

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
7/13/2007	7/13/2017	7/13/2017	4.29000	100.15491	100.15491	100.15085	100.11581	100.08080	100.04584	100.01092	99.97604
7/20/2007	7/20/2017	7/20/2017	4.29000	100.23832	100.23832	100.23208	100.17817	100.12433	100.07057	100.01688	99.96327
7/27/2007	7/27/2017	7/27/2017	4.25000	100.31873	100.31873	100.31031	100.23754	100.16489	100.09235	100.01992	99.94760
7/30/2007	1/30/2019	7/31/2017	3.99000	106.41684	106.41684	105.36650	103.77451	102.26870	100.99563	100.17423	99.91766
7/31/2007	7/31/2017	7/31/2017	3.99000	100.34356	100.34356	100.33389	100.25036	100.16696	100.08371	100.00059	99.91761
7/31/2007	7/31/2017	7/31/2017	3.99000	100.34356	100.34356	100.33389	100.25036	100.16696	100.08371	100.00059	99.91761
7/31/2007	7/31/2017	7/31/2017	4.06000	100.34959	100.34959	100.33992	100.25638	100.17298	100.08972	100.00660	99.92361
8/2/2007	8/2/2017	8/2/2017	4.05000	100.37123	100.37123	100.36073	100.27180	100.18302	100.09441	100.00595	99.91766
8/9/2007	8/9/2017	8/9/2017	3.99000	100.44331	100.44331	100.42992	100.32210	100.21452	100.10719	100.00010	99.89325
8/16/2007	8/16/2017	8/16/2017	3.99000	100.52088	100.52088	100.50461	100.37790	100.25153	100.12549	99.99979	99.87441
8/17/2007	8/17/2017	8/17/2017	4.00000	100.53330	100.53330	100.51661	100.38721	100.25815	100.12944	100.00107	99.87306
9/4/2007	9/5/2017	9/5/2017	3.89000	100.72393	100.72393	100.69838	100.51727	100.33683	100.15705	99.97791	99.79943
9/10/2007	9/11/2017	9/11/2017	3.69000	100.74820	100.74820	100.71896	100.52118	100.32418	100.12798	99.93256	99.73792
9/11/2007	9/11/2017	9/11/2017	3.59000	100.72792	100.72792	100.69868	100.50093	100.30397	100.10779	99.91240	99.71779
9/13/2007	9/13/2017	9/13/2017	3.99000	100.83120	100.83120	100.80071	100.59726	100.39465	100.19287	99.99192	99.79178
9/27/2007	9/27/2017	9/27/2017	3.65000	100.90230	100.90230	100.86320	100.62084	100.37965	100.13962	99.90075	99.66302
10/11/2007	10/11/2017	7/11/2017	3.99000	101.14151	101.14151	101.08624	100.80568	100.52669	100.24927	100.02143	99.97057
10/15/2007	10/16/2017	7/17/2017	3.99000	101.19693	101.19693	101.13515	100.84110	100.54877	100.25816	100.02187	99.95464
10/26/2007	10/26/2017	7/26/2017	3.99000	101.11109	101.11109	101.03638	100.71575	100.39717	100.08954	99.95726	99.88766
11/5/2007	11/6/2017	8/7/2017	4.39000	101.57299	101.57299	101.48224	101.13069	100.78159	100.43490	100.11655	99.94286
11/6/2007	11/6/2017	8/7/2017	3.48000	101.24691	101.24691	101.15630	100.80545	100.45705	100.12716	99.94789	99.84514
11/19/2007	11/20/2017	11/19/2012	4.29000	101.70399	101.70399	101.59128	101.20076	100.81325	100.42872	100.04714	99.66847
11/20/2007	11/20/2017	8/21/2017	3.74000	101.48551	101.48551	101.37292	100.98291	100.59591	100.22183	99.97211	99.82514
