

Federal Home Loan Bank of Des Moines Monthly Price Report

The Federal Home Loan Bank of Des Moines (Bank) is providing estimated valuations for specific Convertible, Amortizing and Non-Amortizing advances set forth below for members' information and convenience only. The estimated valuations are generated by models used for the Bank's own asset/liability management purposes. The models use 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 prices only and should not be construed as a liquidation price for the specific advance.**

It is expressly understood that in providing these valuations to members, the Bank is not performing any advisory service. The valuations are provided without representation or warranty and the member is solely responsible for any decision it makes or actions it takes based on the valuations provided. It is recommended that members maintain independent capabilities to value their asset/liability positions, including Convertible, Amortizing and Non-Amortizing advances. You should consult with your own tax, legal, accounting, credit and financial advisors with respect to the transaction structure and information detailed herein.

The table depicts valuation estimates resulting from immediate parallel interest-rate movements of plus/minus 400 basis points in 100 basis point increments. To identify your advance, locate the appropriate maturity date and verify the advance rate. The advances in report are grouped by advance type and then within each type sorted in ascending order by maturity date. Once the appropriate structure is located, read across to view the sensitivity analysis for that advance.

If you have any questions, contact the Money Desk at 800.544.3452, ext. 2122.

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160608A00026	6/8/2016	2.36	6/8/2026	6/8/2016	104.77534	102.4026935	100.0984034	97.86008379	95.68544745	93.5723015	91.51854269	89.52215317	87.58119641
160608A00031	6/8/2016	2.36	6/8/2026	6/8/2016	104.77534	102.4026935	100.0984034	97.86008379	95.68544745	93.5723015	91.51854269	89.52215317	87.58119641
160608A00032	6/8/2016	2.36	6/8/2026	6/8/2016	104.77534	102.4026935	100.0984034	97.86008379	95.68544745	93.5723015	91.51854269	89.52215317	87.58119641
170406A00031	4/6/2017	3.01	4/6/2027	4/6/2017	108.74848	105.5790372	102.5238073	99.57804105	96.73721326	93.99701029	91.35331908	88.80221664	86.3399603
180508A00038	5/8/2018	3.57	5/9/2033	5/8/2018	116.37035	111.0902551	106.151947	101.5294337	97.19892392	93.13862326	89.32855197	85.75038078	82.38728251
170921A00056	9/21/2017	2.82	9/21/2027	9/21/2017	109.40922	105.8341037	102.4021517	99.10681352	95.94187176	92.90142678	89.97987877	87.1719107	84.47247252
231017A00034	10/17/2023	4.99	10/17/2028	10/17/2023	122.88475	117.8742191	113.1109216	108.5812165	104.272289	100.172095	96.26931121	92.55328783	89.01400545
231017A00035	10/17/2023	4.99	10/17/2028	10/17/2023	122.88475	117.8742191	113.1109216	108.5812165	104.272289	100.172095	96.26931121	92.55328783	89.01400545
231017A00033	10/17/2023	4.99	10/17/2028	10/17/2023	122.88475	117.8742191	113.1109216	108.5812165	104.272289	100.172095	96.26931121	92.55328783	89.01400545
231017A00036	10/17/2023	4.99	10/17/2028	10/17/2023	122.88475	117.8742191	113.1109216	108.5812165	104.272289	100.172095	96.26931121	92.55328783	89.01400545
231017A00037	10/17/2023	4.99	10/17/2028	10/17/2023	122.88475	117.8742191	113.1109216	108.5812165	104.272289	100.172095	96.26931121	92.55328783	89.01400545
231017A00039	10/17/2023	5.12	10/16/2026	10/17/2023	113.60961	110.6933305	107.8701983	105.1367239	102.4895641	99.92551904	97.44152574	95.03465094	92.70208511
231017A00032	10/17/2023	4.99	10/17/2028	10/17/2023	122.88475	117.8742191	113.1109216	108.5812165	104.272289	100.172095	96.26931121	92.55328783	89.01400545
231017A00029	10/17/2023	4.99	10/17/2028	10/17/2023	122.88475	117.8742191	113.1109216	108.5812165	104.272289	100.172095	96.26931121	92.55328783	89.01400545
231017A00040	10/17/2023	5.12	10/16/2026	10/17/2023	113.60961	110.6933305	107.8701983	105.1367239	102.4895641	99.92551904	97.44152574	95.03465094	92.70208511
230130A00097	1/30/2023	5.15	1/25/2024	1/30/2023	100.27586	100.2008826	100.1260285	100.0512932	99.97667628	99.90217757	99.82779677	99.75353359	99.67938776
230130A00022	1/30/2023	5.15	1/30/2024	1/30/2023	100.32672	100.2378851	100.1492076	100.0606876	99.97232487	99.88411886	99.7960692	99.70817546	99.62043725
230131A00040	1/31/2023	5.09	1/31/2024	1/31/2023	100.33121	100.239609	100.1481739	100.0569084	99.96581195	99.8748841	99.78412437	99.6935323	99.60310741
230131A00022	1/31/2023	5.09	1/31/2024	1/31/2023	100.33121	100.239609	100.1481739	100.0569084	99.96581195	99.8748841	99.78412437	99.6935323	99.60310741
230207A00032	2/7/2023	5.25	2/7/2024	2/7/2023	100.41771	100.3066803	100.1959067	100.0853906	99.97513109	99.86512729	99.75537826	99.64588306	99.53664078
230315A00092	3/15/2023	4.61	3/11/2024	3/15/2023	100.62774	100.4255479	100.2241766	100.0236241	99.82388537	99.62495532	99.42682904	99.22950158	99.03296808
230315A00083	3/15/2023	4.61	3/11/2024	3/15/2023	100.62774	100.4255479	100.2241766	100.0236241	99.82388537	99.62495532	99.42682904	99.22950158	99.03296808
230315A00067	3/15/2023	4.61	3/11/2024	3/15/2023	100.62774	100.4255479	100.2241766	100.0236241	99.82388537	99.62495532	99.42682904	99.22950158	99.03296808
230316A00014	3/16/2023	4.86	3/11/2024	3/16/2023	100.67833	100.476056	100.2746107	100.0739844	99.874172	99.67516859	99.47696917	99.27956882	99.08296266
230316A00062	3/16/2023	4.86	3/15/2024	3/16/2023	100.71742	100.504072	100.2916449	100.0801278	99.86951507	99.6598007	99.45097893	99.243044	99.03599021
230316A00041	3/16/2023	4.86	3/15/2024	3/16/2023	100.71742	100.504072	100.2916449	100.0801278	99.86951507	99.6598007	99.45097893	99.243044	99.03599021
230316A00025	3/16/2023	4.86	3/15/2024	3/16/2023	100.71742	100.504072	100.2916449	100.0801278	99.86951507	99.6598007	99.45097893	99.243044	99.03599021
230320A00017	3/20/2023	5.15	2/20/2024	3/20/2023	100.53789	100.3908452	100.2442437	100.0980828	99.95236045	99.80707458	99.66222324	99.51780446	99.37381626
230403A00030	4/3/2023	5.17	1/3/2024	4/3/2023	100.05162	100.0377152	100.0238253	100.009949	99.99608624	99.98223709	99.96840149	99.95457943	99.94077087
230323A00041	3/23/2023	4.99	3/22/2024	3/23/2023	100.81038	100.5776901	100.3460825	100.1155494	99.88608325	99.65767665	99.43032223	99.20401271	98.97874086
230324A00056	3/24/2023	4.83	3/22/2024	3/24/2023	100.77314	100.5405068	100.3089588	100.078485	99.84907799	99.62073031	99.3934346	99.16718358	98.94197001
230328A00008	3/28/2023	5.08	3/22/2024	3/28/2023	100.83133	100.5986057	100.3669646	100.1363981	99.9068987	99.67845896	99.45107152	99.22472909	98.99942446
230420A00030	4/20/2023	5.1	4/19/2024	4/20/2023	101.1242	100.8141153	100.5059452	100.1996712	99.89527559	99.59274105	99.29205049	98.99318697	98.69613381

