

## **Parallel-Shift Sensitivity Analysis for HLB-Option and Knockout Advances**

The Federal Home Loan Bank of Boston (Bank) is providing estimated valuations of the specific HLB-Option and Knockout advances set forth below 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 HLB-Option or Knockout advance.

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 HLB-Option and Knockout advances.

The table depicts valuation estimates resulting from immediate parallel interest-rate movements of plus/minus 400 basis points in 100 basis point increments. 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 by the indicated basis point shocks. Please note that the valuation estimates are from the Federal Home Loan Bank of Boston's perspective. Since the advance is held by the member 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 advance, the Bank would be likely to exercise its option to cancel the advance as the value falls below 100. In the case of a Knockout advance, the Bank would automatically terminate the advance on any specified cancellation date if LIBOR is equal to or greater than a predetermined "strike rate" four London Business days prior to the scheduled cancellation date. In either case, the member's cost to purchase the advance increases as interest rates fall.

To identify your advance, locate the appropriate 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 the Money Desk at 1-800-357-3452.

As of: 5/31/2016 Parallel-Shift Sensitivity Analysis for HLB-Option and Knockout Advances

Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
6/12/2006	6/13/2016	6/13/2016	4.620	100.167	100.167	100.167	100.153	100.117	100.080	100.044	100.008
6/26/2006	6/27/2016	6/27/2016	4.730	100.355	100.355	100.355	100.326	100.251	100.175	100.100	100.026
7/24/2006	7/25/2016	7/25/2016	4.660	100.712	100.712	100.712	100.642	100.491	100.340	100.190	100.041
7/28/2006	7/28/2016	7/28/2016	4.490	100.723	100.723	100.723	100.649	100.490	100.331	100.173	100.016
8/25/2006	8/25/2016	8/25/2016	4.350	101.039	101.039	101.039	100.912	100.678	100.445	100.212	99.981
11/24/2006	11/25/2016	8/24/2016	4.190	102.072	102.072	102.072	101.701	101.215	100.735	100.296	99.965
12/1/2006	12/1/2016	9/1/2016	4.090	102.090	102.090	102.090	101.702	101.199	100.709	100.269	100.009
12/4/2006	12/5/2016	6/6/2016	4.080	102.131	102.131	102.131	101.730	101.217	100.716	100.267	100.003
12/5/2006	12/5/2016	6/6/2016	4.260	102.225	102.225	102.225	101.824	101.311	100.806	100.344	100.036
12/8/2006	12/8/2016	6/8/2016	3.990	102.117	102.117	102.117	101.707	101.187	100.680	100.231	99.991
12/12/2006	12/12/2016	6/13/2016	3.990	102.161	102.161	102.161	101.740	101.208	100.691	100.233	99.986
12/19/2006	12/19/2016	6/20/2016	4.190	102.351	102.351	102.351	101.908	101.358	100.819	100.326	100.016
