101.37129	99.34722	97.37382	95.44958	93.57304
10/5/2012	10/5/2017	10/6/2014	1.63000	100.15836	100.15836	100.14598	100.05037	99.95525	99.86069	99.76669	99.67323
3/8/2013	3/8/2018	3/9/2015	1.78000	100.93437	100.93437	100.74533	100.22926	99.71835	99.21255	98.71179	98.21599
5/7/2014	5/7/2018	5/7/2015	1.76000	101.21718	101.21718	100.91047	100.23121	99.55986	98.89630	98.24040	97.59204
10/16/2014	10/16/2018	10/17/2016	2.48000	102.83101	102.83101	102.26457	101.13964	100.03274	98.94328	97.87110	96.81578
10/24/2014	10/24/2018	10/26/2015	1.74000	102.02484	102.02484	101.44739	100.30580	99.18274	98.07766	96.99034	95.92037
2/20/2015	2/20/2019	2/22/2016	1.79000	102.67470	102.67470	101.87812	100.41338	98.97692	97.56809	96.18624	94.83071
3/26/2015	3/26/2019	3/29/2016	1.61000	102.55774	102.55774	101.69169	100.13727	98.61430	97.12201	95.65962	94.22640
3/26/2015	3/26/2020	3/29/2016	1.59000	104.14222	104.14222	102.41406	99.88061	97.42269	95.03770	92.72312	90.47654
6/29/2015	7/1/2019	6/29/2017	2.74000	105.09137	105.09137	103.99891	102.16375	100.37031	98.61743	96.90401	95.22896
7/30/2015	7/30/2019	8/1/2016	1.80000	103.48954	103.48954	102.33728	100.44055	98.58847	96.77978	95.01324	93.28769
8/14/2015	8/14/2025	8/14/2020	1.85000	114.92676	112.50273	106.80501	102.10216	98.32723	95.17538	92.38969	89.79995
8/26/2015	8/26/2025	8/26/2020	1.75000	114.17815	111.81647	106.24361	101.64436	97.93566	94.80807	92.02095	89.41809
9/14/2015	9/14/2020	9/14/2017	1.05000	103.23689	103.23689	101.46981	100.00521	99.95082	99.91298	99.87534	99.83789
9/15/2015	9/16/2019	9/15/2016	1.75000	103.62599	103.62599	102.35975	100.33488	98.36029	96.43443	94.55586	92.72320
9/18/2015	9/18/2020	9/18/2017	1.09000	103.37233	103.37233	101.57337	100.03122	99.94095	99.89230	99.84392	99.79580
9/29/2015	9/30/2019	9/29/2016	1.61000	103.39848	103.39848	102.10041	100.04115	98.03381	96.07676	94.16849	92.30756
10/2/2015	10/2/2020	10/2/2017	0.89000	102.78805	102.78805	101.11044	99.98076	99.89262	99.80583	99.71955	99.63376
10/2/2015	10/2/2025	10/2/2020	1.69000	113.86556	111.45781	105.98539	101.39532	97.64351	94.44490	91.57714	88.89719
11/6/2015	11/6/2020	11/6/2017	1.05000	103.39144	103.39144	101.52971	100.02716	99.80727	99.62753	99.44898	99.27163

Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
11/6/2015	11/7/2022	11/6/2018	1.40000	107.36451	107.36452	103.61718	100.69544	98.88572	97.62896	96.50333	95.40481
12/4/2015	12/4/2025	12/4/2018	1.36000	111.39572	109.20315	104.43143	100.99017	98.86243	97.43179	96.21816	95.05061
12/8/2015	12/8/2020	9/8/2017	1.38000	104.58016	104.58016	102.46155	100.35579	99.98420	99.96255	99.94101	99.91959
12/11/2015	12/12/2022	12/11/2017	0.73811	109.99630	109.99623	105.63253	102.15039	100.15308	99.85032	99.82118	99.79330