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230120A00048	1/20/2023	5.1	1/16/2024	1/20/2023	100.18187	100.1318626	100.08192	100.0320443	99.98223523	99.93249278	99.88281678	99.83320708	99.78366355
230125A00044	1/25/2023	5.1	1/22/2024	1/25/2023	100.24251	100.1758504	100.109293	100.0428357	99.97647835	99.91022066	99.84406243	99.77800343	99.71204343
230503A00046	5/3/2023	4.96	4/29/2024	5/3/2023	101.17993	100.842366	100.507055	100.1739709	99.84309142	99.5143949	99.18785978	98.86346482	98.54118908
230504A00014	5/4/2023	4.98	4/29/2024	5/4/2023	101.18668	100.8491083	100.5137832	100.180685	99.84979162	99.52108118	99.19453221	98.87012348	98.54783402
230504A00038	5/4/2023	5.24	2/5/2024	5/4/2023	100.39613	100.2906427	100.1853893	100.0803676	99.97557672	99.87101593	99.76668443	99.66258143	99.55870615
230508A00003	5/8/2023	4.99	5/2/2024	5/8/2023	101.2206	100.8747401	100.5312456	100.1900933	99.85125917	99.5147196	99.18045134	98.84843141	98.51863715
230512A00005	5/12/2023	4.76	5/10/2024	5/12/2023	101.26429	100.8959199	100.5302406	100.1672265	99.80684851	99.4490778	99.09388598	98.74124508	98.39112753
230512A00021	5/12/2023	4.99	5/10/2024	5/12/2023	101.30205	100.9341197	100.5688779	100.2062917	99.84633191	99.48897009	99.13417801	98.7819279	98.4321924
230425A00035	4/25/2023	5.24	1/25/2024	4/25/2023	100.2826	100.2076183	100.1327584	100.0580173	99.98339468	99.90889022	99.83450368	99.76023477	99.68608322
230426A00090	4/26/2023	5.08	4/22/2024	4/26/2023	101.14873	100.8303882	100.5140545	100.1997146	99.8873497	99.57694107	99.26847034	98.96191934	98.65727013
230427A00029	4/27/2023	4.87	4/26/2024	4/27/2023	101.16245	100.8326649	100.5050309	100.1795317	99.85614616	99.53485385	99.21563441	98.89846778	98.58333416
230609A00035	6/9/2023	5.47	6/7/2024	6/9/2023	101.80357	101.3579236	100.9161924	100.4783267	100.0442757	99.61398967	99.1874195	98.76451708	98.34523508
230427A00034	5/2/2023	5.23	2/2/2024	5/2/2023	100.36445	100.2672825	100.1703121	100.0735357	99.97695271	99.88056243	99.78436431	99.68835778	99.59254223
230428A00046	4/28/2023	5.15	3/28/2024	4/28/2023	100.90797	100.658659	100.4105774	100.1637173	99.91806955	99.6736254	99.430376	99.18831262	98.94742663
230613A00093	6/13/2023	5.46	4/12/2024	6/13/2023	101.15679	100.8658316	100.5765574	100.2889565	100.0030145	99.71871692	99.43604942	99.15499793	98.8755485
230615A00055	6/15/2023	5.57	1/16/2024	6/15/2023	100.20534	100.155313	100.1053503	100.0554544	100.0056253	99.95586283	99.9061668	99.85653711	99.80697362
230331A00028	3/31/2023	5.05	3/29/2024	3/31/2023	100.89282	100.6407865	100.3900129	100.1404854	99.89219499	99.64513241	99.39928861	99.15465464	98.9112216
230627A00064	6/27/2023	5.59	1/29/2024	6/27/2023	100.35457	100.2684807	100.182533	100.0967311	100.0110747	99.92556336	99.84019678	99.75497461	99.66989648
230628A00026	6/28/2023	5.6	2/28/2024	6/28/2023	100.69414	100.5248608	100.3561536	100.1880122	100.0204338	99.85341569	99.68695496	99.52104888	99.3556947
230629A00089	6/29/2023	5.68	3/28/2024	6/29/2023	101.04014	100.7906063	100.5423055	100.295227	100.0493617	99.80470087	99.56123556	99.31895709	99.07785682
230630A00009	6/30/2023	5.59	6/27/2024	6/30/2023	102.09955	101.5985186	101.1024112	100.6111585	100.1246893	99.642934	99.16582427	98.69329308	98.22527468
230630A00045	6/30/2023	5.7	4/30/2024	6/30/2023	101.44206	101.1012053	100.7626423	100.4263471	100.0922968	99.76046909	99.43084185	99.10339325	98.77810173
230630A00044	6/30/2023	5.69	3/29/2024	6/30/2023	101.05419	100.8018858	100.550843	100.3010474	100.0524899	99.80516131	99.55905249	99.3141545	99.07045846
230703A00040	7/3/2023	5.68	2/5/2024	7/3/2023	100.4425	100.3369701	100.2316697	100.1266011	100.0217634	99.91715589	99.81277776	99.70862823	99.60470652
230516A00060	5/16/2023	5.07	5/9/2024	5/16/2023	101.3211	100.9558649	100.5932743	100.2333	99.87591359	99.52108703	99.1687928	98.81900375	98.47169311
230517A00028	5/19/2023	4.87	5/17/2024	5/19/2023	101.37628	100.988491	100.6036806	100.2218184	99.84287061	99.46680374	99.09358485	98.72318153	98.35556182
230524A00031	5/24/2023	5.53	1/12/2024	5/24/2023	100.15815	100.1192337	100.0803624	100.0415388	100.0027629	99.96403449	99.92535359	99.88672005	99.8481338
230525A00032	5/25/2023	5.55	1/25/2024	5/25/2023	100.30582	100.230819	100.1559393	100.0811783	100.0065358	99.93201157	99.85760526	99.78331661	99.70914536
230301A00032	3/1/2023	5.46	1/2/2024	3/1/2023	100.04451	100.0333867	100.0222711	100.011166	100.0000716	99.98898769	99.97791433	99.9668515	99.95579917
230728A00008	7/28/2023	5.67	5/28/2024	7/28/2023	101.7695	101.35128	100.9364994	100.5251168	100.1170904	99.71237932	99.31094324	98.91274253	98.51773818
230711A00029	7/11/2023	5.55	7/5/2024	7/11/2023	102.16659	101.6436523	101.1260884	100.6138119	100.1067417	99.60479864	99.10790509	98.61598495	98.12896367
230712A00032	10/12/2023	5.23	10/11/2024	10/12/2023	103.13491	102.3421347	101.5616009	100.793026	100.0361362	99.29066587	98.5563573	97.83296063	97.12023335
230713A00054	7/13/2023	5.64	4/12/2024	7/13/2023	101.20915	100.9180834	100.6287102	100.3410108	100.0549707	99.77057546	99.48781072	99.20666242	98.9271166