12/28/2006	12/28/2016	6/28/2016	4.250	102.491	102.491	102.491	102.021	101.447	100.883	100.363	100.026
12/28/2006	12/28/2016	6/28/2016	4.400	102.579	102.579	102.579	102.109	101.534	100.968	100.439	100.065
1/12/2007	1/12/2017	7/12/2016	4.420	102.775	102.775	102.775	102.259	101.644	101.041	100.481	100.076
1/16/2007	1/17/2017	7/18/2016	4.790	103.073	103.073	103.073	102.542	101.912	101.293	100.699	100.208
2/2/2007	2/2/2017	8/20/2016	4.690	103.218	103.218	103.218	102.637	101.964	101.301	100.646	99.999
2/20/2007	2/21/2017	8/20/2016	4.850	103.583	103.583	103.583	102.942	102.213	101.494	100.786	100.087
2/20/2007	2/21/2017	8/22/2016	4.390	103.244	103.244	103.244	102.604	101.876	101.169	100.529	100.064
2/23/2007	2/23/2017	8/23/2016	4.250	103.164	103.164	103.164	102.518	101.785	101.076	100.450	100.013
2/23/2007	2/23/2017	8/23/2016	4.350	103.238	103.238	103.238	102.592	101.859	101.147	100.508	100.048
3/16/2007	3/16/2017	6/16/2016	4.090	103.283	103.283	103.283	102.570	101.783	101.031	100.388	100.019
3/23/2007	3/23/2017	6/23/2016	4.290	103.527	103.527	103.527	102.791	101.983	101.205	100.516	100.069
4/9/2007	4/10/2017	7/11/2016	4.150	103.620	103.620	103.620	102.824	101.971	101.159	100.458	100.032
4/12/2007	4/12/2017	7/12/2016	4.250	103.730	103.730	103.730	102.928	102.068	101.245	100.526	100.061
4/13/2007	4/13/2017	7/13/2016	4.450	103.918	103.918	103.918	103.112	102.247	101.413	100.665	100.132
5/18/2007	5/18/2017	8/18/2016	4.190	104.097	104.097	104.097	103.172	102.217	101.311	100.539	100.030
5/22/2007	5/22/2017	8/22/2016	4.750	104.697	104.697	104.697	103.755	102.784	101.842	100.976	100.297
5/29/2007	5/30/2017	8/29/2016	4.250	104.297	104.297	104.297	103.330	102.343	101.403	100.593	100.042
6/7/2007	6/7/2017	6/7/2016	4.820	104.980	104.980	104.980	103.982	102.965	101.981	101.077	100.359
6/8/2007	6/8/2017	6/8/2016	4.490	104.652	104.652	104.652	103.651	102.635	101.662	100.801	100.174
6/18/2007	6/19/2017	6/20/2016	4.500	104.800	104.800	104.800	103.760	102.710	101.704	100.814	100.175
6/19/2007	6/19/2017	6/20/2016	4.650	104.960	104.960	104.960	103.919	102.867	101.854	100.941	100.240
6/22/2007	6/22/2017	6/22/2016	4.500	104.837	104.837	104.837	103.786	102.728	101.713	100.815	100.174
6/28/2007	6/28/2017	6/28/2016	4.500	104.912	104.912	104.912	103.840	102.763	101.731	100.818	100.173
7/13/2007	7/13/2017	7/13/2016	4.290	104.862	104.862	104.859	103.736	102.624	101.574	100.680	100.104
7/20/2007	7/20/2017	7/20/2016	4.290	104.945	104.945	104.941	103.794	102.663	101.595	100.685	100.100
7/27/2007	7/27/2017	7/27/2016	4.250	104.982	104.982	104.976	103.805	102.656	101.574	100.657	100.079
7/30/2007	1/30/2019	8/1/2016	3.990	110.794	110.794	110.098	107.403	104.916	102.763	101.119	100.170
7/31/2007	7/31/2017	8/1/2016	3.990	104.721	104.721	104.714	103.533	102.383	101.320	100.481	99.999
7/31/2007	7/31/2017	8/1/2016	3.990	104.721	104.721	104.714	103.533	102.383	101.320	100.481	99.999
