

## **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	2/2/2018	2/2/2018	3.99000	100.02217	100.02217	100.01840	100.01293	100.00750	100.00208	99.99670	99.99134
7/30/2007	1/30/2019	4/30/2018	3.99000	104.03410	103.87495	102.86668	101.87236	100.89323	100.08833	99.82913	99.59312
2/14/2008	2/14/2018	2/14/2018	3.19000	100.12404	100.12404	100.09774	100.05957	100.02161	99.98384	99.94628	99.90891
3/7/2008	3/7/2018	3/7/2018	3.55000	100.34502	100.34502	100.27818	100.18268	100.08774	99.99336	99.89952	99.80623
3/14/2008	3/14/2018	3/14/2018	2.40000	100.27988	100.27988	100.19813	100.08366	99.96988	99.85680	99.74438	99.63264
3/17/2008	3/19/2018	3/19/2018	3.30000	100.43071	100.43071	100.33773	100.20952	100.08210	99.95553	99.82963	99.70455
4/28/2008	4/30/2018	4/30/2018	2.15000	100.53141	100.53141	100.33555	100.09320	99.85262	99.61382	99.37674	99.14138
4/30/2008	4/30/2018	4/30/2018	3.74000	100.92449	100.92449	100.72815	100.48516	100.24395	100.00452	99.76683	99.53085
5/23/2008	5/23/2018	2/23/2018	3.27000	101.01721	101.01721	100.76003	100.45585	100.15398	99.97851	99.91682	99.85547
6/30/2008	7/2/2018	6/30/2011	3.69000	101.55787	101.55787	101.18331	100.76810	100.35657	99.94877	99.54462	99.14406
7/11/2008	7/11/2018	7/11/2012	3.75000	101.67694	101.67694	101.27538	100.83578	100.40017	99.96861	99.54102	99.11733
7/14/2008	7/16/2018	4/16/2018	2.50000	101.15263	101.15263	100.73701	100.28530	99.95523	99.75413	99.55442	99.35608
7/14/2008	7/16/2018	4/16/2018	3.25000	101.49846	101.49846	101.08207	100.62944	100.18103	99.90957	99.70964	99.51109
7/17/2008	7/17/2018	7/17/2013	3.75000	101.73943	101.73943	101.31944	100.86347	100.41168	99.96419	99.52087	99.08167
8/15/2008	8/15/2018	2/15/2018	3.83000	102.08504	102.08499	101.57265	101.03730	100.50737	100.02585	99.96905	99.92901
12/27/2011	12/27/2021	12/29/2014	3.55000	114.06111	110.71516	106.75964	102.96906	99.33643	95.85440	92.51596	89.31448
7/18/2012	7/18/2018	7/20/2015	2.72000	101.26918	101.26918	100.84715	100.38970	99.93644	99.48752	99.04280	98.60222
10/1/2012	10/1/2019	4/1/2015	2.25000	103.79961	103.06956	101.40390	99.77303	98.17653	96.61352	95.08313	93.58453
3/8/2013	3/8/2018	3/9/2015	1.78000	100.17788	100.17788	100.10902	100.01092	99.91341	99.81647	99.72009	99.62428
5/7/2014	5/7/2018	5/7/2015	1.76000	100.46921	100.46921	100.25489	99.99368	99.73443	99.47714	99.22176	98.96827
10/16/2014	10/16/2018	10/17/2016	2.48000	101.77715	101.76077	101.05042	100.34950	99.65683	98.97236	98.29593	97.62740
10/24/2014	10/24/2018	10/26/2015	1.74000	101.28548	101.26070	100.53094	99.81059	99.09893	98.39582	97.70112	97.01468
2/20/2015	2/20/2019	2/22/2016	1.79000	101.91402	101.71851	100.66442	99.62607	98.60354	97.59650	96.60465	95.62769
3/26/2015	3/26/2019	3/29/2016	1.61000	101.87356	101.61267	100.46726	99.34006	98.23105	97.13984	96.06606	95.00935
3/26/2015	3/26/2020	3/29/2016	1.59000	103.46660	102.22176	100.09364	98.02019	96.00005	94.03159	92.11325	90.24351
6/29/2015	7/1/2019	6/29/2017	2.74000	103.92696	103.44279	102.02310	100.62940	99.26169	97.91936	96.60181	95.30848
7/30/2015	7/30/2019	6/29/2017	1.80000	102.72461	102.16766	100.67929	99.21962	97.78832	96.38470	95.00811	93.65789