11/23/2007	11/24/2017	11/23/2011	3.99000	101.62915	101.62915	101.51024	101.10885	100.71065	100.31560	99.92366	99.53479
11/23/2007	11/24/2017	11/23/2011	3.99000	101.62915	101.62915	101.51024	101.10885	100.71065	100.31560	99.92366	99.53479
11/29/2007	11/29/2017	8/29/2017	2.95000	101.24545	101.24545	101.11894	100.70473	100.29595	99.99858	99.82691	99.66743
11/30/2007	11/30/2017	8/30/2017	3.19000	101.35564	101.35564	101.22752	100.81028	100.39724	100.05559	99.86457	99.70231
12/10/2007	12/11/2017	9/11/2017	3.45000	101.57155	101.57155	101.42433	100.97723	100.53444	100.14330	99.88821	99.68964
12/24/2007	12/26/2017	12/24/2012	3.99000	101.98379	101.98379	101.81041	101.32226	100.83879	100.35995	99.88566	99.41587
1/7/2008	1/8/2018	7/7/2017	2.59000	101.38120	101.38120	101.18670	100.66625	100.19292	99.99170	99.97291	99.95414
1/8/2008	1/8/2018	7/10/2017	2.57000	101.37054	101.37054	101.17604	100.65567	100.18438	99.98762	99.96079	99.93400
1/8/2008	1/8/2018	7/10/2017	2.64000	101.40787	101.40787	101.21334	100.69269	100.21458	99.98956	99.96273	99.93593
1/11/2008	1/11/2018	7/11/2017	2.72000	101.47320	101.47320	101.27376	100.74481	100.25286	99.99093	99.96141	99.93193
1/14/2008	1/16/2018	7/14/2017	3.24000	101.79986	101.79986	101.59203	101.04856	100.51790	100.08650	99.97110	99.93358
1/16/2008	1/16/2018	7/17/2017	2.38000	101.32209	101.32209	101.11468	100.57436	100.10707	99.97001	99.92443	99.87892
1/17/2008	1/17/2018	7/17/2017	2.25000	101.25611	101.25611	101.04714	100.50604	100.06818	99.96388	99.91830	99.87279
1/18/2008	1/18/2018	7/18/2017	2.29000	101.28481	101.28481	101.07419	100.52979	100.07837	99.96375	99.91550	99.86732
2/14/2008	2/14/2018	2/14/2012	3.19000	102.02904	102.02904	101.77847	101.15331	100.53584	99.92592	99.92340	98.72816
3/7/2008	3/7/2018	9/7/2017	3.55000	102.46510	102.46510	102.18453	101.49817	100.82756	100.25668	99.92744	99.72793
3/14/2008	3/14/2018	9/14/2017	2.40000	101.71316	101.71316	101.42222	100.72471	100.15237	99.86384	99.65776	99.45542
3/17/2008	3/19/2018	9/18/2017	3.30000	102.40148	102.40148	102.10157	101.38379	100.68871	100.14264	99.84243	99.62343
4/28/2008	4/30/2018	7/28/2017	2.15000	101.81535	101.81535	101.44807	100.63658	100.06655	99.93288	99.85792	99.78307
4/30/2008	4/30/2018	7/30/2017	3.74000	103.15801	103.15801	102.78851	101.95380	101.13266	100.32476	99.52977	98.74739
5/23/2008	5/23/2018	8/23/2017	3.27000	102.97002	102.97002	102.55707	101.66331	100.81145	100.16450	99.89542	99.74832
6/30/2008	7/2/2018	6/30/2011	3.69000	103.76149	103.76149	103.26550	102.25919	101.27209	100.30367	99.35340	98.42076
7/11/2008	7/11/2018	7/11/2012	3.75000	103.91640	103.91640	103.40076	102.36803	101.35371	100.35730	99.37833	98.41636
7/14/2008	7/16/2018	7/14/2017	2.50000	102.64557	102.64557	102.12220	101.10000	100.27727	99.97995	99.94241	99.90491