7/31/2007	7/31/2017	8/1/2016	4.060	104.804	104.804	104.797	103.615	102.462	101.392	100.531	100.023
8/2/2007	8/2/2017	8/2/2016	4.150	104.934	104.934	104.925	103.736	102.577	101.498	100.613	100.063
8/2/2007	8/2/2017	8/2/2016	4.050	104.815	104.815	104.806	103.619	102.463	101.395	100.539	100.025
8/9/2007	8/9/2017	8/9/2016	3.990	104.821	104.821	104.806	103.599	102.427	101.349	100.495	99.991
8/16/2007	8/16/2017	8/16/2016	3.990	104.899	104.899	104.877	103.651	102.460	101.364	100.495	99.978
8/17/2007	8/17/2017	8/17/2016	4.000	104.922	104.922	104.899	103.671	102.476	101.376	100.503	99.980
9/4/2007	9/5/2017	6/6/2016	3.890	104.992	104.992	104.952	103.672	102.436	101.317	100.450	100.018
9/10/2007	9/11/2017	6/10/2016	3.690	104.797	104.797	104.751	103.458	102.218	101.119	100.304	99.981
9/11/2007	9/11/2017	6/13/2016	3.590	104.667	104.667	104.621	103.330	102.097	101.018	100.238	99.971
9/13/2007	9/13/2017	6/13/2016	3.990	105.209	105.209	105.161	103.857	102.595	101.440	100.524	100.037
9/27/2007	9/27/2017	6/27/2016	3.650	104.907	104.907	104.847	103.509	102.228	101.098	100.263	99.945
10/11/2007	10/11/2017	7/11/2016	3.990	105.519	105.519	105.445	104.063	102.729	101.515	100.551	100.027
10/15/2007	10/16/2017	7/15/2016	3.990	105.575	105.575	105.495	104.099	102.751	101.525	100.550	100.022
10/26/2007	10/26/2017	7/26/2016	3.390	104.830	104.830	104.740	103.331	102.007	100.885	100.154	99.852
11/5/2007	11/6/2017	8/5/2016	4.390	106.390	106.390	106.288	104.827	103.408	102.084	100.966	100.215
11/6/2007	11/6/2017	8/8/2016	3.480	105.065	105.065	104.964	103.523	102.169	101.014	100.230	99.847
11/19/2007	11/20/2017	11/19/2012	4.290	106.411	106.411	106.295	104.792	103.315	101.865	100.443	99.048

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Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
11/20/2007	11/20/2017	8/22/2016	3.740	105.589	105.589	105.473	103.985	102.568	101.316	100.393	99.891
11/23/2007	11/24/2017	11/23/2011	3.990	106.007	106.007	105.887	104.376	102.891	101.434	100.005	98.603
11/23/2007	11/24/2017	11/23/2011	3.990	106.007	106.007	105.887	104.376	102.891	101.434	100.005	98.603
11/29/2007	11/29/2017	8/29/2016	2.950	104.482	104.482	104.358	102.878	101.542	100.517	99.936	99.635
11/30/2007	11/30/2017	8/30/2016	3.190	104.856	104.856	104.730	103.234	101.854	100.735	100.044	99.696
12/10/2007	12/11/2017	6/10/2016	3.450	105.357	105.357	105.219	103.684	102.250	101.037	100.213	99.974
12/24/2007	12/26/2017	12/24/2012	3.990	106.361	106.361	106.206	104.605	103.032	101.491	99.981	98.501
1/7/2008	1/8/2018	7/7/2016	2.590	104.223	104.223	104.056	102.515	101.199	100.297	99.934	99.816
1/8/2008	1/8/2018	7/8/2016	2.570	104.190	104.190	104.023	102.484	101.173	100.281	99.928	99.809
1/8/2008	1/8/2018	7/8/2016	2.640	104.304	104.304	104.137	102.589	101.258	100.329	99.941	99.816