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230713A00015	7/13/2023	5.44	7/12/2024	7/13/2023	102.18678	101.6447743	101.1085387	100.5779834	100.0530182	99.53355474	99.01950672	98.51078947	98.00732017
230303A00018	3/3/2023	5.53	3/1/2024	3/3/2023	100.7045	100.5297042	100.3555112	100.1819212	100.008931	99.83653751	99.66473773	99.49352859	99.32290705
230623A00020	6/23/2023	5.5	1/23/2024	6/23/2023	100.27969	100.2102447	100.1409032	100.0716678	100.0025384	99.93351458	99.86459624	99.79578309	99.72707491
230821A00067	8/21/2023	5.66	5/22/2024	8/21/2023	101.69312	101.291477	100.8930152	100.4976998	100.1054935	99.71635949	99.33026183	98.94716493	98.56703382
230913A00043	9/13/2023	5.59	9/12/2024	9/13/2023	103.02502	102.3116774	101.6082614	100.9145645	100.2303858	99.55552991	98.8898066	98.23303096	97.58502297
230918A00059	9/18/2023	5.68	4/19/2024	9/18/2023	101.30411	100.9936663	100.68514	100.3785114	100.0737628	99.77087687	99.46983657	99.17062494	98.87322525
230918A00061	9/18/2023	5.55	8/19/2024	9/18/2023	102.68135	102.0346988	101.3962299	100.7657847	100.1432122	99.52836525	98.92110038	98.32127761	97.72876042
230922A00019	9/22/2023	5.53	9/16/2024	9/22/2023	103.03323	102.3089862	101.5949727	100.8909728	100.1967765	99.51217954	98.83698326	98.17099449	97.51402534
230922A00029	9/22/2023	5.67	5/22/2024	9/22/2023	101.69714	101.2954806	100.8970091	100.501684	100.1094681	99.72032461	99.33421748	98.95111117	98.57097069
230718A00030	7/18/2023	5.67	3/20/2024	7/18/2023	100.94789	100.7204514	100.4940461	100.2686687	100.0443124	99.82096996	99.59863463	99.37729952	99.15695784
230918A00045	9/18/2023	5.52	9/12/2024	9/18/2023	102.97514	102.2619979	101.5587775	100.8652743	100.1812875	99.50662152	98.84108635	98.18449703	97.5366736
230919A00045	9/19/2023	5.52	9/13/2024	9/19/2023	102.98786	102.271943	101.566031	100.86991	100.1833769	99.50623408	98.83828929	98.17935554	97.5292509
230928A00030	9/28/2023	5.67	6/28/2024	9/28/2023	102.15195	101.6480411	101.1491094	100.655084	100.1658927	99.68146495	99.20173125	98.7266236	98.25607528
230929A00037	9/29/2023	5.66	6/28/2024	9/29/2023	102.14692	101.6430218	101.1441046	100.6500937	100.1609169	99.67650341	99.19678391	98.72169035	98.25115602
230929A00027	9/29/2023	5.52	9/23/2024	9/29/2023	103.11499	102.3714096	101.6386008	100.9163289	100.2043673	99.50249594	98.81050103	98.12817471	97.45531498
230815A00035	8/15/2023	5.67	4/16/2024	8/15/2023	101.26241	100.9603115	100.6600254	100.3615395	100.0648377	99.76990375	99.47672192	99.18527648	98.89555193
230815A00036	8/15/2023	5.68	5/15/2024	8/15/2023	101.61654	101.234211	100.8547771	100.4782027	100.1044552	99.73350295	99.36531439	98.99985862	98.63710514
230815A00034	8/15/2023	5.66	3/14/2024	8/15/2023	100.87664	100.6658051	100.4558632	100.2468093	100.0386379	99.83134317	99.62491962	99.41936167	99.21466383
230721A00046	7/21/2023	5.61	1/22/2024	7/21/2023	100.27647	100.2097786	100.1431921	100.0767058	100.0103194	99.94403275	99.87784558	99.8117577	99.74576886
231102A00041	11/2/2023	5.46	11/1/2024	11/2/2023	103.60065	102.7486207	101.9106688	101.0864488	100.2756245	99.47787054	98.69287226	97.92032488	97.15993332
231102A00012	11/2/2023	5.65	6/5/2024	11/2/2023	101.85918	101.418849	100.9823407	100.5496036	100.1205886	99.69524785	99.27353409	98.85540094	98.4408028
230817A00055	11/17/2023	5.28	11/15/2024	11/17/2023	103.62974	102.7394538	101.86454	101.0046055	100.1592669	99.32815407	98.5109092	97.70718642	96.91665129
231103A00028	11/3/2023	5.53	9/3/2024	11/3/2023	102.86081	102.172674	101.4937791	100.8239404	100.1629773	99.5107139	98.86697894	98.23160561	97.60443147
230725A00090	7/25/2023	5.6	7/18/2024	7/25/2023	102.33612	101.7774411	101.2248859	100.6783543	100.1377479	99.6029705	99.07392788	98.55052795	98.03268053
230725A00089	7/25/2023	5.65	6/26/2024	7/25/2023	102.1173	101.6189378	101.1254523	100.6367714	100.152825	99.67354448	99.1988625	98.72871304	98.26303131
231005A00007	10/5/2023	5.51	10/4/2024	10/5/2023	103.26455	102.4902608	101.7276288	100.9763964	100.2363088	99.50711891	98.78858682	98.08047963	97.3825712
230824A00017	8/24/2023	5.66	3/22/2024	8/24/2023	100.96634	100.7333952	100.5015382	100.2707565	100.0410428	99.81238942	99.58478917	99.3582347	99.13271877
231025A00009	10/25/2023	5.49	10/21/2024	10/25/2023	103.48023	102.6586491	101.8501806	101.0545094	100.2713329	99.50035769	98.74129963	97.99388332	97.25784181
231027A00004	10/27/2023	5.61	7/26/2024	10/27/2023	102.42248	101.8419835	101.2680805	100.7006627	100.1396204	99.58484646	99.03623623	98.49368725	97.95709934
231010A00131	10/10/2023	5.44	10/4/2024	10/10/2023	103.21044	102.4363749	101.6739707	100.9229636	100.183099	99.45412971	98.73581596	98.02792485	97.3302303
231011A00020	10/11/2023	5.65	4/12/2024	10/11/2023	101.21205	100.9209862	100.6316076	100.3439027	100.0578572	99.77345649	99.49068635	99.20953267	98.9299815
231012A00014	10/12/2023	5.55	10/11/2024	10/12/2023	103.38846	102.5945761	101.8129508	101.0432963	100.2853385	99.53881149	98.80345754	98.0790265	97.36527568
231017A00082	10/17/2023	5.69	5/17/2024	10/17/2023	101.64459	101.2567245	100.8718373	100.4898909	100.1108515	99.73468588	99.36136132	98.99084557	98.6231069

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
231018A00003	10/18/2023	5.68	4/23/2024	10/18/2023	101.35173	101.030231	100.7107822	100.393362	100.0779511	99.76453033	99.45308089	99.14358416	98.83602177
231018A00049	10/18/2023	5.65	7/18/2024	10/18/2023	102.36404	101.8052732	101.2526293	100.7060096	100.1653159	99.63045176	99.10132314	98.57783786	98.05990575
231018A00041	10/18/2023	5.65	7/18/2024	10/18/2023	102.36404	101.8052732	101.2526293	100.7060096	100.1653159	99.63045176	99.10132314	98.57783786	98.05990575
230830A00060	8/30/2023	5.67	3/1/2024	8/30/2023	100.72896	100.5541247	100.3798999	100.2062782	100.0332563	99.86083133	99.68900011	99.51775961	99.34710679
230830A00023	8/30/2023	5.68	6/28/2024	8/30/2023	102.15699	101.6530604	101.1541141	100.6600742	100.1708686	99.68642648	99.20667859	98.73155684	98.26099453
230830A00010	8/30/2023	5.71	3/29/2024	8/30/2023	101.05923	100.8069201	100.5558689	100.306065	100.0574992	99.81016222	99.56404511	99.31913887	99.07543461
231019A00035	10/19/2023	5.54	10/18/2024	10/19/2023	103.47332	102.6600315	101.8595949	101.0717051	100.2960681	99.5323989	98.7804215	98.03986816	97.31047935
231114A00023	11/14/2023	5.46	9/13/2024	11/14/2023	102.94494	102.2291968	101.5234536	100.8274999	100.1411325	99.46415362	98.79637123	98.13759832	97.48765299
231115A00002	11/15/2023	5.56	7/18/2024	11/15/2023	102.31378	101.7551754	101.2026913	100.6562301	100.1156936	99.58098548	99.05201167	98.52868002	98.01090036
231115A00001	11/15/2023	5.58	6/18/2024	11/15/2023	101.98565	101.5094798	101.0377715	100.5704663	100.1075024	99.64881937	99.19435783	98.74405951	98.29786718
231117A00024	11/17/2023	5.55	6/3/2024	11/17/2023	101.79115	101.356469	100.9255083	100.4982227	100.0745653	99.65448987	99.23795104	98.82490419	98.41530542
231120A00025	11/20/2023	5.49	8/14/2024	11/20/2023	102.58203	101.9493124	101.3244378	100.707256	100.0976252	99.49540705	98.90046654	98.31267199	97.73189487
231120A00027	11/20/2023	5.4	10/16/2024	11/20/2023	103.33396	102.5267236	101.732163	100.9499784	100.1798817	99.42159345	98.674843	97.9393678	97.21491323
231120A00028	11/20/2023	5.38	11/13/2024	11/20/2023	103.69203	102.806885	101.9369293	101.0817768	100.2410512	99.41438871	98.60143765	97.80185809	97.01532123
231120A00026	11/20/2023	5.43	9/18/2024	11/20/2023	102.98581	102.2563252	101.5372228	100.8282801	100.1292824	99.44002091	98.76029279	98.08990077	97.42865297
231122A00033	11/22/2023	5.53	7/22/2024	11/22/2023	102.33952	101.770017	101.2068768	100.6499897	100.0992519	99.55456163	99.01581952	98.48292833	97.95579293
231122A00034	11/22/2023	5.42	9/23/2024	11/22/2023	103.04071	102.2974365	101.5649296	100.8429564	100.1312905	99.42971189	98.73800678	98.05596739	97.38339174
231208A00015	12/8/2023	5.51	6/14/2024	12/8/2023	101.90472	101.4396894	100.9789182	100.5223522	100.069934	99.62160691	99.17731549	98.73700519	98.30062248
231211A00013	12/11/2023	5.42	9/11/2024	12/11/2023	102.88444	102.1744622	101.4743269	100.7838296	100.1027719	99.43096065	98.76820798	98.11433112	97.46915216
231213A00015	12/13/2023	5.47	8/13/2024	12/13/2023	102.55732	101.9274112	101.3052731	100.6907619	100.0837376	99.48406351	98.89160641	98.30623624	97.72782604
231218A00019	12/18/2023	5.39	7/18/2024	12/18/2023	102.21885	101.6605463	101.1083639	100.5622021	100.0219626	99.48754918	98.95886779	98.43582632	97.91833462
231218A00020	12/18/2023	5.32	8/19/2024	12/18/2023	102.53266	101.8865528	101.2486195	100.6187051	99.99665858	99.382333	98.77558489	98.17627435	97.58426493
231218A00047	12/18/2023	5.24	9/18/2024	12/18/2023	102.84729	102.1183693	101.3998211	100.691427	99.99297243	99.30424871	98.62505307	97.95518831	97.29446265
231218A00048	12/18/2023	5.32	8/19/2024	12/18/2023	102.53266	101.8865528	101.2486195	100.6187051	99.99665858	99.382333	98.77558489	98.17627435	97.58426493
231130A00031	11/30/2023	5.41	8/30/2024	11/30/2023	102.72207	102.0454306	101.3777296	100.7187902	100.0684408	99.42651385	98.79284646	98.16727979	97.54965905
231219A00006	12/19/2023	5.39	7/19/2024	12/19/2023	102.23049	101.6694308	101.1145513	100.5657503	100.022928	99.48598702	98.95483178	98.42936895	97.90950715
231130A00063	11/30/2023	5.52	7/1/2024	11/30/2023	102.11265	101.6006694	101.0938322	100.5920615	100.0952817	99.60341848	99.116399	98.63415192	98.15660728
231130A00064	11/30/2023	5.41	8/30/2024	11/30/2023	102.72207	102.0454306	101.3777296	100.7187902	100.0684408	99.42651385	98.79284646	98.16727979	97.54965905
231130A00065	11/30/2023	5.33	10/30/2024	11/30/2023	103.46385	102.617905	101.7858472	100.967338	100.162048	99.36965828	98.58986029	97.82235513	97.06685331
231201A00009	12/1/2023	5.27	11/25/2024	12/1/2023	103.75066	102.8326051	101.9308715	101.045029	100.1746594	99.31935913	98.47873857	97.65242138	96.84004403
231205A00036	12/5/2023	5.31	10/4/2024	12/5/2023	103.10994	102.3363011	101.5743199	100.8237312	100.0842807	99.35572119	98.63781292	97.93032313	97.23302578
231205A00037	12/5/2023	5.38	9/5/2024	12/5/2023	102.7754	102.082243	101.3984692	100.7238906	100.0583223	99.4015843	98.7535013	98.11390268	97.48262229
231228A00008	12/28/2023	5.18	9/30/2024	12/28/2023	102.96038	102.1982535	101.4474481	100.7077088	99.97879168	99.26046041	98.5524853	97.85464328	97.16671767