7/14/2008	7/16/2018	7/14/2017	3.25000	103.43932	103.43932	102.91403	101.87217	100.89773	100.17423	99.97148	99.93396
7/17/2008	7/17/2018	8/14/2017	3.75000	103.97890	103.97890	103.45024	102.40014	101.36790	100.35307	99.35522	98.37395
8/15/2008	8/15/2018	8/15/2017	3.83000	104.37230	104.37230	103.77617	102.64493	101.55403	100.61642	100.05532	99.85845
12/27/2011	12/27/2021	12/29/2014	3.55000	116.18087	116.03493	111.33498	106.80527	102.48927	98.37578	94.45421	90.71461
7/16/2012	7/17/2017	7/16/2014	1.72000	100.08121	100.08121	100.07592	100.03019	99.98452	99.93891	99.89336	99.84787
7/18/2012	7/18/2018	7/20/2015	2.72000	102.89351	102.89351	102.36517	101.31829	100.28909	99.27714	98.28202	97.30332
7/19/2012	7/19/2017	7/21/2014	1.69000	100.08918	100.08918	100.08327	100.03216	99.98113	99.93016	99.87926	99.82843
10/1/2012	10/1/2019	4/1/2015	2.25000	105.14317	105.14317	103.38311	101.14456	98.96531	96.84351	94.77733	92.76503
10/5/2012	10/5/2017	10/6/2014	1.63000	100.43913	100.43913	100.39182	100.12857	99.86670	99.60621	99.34708	99.08931
3/8/2013	3/8/2018	3/9/2015	1.78000	101.24088	101.24088	100.96021	100.27583	99.60071	98.93467	98.27751	97.62906
5/7/2014	5/7/2018	5/7/2015	1.76000	101.52023	101.52023	101.14015	100.29454	99.46303	98.64526	97.84089	97.04960
10/16/2014	10/16/2018	10/17/2016	2.48000	103.25812	103.25812	102.51070	101.21864	99.94869	98.70035	97.47309	96.26644
10/24/2014	10/24/2018	10/26/2015	1.74000	102.32450	102.32450	101.55903	100.25237	98.96839	97.70655	96.46632	95.24720
10/24/2014	10/24/2018	10/26/2015	1.74000	102.32450	102.32450	101.55903	100.25237	98.96839	97.70655	96.46632	95.24720

Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
2/20/2015	2/20/2019	2/22/2016	1.79000	102.98292	102.98292	101.89228	100.26213	98.66567	97.10204	95.57040	94.06992
3/26/2015	3/26/2019	3/29/2016	1.61000	102.83495	102.83495	101.64854	99.92908	98.24663	96.60020	94.98881	93.41154
3/26/2015	3/26/2020	3/29/2016	1.59000	104.41597	104.41597	102.09948	99.41178	96.80793	94.28491	91.83980	89.46981
6/29/2015	7/1/2019	6/29/2017	2.74000	105.56321	105.56321	104.07846	102.07669	100.12359	98.21765	96.35747	94.54166
7/30/2015	7/30/2019	8/1/2016	1.80000	103.79947	103.79947	102.23863	100.17996	98.17277	96.21552	94.30671	92.44493
8/14/2015	8/14/2025	8/14/2020	1.85000	115.24490	111.56968	105.85417	101.34601	97.65313	94.44833	91.53240	88.79880
8/19/2015	8/19/2025	8/21/2017	0.99000	108.17089	105.73556	101.94951	100.16521	99.84571	99.70683	99.56834	99.43026
8/25/2015	8/25/2020	8/25/2017	0.95000	103.03920	103.03920	101.03822	100.01756	99.82744	99.67795	99.52891	99.38032
8/26/2015	8/26/2025	8/26/2020	1.75000	114.47906	110.87895	105.27706	100.85682	97.21577	94.03250	91.11875	88.37731