8/14/2015	8/14/2025	8/14/2020	1.85000	112.34217	106.43209	101.85228	98.47784	95.82821	93.47917	91.24357	89.07745
8/26/2015	8/26/2025	8/26/2020	1.75000	111.66036	105.88604	101.43406	98.13460	95.50220	93.13974	90.88299	88.69589
9/15/2015	9/16/2019	9/15/2016	1.75000	102.88225	102.19630	100.57907	98.99509	97.44390	95.92466	94.43655	92.97880
9/29/2015	9/30/2019	9/29/2016	1.61000	102.71425	101.99004	100.33713	98.71887	97.13471	95.58376	94.06518	92.57813
10/2/2015	10/2/2025	10/2/2020	1.69000	111.33038	105.59047	101.16199	97.83759	95.13803	92.69849	90.36653	88.10859
11/6/2015	11/7/2022	11/6/2018	1.40000	106.76953	103.16318	100.63580	99.53755	98.78695	98.05238	97.32685	96.61019
12/4/2015	12/4/2025	12/4/2018	1.36000	109.09618	104.03862	100.86532	99.45405	98.60266	97.79557	96.99926	96.21327
12/11/2015	12/12/2022	3/12/2018	1.99000	109.81627	105.55084	102.02236	100.17070	99.92648	99.81801	99.71020	99.60303
12/15/2015	12/15/2022	3/15/2018	1.99000	109.83285	105.55938	102.02750	100.17099	99.92113	99.80461	99.68880	99.57368
12/18/2015	12/18/2020	3/19/2018	2.24000	106.54509	104.50939	101.90113	100.26830	99.94158	99.81394	99.68709	99.56101
12/24/2015	12/24/2025	12/24/2020	1.99000	113.74178	107.39869	102.39113	98.58434	95.54561	92.86991	90.34771	87.91655
1/19/2016	1/20/2026	1/22/2019	1.35000	109.11908	104.02166	100.82363	99.30200	98.31813	97.38719	96.47008	95.56604
2/2/2016	2/2/2021	2/2/2018	0.78122	106.77031	104.60012	101.90563	100.25211	99.99768	99.99228	99.98691	99.98156
2/26/2016	2/26/2021	2/26/2018	0.89000	102.77328	101.17758	100.03804	99.94465	99.87426	99.80425	99.73464	99.66541
2/26/2016	2/26/2026	2/26/2021	1.49000	110.20911	104.58929	100.16795	96.67553	93.69384	90.94740	88.32270	85.79069
3/8/2016	3/8/2023	3/8/2018	0.99000	105.11911	101.90298	100.16528	99.93210	99.83391	99.73630	99.63926	99.54279
4/5/2016	4/5/2021	4/2/2018	0.99000	103.18935	100.86111	100.01440	99.80209	99.55662	99.31294	99.07106	98.83094
4/28/2016	4/30/2021	4/30/2018	1.16031	106.86947	104.39653	101.33018	99.86991	99.79446	99.72022	99.64667	99.57378
5/2/2016	5/4/2023	5/4/2018	0.78122	108.39062	103.97046	100.97939	99.88712	99.85177	99.84259	99.83384	99.82553
5/5/2016	5/5/2021	5/7/2018	0.89000	102.94135	101.21731	100.04582	99.76213	99.50297	99.24580	98.99053	98.73715
5/5/2016	5/5/2026	5/5/2021	1.49000	110.34495	104.61077	100.05632	96.40953	93.27097	90.37796	87.61828	84.96121
5/17/2016	5/17/2021	5/17/2018	0.82190	106.35911	103.83620	100.82147	99.83800	99.79236	99.74749	99.70326	99.65965
6/16/2016	6/16/2026	6/18/2018	0.69000	104.60044	101.44414	99.99875	99.56151	99.19157	98.82473	98.46102	98.10042
6/16/2016	6/16/2031	6/16/2021	1.21000	110.65418	104.05367	99.14595	95.34796	92.11467	89.14390	86.31669	83.59840
6/27/2016	6/27/2031	6/27/2018	0.69000	105.72338	101.75836	100.01654	99.52771	99.13319	98.74233	98.35491	97.97088
6/27/2016	6/27/2031	6/27/2019	0.91000	107.76119	102.73900	99.81944	98.10899	96.73488	95.42022	94.13113	92.86568
7/28/2016	7/30/2026	7/30/2018	1.06031	108.49604	103.28092	100.51720	99.70473	99.59907	99.52631	99.45466	99.38405
8/11/2016	8/11/2026	8/13/2018	0.81000	105.49098	101.86955	100.07661	99.40982	98.88804	98.37270	97.86254	97.35750
9/9/2016	9/9/2026	9/10/2018	0.80000	105.44565	101.83965	100.04624	99.30313	98.70763	98.12114	97.54099	96.96706