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
231228A00038	12/28/2023	5.18	9/30/2024	12/28/2023	102.96038	102.1982535	101.4474481	100.7077088	99.97879168	99.26046041	98.5524853	97.85464328	97.16671767
231228A00020	12/28/2023	4.93	12/27/2024	12/28/2023	103.84144	102.8357688	101.8496575	100.8825409	99.93387304	99.00312888	98.0898031	97.19340924	96.3134788
231229A00002	12/29/2023	4.95	12/23/2024	12/29/2023	103.81072	102.8160904	101.8406042	100.8837142	99.9448914	99.02362666	98.11942976	97.23182867	96.3603686
231031A00041	10/31/2023	5.51	10/25/2024	10/31/2023	103.54943	102.7166752	101.8973764	101.0912096	100.2978604	99.51702432	98.74840638	97.99172089	97.246691
200114A00017	1/11/2021	1.93	1/11/2024	1/11/2021	100.01702	99.98098847	99.9450021	99.90905892	99.87315887	99.83730186	99.8014878	99.76571662	99.72998823
200114A00021	1/11/2021	1.93	1/11/2024	1/11/2021	100.01702	99.98098847	99.9450021	99.90905892	99.87315887	99.83730186	99.8014878	99.76571662	99.72998823
200402A00036	4/2/2020	0.71	4/2/2024	4/2/2020	99.82699	99.56544754	99.30527949	99.04647518	98.78902385	98.53291486	98.27813768	98.02468188	97.77253715
200402A00038	4/2/2020	0.84	4/2/2025	4/2/2020	100.1803	98.93464255	97.71829043	96.53021007	95.36942033	94.23498513	93.12601093	92.04164429	90.98106967
200402A00048	4/2/2020	0.71	4/2/2024	4/2/2020	99.82699	99.56544754	99.30527949	99.04647518	98.78902385	98.53291486	98.27813768	98.02468188	97.77253715
200403A00018	4/3/2020	0.91	4/3/2024	4/3/2020	99.845004	99.58106527	99.31852493	99.05737225	98.79759621	98.53918589	98.28213052	98.02641941	97.772042
200403A00025	4/3/2020	0.91	4/3/2024	4/3/2020	99.845004	99.58106527	99.31852493	99.05737225	98.79759621	98.53918589	98.28213052	98.02641941	97.772042
200406A00060	4/6/2020	1.03	4/5/2024	4/6/2020	99.872376	99.60296267	99.33500915	99.06850309	98.80343271	98.53978638	98.27755259	98.01671994	97.75727718
200406A00053	4/6/2020	1.13	4/7/2025	4/6/2020	100.36724	99.11142552	97.88366429	96.68301368	95.50857633	94.35949449	93.23494777	92.13415113	91.05635299
200407A00019	4/7/2020	1.06	4/8/2024	4/7/2020	99.87784	99.60023884	99.32418908	99.049678	98.77669266	98.50522029	98.23524825	97.96676406	97.69975536
200413A00011	4/13/2020	0.94	4/12/2024	4/13/2020	99.842198	99.55373139	99.26694217	98.98181542	98.69833662	98.4164914	98.13626559	97.85764515	97.58061622
200413A00027	4/13/2020	0.94	4/12/2024	4/13/2020	99.842198	99.55373139	99.26694217	98.98181542	98.69833662	98.4164914	98.13626559	97.85764515	97.58061622
200414A00014	4/14/2020	0.76	4/12/2024	4/14/2020	99.826625	99.53778429	99.2506275	98.96514009	98.68130739	98.39911492	98.11854836	97.83959357	97.56223657
200415A00027	4/15/2020	0.86	4/15/2024	4/15/2020	99.811767	99.51521912	99.22044261	98.92742189	98.63614122	98.34658505	98.058738	97.77258488	97.48811069
200415A00038	4/15/2020	1.37	4/15/2027	4/15/2020	103.87722	100.6101365	97.46227443	94.42863543	91.50445744	88.68520497	85.96655689	83.34439495	80.81479296
200415A00031	4/15/2020	0.97	4/15/2025	4/15/2020	100.18867	98.91486354	97.66725739	96.44505048	95.24747432	94.07379164	92.92329478	91.79530419	90.68916703
200415A00020	4/15/2020	0.86	4/15/2024	4/15/2020	99.811767	99.51521912	99.22044261	98.92742189	98.63614122	98.34658505	98.058738	97.77258488	97.48811069
200415A00023	4/15/2020	1.71	4/15/2030	4/15/2020	109.43257	103.1059429	97.18469796	91.64080238	86.44830107	81.58315208	77.02307608	72.74741846	68.73702286
200415A00021	4/15/2020	1.37	4/15/2027	4/15/2020	103.87722	100.6101365	97.46227443	94.42863543	91.50445744	88.68520497	85.96655689	83.34439495	80.81479296
200415A00024	4/15/2020	2.2	4/16/2035	4/15/2020	118.04764	106.6613556	96.49255885	87.40400706	79.27459205	71.99737313	65.47785551	59.63248544	54.38733396
200415A00036	4/15/2020	0.91	10/15/2024	4/15/2020	99.714166	98.92560113	98.14944799	97.38541568	96.63322203	95.89259353	95.16326507	94.44497959	93.73748775
200415A00037	4/15/2020	0.97	4/15/2025	4/15/2020	100.18867	98.91486354	97.66725739	96.44505048	95.24747432	94.07379164	92.92329478	91.79530419	90.68916703
200417A00014	4/17/2020	0.96	4/17/2025	4/17/2020	100.1822	98.90363551	97.65081838	96.42297866	95.21938037	94.03931667	92.88210839	91.74710266	90.63367164
200417A00008	4/17/2020	0.96	4/17/2025	4/17/2020	100.1822	98.90363551	97.65081838	96.42297866	95.21938037	94.03931667	92.88210839	91.74710266	90.63367164
200417A00019	4/17/2020	0.77	4/17/2025	4/17/2020	100.13934	98.85784134	97.60219578	96.37163276	95.16541203	93.98282272	92.82318186	91.68583296	90.57014476
200417A00002	4/17/2020	0.96	4/17/2025	4/17/2020	100.1822	98.90363551	97.65081838	96.42297866	95.21938037	94.03931667	92.88210839	91.74710266	90.63367164
200417A00004	4/17/2020	0.86	4/17/2024	4/17/2020	99.811838	99.50981107	99.20962068	98.91125013	98.61468282	98.31990235	98.02689252	97.73563733	97.44612096
200421A00020	4/24/2020	0.83	3/15/2024	4/24/2020	99.857406	99.64537251	99.43425103	99.2240353	99.01471942	98.80629756	98.59876396	98.39211288	98.18633865
200421A00032	4/21/2020	1.31	4/21/2027	4/21/2020	103.7041	100.4241158	97.26438061	94.21984948	91.28572097	88.45742041	85.73058788	83.1010669	80.56489371

