

## **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
12/27/2011	12/27/2021	12/29/2014	3.55000	109.88026	107.97193	105.19248	102.49989	99.89102	97.36285	94.91251	92.53722
10/1/2012	10/1/2019	4/1/2015	2.25000	101.14983	100.77198	100.27078	99.77454	99.28318	98.79664	98.31484	97.83772
3/26/2015	3/26/2020	3/29/2016	1.59000	101.59415	100.91762	99.93736	98.97141	98.01953	97.08144	96.15687	95.24557
6/29/2015	7/1/2019	6/29/2017	2.74000	100.70011	100.51161	100.26085	100.01184	99.76466	99.51931	99.27574	99.03395
7/30/2015	7/30/2019	6/29/2017	1.80000	100.60487	100.35659	100.02713	99.70049	99.37652	99.05518	98.73644	98.42026
8/14/2015	8/14/2025	8/14/2020	1.85000	111.33007	107.02364	102.45254	99.46977	97.69533	96.35233	95.08381	93.84001
8/26/2015	8/26/2025	8/26/2020	1.75000	110.73297	106.48929	102.06184	99.21261	97.48633	96.12835	94.83280	93.56237
9/15/2015	9/16/2019	9/15/2016	1.75000	100.82137	100.47415	100.01442	99.55905	99.10798	98.66115	98.21851	97.77998
9/29/2015	9/30/2019	9/29/2016	1.61000	100.81825	100.44308	99.94554	99.45291	98.96512	98.48210	98.00377	97.53008
10/2/2015	10/2/2025	10/2/2020	1.69000	110.44952	106.20794	101.83050	98.99259	97.20461	95.75639	94.37259	93.01704
12/24/2015	12/24/2025	12/24/2020	1.99000	112.63619	108.01784	103.08755	99.62212	97.35614	95.63594	94.04880	92.50331
2/26/2016	2/26/2026	2/26/2021	1.49000	109.48944	105.26827	101.02794	98.14228	96.06306	94.26749	92.54828	90.87099
5/5/2016	5/5/2026	5/5/2021	1.49000	109.64295	105.34962	101.04499	97.99961	95.71338	93.73734	91.86307	90.04109
6/16/2016	6/16/2031	6/16/2021	1.21000	111.06867	105.38656	100.52082	97.26824	94.88279	92.82155	90.86295	88.95979
6/27/2016	6/27/2031	6/27/2019	0.91000	108.08813	103.36679	100.14806	99.56644	99.33055	99.09657	98.86428	98.63365
9/15/2016	9/15/2026	9/16/2019	0.99000	106.47176	102.84907	100.03659	99.20801	98.75392	98.30784	97.86594	97.42816
1/20/2017	1/22/2024	4/22/2019	2.61000	112.74447	109.31870	104.82417	101.32022	99.93562	99.87662	99.81793	99.75957
1/24/2017	1/24/2024	4/24/2019	2.79000	113.63897	110.18123	105.58491	101.85242	99.94315	99.87740	99.81339	99.74973
1/30/2017	1/30/2027	1/30/2020	1.72050	119.38078	113.60640	107.60790	102.98786	100.10993	99.12898	99.04918	99.04918
4/13/2017	4/15/2019	4/15/2019	1.45000	100.06040	100.02985	99.98900	99.94837	99.90795	99.86775	99.82776	99.78799
4/28/2017	4/28/2022	4/29/2019	1.59000	104.96371	102.98017	100.58929	99.91040	99.83194	99.75393	99.67636	99.59922
4/28/2017	4/29/2024	4/29/2019	1.76475	113.82863	110.13885	105.38358	101.60232	99.83452	99.75467	99.67709	99.59995
6/5/2017	6/5/2024	6/5/2019	1.59850	113.08407	109.42690	104.81810	101.27466	99.81992	99.78493	99.77408	99.76354
6/14/2017	6/14/2022	6/14/2019	1.59000	105.17128	103.10954	100.63122	99.77507	99.57156	99.37207	99.17394	98.97717
6/27/2017	6/27/2022	6/27/2019	1.60000	105.26157	103.17470	100.66026	99.73916	99.49821	99.26397	99.03141	98.80053
7/3/2017	7/5/2022	7/3/2019	1.80763	109.08492	107.02189	104.02305	101.39583	99.83920	99.69950	99.69411	99.68913
7/14/2017	7/14/2022	7/15/2019	1.62000	105.40384	103.28293	100.71611	99.69402	99.40038	99.11831	98.83841	98.56066
7/24/2017	7/25/2022	7/24/2019	1.63000	105.48700	103.34361	100.74526	99.67388	99.34961	99.04314	98.73910	98.43747
7/28/2017	7/28/2022	7/29/2019	1.60000	105.39933	103.25777	100.68714	99.64719	99.31161	98.99202	98.67501	98.36055
8/1/2017	8/3/2020	5/1/2019	2.79000	103.80492	102.89556	101.55410	100.31406	99.92346	99.84002	99.75706	99.67457