9/15/2016	9/15/2026	9/16/2019	0.99000	106.83849	102.49840	99.68249	97.80863	96.23141	94.72108	93.24361	91.79635
9/22/2016	9/22/2031	9/24/2018	0.65000	105.40274	101.60736	99.87567	99.14822	98.51782	97.89514	97.27942	96.67054
1/13/2017	1/13/2022	4/13/2018	2.10000	108.41662	105.21034	101.99311	100.20756	99.88037	99.68765	99.49641	99.30639
1/13/2017	1/13/2027	1/14/2019	1.31000	109.42528	104.11866	100.87950	99.30948	98.32004	97.40612	96.50682	95.62019
1/20/2017	1/22/2024	1/22/2019	0.71470	111.71878	106.11035	102.24365	99.79621	99.00482	98.89672	98.85029	98.80614

Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
1/24/2017	1/24/2024	1/24/2019	0.70130	112.61182	106.89591	102.83947	100.08695	99.03330	98.87186	98.81902	98.76967
1/30/2017	1/30/2027	1/30/2020	0.73690	116.58788	108.82403	103.72627	100.23976	98.40875	97.75938	97.60634	97.56352
2/17/2017	2/20/2022	2/20/2018	0.42190	109.17152	105.81945	102.43858	100.33542	99.89497	99.84109	99.78751	99.73421
3/7/2017	3/7/2022	3/7/2018	0.51532	109.26925	105.85199	102.46087	100.34046	99.89275	99.87359	99.85465	99.83594
3/7/2017	3/8/2027	3/7/2019	1.50000	111.00865	105.21053	101.44618	99.43576	98.22433	97.17274	96.14576	95.13474
3/20/2017	3/20/2024	3/20/2019	1.55000	109.04939	104.35885	101.11186	99.35477	98.19482	97.11669	96.05710	95.01420
3/20/2017	3/22/2032	3/20/2018	1.04000	109.29543	103.60967	100.56903	99.91180	99.78077	99.65064	99.52131	99.39278
3/27/2017	3/29/2021	3/27/2018	0.52464	107.60691	105.24933	102.38354	100.36168	99.76614	99.69516	99.62461	99.55469
3/31/2017	4/2/2022	4/2/2018	0.69465	108.97032	105.47775	102.16115	100.18139	99.84478	99.84174	99.83867	99.83603
4/10/2017	4/11/2022	4/10/2018	0.70802	108.58262	105.09288	101.86611	100.04619	99.79715	99.77200	99.74735	99.72301
4/13/2017	4/13/2022	4/13/2018	0.72152	108.42479	104.94351	101.75541	100.00522	99.78519	99.75196	99.71934	99.68705
4/13/2017	4/15/2024	4/15/2019	1.45000	108.50746	103.94031	100.84910	99.14179	97.93400	96.79385	95.67360	94.57174
4/13/2017	4/13/2032	4/13/2018	0.99000	108.81387	103.33258	100.46743	99.85320	99.65927	99.46688	99.27596	99.08626
4/28/2017	4/30/2021	4/30/2018	0.76031	107.07502	104.63424	101.85821	100.07958	99.69604	99.62192	99.54853	99.47580
4/28/2017	4/28/2022	4/29/2019	1.59000	106.83605	103.60292	100.87031	99.24869	98.02296	96.84768	95.69262	94.55694
4/28/2017	4/29/2024	4/29/2019	0.76031	111.73714	106.01996	102.20242	99.72981	98.77673	98.59185	98.53078	98.47634
5/8/2017	5/10/2027	5/8/2018	1.30000	109.51852	104.18971	100.98296	99.88047	99.60740	99.34739	99.08931	98.83315
5/8/2017	5/10/2032	5/8/2018	1.15000	110.46261	104.28427	100.82887	99.83647	99.56718	99.30724	99.04922	98.79313
5/19/2017	5/21/2022	5/21/2018	0.43567	108.31758	104.71133	101.55795	99.87848	99.65329	99.59789	99.54321	99.48923
5/22/2017	5/24/2021	5/22/2018	0.44594	106.53058	104.03643	101.38230	99.86619	99.64137	99.58326	99.52586	99.46913
5/22/2017	5/24/2027	5/22/2018	1.09000	107.87865	103.17636	100.53647	99.78108	99.47920	99.18178	98.88670	98.59394
6/1/2017	6/7/2032	6/5/2018	0.99000	108.85115	103.34728	100.47103	99.71224	99.37180	99.03707	98.70510	98.37585