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200421A00031	4/21/2020	0.84	4/19/2024	4/21/2020	99.802798	99.49534372	99.18979056	98.88612119	98.58431815	98.2843642	97.98624233	97.6899357	97.3954277
200423A00017	4/23/2020	1.82	4/23/2035	4/23/2020	115.30893	103.9643104	93.84366078	84.80819251	76.73550875	69.51759472	63.05906403	57.27562644	52.09274807
200423A00006	4/23/2020	0.82	4/23/2025	4/23/2020	100.22484	98.92829763	97.65625562	96.40804331	95.18301916	93.98056469	92.80008353	91.64100031	90.50275984
200423A00027	4/28/2020	0.88	4/15/2024	4/28/2020	99.81775	99.52119005	99.22640198	98.93336977	98.64207766	98.3525101	98.06465171	97.7784873	97.49400187
200424A00014	4/28/2020	1.01	4/23/2025	4/28/2020	100.26815	98.97459497	97.70543218	96.45999764	95.23765359	94.03778513	92.85979927	91.70312389	90.56720684
200427A00017	4/27/2020	1.02	4/25/2025	4/27/2020	100.28829	98.98979938	97.7152456	96.4640042	95.23547048	94.0290606	92.84421061	91.68037567	90.53702922
200427A00018	4/27/2020	1.51	4/27/2028	4/27/2020	106.25589	101.9307469	97.80508309	93.86871023	90.11200714	86.52588947	83.101777	79.83156318	76.70758658
200428A00003	4/29/2020	1.01	4/29/2025	4/29/2020	100.28865	98.98056068	97.69550122	96.43291998	95.19227904	93.97305717	92.77474923	91.5968655	90.43893116
200429A00061	4/29/2020	1.66	10/29/2029	4/29/2020	108.84201	102.9797421	97.46864645	92.28595112	87.41046842	82.82247818	78.5036192	74.43678926	70.60605293
200429A00021	5/4/2020	0.97	4/29/2025	5/4/2020	100.23498	98.92726295	97.64257464	96.38035832	95.14007623	93.92120731	92.72324657	91.54570447	90.3881063
200429A00054	4/29/2020	1.04	4/29/2025	4/29/2020	100.32891	99.02053398	97.73519616	96.47234123	95.23143115	94.01194457	92.81337622	91.63523628	90.47704981
200429A00057	4/29/2020	1.4	4/29/2027	4/29/2020	104.04003	100.7334179	97.54867063	94.48068871	91.52460868	88.67579457	85.92982612	83.28248755	80.72975709
200429A00049	4/29/2020	1.25	4/29/2026	4/29/2020	102.04342	99.74272927	97.50497267	95.32809776	93.21012691	91.14915785	89.14336043	87.19097339	85.29030141
200430A00030	4/30/2020	0.96	4/30/2025	4/30/2020	100.22393	98.91359636	97.62638301	96.36172755	95.11908916	93.89794386	92.69778385	91.51811688	90.3584657
200504A00006	5/4/2020	0.94	5/5/2025	5/4/2020	100.20859	98.8849137	97.58480564	96.30769161	95.05301525	93.82023769	92.60883687	91.41830692	90.24815747
200504A00007	5/4/2020	1.47	5/4/2028	5/4/2020	106.11375	101.7728236	97.63296877	93.6838771	89.91581944	86.31961074	82.8865769	79.60852377	76.4777083
200511A00006	5/11/2020	1.65	5/13/2030	5/11/2020	109.09003	102.700793	96.72572635	91.13592123	85.90462605	81.00707354	76.42032426	72.12312318	68.09576821
200218A00026	2/21/2020	1.73	3/25/2024	2/21/2020	100.05333	99.81365054	99.57511803	99.33772792	99.10147201	98.86634219	98.6323304	98.3994287	98.16762918
200220A00014	2/20/2020	2.09	12/21/2029	2/20/2020	111.51401	105.4340576	99.7253559	94.36332409	89.32512716	84.58954683	80.13685911	75.94872181	72.00807102
200220A00013	2/20/2020	2.09	12/14/2029	2/20/2020	111.49434	105.4338328	99.74226476	94.39527871	89.37024666	84.64613764	80.20339722	76.02383662	72.09053079
200221A00011	2/21/2020	1.69	8/21/2024	2/21/2020	100.1893	99.54634622	98.91162417	98.28497591	97.66624809	97.05529121	96.45195951	95.85611088	95.26760668
200221A00023	2/21/2020	2.05	12/7/2029	2/21/2020	111.23521	105.2011893	99.53348716	94.20799551	89.20230741	84.49559247	80.06847831	75.90294144	71.98220687
200221A00024	2/21/2020	2.05	12/28/2029	2/21/2020	111.29193	105.1996899	99.48071183	94.11020031	89.06512774	84.32410217	79.86724308	75.67606711	71.73338313
200224A00006	2/24/2020	1.58	11/15/2024	2/24/2020	100.34209	99.46766579	98.6084234	97.76397093	96.93392895	96.11793096	95.31562275	94.52666199	93.75071765
200225A00029	2/25/2020	1.89	12/28/2029	2/25/2020	110.32489	104.2612556	98.56963628	93.22529857	88.20527713	83.4882385	79.05435712	74.88520138	70.96362883
200225A00028	2/25/2020	1.89	12/21/2029	2/25/2020	110.30906	104.2646382	98.58992623	93.26041613	88.25334977	83.54758113	79.12345423	74.96269081	71.04828719
200225A00023	2/25/2020	1.62	2/25/2025	2/25/2020	100.79846	99.64751835	98.52271471	97.42316772	96.34803459	95.29650968	94.26782241	93.26123541	92.27604276
200226A00004	2/26/2020	1.58	2/26/2025	2/26/2020	100.75657	99.60319648	98.47607392	97.3743182	96.29708103	95.24355155	94.21295431	93.2045473	92.21762024
200228A00091	2/28/2020	1.72	12/7/2029	2/28/2020	109.25972	103.2836042	97.67129592	92.39881871	87.44388962	82.78579489	78.4052718	74.28440011	70.40650207
200228A00071	2/28/2020	1.74	12/14/2029	2/28/2020	109.39239	103.3936897	97.76123833	92.47082268	87.49994776	82.82770771	78.43466572	74.30274373	70.41512093
200302A00013	3/2/2020	1.25	3/4/2024	3/2/2020	99.954829	99.7727829	99.59140405	99.41068858	99.23063283	99.05123317	98.87248601	98.69438778	98.51693492
200302A00060	3/2/2021	1.44	3/3/2025	3/2/2021	100.6141	99.44815093	98.30906177	97.1959088	96.1078147	95.0439413	94.00348743	92.9856869	91.98980659
200302A00005	3/2/2020	1.31	3/3/2025	3/2/2020	100.46001	99.29503491	98.15689708	97.04468039	95.95750793	94.89454191	93.85498152	92.83806093	91.84304737