9/14/2015	9/14/2020	9/14/2017	1.05000	103.41752	103.41752	101.27353	100.07596	99.78122	99.57725	99.37449	99.17257
9/15/2015	9/16/2019	9/15/2016	1.75000	103.92721	103.92721	102.22080	100.03575	97.90784	95.83528	93.81635	91.84939
9/18/2015	9/18/2020	9/18/2017	1.09000	103.55985	103.55985	101.36403	100.09944	99.77736	99.56235	99.34877	99.13613
9/29/2015	9/30/2019	9/29/2016	1.61000	103.67559	103.67559	101.92914	99.70989	97.54949	95.44607	93.39785	91.40309
10/2/2015	10/2/2020	10/2/2017	0.89000	102.94112	102.94112	100.95533	99.98105	99.68072	99.42819	99.17718	98.92743
10/2/2015	10/2/2025	10/2/2020	1.69000	114.15623	110.53752	104.96733	100.53973	96.85582	93.60998	90.62701	87.81668
11/6/2015	11/6/2020	11/6/2017	1.05000	103.57206	103.57206	101.31846	100.05148	99.59334	99.24636	98.90463	98.56526
11/6/2015	11/7/2022	11/6/2018	1.40000	107.60528	106.98945	103.02743	100.38341	98.61765	97.20930	95.91550	94.66410
12/4/2015	12/4/2025	12/4/2018	1.36000	111.62955	108.32216	103.58227	100.52049	98.52746	96.99145	95.61262	94.29131
12/8/2015	12/8/2020	9/8/2017	1.38000	104.81762	104.81762	102.17613	100.41897	99.87461	99.67679	99.49016	99.30424
12/11/2015	12/12/2022	12/11/2017	0.73811	110.12384	109.31116	104.75803	101.65350	99.93236	99.11085	98.61150	98.18463
12/15/2015	12/15/2022	12/15/2017	0.74556	110.12555	109.30419	104.74511	101.64001	100.00736	99.41933	99.16801	98.96604
12/18/2015	12/18/2020	12/18/2017	1.01744	106.98173	106.98173	103.97434	101.53952	100.10572	99.52368	99.26101	99.05015
12/24/2015	12/24/2020	12/26/2017	1.25000	104.41925	104.41925	101.83804	100.20634	99.49974	99.01043	98.53958	98.07354
12/24/2015	12/24/2025	12/24/2020	1.99000	117.12828	112.87459	106.76455	101.86093	97.78488	94.22642	90.99219	87.97288
1/12/2016	1/13/2020	7/12/2017	1.87000	104.81460	104.81460	102.84908	100.96743	100.06236	99.96185	99.92968	99.89754
1/19/2016	1/19/2021	1/19/2018	1.15000	104.14868	104.14868	101.60794	100.07688	99.35892	98.81148	98.28100	97.75651
1/19/2016	1/20/2026	1/22/2019	1.35000	111.72024	108.31481	103.51575	100.26108	97.95035	96.06389	94.34641	92.70401
1/22/2016	1/22/2020	7/24/2017	1.46000	103.79535	103.79535	101.92625	100.38705	99.96087	99.89653	99.83228	99.76813
1/29/2016	1/29/2021	7/31/2017	1.42000	105.16236	105.16236	102.33909	100.46367	99.94606	99.86299	99.78005	99.69726
2/2/2016	2/2/2021	2/2/2018	0.56956	106.50456	106.50456	103.45145	101.23034	100.00331	99.55546	99.41078	99.32880
2/26/2016	2/26/2021	2/26/2018	0.89000	103.30443	103.30443	101.01017	99.75136	99.03294	98.39133	97.76120	97.13918
2/26/2016	2/26/2026	2/26/2021	1.49000	113.08900	109.34379	103.80078	99.28946	95.41903	91.93173	88.68974	85.62340
3/8/2016	3/8/2023	3/8/2018	0.99000	105.71029	104.99087	101.66674	99.93765	99.07307	98.39175	97.73573	97.08928