12/15/2015	12/15/2022	12/15/2017	0.74556	110.00022	110.00015	105.62658	102.14025	100.14780	99.82752	99.78743	99.74864
12/18/2015	12/18/2020	12/18/2017	1.01744	106.80896	106.80896	104.52102	101.86406	100.13396	99.88304	99.83535	99.78844
12/24/2015	12/24/2020	12/26/2017	1.25000	104.20418	104.20418	102.12079	100.19488	99.69730	99.38187	99.06900	98.75859
12/24/2015	12/24/2025	12/24/2020	1.99000	116.78595	113.85872	107.80619	102.72951	98.56215	95.03483	91.91082	89.02486
1/12/2016	1/13/2020	10/12/2017	1.87000	104.49268	104.49268	102.95937	100.87618	99.97268	99.85842	99.74490	99.63207
1/19/2016	1/19/2021	1/19/2018	1.15000	103.95082	103.95082	101.87832	100.08689	99.59027	99.21302	98.83906	98.46833
1/19/2016	1/20/2026	1/22/2019	1.35000	111.48813	109.20600	104.40961	100.92763	98.70154	97.14054	95.80271	94.51872
2/2/2016	2/2/2021	2/2/2018	0.71056	106.51791	106.51791	104.17680	101.60298	99.99722	99.76714	99.75679	99.74738
2/26/2016	2/26/2021	2/26/2018	0.89000	103.15134	103.15134	101.22665	99.82740	99.30235	98.82366	98.34935	97.88005
2/26/2016	2/26/2026	2/26/2021	1.49000	112.83279	110.30856	104.90118	100.26771	96.36311	92.93203	89.79446	86.84258
3/8/2016	3/8/2023	3/8/2018	0.99000	105.54015	105.48690	102.13975	100.06826	99.30788	98.79834	98.29792	97.80236
3/18/2016	3/18/2020	9/18/2017	1.62000	104.18440	104.18440	102.53085	100.50273	99.97645	99.92777	99.87935	99.83120
4/5/2016	4/5/2021	4/2/2018	0.99000	103.61002	103.61002	101.14069	99.75796	99.05431	98.40579	97.76467	97.13084
4/28/2016	4/28/2021	4/30/2018	0.71389	106.33590	106.33590	103.79043	100.92534	99.55062	99.47527	99.48109	99.48708
5/2/2016	5/2/2023	5/4/2018	0.71056	107.97267	107.80952	103.64697	100.95266	99.78368	99.65919	99.72622	99.79883
5/5/2016	5/5/2021	5/7/2018	0.89000	103.31939	103.31939	101.27829	99.71278	98.96226	98.30002	97.64588	96.99925
5/5/2016	5/5/2026	5/5/2021	1.49000	113.11419	110.41700	104.90661	100.14122	96.09411	92.51626	89.23850	86.15649
5/17/2016	5/17/2021	5/17/2018	0.71417	106.08767	106.08767	103.48090	100.67476	99.55276	99.45866	99.41549	99.37365
6/6/2016	6/8/2020	9/6/2017	1.62000	104.55337	104.55337	102.71145	100.54639	99.99214	99.97590	99.95975	99.94367
6/16/2016	6/16/2026	6/18/2018	0.69000	106.15259	104.63960	101.49484	99.61339	98.62294	97.83875	97.07917	96.32945
6/16/2016	6/16/2031	6/16/2021	1.21000	116.51356	110.62002	104.49857	99.36411	95.08539	91.34746	87.95394	84.78741
6/27/2016	6/27/2031	6/27/2018	0.69000	109.40214	105.73486	102.03427	99.78360	98.61043	97.77101	96.98633	96.21393
6/27/2016	6/27/2031	6/27/2019	0.91000	112.41619	107.75626	103.12893	99.73934	97.33348	95.41425	93.69386	92.05096
7/28/2016	7/28/2026	7/30/2018	0.61389	110.15768	107.47978	102.97958	100.47008	99.49065	99.30281	99.29557	99.30251