6/2/2017	6/7/2032	6/5/2018	0.99000	108.85216	103.34687	100.47044	99.71222	99.37180	99.03707	98.70510	98.37585
6/5/2017	6/6/2022	6/5/2018	0.49463	108.11887	104.46671	101.38771	99.81499	99.65150	99.63942	99.62794	99.61702
6/5/2017	6/5/2024	6/5/2019	0.49463	110.97845	105.30017	101.68375	99.46606	98.68790	98.58146	98.58146	98.58146
6/5/2017	6/7/2032	6/5/2018	0.99000	108.85308	103.34921	100.47146	99.71222	99.37180	99.03707	98.70510	98.37585
6/14/2017	6/14/2022	6/14/2019	1.59000	107.04359	103.66890	100.85072	99.10123	97.75021	96.45944	95.19304	93.94928
6/22/2017	6/22/2022	6/22/2018	0.65793	108.31470	104.58883	101.45501	99.79786	99.56843	99.51264	99.45776	99.40368
6/27/2017	6/27/2022	6/27/2018	0.67464	108.12440	104.40383	101.32156	99.75422	99.54172	99.47223	99.40369	99.33605
6/27/2017	6/27/2022	6/27/2019	1.60000	107.14568	103.72334	100.86920	99.07922	97.69344	96.37228	95.07639	93.80422
7/3/2017	7/3/2020	7/3/2018	0.69428	104.88838	103.33702	101.36981	99.94049	99.59025	99.58536	99.58172	99.57874
7/3/2017	7/6/2021	7/3/2018	0.69428	106.74899	104.10189	101.43003	99.83130	99.57971	99.57507	99.57126	99.56803
7/3/2017	7/3/2022	7/3/2019	0.69428	107.89051	104.21327	101.50113	99.52087	98.65395	98.50943	98.50943	98.50943
7/14/2017	7/14/2022	7/15/2019	1.62000	107.31151	103.82054	100.90698	99.05033	97.61250	96.24608	94.90673	93.59255
7/14/2017	7/16/2022	7/16/2018	0.42152	108.77028	104.88988	101.62659	99.73290	99.38408	99.34401	99.30570	99.26823
7/21/2017	7/23/2022	7/23/2018	0.44470	108.77943	104.87512	101.60700	99.70651	99.33996	99.28062	99.22336	99.16705
7/24/2017	7/25/2022	7/24/2019	1.63000	107.40645	103.87384	100.92682	99.03781	97.57453	96.18592	94.82529	93.49053
7/28/2017	7/28/2022	7/29/2019	1.60000	107.28345	103.76717	100.85089	98.97263	97.50096	96.10069	94.72865	93.38288
7/28/2017	7/30/2022	7/30/2018	0.46031	108.82117	104.88711	101.60861	99.69105	99.30284	99.22948	99.15867	99.08889
7/28/2017	7/30/2022	7/30/2018	0.76031	108.40301	104.52637	101.39470	99.72118	99.45058	99.37787	99.30664	99.23645
7/31/2017	7/31/2020	7/31/2018	0.72225	105.01112	103.37393	101.36378	99.85895	99.42442	99.35076	99.27962	99.20953
7/31/2017	1/31/2021	7/31/2018	0.72225	105.96391	103.77724	101.37324	99.76825	99.42330	99.35077	99.27963	99.20954
7/31/2017	7/31/2021	7/31/2018	0.72225	106.79462	104.06727	101.37067	99.73884	99.42345	99.35078	99.27964	99.20955
7/31/2017	1/31/2022	7/31/2018	0.72225	107.71622	104.39989	101.40516	99.70807	99.42326	99.35078	99.27965	99.20955
7/31/2017	7/31/2022	7/31/2018	0.72225	108.41601	104.53144	101.39167	99.70107	99.42344	99.35079	99.27965	99.20956
8/1/2017	8/1/2020	8/1/2018	0.07678	105.01225	103.36909	101.39461	99.86213	99.37108	99.36743	99.36743	99.36743
8/1/2017	8/1/2022	8/1/2018	0.07678	108.68074	104.73921	101.52253	99.68313	99.36763	99.36746	99.36746	99.36746
8/11/2017	8/11/2022	8/12/2019	1.59000	107.29975	103.74751	100.81707	98.90698	97.39817	95.96316	94.55772	93.17972
8/11/2017	8/13/2022	8/13/2018	0.41289	108.04532	104.14628	101.14477	99.64299	99.45318	99.42123	99.39053	99.36076
8/17/2017	8/17/2022	8/17/2018	0.12190	108.53805	104.55341	101.37158	99.58643	99.26763	99.22404	99.18285	99.14264
8/18/2017	8/20/2022	8/20/2018	0.43567	108.18174	104.24200	101.20317	99.64262	99.41439	99.36317	99.31349	99.26485