1/11/2008	1/11/2018	7/11/2016	2.720	104.457	104.457	104.286	102.722	101.363	100.388	99.953	99.811
1/14/2008	1/16/2018	7/14/2016	3.240	105.355	105.355	105.175	103.556	102.071	100.862	100.127	99.865
1/16/2008	1/16/2018	7/18/2016	2.380	103.933	103.933	103.759	102.225	100.958	100.162	99.869	99.733
1/17/2008	1/17/2018	7/18/2016	2.250	103.725	103.725	103.550	102.036	100.816	100.098	99.850	99.716
1/18/2008	1/18/2018	7/18/2016	2.290	103.797	103.797	103.621	102.097	100.860	100.116	99.856	99.721
2/14/2008	2/14/2018	2/14/2012	3.190	105.529	105.529	105.318	103.584	101.885	100.221	98.593	96.998
2/25/2008	2/26/2018	8/25/2016	2.420	104.275	104.275	104.060	102.416	101.058	100.183	99.770	99.524
3/7/2008	3/7/2018	6/7/2016	3.550	106.360	106.360	106.128	104.354	102.706	101.313	100.339	99.984
3/14/2008	3/14/2018	6/14/2016	2.400	104.346	104.346	104.113	102.441	101.071	100.197	99.962	99.923
3/17/2008	3/19/2018	6/17/2016	3.300	106.022	106.022	105.775	103.984	102.348	101.014	100.180	99.949
4/28/2008	4/30/2018	7/28/2016	2.150	104.174	104.174	103.891	102.162	100.816	100.066	99.801	99.641
4/30/2008	4/30/2018	4/30/2013	3.740	107.261	107.261	106.961	105.003	103.088	101.217	99.390	97.604
5/23/2008	5/23/2018	8/23/2016	3.270	106.558	106.558	106.230	104.271	102.498	101.069	100.170	99.752
6/30/2008	7/2/2018	6/30/2011	3.690	107.810	107.810	107.427	105.291	103.206	101.172	99.189	97.254
7/11/2008	7/11/2018	7/11/2012	3.750	108.031	108.031	107.635	105.473	103.362	101.303	99.296	97.339
7/14/2008	7/16/2018	7/14/2016	2.500	105.388	105.388	105.004	103.027	101.405	100.334	99.911	99.770
7/14/2008	7/16/2018	7/14/2016	3.250	107.005	107.005	106.608	104.513	102.635	101.133	100.206	99.872
7/17/2008	7/17/2018	7/14/2016	3.750	108.093	108.093	107.690	105.510	103.383	101.309	99.287	97.316
8/15/2008	8/15/2018	8/15/2016	3.830	108.574	108.574	108.132	105.906	103.840	102.056	100.734	100.004
12/27/2011	12/27/2021	12/29/2014	3.550	120.076	120.076	115.893	110.129	104.690	99.560	94.718	90.149
5/15/2012	5/15/2017	11/17/2014	1.950	101.890	101.890	101.890	100.985	100.044	99.121	98.214	97.325
6/20/2012	6/20/2017	6/22/2015	1.630	101.743	101.743	101.743	100.714	99.674	98.651	97.645	96.656
7/16/2012	7/17/2017	7/16/2014	1.720	101.968	101.968	101.964	100.843	99.728	98.630	97.549	96.485
7/18/2012	7/18/2018	7/20/2015	2.720	105.878	105.878	105.475	103.316	101.210	99.157	97.156	95.205
7/19/2012	7/19/2017	7/21/2014	1.690	101.943	101.943	101.939	100.811	99.691	98.588	97.503	96.434
10/1/2012	10/1/2019	4/1/2015	2.250	107.612	107.612	106.437	103.072	99.829	96.706	93.697	90.796
10/5/2012	10/5/2017	10/6/2014	1.630	102.227	102.227	102.159	100.810	99.484	98.181	96.901	95.643
3/8/2013	3/8/2018	3/9/2015	1.780	103.194	103.194	102.961	101.184	99.445	97.744	96.080	94.451
5/7/2014	5/7/2018	5/7/2015	1.760	103.451	103.451	103.144	101.203	99.308	97.456	95.648	93.882