3/18/2016	3/18/2020	9/18/2017	1.62000	104.46331	104.46331	102.38933	100.62247	99.92152	99.67961	99.46581	99.25298
4/5/2016	4/5/2021	7/12/2017	0.99000	103.78029	103.78029	100.14921	99.68553	98.94046	98.20648	97.48335	96.77081
4/28/2016	4/28/2020	7/28/2017	1.41000	104.04520	104.04520	101.95081	100.35615	99.95049	99.87544	99.80051	99.72570
4/28/2016	4/28/2021	7/28/2017	1.30000	105.04735	105.04735	102.10406	100.32773	99.94195	99.86691	99.79199	99.71718
4/28/2016	4/28/2021	4/30/2018	0.57178	106.45955	106.45955	103.01667	100.64267	99.63736	99.37515	99.28747	99.22338
5/2/2016	5/2/2023	5/4/2018	0.56956	108.16910	107.04796	102.87290	100.61472	99.65902	99.35405	99.23574	99.15328
5/5/2016	5/5/2021	5/7/2018	0.89000	103.47249	103.47249	101.05132	99.64276	98.72750	97.90569	97.10428	96.31629
5/5/2016	5/5/2026	5/5/2021	1.49000	113.37039	109.45773	103.79299	99.14056	95.11811	91.48181	88.10050	84.90630
5/17/2016	5/17/2021	5/17/2018	0.57944	106.07626	106.07626	102.61096	100.38792	99.49799	99.22875	99.09485	98.98059
6/6/2016	6/8/2020	9/6/2017	1.62000	104.83225	104.83225	102.53961	100.67990	99.94891	99.73210	99.55073	99.37013
6/16/2016	6/16/2026	6/18/2018	0.69000	106.27095	104.00234	100.96074	99.37178	98.33941	97.41331	96.51293	95.62968
6/16/2016	6/16/2031	6/16/2021	1.21000	115.83206	109.23700	102.97958	98.05841	93.89364	90.16601	86.71586	83.46461
6/27/2016	6/27/2031	6/27/2018	0.69000	108.91857	104.73418	101.19097	99.39507	98.29722	97.34301	96.42060	95.51660
6/27/2016	6/27/2031	6/27/2019	0.91000	111.83363	106.55689	101.95636	98.92232	96.66216	94.70182	92.86063	91.08232
7/8/2016	7/8/2026	7/10/2017	0.45000	104.11648	102.52436	100.41473	99.98251	99.95567	99.92886	99.90207	99.87532
7/14/2016	7/14/2021	7/14/2017	0.50844	104.52755	104.52601	101.63329	100.12631	99.94021	99.90268	99.86519	99.82775
7/22/2016	7/22/2026	7/24/2017	0.55000	105.05311	103.13498	100.61816	99.96470	99.90031	99.83601	99.77181	99.70770
7/22/2016	7/22/2026	7/24/2017	0.55000	105.05311	103.13498	100.61816	99.96470	99.90031	99.83601	99.77181	99.70770
7/28/2016	7/28/2026	7/30/2018	0.47178	110.20121	106.33376	101.96318	100.00448	99.29879	99.08040	98.98447	98.91180
8/1/2016	8/1/2031	8/1/2017	0.49000	106.32740	103.22352	100.62106	99.95059	99.86171	99.77605	99.69053	99.60517
8/11/2016	8/11/2026	8/13/2018	0.81000	107.48790	104.81431	101.35586	99.42836	98.16920	97.07256	96.01396	94.97394
8/12/2016	8/12/2021	8/14/2017	0.38094	104.71153	104.69593	101.69939	100.11223	99.79513	99.67492	99.55501	99.43541
8/19/2016	8/19/2021	8/21/2017	0.37839	104.88091	104.85834	101.79369	100.12661	99.76282	99.62329	99.48490	99.34691
9/2/2016	9/2/2026	9/5/2017	0.69000	106.42040	104.04506	101.03061	99.96107	99.74301	99.56403	99.38570	99.20802
9/9/2016	9/9/2026	9/10/2018	0.80000	107.45985	104.76429	101.31565	99.34068	98.00803	96.83852	95.71037	94.60301