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200302A00017	3/2/2020	1.3	3/4/2024	3/2/2020	99.963977	99.78191856	99.60052731	99.41979948	99.2397314	99.06031946	98.88156005	98.7034496	98.52598456
200302A00002	3/2/2020	1.12	3/3/2025	3/2/2020	100.42083	99.25326344	98.11264743	96.99805589	95.90860708	94.84345864	93.80180544	92.78287757	91.78593842
200302A00016	3/2/2020	1.36	3/3/2025	3/2/2020	100.51927	99.35392569	98.21542196	97.10284516	96.01531823	94.95200322	93.91209918	92.89484015	91.89949322
200304A00005	3/4/2020	0.98	3/4/2025	3/4/2020	100.25812	99.08888277	97.94670492	96.83065438	95.73984372	94.67342527	93.63058891	92.61056002	91.61259759
200304A00018	3/4/2020	0.98	3/4/2025	3/4/2020	100.25812	99.08888277	97.94670492	96.83065438	95.73984372	94.67342527	93.63058891	92.61056002	91.61259759
200304A00002	3/4/2020	0.98	3/4/2025	3/4/2020	100.25812	99.08888277	97.94670492	96.83065438	95.73984372	94.67342527	93.63058891	92.61056002	91.61259759
200304A00020	3/4/2020	0.98	3/4/2025	3/4/2020	100.25812	99.08888277	97.94670492	96.83065438	95.73984372	94.67342527	93.63058891	92.61056002	91.61259759
200304A00012	3/4/2020	0.98	3/4/2025	3/4/2020	100.25812	99.08888277	97.94670492	96.83065438	95.73984372	94.67342527	93.63058891	92.61056002	91.61259759
200304A00030	3/4/2020	1.6	12/22/2028	3/4/2020	107.69703	102.6983207	97.96053147	93.4687195	89.20886948	85.16783518	81.33328108	77.69362829	74.23800436
200304A00033	3/4/2020	1.17	3/4/2025	3/4/2020	100.29753	99.13088414	97.99118924	96.87751791	95.78898756	94.72475512	93.68401481	92.66599613	91.66996192
200304A00032	3/4/2020	1.6	12/15/2028	3/4/2020	107.67059	102.6914573	97.97126966	93.49524915	89.2495352	85.22112342	81.39780835	77.76813037	74.32132639
200304A00035	3/4/2020	1.17	3/4/2025	3/4/2020	100.29753	99.13088414	97.99118924	96.87751791	95.78898756	94.72475512	93.68401481	92.66599613	91.66996192
200305A00030	3/5/2020	1.58	3/5/2030	3/5/2020	108.54782	102.358844	96.56046752	91.12603358	86.03083855	81.25198154	76.7682234	72.55985753	68.60859141
200305A00001	3/5/2020	1.14	3/5/2025	3/5/2020	100.26525	99.09613033	97.95407559	96.83815963	95.74749388	94.68122964	93.63855583	92.61869697	91.62091122
200305A00038	3/5/2020	1.51	3/5/2029	3/5/2020	107.48258	102.2922889	97.38223794	92.735827	88.33753283	84.17282909	80.22811682	76.49066008	72.94852645
200305A00037	3/5/2020	1.43	3/6/2028	3/5/2020	105.65995	101.4890159	97.50496108	93.69840066	90.06047463	86.58281634	83.25752194	80.077122	77.03455492
200305A00039	3/5/2020	1.58	3/5/2030	3/5/2020	108.54782	102.358844	96.56046752	91.12603358	86.03083855	81.25198154	76.7682234	72.55985753	68.60859141
200305A00032	3/5/2020	1.58	3/5/2030	3/5/2020	108.54782	102.358844	96.56046752	91.12603358	86.03083855	81.25198154	76.7682234	72.55985753	68.60859141
200306A00013	3/6/2020	1.01	3/6/2025	3/6/2020	100.11347	98.94261815	97.79894753	96.68151916	95.5894388	94.52185241	93.47794389	92.45693307	91.45807368
200306A00055	3/6/2020	0.82	3/6/2025	3/6/2020	100.07375	98.90029326	97.75412764	96.63430895	95.53993801	94.47015612	93.42414282	92.40111375	91.40031875
200306A00028	3/6/2020	1.01	3/6/2025	3/6/2020	100.11347	98.94261815	97.79894753	96.68151916	95.5894388	94.52185241	93.47794389	92.45693307	91.45807368
200306A00040	3/6/2020	1.01	3/6/2025	3/6/2020	100.11347	98.94261815	97.79894753	96.68151916	95.5894388	94.52185241	93.47794389	92.45693307	91.45807368
200306A00077	3/6/2020	1.06	3/6/2025	3/6/2020	100.17314	99.00191596	97.85787446	96.74008112	95.64764153	94.5797015	93.5354448	92.51409111	91.51489402
200306A00066	3/6/2020	1.2	3/8/2027	3/6/2020	103.14857	99.99707362	96.95753221	94.02530825	91.19598929	88.46537341	85.8294576	83.2844269	80.82664425
200306A00087	3/8/2021	1.26	3/7/2025	3/8/2021	100.41554	99.24009501	98.09198604	96.9702679	95.87403942	94.80244008	93.75464767	92.72987621	91.72737398
200306A00064	3/6/2020	1.2	3/8/2027	3/6/2020	103.14857	99.99707362	96.95753221	94.02530825	91.19598929	88.46537341	85.8294576	83.2844269	80.82664425
200306A00031	3/6/2020	1.01	3/6/2025	3/6/2020	100.11347	98.94261815	97.79894753	96.68151916	95.5894388	94.52185241	93.47794389	92.45693307	91.45807368
200306A00022	3/6/2020	1.2	3/8/2027	3/6/2020	103.14857	99.99707362	96.95753221	94.02530825	91.19598929	88.46537341	85.8294576	83.2844269	80.82664425
200309A00030	3/9/2020	1.11	3/9/2027	3/9/2020	102.8642	99.71446452	96.67674886	93.74640593	90.9190168	88.19037357	85.55646772	83.01347927	80.5577665
200309A00007	3/9/2020	1.11	3/9/2027	3/9/2020	102.8642	99.71446452	96.67674886	93.74640593	90.9190168	88.19037357	85.55646772	83.01347927	80.5577665
200518A00019	5/19/2020	0.9	5/19/2025	5/19/2020	100.18508	98.82391764	97.48761481	96.17554687	94.88711279	93.62173095	92.37883836	91.15788992	89.95835774
200309A00038	3/9/2020	1.26	3/11/2030	3/9/2020	106.56037	100.4154669	94.66044521	89.26859092	84.21515749	79.47721039	75.03348491	70.86425589	66.95121839
200310A00034	3/10/2020	1.41	3/11/2030	3/10/2020	107.49701	101.323504	95.54116607	90.12321189	85.04482945	80.28302275	75.81646935	71.62538988	67.69142841

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200310A00028	3/10/2020	1.1	3/10/2025	3/10/2020	100.23391	99.05156917	97.89691761	96.76899536	95.66688338	94.58970433	93.53662021	92.5068302	91.49956862
200310A00021	3/10/2020	1.1	3/10/2025	3/10/2020	100.23391	99.05156917	97.89691762	96.76899537	95.66688338	94.58970433	93.53662021	92.5068302	91.49956862
200310A00005	3/10/2020	1.41	3/8/2030	3/10/2020	107.49305	101.3279315	95.55297298	90.14149292	85.06877034	80.31189139	75.84960775	71.66220696	67.73139348
200310A00015	3/10/2020	1.37	3/11/2030	3/10/2020	107.24724	101.0813608	95.30630717	89.89531296	84.82358359	80.06813945	75.6076735	71.42242081	67.49403907
200310A00038	3/10/2020	1.41	3/11/2030	3/10/2020	107.49701	101.323504	95.54116607	90.12321189	85.04482945	80.28302275	75.81646935	71.62538988	67.69142841
200310A00041	3/10/2020	1.39	3/12/2029	3/10/2020	106.8764	101.6820549	96.76934876	92.12154193	87.72297829	83.55901107	79.61593207	75.88090633	72.34191164
200310A00051	3/10/2020	1.41	3/8/2030	3/10/2020	107.49305	101.3279315	95.55297298	90.14149292	85.06877034	80.31189139	75.84960775	71.66220696	67.73139348
200310A00020	3/10/2020	1.1	3/10/2025	3/10/2020	100.23391	99.05156917	97.89691762	96.76899537	95.66688338	94.58970433	93.53662021	92.5068302	91.49956862
200521A00015	5/21/2020	2.14	5/21/2036	5/21/2020	117.62562	105.2886005	94.38463939	84.73877962	76.19827067	68.62964854	61.916215	55.95585706	50.65915926
200521A00013	5/21/2020	2.09	5/21/2035	5/21/2020	116.83568	105.4294778	95.25430002	86.17023946	78.05396	70.79665915	64.30229072	58.48601243	53.27282915
200521A00016	5/21/2020	2.18	5/21/2037	5/21/2020	118.42661	105.1758323	93.5713772	83.39855988	74.47173796	66.63025346	59.73495953	53.66524475	48.31648148
200521A00017	5/21/2020	2.22	5/21/2038	5/21/2020	119.59256	105.4172546	93.11476182	82.4255643	73.12739329	65.02971548	57.96906076	51.80505747	46.41706506
200310A00033	3/10/2020	0.91	3/10/2025	3/10/2020	100.19406	99.00907669	97.8518972	96.72155376	95.61712228	94.53772062	93.4825063	92.45067425	91.44145475
200310A00040	3/10/2020	1.36	3/10/2028	3/10/2020	105.38505	101.2085752	97.21973374	93.40908185	89.76770217	86.28717527	82.95954871	79.77730829	76.73335119
200310A00054	3/10/2020	1.1	3/10/2025	3/10/2020	100.23391	99.05156917	97.89691762	96.76899537	95.66688338	94.58970433	93.53662021	92.5068302	91.49956862
200310A00003	3/10/2020	1.1	3/10/2025	3/10/2020	100.23391	99.05156917	97.89691762	96.76899537	95.66688338	94.58970433	93.53662021	92.5068302	91.49956862
200310A00062	3/10/2020	1.05	3/8/2024	3/10/2020	99.911319	99.71839281	99.52621997	99.33479628	99.14411734	98.95417876	98.76497619	98.57650532	98.38876186
200311A00055	3/11/2020	1.66	12/17/2027	3/11/2020	106.19444	102.2269311	98.42933227	94.79349107	91.31168771	87.97661129	84.78133599	81.71929868	78.78427802
200311A00050	3/2/2021	1.46	3/2/2026	3/2/2021	102.26327	100.1173814	98.02683989	95.98982307	94.00458648	92.06945689	90.18282876	88.34316089	86.54897324
200311A00052	3/2/2021	1.43	2/28/2025	3/2/2021	100.58975	99.4320264	98.30078224	97.19511744	96.11417284	95.05712738	94.02319597	93.01162755	92.02170328
200311A00031	3/11/2020	1.41	12/24/2027	3/11/2020	105.23008	101.2627628	97.4663762	93.83266821	90.35383333	87.02248175	83.83161493	80.77460276	77.84516217
200312A00015	3/12/2020	1.23	3/10/2025	3/12/2020	100.3905	99.20715453	98.05152142	96.92263338	95.81957094	94.74145637	93.68745126	92.65675444	91.64859985
200312A00037	3/12/2020	1.3	3/12/2025	3/12/2020	100.48242	99.29312456	98.13179417	96.99745661	95.88917983	94.80607429	93.74729049	92.71201676	91.69947722
200527A00014	5/27/2020	1.06	5/27/2026	5/27/2020	101.69681	99.32485221	97.01977801	94.77933298	92.60135345	90.483761	88.42455853	86.4218266	84.47371989
200527A00012	5/27/2020	1.2	5/27/2027	5/27/2020	103.49003	100.1170934	96.87123695	93.74702153	90.73927052	87.84305501	85.05368052	82.36667459	79.7777751
200527A00016	5/27/2020	0.92	5/27/2025	5/27/2020	100.23107	98.84806455	97.49067552	96.1582493	94.85015839	93.56579585	92.30457447	91.06592597	89.84930025
200527A00015	5/27/2020	0.99	11/26/2025	5/27/2020	100.89914	99.02563246	97.1958924	95.40863448	93.6626237	91.95666898	90.28962137	88.66037222	87.0678515
200527A00013	5/27/2020	1.13	11/25/2026	5/27/2020	102.52699	99.66189895	96.8910858	94.21095352	91.61806258	89.10912288	86.68098643	84.33064033	82.05520029
200529A00022	6/1/2020	0.98	6/1/2026	6/1/2020	101.51848	99.13554625	96.82017151	94.57007137	92.38304861	90.25699306	88.1898776	86.17975438	84.2247512
200312A00014	3/12/2020	1.04	3/12/2025	3/12/2020	100.35791	99.16649545	98.00315182	96.86690025	95.75680382	94.67196835	93.61153999	92.57470298	91.56067755
200316A00043	3/16/2020	1.3	3/14/2025	3/16/2020	100.49004	99.29531812	98.12881978	96.98955403	95.87657645	94.78898582	93.72592171	92.68656217	91.67012161
200316A00049	3/16/2020	1.25	3/14/2025	3/16/2020	100.42927	99.23493488	98.0688207	96.92993289	95.81732719	94.73010255	93.6673987	92.62839383	91.6123025
200316A00009	3/16/2020	1.25	3/14/2025	3/16/2020	100.42927	99.23493488	98.0688207	96.92993289	95.81732719	94.73010255	93.6673987	92.62839383	91.6123025