8/11/2016	8/11/2026	8/13/2018	0.81000	107.34885	105.55153	101.98743	99.73984	98.48168	97.53008	96.62589	95.73585
9/2/2016	9/2/2026	9/5/2017	0.69000	106.30204	104.71382	101.51799	99.98840	99.97480	99.96128	99.94782	99.93444
9/9/2016	9/9/2026	9/10/2018	0.80000	107.32260	105.49574	102.01081	99.71761	98.36095	97.32386	96.34947	95.39252
9/9/2016	9/9/2031	9/11/2017	0.39000	105.35193	103.12858	100.75458	99.97472	99.94484	99.91511	99.88553	99.85611
9/12/2016	9/12/2031	9/12/2017	0.39000	105.33988	103.12865	100.75427	99.97272	99.94012	99.90769	99.87543	99.84334
9/15/2016	9/15/2026	9/16/2019	0.99000	109.07861	106.88898	102.75251	99.49896	97.03281	94.96068	93.06163	91.23939
9/16/2016	9/16/2021	9/18/2017	0.40033	105.20344	105.20344	102.56137	100.32923	99.92174	99.94896	99.97607	100.00307
9/22/2016	9/22/2031	9/22/2017	0.39000	105.34717	103.13271	100.75623	99.95271	99.89296	99.83355	99.77446	99.71570
9/22/2016	9/22/2031	9/24/2018	0.65000	108.93370	105.41989	101.84316	99.54196	98.14701	97.06601	96.05522	95.06469
9/26/2016	9/26/2031	9/26/2017	0.42000	105.76333	103.39363	100.87278	99.94619	99.87521	99.80464	99.73446	99.66467
10/3/2016	10/5/2026	10/3/2017	0.59000	105.44259	104.00469	101.20690	99.95994	99.86185	99.77240	99.68346	99.59504
10/7/2016	10/7/2026	10/10/2017	0.69000	106.36917	104.72388	101.58455	100.00254	99.84304	99.73436	99.62633	99.51895
10/21/2016	10/21/2031	10/23/2017	0.55000	107.56681	104.54493	101.40872	99.95947	99.77127	99.62728	99.48421	99.34203
1/13/2017	1/13/2022	1/16/2018	0.28350	107.91804	107.91804	104.64559	101.61177	99.84172	99.60787	99.65047	99.69364
1/13/2017	1/13/2027	1/14/2019	1.31000	112.45029	109.46265	104.53339	100.98681	98.72027	97.14289	95.81096	94.54305
1/20/2017	1/22/2024	1/22/2019	0.27694	111.86166	110.83606	105.78712	102.27267	99.93702	98.79413	98.44665	98.36417
1/20/2017	1/20/2032	1/22/2018	0.93000	112.96094	108.10082	103.39497	100.53868	99.52383	99.10710	98.72536	98.34707
1/24/2017	1/24/2024	1/24/2019	0.27250	112.76571	111.70495	106.51071	102.80952	100.24203	98.89349	98.42701	98.31551
1/30/2017	2/1/2027	1/30/2020	0.28111	119.96521	114.69932	107.94774	103.60835	100.64018	98.86574	97.99940	97.69005
2/17/2017	2/17/2022	2/20/2018	0.31417	108.45327	108.45327	105.04924	101.90671	99.92742	99.46488	99.48242	99.50870
3/7/2017	3/7/2022	3/7/2018	0.21956	108.83670	108.83670	105.34651	102.12840	100.05854	99.48399	99.45060	99.43612
3/7/2017	3/8/2027	3/7/2019	1.50000	114.48129	111.04838	105.62633	101.63971	98.98692	97.14459	95.64521	94.24647
3/20/2017	3/20/2024	3/20/2019	1.55000	110.30190	109.39354	104.78399	101.23131	98.82524	97.09340	95.60709	94.18513
3/20/2017	3/22/2032	3/20/2018	1.04000	114.61653	109.20069	104.08167	100.83096	99.38729	98.74039	98.20521	97.67871
