

## **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	110.09866	107.46715	104.62447	101.87274	99.20862	96.62888	94.13045	91.71037
10/1/2012	10/1/2019	4/1/2015	2.25000	101.34357	100.88208	100.29670	99.71760	99.14468	98.57784	98.01699	97.46204
3/26/2015	3/26/2019	3/29/2016	1.61000	100.11620	100.06259	99.99178	99.92136	99.85134	99.78172	99.71248	99.64362
3/26/2015	3/26/2020	3/29/2016	1.59000	101.73111	100.87788	99.81559	98.76970	97.73990	96.72585	95.72724	94.74376
6/29/2015	7/1/2019	6/29/2017	2.74000	100.93605	100.67872	100.34324	100.01060	99.68069	99.35348	99.02894	98.70702
7/30/2015	7/30/2019	6/29/2017	1.80000	100.75986	100.43910	100.02539	99.61539	99.20907	98.80639	98.40730	98.01175
8/14/2015	8/14/2025	8/14/2020	1.85000	110.49856	105.40386	101.41463	98.90415	97.27920	95.89725	94.56018	93.24878
8/26/2015	8/26/2025	8/26/2020	1.75000	109.91126	104.91719	101.07339	98.66759	97.06054	95.65569	94.29183	92.95441
9/15/2015	9/16/2019	9/15/2016	1.75000	100.97204	100.54449	100.00077	99.46267	98.93009	98.40295	97.88118	97.36469
9/29/2015	9/30/2019	9/29/2016	1.61000	100.95687	100.49858	99.91718	99.34200	98.77295	98.20993	97.65284	97.10160
10/2/2015	10/2/2025	10/2/2020	1.69000	109.61730	104.65255	100.85516	98.43456	96.75120	95.25907	93.81096	92.39233
12/24/2015	12/24/2025	12/24/2020	1.99000	111.69109	106.26911	101.88788	98.88343	96.81468	95.08753	93.44334	91.83833
2/26/2016	2/26/2026	2/26/2021	1.49000	108.62716	103.76939	100.06174	97.48123	95.46879	93.63355	91.85720	90.12397
5/5/2016	5/5/2026	5/5/2021	1.49000	108.74505	103.81905	100.01328	97.25557	95.04941	93.04663	91.12006	89.24496
6/16/2016	6/16/2031	6/16/2021	1.21000	109.39981	103.45372	99.29390	96.43051	94.15417	92.06982	90.05989	88.10486
6/27/2016	6/27/2031	6/27/2019	0.91000	106.75960	101.97030	99.82338	99.40628	99.08719	98.77071	98.45678	98.14535
9/15/2016	9/15/2026	9/16/2019	0.99000	105.72220	101.75823	99.69634	99.04059	98.50780	97.98069	97.45895	96.94250
1/20/2017	1/22/2024	4/22/2019	2.61000	112.55016	107.95077	103.69862	100.67286	99.84003	99.69715	99.55519	99.41412
1/24/2017	1/24/2024	4/24/2019	2.79000	113.45535	108.79481	104.40438	101.09599	99.86291	99.71336	99.56609	99.41975
1/30/2017	1/30/2027	1/30/2020	1.72050	117.80124	111.12693	105.61583	101.59663	99.41309	98.83864	98.74395	98.67735
3/7/2017	3/7/2019	3/7/2019	1.50000	100.02916	100.01470	99.99564	99.97667	99.95780	99.93903	99.92035	99.90176
3/20/2017	3/20/2024	3/20/2019	1.55000	107.50289	103.41939	100.49943	99.93614	99.88227	99.82869	99.77540	99.72240
4/13/2017	4/15/2024	4/15/2019	1.45000	107.07016	103.04765	100.31362	99.83771	99.71290	99.58887	99.46559	99.34305
4/28/2017	4/28/2022	4/29/2019	1.59000	105.01452	102.32218	100.23318	99.81879	99.65877	99.49977	99.34181	99.18486
4/28/2017	4/29/2024	4/29/2019	1.76475	113.18161	108.37876	103.97317	100.76871	99.75269	99.67583	99.60068	99.52607
6/5/2017	6/5/2024	6/5/2019	1.75125	112.38420	107.64544	103.42066	100.49847	99.71088	99.69627	99.68529	99.67470
6/14/2017	6/14/2022	6/14/2019	1.59000	105.21901	102.41627	100.25497	99.67158	99.38691	99.10451	98.82429	98.54631
6/27/2017	6/27/2022	6/27/2019	1.60000	105.30836	102.47050	100.27310	99.63330	99.31355	98.99662	98.68223	98.37032
7/3/2017	7/5/2022	7/3/2019	1.80763	108.90616	106.00581	103.09446	100.71041	99.64961	99.61276	99.60733	99.60231
7/14/2017	7/14/2022	7/15/2019	1.62000	105.44914	102.56453	100.30882	99.59155	99.22599	98.86413	98.50534	98.14958
7/24/2017	7/25/2022	7/24/2019	1.63000	105.53097	102.61458	100.32944	99.56589	99.17519	98.78907	98.40633	98.02691