8/11/2017	8/11/2022	8/12/2019	1.59000	105.42741	103.26225	100.67673	99.60964	99.23698	98.88294	98.53189	98.18378
8/25/2017	8/25/2022	8/26/2019	1.55000	105.35112	103.17104	100.60845	99.54978	99.13830	98.74696	98.35908	97.97459
9/5/2017	9/6/2022	9/5/2019	1.55000	105.40278	103.20082	100.61823	99.52155	99.07892	98.66113	98.24714	97.83688
9/12/2017	9/12/2022	9/12/2019	1.49000	105.21844	103.02198	100.50305	99.46656	99.01117	98.57523	98.14333	97.71541
9/18/2017	9/19/2022	9/18/2019	1.62000	105.70529	103.46107	100.77258	99.52732	99.03559	98.58349	98.13569	97.69208
9/22/2017	9/22/2022	9/23/2019	1.65000	105.82471	103.56883	100.84141	99.53489	99.02113	98.55561	98.09460	97.63796
10/10/2017	10/11/2022	10/10/2019	1.75000	106.27010	103.95744	101.08937	99.57503	98.98063	98.47021	97.96523	97.46527
10/23/2017	10/24/2022	10/23/2019	1.79000	106.47806	104.13132	101.19826	99.58711	98.93590	98.39107	97.85252	97.31952
11/6/2017	11/7/2022	11/6/2019	1.82000	106.65741	104.27684	101.28802	99.59938	98.89307	98.31334	97.74094	97.17462
11/17/2017	11/17/2022	11/18/2019	1.88000	106.92912	104.51704	101.45401	99.64506	98.87344	98.26127	97.65795	97.06125
12/4/2017	12/5/2022	6/4/2019	2.54000	109.48892	106.95905	103.46051	100.73812	99.80399	99.62995	99.45859	99.28835
12/4/2017	12/5/2022	12/4/2019	2.00000	107.47143	105.00302	101.81032	99.78165	98.88305	98.22509	97.58027	96.94281
12/14/2017	12/14/2022	12/16/2019	2.04000	107.67186	105.17830	101.93638	99.82589	98.86248	98.17078	97.49522	96.82758
1/12/2018	1/12/2023	4/12/2019	2.70000	110.37165	107.74267	104.09517	101.13164	99.96781	99.93559	99.90353	99.87164
1/19/2018	1/19/2023	1/21/2020	2.26000	108.72525	106.12396	102.65938	100.17304	98.92247	98.11928	97.35372	96.59804
2/2/2018	2/2/2023	5/2/2019	2.89000	111.27011	108.57875	104.82182	101.64323	99.94346	99.84378	99.75815	99.67301
2/2/2018	2/2/2023	5/2/2019	3.21000	112.51811	109.80539	105.97434	102.57149	100.21775	99.87211	99.78645	99.70129
2/9/2018	2/9/2023	2/10/2020	2.33000	109.13141	106.47544	102.92488	100.31001	98.92873	98.05899	97.24210	96.43647
2/9/2018	2/9/2023	2/9/2022	2.77000	110.85596	108.15577	104.37166	100.93906	97.90278	95.17976	92.63556	90.19372
2/16/2018	2/16/2023	5/16/2019	2.97000	111.69759	108.96824	105.15463	101.88696	99.97888	99.78308	99.65956	99.53679
2/16/2018	2/16/2023	5/16/2019	2.99000	111.77637	109.04561	105.22688	101.94392	99.99066	99.78562	99.66210	99.53933
2/20/2018	2/21/2023	2/20/2020	2.44000	109.64387	106.94953	103.31330	100.54308	99.01680	98.09885	97.25560	96.42475
2/20/2018	2/21/2023	2/22/2022	2.87000	111.34356	108.60923	104.77348	101.27906	98.18081	95.40829	92.82704	90.35412
3/5/2018	3/6/2023	6/5/2019	3.09000	112.32473	109.54613	105.65678	102.26542	100.09596	99.72243	99.54792	99.37458
3/15/2018	3/15/2023	6/17/2019	3.15000	112.64281	109.83892	105.91232	102.46169	100.16457	99.68253	99.47594	99.27086
3/20/2018	3/20/2023	6/20/2019	3.43000	113.81433	110.98072	106.98706	103.37034	100.63346	99.73525	99.51819	99.30518
3/21/2018	3/21/2023	6/21/2019	3.43000	113.82386	110.98793	106.99155	103.37261	100.63527	99.73213	99.51229	99.29668
3/29/2018	3/29/2023	7/1/2019	3.26000	113.21111	110.36761	106.38113	102.83474	100.32955	99.65236	99.40782	99.16589
4/5/2018	4/5/2023	4/5/2019	0.49500	114.61836	111.73824	107.67941	103.96811	101.01387	99.98544	99.97206	99.95875
4/13/2018	4/15/2023	4/15/2019	0.49694	114.78495	111.87896	107.78540	104.03277	101.00848	99.82094	99.78096	99.74120