9/9/2016	9/9/2031	9/11/2017	0.39000	105.03287	102.49037	100.37148	99.85511	99.65708	99.46184	99.26738	99.07370
9/12/2016	9/12/2031	9/12/2017	0.39000	105.03323	102.48915	100.36913	99.85275	99.65204	99.45408	99.25692	99.06056
9/15/2016	9/15/2026	9/16/2019	0.99000	109.24860	106.04973	101.81898	98.78721	96.37918	94.23357	92.20666	90.25023

Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
9/15/2016	9/15/2026	9/16/2019	0.99000	109.24860	106.04973	101.81898	98.78721	96.37918	94.23357	92.20666	90.25023
9/16/2016	9/16/2021	9/18/2017	0.40033	105.44266	105.39769	102.12974	100.21545	99.63942	99.41490	99.20154	98.98912
9/22/2016	9/22/2031	9/22/2017	0.39000	105.03280	102.48510	100.35722	99.82955	99.60168	99.37653	99.15241	98.92931
9/22/2016	9/22/2031	9/24/2018	0.65000	108.47053	104.44876	101.00278	99.07337	97.73730	96.53976	95.37886	94.23880
9/26/2016	9/26/2031	9/26/2017	0.42000	105.42820	102.69923	100.41807	99.82879	99.58885	99.35283	99.11793	98.88415
10/3/2016	10/5/2026	10/3/2017	0.59000	105.54364	103.41989	100.75209	99.87564	99.59752	99.34270	99.08923	98.83706
10/7/2016	10/7/2026	10/10/2017	0.69000	106.48745	104.06022	101.02908	99.91256	99.59118	99.31787	99.04628	98.77620
10/21/2016	10/21/2031	10/23/2017	0.55000	107.16740	103.67963	100.77031	99.81739	99.48562	99.17866	98.87366	98.57055
1/13/2017	1/13/2022	1/16/2018	0.13511	108.00504	107.84861	103.87269	101.24581	99.88504	99.45758	99.36507	99.33242
1/13/2017	1/13/2027	1/14/2019	1.31000	112.67536	108.45967	103.54553	100.38123	98.28663	96.64794	95.17072	93.75602
1/20/2017	1/22/2024	1/22/2019	0.12622	111.68795	109.38197	104.53013	101.52621	99.70803	98.77799	98.35944	98.17930
1/20/2017	1/20/2032	1/22/2018	0.93000	112.38136	106.85544	102.31398	100.10914	99.23842	98.66908	98.13079	97.59940
1/24/2017	1/24/2024	1/24/2019	0.11317	112.57172	110.19913	105.21027	102.01566	99.99499	98.90515	98.38664	98.15403
1/30/2017	2/1/2027	1/30/2020	0.13956	119.93123	112.94528	106.73841	102.84917	100.30161	98.75111	97.86256	97.37276
2/17/2017	2/17/2022	2/20/2018	0.17944	108.64355	108.45175	104.32739	101.48763	99.87110	99.22014	98.98241	98.84236
3/7/2017	3/7/2022	3/7/2018	0.21956	108.87258	108.66073	104.48404	101.56206	99.85039	99.09919	98.78392	98.58608
3/7/2017	3/8/2027	3/7/2019	1.50000	114.73907	109.97683	104.58757	100.97759	98.53239	96.65174	95.00081	93.44401
3/20/2017	3/20/2024	3/20/2019	1.55000	110.56837	108.62681	103.99713	100.75595	98.46031	96.61879	94.96096	93.38152
3/20/2017	3/22/2032	3/20/2018	1.04000	113.99026	107.88279	102.89917	100.29309	99.11348	98.35424	97.66433	96.98919
3/27/2017	3/29/2021	3/27/2018	0.14328	107.11194	107.11194	103.80964	101.26303	99.64061	98.84909	98.47381	98.22174
3/31/2017	3/31/2022	4/2/2018	0.29639	108.70038	108.45379	104.25759	101.35592	99.67542	98.90753	98.53752	98.27587