7/28/2017	7/28/2022	7/29/2019	1.60000	105.44005	102.53058	100.28231	99.53789	99.13418	98.73503	98.33943	97.94732
8/1/2017	8/3/2020	5/1/2019	2.79000	104.04214	102.83684	101.41778	100.17277	99.85295	99.68839	99.52491	99.36248
8/11/2017	8/11/2022	8/12/2019	1.59000	105.46381	102.52834	100.27152	99.48845	99.04698	98.61102	98.17909	97.75114
8/25/2017	8/25/2022	8/26/2019	1.55000	105.38034	102.43346	100.21563	99.42215	98.94276	98.46976	98.00133	97.53738
9/5/2017	9/6/2022	9/5/2019	1.55000	105.42853	102.45309	100.21758	99.38840	98.88177	98.38251	97.88819	97.39873
9/12/2017	9/12/2022	9/12/2019	1.49000	105.23745	102.28240	100.12876	99.33224	98.80794	98.29067	97.77862	97.27170
9/18/2017	9/19/2022	9/18/2019	1.62000	105.73254	102.69544	100.33212	99.38658	98.84226	98.30891	97.78103	97.25853
9/22/2017	9/22/2022	9/23/2019	1.65000	105.85338	102.79426	100.38760	99.39687	98.83937	98.29527	97.75679	97.22386
10/10/2017	10/11/2022	10/10/2019	1.75000	106.30023	103.15062	100.57753	99.41516	98.80398	98.21548	97.63334	97.05746
10/23/2017	10/24/2022	10/23/2019	1.79000	106.50654	103.30934	100.66455	99.41221	98.75918	98.13678	97.52134	96.91273
11/6/2017	11/7/2022	11/6/2019	1.82000	106.68260	103.44143	100.73724	99.40387	98.70422	98.04504	97.39354	96.74950
11/17/2017	11/17/2022	11/18/2019	1.88000	106.95504	103.66769	100.87094	99.42930	98.68507	97.99456	97.31239	96.63826
12/4/2017	12/5/2022	3/4/2019	2.54000	109.56136	106.05972	102.66872	100.30190	99.98738	99.97663	99.96594	99.95530
12/4/2017	12/5/2022	12/4/2019	2.00000	107.49918	104.12645	101.16973	99.52555	98.70537	97.97491	97.25403	96.54193
12/14/2017	12/14/2022	12/16/2019	2.04000	107.69882	104.29111	101.27715	99.54995	98.68100	97.91905	97.16770	96.42573
1/12/2018	1/12/2023	4/12/2019	2.70000	110.43920	106.80923	103.25091	100.59680	99.88136	99.76550	99.65034	99.53587
1/19/2018	1/19/2023	1/21/2020	2.26000	108.75299	105.19247	101.90750	99.79262	98.71645	97.85645	97.01357	96.18204
2/2/2018	2/2/2023	5/2/2019	2.89000	111.34306	107.62813	103.93575	101.01764	99.86920	99.70067	99.53451	99.36944
2/2/2018	2/2/2023	5/2/2019	3.21000	112.61780	108.86485	105.06107	101.83571	99.98114	99.75633	99.59011	99.42497
2/9/2018	2/9/2023	2/10/2020	2.33000	109.15451	105.52251	102.14297	99.88873	98.70577	97.78989	96.89645	96.01553
2/9/2018	2/9/2023	2/9/2022	2.77000	110.91537	107.19132	103.43619	100.06283	97.06792	94.33968	91.76151	89.27972
2/16/2018	2/16/2023	5/16/2019	2.97000	111.77007	108.00514	104.24916	101.22253	99.86092	99.64651	99.44270	99.24030
2/16/2018	2/16/2023	5/16/2019	2.99000	111.85052	108.08300	104.31930	101.27227	99.86796	99.65076	99.44695	99.24453
2/20/2018	2/21/2023	2/20/2020	2.44000	109.66994	105.98043	102.49521	100.07386	98.79037	97.84398	96.92732	96.02379
2/20/2018	2/21/2023	2/22/2022	2.87000	111.40517	107.63463	103.82442	100.39041	97.34024	94.56861	91.95713	89.44650
3/5/2018	3/6/2023	3/5/2019	1.50125	112.39801	108.57139	104.74052	101.58072	99.99184	99.97841	99.96504	99.95174
3/15/2018	3/15/2023	3/15/2019	1.53819	112.64499	108.78543	104.91369	101.68165	99.90673	99.86652	99.82652	99.78672
3/20/2018	3/20/2023	3/20/2019	0.79200	113.75517	109.84939	105.88295	102.42500	100.09117	99.77949	99.72622	99.67324
3/21/2018	3/21/2023	3/21/2019	0.78963	113.75578	109.84708	105.87812	102.41867	100.08563	99.76778	99.71185	99.65623
3/29/2018	3/29/2023	3/29/2019	1.55300	113.13427	109.22110	105.28030	101.93088	99.89137	99.73504	99.65749	99.58037

Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
4/5/2018	4/5/2023	4/5/2019	0.49500	114.16714	110.25379	106.29332	102.78865	100.27924	99.73447	99.72134	99.70840