10/16/2014	10/16/2018	10/17/2016	0.413	105.026	105.026	104.498	102.317	100.670	99.854	99.584	99.449
10/24/2014	10/24/2018	10/26/2015	1.740	104.233	104.233	103.696	101.293	98.956	96.685	94.476	92.329
10/24/2014	10/24/2018	10/26/2015	1.740	104.233	104.233	103.696	101.293	98.956	96.685	94.476	92.329
2/20/2015	2/20/2019	2/22/2016	1.790	104.947	104.947	104.226	101.494	98.845	96.278	93.790	91.379
3/26/2015	3/26/2019	3/29/2016	1.610	104.601	104.601	103.824	101.005	98.275	95.632	93.073	90.596
3/26/2015	3/26/2020	3/29/2016	1.590	106.160	106.160	104.539	100.737	97.092	93.598	90.248	87.035
6/29/2015	7/1/2019	6/29/2017	0.350	105.422	105.422	104.455	102.422	101.021	100.199	99.826	99.693
7/30/2015	7/30/2019	8/1/2016	0.347	105.524	105.524	104.496	101.521	100.005	99.646	99.474	99.307
8/14/2015	8/14/2025	8/14/2020	1.850	117.274	115.594	109.738	103.975	98.984	94.558	90.553	86.863
8/19/2015	8/19/2025	8/21/2017	0.990	109.257	108.213	104.723	101.542	99.373	97.786	96.485	95.304
8/25/2015	8/25/2020	8/25/2017	0.950	104.081	104.081	102.952	100.687	98.989	97.606	96.374	95.206
8/26/2015	8/26/2025	8/26/2020	1.750	116.399	114.757	109.030	103.346	98.409	94.017	90.029	86.346
9/14/2015	9/14/2020	9/14/2017	1.050	104.569	104.569	103.345	100.940	99.119	97.641	96.337	95.112
9/15/2015	9/16/2019	9/15/2016	0.304	105.295	105.295	104.160	101.354	100.123	99.895	99.851	99.818
9/18/2015	9/18/2020	9/18/2017	1.090	104.756	104.756	103.494	101.038	99.180	97.677	96.357	95.120
9/29/2015	9/30/2019	9/29/2016	0.310	104.844	104.844	103.679	100.992	99.966	99.773	99.694	99.622
10/2/2015	10/2/2020	10/2/2017	0.890	103.917	103.917	102.799	100.527	98.768	97.295	95.966	94.704
10/2/2015	10/2/2025	10/2/2020	1.690	116.010	114.368	108.654	102.953	97.979	93.538	89.495	85.756
11/6/2015	11/6/2020	11/6/2017	1.050	104.724	104.724	103.420	100.913	98.963	97.343	95.901	94.546

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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	1.400	109.141	109.141	105.897	102.097	98.937	96.206	93.757	91.490
12/4/2015	12/4/2025	12/4/2018	1.360	113.121	111.594	106.994	102.593	99.065	96.107	93.514	91.149
12/8/2015	12/8/2020	12/8/2016	0.174	105.370	105.370	103.786	101.485	100.300	99.838	99.719	99.694
12/11/2015	12/12/2022	12/11/2017	0.145	109.357	109.357	105.287	102.498	100.657	99.492	98.778	98.332
12/15/2015	12/16/2019	12/15/2016	0.384	104.120	104.120	103.136	101.222	100.250	99.871	99.762	99.723
12/15/2015	12/15/2022	12/15/2017	0.134	109.337	109.337	105.256	102.511	100.771	99.770	99.259	99.029
12/18/2015	12/18/2020	12/18/2017	0.389	106.458	106.458	104.420	102.302	100.893	100.041	99.584	99.365
12/24/2015	12/24/2020	12/26/2017	1.250	105.790	105.790	104.242	101.438	99.236	97.414	95.810	94.320
12/24/2015	12/24/2025	12/24/2020	1.990	119.311	117.240	110.829	104.655	99.291	94.530	90.223	86.264