8/25/2017	8/25/2022	8/26/2019	1.55000	107.17636	103.61386	100.70774	98.79107	97.25212	95.78389	94.34630	92.93729
8/25/2017	8/27/2022	8/27/2018	0.46206	107.87381	103.95034	101.00383	99.58038	99.38509	99.31765	99.25158	99.18662
9/5/2017	9/6/2022	9/5/2019	1.55000	107.22802	103.62989	100.70333	98.76091	97.19656	95.70565	94.24636	92.81644
9/12/2017	9/12/2022	9/12/2018	0.54878	107.26685	103.36027	100.63397	99.48643	99.38071	99.35414	99.32871	99.30429
9/12/2017	9/12/2022	9/12/2019	1.49000	106.97302	103.41276	100.55249	98.63224	97.05759	95.55094	94.07622	92.63145
9/18/2017	9/19/2022	9/18/2019	1.62000	107.61299	103.91117	100.86865	98.83864	97.22975	95.70607	94.21578	92.75598
9/22/2017	9/22/2022	9/23/2019	1.65000	107.76774	104.03140	100.94414	98.87405	97.24467	95.70731	94.20432	92.73229
9/22/2017	9/24/2022	9/24/2018	0.65793	108.18578	104.11677	101.11097	99.56167	99.31574	99.25592	99.19827	99.14180
10/10/2017	10/11/2022	10/10/2018	0.95802	108.25000	104.12493	101.17513	99.68763	99.47736	99.45425	99.43353	99.41389
10/10/2017	10/11/2022	10/10/2018	0.36802	108.93110	104.68708	101.45422	99.50687	99.07261	99.04499	99.02582	99.00772

Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
10/10/2017	10/11/2022	10/10/2019	1.75000	108.33092	104.44776	101.20316	99.00590	97.31193	95.73078	94.18715	92.67603
10/23/2017	10/24/2022	10/23/2018	0.99447	108.32776	104.15791	101.18780	99.66721	99.41397	99.35536	99.29974	99.24539
10/23/2017	10/24/2022	10/23/2019	1.79000	108.58600	104.62803	101.31103	99.04360	97.30302	95.68805	94.11317	92.57203
10/25/2017	10/25/2022	10/25/2018	0.74520	108.79500	104.54701	101.40079	99.60406	99.22472	99.15768	99.09725	99.03815
11/6/2017	11/7/2022	11/6/2018	0.39139	108.71045	104.41797	101.31823	99.57846	99.24640	99.23259	99.22594	99.22038
11/6/2017	11/7/2022	11/6/2019	1.82000	108.80068	104.77290	101.39166	99.06178	97.27747	95.62771	94.02024	92.44780
11/17/2017	11/17/2022	11/18/2019	1.88000	109.14306	105.03760	101.56515	99.15617	97.32518	95.64541	94.01097	92.41270
11/17/2017	11/19/2022	11/19/2018	0.42190	108.85772	104.51547	101.37546	99.56833	99.17742	99.12714	99.08577	99.04572
12/4/2017	12/4/2022	12/4/2018	0.48738	109.47341	105.01664	101.75231	99.71632	99.18583	99.16342	99.16287	99.16287
12/4/2017	12/5/2022	12/4/2019	2.00000	109.82671	105.57620	101.93713	99.37189	97.45699	95.73143	94.05759	92.42165
12/14/2017	12/14/2022	12/16/2019	2.04000	110.07426	105.76444	102.06458	99.43219	97.47186	95.71458	94.01262	92.34983
12/18/2017	12/19/2022	12/18/2018	1.75000	108.66629	104.56193	101.38314	99.76954	98.86447	98.01940	97.18592	96.36356
1/12/2018	1/14/2023	1/14/2019	0.70911	110.05734	105.42315	102.05025	99.80384	99.06192	98.98314	98.95596	98.93064
1/19/2018	1/19/2023	1/21/2020	2.26000	111.38678	106.81723	102.82164	99.88396	97.73119	95.86640	94.07695	92.33134
1/29/2018	1/30/2023	1/29/2019	2.05000	110.39124	105.90788	102.23514	100.09016	98.97242	98.01752	97.07924	96.15449
2/2/2018	2/4/2023	2/4/2019	0.77777	110.70819	105.95466	102.50884	100.07894	99.11825	99.01113	99.01113	99.01113
2/2/2018	2/4/2023	2/4/2019	0.02777	111.24227	106.40334	102.76888	99.95911	98.53598	98.27146	98.27146	98.27146