4/27/2018	4/29/2023	4/29/2019	0.76475	115.46902	112.52123	108.36555	104.52169	101.31497	99.68114	99.59689	99.51982

Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
5/4/2018	5/4/2023	5/6/2019	2.63000	110.92085	108.05217	104.17311	101.09657	99.89519	99.79711	99.70053	99.60451
5/4/2018	5/6/2023	5/6/2019	0.73750	115.26395	112.35448	108.26166	104.48246	101.34485	99.77638	99.74266	99.72702
5/8/2018	5/8/2023	5/8/2019	1.43763	114.04252	111.14951	107.10160	103.44519	100.64825	99.81018	99.78893	99.76792
5/17/2018	5/17/2023	5/17/2019	1.38288	114.32012	111.40416	107.32117	103.61781	100.73220	99.72921	99.68260	99.63741
5/17/2018	5/17/2023	5/18/2020	2.84000	111.89547	108.97798	104.98456	101.64529	99.41538	98.08741	97.00823	95.96179
5/24/2018	5/24/2021	5/24/2019	1.25100	108.26848	106.77315	104.67516	102.64362	100.78452	99.66713	99.58416	99.52052
5/24/2018	5/24/2023	5/26/2020	1.65100	111.57015	109.11141	106.02010	103.16172	100.72050	99.12370	98.57763	98.53262
6/5/2018	6/5/2023	6/5/2019	1.29850	113.43291	110.54470	106.52911	102.95953	100.36075	99.73077	99.71946	99.70899
6/5/2018	6/5/2023	6/5/2020	2.72000	111.53635	108.59070	104.59547	101.32844	99.19158	97.87131	96.75501	95.66801
6/25/2018	6/25/2021	6/25/2019	2.10150	106.94491	105.45728	103.37620	101.42824	99.98531	99.73239	99.66746	99.60317
6/25/2018	6/26/2023	6/25/2020	2.10150	110.38600	107.89268	104.79796	102.07738	100.10628	99.21822	99.01353	98.95564
6/25/2018	6/26/2023	6/25/2020	0.30150	112.80514	110.22796	106.97476	103.91665	101.10983	98.76906	97.32094	96.83556
6/27/2018	6/27/2023	6/27/2019	2.53000	110.88505	107.91552	103.95506	100.90763	99.73420	99.48959	99.25668	99.02544
7/2/2018	7/3/2023	7/2/2019	0.79700	114.14914	111.23442	107.17722	103.50274	100.62321	99.47639	99.44916	99.44732
7/2/2018	7/3/2023	7/2/2019	1.79700	112.70576	109.82217	105.85278	102.40761	100.11394	99.71216	99.70897	99.70670
7/2/2018	7/3/2023	7/2/2020	2.71000	111.70471	108.70164	104.64164	101.32532	99.12581	97.72883	96.54368	95.39186
7/30/2018	7/30/2023	7/30/2019	0.75050	114.70792	111.76894	107.68908	103.95973	100.92399	99.40987	99.30137	99.30137
7/30/2018	7/30/2023	7/30/2019	2.00050	112.89598	109.99777	106.02682	102.57274	100.23470	99.71811	99.71667	99.71667
8/23/2018	8/23/2023	8/23/2019	0.65100	114.09192	111.10570	106.98979	103.27384	100.36705	99.10541	98.98346	98.92872
8/28/2018	8/28/2023	8/28/2019	0.62888	114.09905	111.09978	106.96984	103.24171	100.32727	99.05063	98.90916	98.84096
9/4/2018	9/7/2021	9/4/2019	2.11513	106.61006	105.13719	103.10527	101.23396	99.93775	99.70100	99.69367	99.68799
9/25/2018	9/27/2021	9/25/2019	2.69000	106.80677	105.06265	102.61639	100.56924	99.53631	99.04687	98.57932	98.11625
9/25/2018	9/27/2021	9/25/2020	2.99000	107.56593	105.81411	103.32917	101.06064	99.21466	97.71480	96.32787	94.97466
10/3/2018	10/3/2023	10/3/2019	1.80763	113.58656	110.61455	106.58471	103.02012	100.40594	99.45451	99.39802	99.39600
10/26/2018	10/26/2023	10/28/2019	0.76475	114.26556	111.24670	107.16437	103.44873	100.42288	98.78221	98.53370	98.53370
10/29/2018	10/30/2023	10/29/2020	1.75163	111.25720	108.56941	105.45520	102.62657	100.28753	98.80190	98.25238	98.18233
11/6/2018	11/8/2021	11/6/2019	2.23438	106.61230	105.12451	103.08533	101.21206	99.90691	99.58438	99.56827	99.56014
12/17/2018	12/17/2021	12/17/2019	2.11463	106.19816	104.69351	102.64240	100.82104	99.70534	99.45685	99.41352	99.37643
12/24/2018	12/24/2021	12/24/2019	2.10150	105.93345	104.41877	102.36141	100.58563	99.60375	99.40225	99.34259	99.28675