3/27/2017	3/29/2021	3/27/2018	0.14328	107.08259	107.08259	104.59333	101.84023	99.86859	99.22283	99.13980	99.07451
3/31/2017	3/31/2022	4/2/2018	0.29639	108.37682	108.37682	104.88183	101.75937	99.81569	99.30059	99.28216	99.28412
4/10/2017	4/11/2022	4/10/2018	0.30411	108.14524	108.14524	104.64720	101.59899	99.79168	99.34585	99.30992	99.29030
4/13/2017	4/13/2022	4/13/2018	0.30350	107.98462	107.98462	104.50092	101.48427	99.73774	99.32728	99.28637	99.25888
4/13/2017	4/15/2024	4/15/2019	1.45000	109.74189	108.81197	104.32807	100.89476	98.54469	96.79356	95.25549	93.77621
4/13/2017	4/13/2032	4/13/2018	0.99000	113.92504	108.72926	103.77419	100.66180	99.24837	98.54695	97.95127	97.36586
4/28/2017	4/28/2021	4/30/2018	0.31389	106.33062	106.33062	103.86458	101.30100	99.61928	99.18359	99.17697	99.18418
4/28/2017	4/28/2022	4/29/2019	1.59000	107.51169	107.51169	104.06347	100.91513	98.66212	96.92403	95.36014	93.84714
4/28/2017	4/29/2024	4/29/2019	0.31389	112.12419	110.74338	105.62440	102.15277	99.83064	98.62412	98.19093	98.06810

As of:

8/31/2017

HLB Option Sensitivity Analysis for HLB-Option and Knockout Advances

Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
5/8/2017	5/10/2027	5/8/2018	1.30000	112.77767	109.56602	104.57136	101.15422	99.42588	98.58221	97.91612	97.26585
5/8/2017	5/10/2032	5/8/2018	1.15000	116.25438	110.34441	104.79736	101.16586	99.36263	98.48556	97.81382	97.16376
5/19/2017	5/19/2022	5/21/2018	0.31639	107.59900	107.59900	104.09089	101.20546	99.57565	99.19449	99.20390	99.23497
5/22/2017	5/24/2021	5/22/2018	0.31472	106.08010	106.08010	103.56557	101.04231	99.51020	99.13097	99.06717	99.01300
5/22/2017	5/24/2027	5/22/2018	1.09000	110.75566	107.93578	103.47030	100.55601	99.13353	98.33742	97.64052	96.95537
6/1/2017	6/7/2032	6/5/2018	0.99000	114.03278	108.78466	103.78875	100.62467	99.04425	98.16690	97.42856	96.70825
6/2/2017	6/7/2032	6/5/2018	0.99000	114.03360	108.78570	103.78939	100.62538	99.04436	98.16691	97.42856	96.70825
6/5/2017	6/6/2022	6/5/2018	0.21806	107.68726	107.68726	104.12080	101.23192	99.60831	99.19797	99.16834	99.16286
6/5/2017	6/5/2024	6/5/2019	0.21806	111.47680	109.98575	104.97275	101.72162	99.62033	98.59122	98.26777	98.21748
6/5/2017	6/7/2032	6/5/2018	0.99000	114.03430	108.76443	103.79113	100.62980	99.04579	98.16710	97.42857	96.70825
6/14/2017	6/14/2022	6/14/2019	1.59000	107.71926	107.71926	104.13473	100.89902	98.53144	96.67034	94.99343	93.37506
6/22/2017	6/22/2022	6/22/2018	0.28722	107.86378	107.86378	104.23160	101.27548	99.57051	99.08210	99.00246	98.95376
6/27/2017	6/27/2022	6/27/2018	0.29328	107.66525	107.66525	104.04740	101.13988	99.50093	99.03618	98.94654	98.88435
6/27/2017	6/27/2022	6/27/2019	1.60000	107.82559	107.82559	104.19644	100.92499	98.51538	96.61720	94.90755	93.25920