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200316A00046	3/16/2020	1.18	3/18/2024	3/16/2020	99.929393	99.70903848	99.48966581	99.27126852	99.05384006	98.83737393	98.62186372	98.40730303	98.19368557
200605A00005	6/5/2020	0.99	6/5/2025	6/5/2020	100.35101	98.94354549	97.56257446	96.20741004	94.87739317	93.57188675	92.29027476	91.03196135	89.79637005
200316A00050	3/16/2020	1.54	3/16/2027	3/16/2020	104.28425	101.0919265	98.01350477	95.04424468	92.17963351	89.41537532	86.74737891	84.17174652	81.68476333
200316A00037	3/16/2020	1.06	3/14/2025	3/16/2020	100.38936	99.1923513	98.02367447	96.88233289	95.7673771	94.67790115	93.61304015	92.57196792	91.55389489
200316A00042	3/16/2020	1.23	3/15/2024	3/16/2020	99.942766	99.73060323	99.51935216	99.30900726	99.09956266	98.89101252	98.68335106	98.47657255	98.27067131
200317A00045	3/19/2020	1.43	3/19/2025	3/19/2020	100.66887	99.45956342	98.27912836	97.12654416	96.00083472	94.90106909	93.82635885	92.77585574	91.74874939
200317A00027	3/17/2020	1.29	3/17/2025	3/17/2020	100.48922	99.28645089	98.11227997	96.96570094	95.84575072	94.75151058	93.68210363	92.63669243	91.61447681
200317A00023	3/17/2020	1.1	3/17/2025	3/17/2020	100.44919	99.24371362	98.06695528	96.9178993	95.79557727	94.6990655	93.62748234	92.57998594	91.55577193
200318A00038	3/18/2020	1.48	3/18/2025	3/18/2020	100.72603	99.51903947	98.3408008	97.1902987	96.06656318	94.968669	93.89573313	92.84691235	91.82140105
200611A00020	6/11/2020	0.81	6/11/2025	6/11/2020	100.10168	98.68052792	97.28641666	95.91863944	94.57651675	93.25939197	91.96663042	90.69761844	89.45176251
200611A00021	6/11/2020	0.72	6/11/2024	6/11/2020	99.682305	99.23147545	98.784722	98.34198899	97.90322222	97.46836844	97.03737537	96.61019165	96.18676684
200611A00019	6/11/2020	0.88	12/11/2025	6/11/2020	100.75012	98.83772653	96.97093481	95.14838326	93.36875872	91.63079581	89.93327489	88.27502008	86.65489733
200318A00013	3/18/2020	1.5	3/18/2025	3/18/2020	100.75056	99.54340985	98.36501486	97.214359	96.0904722	94.99242916	93.91934677	92.87038177	91.84472848
200318A00037	3/18/2020	1.35	3/18/2024	3/18/2020	99.967083	99.74666931	99.52723804	99.30878236	99.0912957	98.87477158	98.65920357	98.4445853	98.23091045
200318A00044	3/18/2020	1.17	3/18/2024	3/18/2020	99.955132	99.73443817	99.51473128	99.29600463	99.0782516	98.86146561	98.64564016	98.4307688	98.21684513
200318A00047	3/18/2020	1.29	3/18/2025	3/18/2020	100.68618	99.47646987	98.29563152	97.14264084	96.01652249	94.91634619	93.84122418	92.79030876	91.76279009
200318A00054	3/18/2020	1.56	3/18/2025	3/18/2020	100.82415	99.616521	98.43765706	97.2865399	96.16219926	95.06370963	93.99018771	92.94079004	91.91471078
200319A00025	3/19/2020	1.39	3/21/2024	3/19/2020	99.974993	99.74635604	99.51877291	99.29223598	99.06673802	98.84227185	98.61883036	98.39640651	98.17499332
200320A00052	3/25/2020	1.47	3/25/2025	3/25/2020	100.74369	99.51776482	98.32148901	97.15379597	96.01367157	94.9001491	93.81230658	92.74926419	91.71018185
200320A00049	3/25/2020	1.47	3/25/2025	3/25/2020	100.74369	99.51776482	98.32148901	97.15379597	96.01367157	94.9001491	93.81230658	92.74926419	91.71018185
200320A00013	3/20/2020	1.25	3/20/2024	3/20/2020	99.972193	99.74598975	99.52082134	99.29668034	99.07355967	98.85145228	98.63035124	98.41024963	98.19114064
200324A00031	3/24/2020	1.64	3/22/2024	3/24/2020	100.0306	99.79916481	99.56880432	99.33951379	99.11128573	98.88411275	98.65798752	98.43290278	98.20885131
200324A00066	3/26/2020	1.81	3/26/2025	3/26/2020	101.17243	99.94100129	98.73939083	97.56653033	96.42139802	95.30302	94.21046753	93.14285437	92.09933442
200324A00013	3/25/2020	1.78	3/25/2025	3/25/2020	101.12985	99.90139431	98.70262364	97.53247709	96.38993938	95.27404269	94.18386401	93.11852247	92.07717705
200324A00012	3/25/2020	1.78	3/25/2025	3/25/2020	101.12985	99.90139431	98.70262364	97.53247709	96.38993938	95.27404269	94.18386401	93.11852247	92.07717705
200629A00023	6/29/2020	0.95	6/29/2026	6/29/2020	101.52605	99.0703278	96.68630294	94.37146988	92.12342903	89.93987899	87.81861183	85.75750872	83.75453572
200629A00021	6/29/2020	1.21	6/29/2028	6/29/2020	105.18016	100.71122	96.45640831	92.4043778	88.54443811	84.86651741	81.36112334	78.01930665	74.83262732
200629A00020	6/29/2020	1.4	6/28/2030	6/29/2020	107.51256	101.0547874	95.02429902	89.39068711	84.12585682	79.20383751	74.60061193	70.29395995	66.26331554
200324A00051	3/24/2020	1.73	11/1/2024	3/24/2020	100.42983	99.5924762	98.76903312	97.9591538	97.16250533	96.37876564	95.60762301	94.8487757	94.10193154
200324A00029	3/24/2020	1.86	3/24/2025	3/24/2020	101.22416	99.9977783	98.80096402	97.63266277	96.49186533	95.37760958	94.28897785	93.22509428	92.18512256
200325A00042	3/25/2020	1.58	3/25/2024	3/25/2020	100.01717	99.77754907	99.53907551	99.30174412	99.06554672	98.83047518	98.59652147	98.36367763	98.13193576
200325A00044	3/25/2020	1.7	12/23/2024	3/25/2020	100.58364	99.60621585	98.64770797	97.70756897	96.78527483	95.88032134	94.99222308	94.12051262	93.26473966
200325A00009	3/27/2020	1.67	3/27/2025	3/27/2020	101.00248	99.76947106	98.56639842	97.39217882	96.24578461	95.1262364	94.0326003	92.96398524	91.91954059