1/8/2016	1/8/2019	1/9/2017	1.120	102.961	102.961	102.496	100.860	99.777	99.033	98.417	97.834
1/12/2016	1/13/2020	1/12/2017	0.031	105.391	105.391	104.214	101.884	100.433	99.670	99.347	99.200
1/19/2016	1/19/2021	1/19/2018	1.150	105.410	105.410	103.889	101.134	98.944	97.100	95.455	93.914
1/19/2016	1/20/2026	1/22/2019	1.350	113.201	111.588	106.911	102.322	98.546	95.307	92.420	89.765
1/22/2016	1/22/2020	1/23/2017	0.035	104.134	104.134	103.061	101.057	99.954	99.437	99.209	99.066
1/29/2016	1/29/2021	1/30/2017	0.038	105.456	105.456	103.730	101.358	100.044	99.422	99.148	98.982
2/2/2016	2/2/2021	2/2/2018	0.037	105.850	105.850	103.708	101.618	100.133	99.185	98.612	98.269
2/17/2016	2/17/2021	2/17/2017	0.028	103.229	103.229	101.940	100.305	99.526	99.151	98.916	98.714
2/26/2016	2/26/2020	2/27/2017	0.065	103.505	103.505	102.461	100.632	99.637	99.127	98.831	98.595
2/26/2016	2/26/2021	2/26/2018	0.890	104.281	104.281	102.909	100.323	98.206	96.359	94.661	93.046
2/26/2016	2/26/2026	2/26/2021	1.490	114.724	112.893	107.198	101.387	96.256	91.628	87.383	83.441
3/8/2016	3/8/2023	3/8/2018	0.990	106.796	106.796	104.045	100.972	98.569	96.563	94.780	93.116
3/18/2016	3/18/2020	3/20/2017	0.039	104.472	104.472	103.249	101.226	100.110	99.583	99.385	99.313
4/5/2016	4/5/2021	4/2/2018	0.990	104.866	104.866	102.066	99.747	97.949	96.192	94.474	92.794
4/8/2016	4/8/2020	4/10/2017	0.031	103.257	103.257	102.174	100.523	99.705	99.328	99.155	99.051
4/12/2016	4/12/2021	4/12/2017	0.031	103.525	103.525	102.053	100.384	99.615	99.277	99.117	99.009
4/28/2016	4/28/2020	4/28/2017	0.034	103.841	103.841	102.623	100.757	99.740	99.227	98.969	98.804
4/28/2016	4/28/2021	4/28/2017	0.034	104.824	104.824	103.015	100.904	99.783	99.236	98.971	98.804
4/28/2016	4/28/2021	4/30/2018	0.034	105.813	105.813	103.115	100.956	99.571	98.780	98.348	98.096
5/2/2016	5/2/2023	5/4/2018	0.037	107.514	107.514	103.445	101.223	99.762	98.887	98.374	98.064
5/2/2016	5/4/2026	5/2/2017	0.037	107.681	106.382	103.055	100.786	99.679	99.170	98.915	98.741
5/5/2016	5/5/2021	5/7/2018	0.890	104.449	104.449	102.972	100.240	97.951	95.923	94.051	92.272
5/5/2016	5/5/2026	5/5/2021	1.490	115.005	113.033	107.179	101.218	95.940	91.173	86.802	82.744
5/6/2016	5/6/2026	5/8/2017	0.034	106.397	105.273	102.371	100.424	99.509	99.083	98.847	98.666
5/6/2016	5/6/2026	5/8/2017	0.341	106.455	105.330	102.428	100.481	99.566	99.140	98.904	98.723
5/10/2016	5/11/2026	5/10/2017	0.490	104.941	104.164	102.135	100.134	98.812	97.791	96.878	96.002
5/12/2016	5/12/2026	5/12/2017	0.490	104.942	104.164	102.131	100.127	98.801	97.776	96.859	95.979
5/13/2016	5/13/2026	5/15/2017	0.027	106.762	105.577	102.532	100.486	99.503	99.037	98.776	98.575
5/17/2016	5/17/2021	5/17/2018	0.028	105.396	105.396	102.706	100.660	99.337	98.570	98.123	97.835
5/20/2016	5/20/2026	5/22/2017	0.590	105.965	105.040	102.637	100.377	98.911	97.818	96.865	95.960