4/10/2017	4/11/2022	4/10/2018	0.15761	107.97367	107.71273	103.64027	101.08528	99.75976	99.29888	99.18603	99.16026
4/13/2017	4/13/2022	4/13/2018	0.15844	107.80670	107.54366	103.49367	100.97823	99.69718	99.25989	99.14922	99.11749
4/13/2017	4/15/2024	4/15/2019	1.45000	109.99113	108.06253	103.55986	100.41132	98.13639	96.26518	94.55726	92.92282
4/13/2017	4/13/2032	4/13/2018	0.99000	113.32622	107.45025	102.64935	100.15864	98.97227	98.15835	97.40980	96.67770
4/28/2017	4/28/2021	4/30/2018	0.17178	106.42704	106.42704	103.16712	100.93530	99.66145	99.15003	98.97797	98.89784
4/28/2017	4/28/2022	4/29/2019	1.59000	107.78533	107.52051	103.51342	100.54003	98.30014	96.41459	94.67761	93.01070
4/28/2017	4/29/2024	4/29/2019	0.17178	111.94701	109.24898	104.39084	101.42348	99.59334	98.60837	98.12617	97.89614
5/8/2017	5/10/2027	5/8/2018	1.30000	113.00099	108.52462	103.59974	100.71119	99.22097	98.26900	97.44542	96.65154
5/8/2017	5/10/2032	5/8/2018	1.15000	115.61207	108.95907	103.55586	100.56327	99.08122	98.13854	97.31762	96.52465
5/19/2017	5/19/2022	5/21/2018	0.17839	107.77969	107.45516	103.36960	100.81480	99.47664	98.94633	98.73115	98.59631
5/22/2017	5/24/2021	5/22/2018	0.17172	106.00702	106.00702	102.72923	100.57304	99.39715	98.91220	98.70302	98.56472
5/22/2017	5/24/2027	5/22/2018	1.09000	110.94281	106.96101	102.57679	100.16152	98.89946	97.98592	97.14205	96.31856
6/1/2017	6/7/2032	6/5/2018	0.99000	113.43526	107.49794	102.68076	100.10551	98.76483	97.80405	96.92480	96.06931
6/2/2017	6/7/2032	6/5/2018	0.99000	113.43100	107.49647	102.67928	100.10481	98.76465	97.80402	96.92480	96.06931
6/5/2017	6/6/2022	6/5/2018	0.21806	107.72850	107.36988	103.29078	100.73876	99.39111	98.82205	98.56037	98.38109
6/5/2017	6/5/2024	6/5/2019	0.21806	111.51295	108.72158	103.95814	101.03826	99.23362	98.22174	97.67172	97.35163
6/5/2017	6/7/2032	6/5/2018	0.99000	113.42906	107.49270	102.67451	100.10232	98.76398	97.80390	96.92478	96.06931
6/14/2017	6/14/2022	6/14/2019	1.59000	107.99288	107.64624	103.56902	100.50290	98.14681	96.14253	94.29408	92.52342
6/22/2017	6/22/2022	6/22/2018	0.28722	107.91135	107.51787	103.38708	100.75789	99.33106	98.69707	98.38301	98.15674
6/27/2017	6/27/2022	6/27/2018	0.29328	108.14581	107.73992	103.56415	100.87001	99.37535	98.69576	98.35712	98.11595
6/27/2017	6/27/2022	6/27/2019	1.60000	108.10092	107.73009	103.61400	100.51134	98.11981	96.08232	94.20288	92.40301
7/3/2017	7/3/2020	7/3/2018	0.29861	104.28545	104.28545	102.12070	100.52277	99.55827	99.15088	99.03329	99.01652
7/3/2017	7/6/2021	7/3/2018	0.29861	106.15945	106.15879	102.80516	100.72601	99.58657	99.14709	99.03007	99.01576
7/3/2017	7/5/2022	7/3/2019	0.29861	107.30453	106.85336	103.16508	100.91896	99.44724	98.61628	98.20657	98.03086