4/13/2018	4/15/2023	4/15/2019	0.49694	114.37468	110.42975	106.43195	102.87746	100.28024	99.61696	99.57689	99.53715
4/27/2018	4/29/2023	4/29/2019	0.76475	115.07577	111.07659	107.01018	103.34459	100.52114	99.51148	99.43509	99.36068
5/4/2018	5/4/2023	5/6/2019	2.63000	110.92644	107.01278	103.27150	100.56949	99.80991	99.63154	99.45454	99.27872
5/4/2018	5/6/2023	5/6/2019	0.73750	114.86822	110.90317	106.90082	103.30273	100.55125	99.59823	99.58203	99.56909
5/8/2018	5/8/2023	5/8/2019	1.43763	113.70682	109.76972	105.83486	102.41387	100.10331	99.70693	99.68816	99.66974
5/17/2018	5/17/2023	5/17/2019	1.38288	113.97765	110.01040	106.03768	102.56041	100.14463	99.62462	99.58142	99.53885
5/17/2018	5/17/2023	5/18/2020	2.84000	111.91151	107.92118	104.03309	100.96832	99.05082	97.78786	96.64887	95.53279
5/24/2018	5/24/2021	5/24/2019	1.25100	108.06439	106.12656	104.04082	102.03901	100.30597	99.53939	99.47468	99.41333
5/24/2018	5/24/2023	5/26/2020	1.65100	111.24920	107.91547	104.89596	102.16377	99.97911	98.78062	98.49280	98.49280
6/5/2018	6/5/2023	6/5/2019	1.45125	113.08223	109.13909	105.25201	101.94951	99.89220	99.61608	99.60519	99.59473
6/5/2018	6/5/2023	6/5/2020	2.72000	111.53252	107.51324	103.64701	100.67451	98.82182	97.53838	96.35711	95.19888
6/25/2018	6/25/2021	6/25/2019	2.32163	106.81813	104.86478	102.80596	100.94877	99.81500	99.68808	99.62294	99.55859
6/25/2018	6/26/2023	6/25/2020	2.32163	110.09232	106.72373	103.74478	101.25145	99.66183	99.09249	98.97677	98.92658
6/25/2018	6/26/2023	6/25/2020	0.52163	112.35172	108.85734	105.66533	102.69070	100.03160	97.97303	96.90532	96.62954
6/27/2018	6/27/2023	6/27/2019	2.53000	110.85398	106.81918	103.03423	100.41098	99.61993	99.30110	98.98611	98.67360
7/2/2018	7/3/2023	7/2/2019	0.79700	113.72087	109.72220	105.77977	102.33367	99.91427	99.28299	99.27677	99.27519
7/2/2018	7/3/2023	7/2/2019	1.79700	112.36510	108.41992	104.60666	101.47644	99.77448	99.62385	99.62108	99.61879
7/2/2018	7/3/2023	7/2/2020	2.71000	111.68464	107.59176	103.67111	100.65311	98.72879	97.37053	96.12277	94.90085
7/30/2018	7/31/2023	7/30/2019	0.75050	114.48956	110.38791	106.33192	102.72464	100.02172	99.00641	98.90528	98.83183
7/30/2018	7/31/2023	7/30/2019	2.00050	112.78579	108.75344	104.85477	101.63032	99.78886	99.50186	99.42585	99.35114
8/23/2018	8/23/2023	8/23/2019	0.65100	113.63272	109.53629	105.54526	102.07123	99.63762	98.88987	98.81718	98.76274
8/28/2018	8/28/2023	8/28/2019	0.62888	113.63634	109.52460	105.52079	102.03710	99.59616	98.83242	98.74596	98.67847
9/4/2018	9/7/2021	9/4/2019	2.23613	106.48252	104.49015	102.48670	100.72805	99.75402	99.66418	99.65769	99.65198
9/25/2018	9/27/2021	9/25/2019	2.69000	106.95234	104.59048	102.13300	100.25787	99.42654	98.87335	98.32791	97.78811
9/25/2018	9/27/2021	9/25/2020	2.99000	107.73712	105.36240	102.83709	100.61208	98.83463	97.31648	95.86719	94.44849
10/3/2018	10/3/2023	10/3/2019	1.80763	113.18381	109.09477	105.21601	101.93591	99.85069	99.35243	99.33910	99.33910
10/26/2018	10/28/2023	10/28/2019	0.76475	114.26407	110.05148	105.99857	102.41487	99.72260	98.56652	98.40134	98.33749
10/29/2018	10/30/2023	10/29/2020	1.75163	111.04571	107.42164	104.32415	101.58292	99.45709	98.26108	97.86578	97.77662
11/6/2018	11/8/2021	11/6/2019	2.23438	106.48464	104.44106	102.43386	100.67785	99.69200	99.55413	99.54421	99.53609
12/17/2018	12/17/2021	12/17/2019	2.28819	106.06872	103.99095	101.98406	100.32633	99.55207	99.44338	99.40704	99.37248
12/24/2018	12/24/2021	12/24/2019	2.32375	105.80569	103.71659	101.71421	100.13654	99.49170	99.39331	99.33840	99.28508