7/3/2017	7/3/2020	7/3/2018	0.29861	104.46749	104.46749	102.83104	100.90441	99.52223	99.12380	99.10657	99.10410
7/3/2017	7/6/2021	7/3/2018	0.29861	106.31729	106.31729	103.72475	101.20065	99.59191	99.13261	99.10737	99.10974
7/3/2017	7/5/2022	7/3/2019	0.29861	107.46403	107.46403	104.09992	101.50825	99.61984	98.57733	98.20814	98.15241
7/14/2017	7/14/2022	7/16/2018	0.00389	107.88991	107.88991	104.17943	101.19451	99.37086	98.80666	98.79235	98.83987
7/14/2017	7/14/2022	7/15/2019	1.62000	107.99992	107.99992	104.30038	100.97668	98.51090	96.55659	94.80059	93.10982
7/21/2017	7/21/2022	7/23/2018	0.00722	107.89020	107.89020	104.15886	101.16398	99.33265	98.74691	98.71069	98.73910
7/24/2017	7/25/2022	7/24/2019	1.63000	108.09911	108.09911	104.35769	101.00509	98.50731	96.52670	94.74798	93.03649
7/28/2017	7/28/2022	7/30/2018	0.01389	107.93040	107.93040	104.17272	101.15811	99.30458	98.68798	98.62831	98.63759
7/28/2017	7/28/2022	7/30/2018	0.31111	107.67596	107.67596	103.99125	101.11505	99.45102	98.97050	98.93373	98.94223
7/28/2017	7/28/2022	7/29/2019	1.60000	107.96336	107.96336	104.23812	100.91074	98.42478	96.43853	94.64854	92.92554
7/31/2017	7/31/2020	7/31/2018	0.26111	104.53279	104.53279	102.84959	100.85472	99.38612	98.87847	98.78833	98.72180
7/31/2017	2/1/2021	7/31/2018	0.26111	105.38017	105.38017	103.25211	101.04242	99.54554	99.04343	99.00975	99.02064
7/31/2017	8/2/2021	7/31/2018	0.26111	106.22246	106.22246	103.58975	101.08634	99.49589	99.02028	98.98760	98.99042
7/31/2017	1/31/2022	7/31/2018	0.26111	107.23798	107.23798	104.05803	101.25917	99.51766	98.91436	98.78959	98.72183
7/31/2017	8/1/2022	7/31/2018	0.26111	107.83222	107.83222	104.10895	101.21608	99.53774	99.04923	99.01201	99.02243
8/1/2017	8/3/2020	8/1/2018	0.01056	104.46606	104.46606	102.79596	100.84191	99.34198	98.78843	98.75320	98.75734
8/1/2017	8/1/2022	8/1/2018	0.01056	108.12716	108.12716	104.33486	101.31330	99.45789	98.84534	98.78486	98.79305
8/11/2017	8/11/2022	8/13/2018	0.30917	107.33650	107.33650	103.67292	100.92340	99.40956	99.02279	99.03800	99.09238
8/11/2017	8/11/2022	8/12/2019	1.59000	107.97541	107.97541	104.21653	100.87263	98.35842	96.34123	94.51812	92.76381
8/17/2017	8/17/2022	8/17/2018	0.01417	107.96923	107.96923	104.14896	101.14051	99.31579	98.70301	98.60292	98.56795
8/18/2017	8/18/2022	8/20/2018	0.31667	107.46178	107.46178	103.76024	100.97017	99.40437	98.97808	98.97167	99.00935
8/25/2017	8/25/2022	8/27/2018	0.31722	107.15033	107.15033	103.47860	100.76447	99.30061	98.91792	98.90215	98.92109
8/25/2017	8/25/2022	8/26/2019	1.55000	107.83502	107.83502	104.06924	100.74315	98.22746	96.18942	94.33706	92.55362
9/5/2017	9/6/2022	9/5/2019	1.55000	107.86523	107.86523	104.09542	100.76140	98.20396	96.11787	94.23272	92.42520