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200325A00016	3/30/2020	1.67	3/31/2025	3/30/2020	101.02259	99.77924092	98.56562692	97.38068437	96.22340386	95.09282294	93.98802342	92.90812881	91.85230206
200325A00046	3/25/2020	1.76	3/25/2025	3/25/2020	101.10494	99.87664402	98.67803431	97.50804605	96.36566403	95.24992053	94.15989256	93.09469936	92.05349994
200325A00047	3/25/2020	1.68	9/25/2024	3/25/2020	100.2743	99.53693349	98.81037294	98.09438214	97.38873177	96.69319914	96.00756787	95.33162775	94.66517445
200325A00043	3/25/2020	1.62	6/25/2024	3/25/2020	100.10964	99.61979609	99.1347397	98.65439696	98.1786994	97.70757989	97.24097256	96.77881282	96.3210373
200326A00009	3/27/2020	1.54	3/27/2025	3/27/2020	100.83982	99.60788864	98.40587084	97.23268853	96.08731455	94.96876997	93.87612136	92.80847807	91.7649899
200326A00011	3/30/2020	1.54	3/31/2025	3/30/2020	100.8585	99.61624785	98.40370652	97.21981873	96.06357556	94.93401503	93.83021941	92.75131268	91.69645818
200326A00016	3/26/2020	1.54	3/25/2025	3/26/2020	100.83089	99.60439084	98.40755167	97.23930461	96.09863527	94.98457669	93.89620665	92.83264509	91.79305173
200327A00055	3/27/2020	1.01	3/27/2024	3/27/2020	99.876967	99.63210453	99.38844147	99.14596863	98.90467733	98.66455897	98.42560502	98.18780705	97.95115671
200327A00061	3/31/2020	1.18	3/31/2025	3/31/2020	100.40411	99.16488242	97.95531158	96.77434466	95.62097411	94.49423928	93.39322371	92.3170526	91.26489049
200327A00051	3/27/2020	0.99	3/27/2025	3/27/2020	100.34862	99.11687502	97.91511234	96.7422522	95.59726313	94.47916221	93.38701222	92.319919	91.27702906
200327A00046	3/27/2020	1.23	3/27/2025	3/27/2020	100.45195	99.2225767	98.0230743	96.85236553	95.7094244	94.59327311	93.50297927	92.43765329	91.39644594
200327A00030	3/27/2020	1.01	3/27/2024	3/27/2020	99.876967	99.63210453	99.38844147	99.14596863	98.90467733	98.66455897	98.42560502	98.18780705	97.95115671
200327A00045	3/27/2020	2.24	3/27/2034	3/27/2020	119.27445	108.7185858	99.19876694	90.60738835	82.84855803	75.83676364	69.49569975	63.7572332	58.56048945
200327A00048	3/27/2020	1.18	3/24/2025	3/27/2020	100.37896	99.15811374	97.96674949	96.80380816	95.668283	94.55921429	93.47568663	92.4168264	91.3817994
200327A00056	3/27/2020	1.18	3/27/2025	3/27/2020	100.38939	99.16042961	97.96133292	96.79102311	95.64847437	94.53270909	93.44279506	92.37784284	91.33700337
200327A00059	3/27/2020	1.01	3/27/2024	3/27/2020	99.876967	99.63210453	99.38844147	99.14596863	98.90467733	98.66455897	98.42560502	98.18780705	97.95115671
200708A00011	7/10/2020	2.87	7/10/2031	7/10/2020	119.11647	111.2590683	103.9854002	97.24887713	91.0068601	85.22030737	79.8534536	74.87351913	70.25044647
200730A00013	7/30/2020	0.74	1/30/2025	7/30/2020	99.703491	98.6290806	97.57763663	96.54843029	95.54076293	94.55396486	93.58739389	92.64043391	91.71249358
200730A00011	7/30/2020	1.15	7/28/2028	7/30/2020	105.01615	100.4718512	96.14847844	92.03415127	88.11769241	84.38858144	80.83691254	77.45335522	74.22911776
200327A00073	3/27/2020	0.99	3/27/2025	3/27/2020	100.34862	99.11687502	97.91511234	96.7422522	95.59726313	94.47916221	93.38701222	92.319919	91.27702906
200327A00060	3/27/2020	1.18	3/27/2025	3/27/2020	100.38939	99.16042961	97.96133292	96.79102311	95.64847437	94.53270909	93.44279506	92.37784284	91.33700337
200327A00031	3/27/2020	1.18	3/27/2025	3/27/2020	100.38939	99.16042961	97.96133292	96.79102311	95.64847437	94.53270909	93.44279506	92.37784284	91.33700337
200327A00037	3/27/2020	1.18	3/27/2026	3/27/2020	102.05202	99.83230857	97.67141727	95.56735285	93.51820786	91.52215557	89.57744579	87.68240088	85.83541208
200327A00035	3/27/2020	0.83	3/27/2024	3/27/2020	99.866223	99.62101583	99.37701352	99.13420727	98.8925883	98.65214789	98.41287745	98.17476842	97.93781236
200327A00043	3/27/2020	1.48	3/27/2028	3/27/2020	106.55269	102.2869981	98.2149686	94.32674037	90.61301411	87.06501618	83.67446555	80.43354297	77.33486228
200327A00042	3/27/2020	0.83	3/27/2024	3/27/2020	99.866223	99.62101583	99.37701352	99.13420727	98.8925883	98.65214789	98.41287745	98.17476842	97.93781236
200327A00047	3/27/2020	0.99	3/27/2025	3/27/2020	100.34862	99.11687502	97.91511234	96.7422522	95.59726313	94.47916221	93.38701222	92.319919	91.27702906
200330A00028	3/30/2020	1.09	3/28/2025	3/30/2020	100.28001	99.04909272	97.84815219	96.6761079	95.53192799	94.41462918	93.32327393	92.25696784	91.21485716
200330A00038	3/30/2020	1.79	3/29/2030	3/30/2020	109.91234	103.6149698	97.71816567	92.19434749	87.01798191	82.16541631	77.61473013	73.34559888	69.33916948
200330A00066	3/30/2020	1.08	3/31/2025	3/30/2020	100.2779	99.03950313	97.83075743	96.65060186	95.49802926	94.37207935	93.27183601	92.1964248	91.14501058
200330A00007	3/30/2020	0.93	4/1/2024	3/30/2020	99.850239	99.59177289	99.33464469	99.07884421	98.82436117	98.57118541	98.31930686	98.06871556	97.81940166
200330A00011	3/30/2020	0.93	4/1/2024	3/30/2020	99.850239	99.59177289	99.33464469	99.07884421	98.82436117	98.57118541	98.31930686	98.06871556	97.81940166
200330A00044	3/30/2020	1.09	3/28/2025	3/30/2020	100.28001	99.04909272	97.84815219	96.6761079	95.53192799	94.41462918	93.32327393	92.25696784	91.21485716

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200330A00037	3/30/2020	1.09	3/28/2025	3/30/2020	100.28001	99.04909272	97.84815219	96.6761079	95.53192799	94.41462918	93.32327393	92.25696784	91.21485716
200330A00006	3/30/2020	0.9	3/28/2025	3/30/2020	100.23907	99.00535364	97.80174102	96.62714076	95.48051532	94.36087609	93.26728049	92.19882937	91.15466451
200330A00008	3/30/2020	1.09	3/28/2025	3/30/2020	100.28001	99.04909272	97.84815219	96.6761079	95.53192799	94.41462918	93.32327393	92.25696784	91.21485716
200330A00054	3/30/2021	1.19	3/30/2026	3/30/2021	101.79419	99.57508261	97.41486739	95.31154819	93.26321617	91.26804311	89.32427719	87.43023909	85.58431826
200331A00007	3/31/2020	0.72	3/29/2024	3/31/2020	99.83548	99.58484848	99.33547219	99.08734142	98.84044688	98.59477936	98.35032973	98.10708898	97.86504816
200331A00016	3/31/2020	1.11	3/31/2026	3/31/2020	101.91047	99.68147057	97.51178995	95.39941583	93.34242493	91.33897509	89.38730101	87.48571032	85.6325799
200331A00017	3/31/2020	0.9	3/31/2025	3/31/2020	100.24934	99.00804361	97.7965195	96.61370235	95.45857943	94.33018517	93.22759848	92.14994023	91.09637084
200331A00014	3/31/2020	0.72	3/29/2024	3/31/2020	99.83548	99.58484848	99.33547219	99.08734142	98.84044688	98.59477936	98.35032973	98.10708898	97.86504816
200331A00022	4/1/2020	1.07	4/1/2025	4/1/2020	100.26886	99.02812134	97.81680221	96.63385889	95.47829988	94.34917946	93.24559515	92.16668518	91.11162629
200401A00023	4/1/2020	0.82	4/1/2025	4/1/2020	100.15159	98.90853368	97.69500997	96.5099686	95.35241279	94.22139189	93.11599874	92.03536721	90.97866987
200401A00001	4/1/2020	1.01	4/1/2025	4/1/2020	100.19296	98.95273105	97.74190912	96.55945472	95.40437653	94.27572909	93.17261011	92.09415804	91.03954981
200401A00012	4/2/2020	1	4/2/2025	4/2/2020	100.1837	98.94113232	97.72773998	96.54250097	95.3844397	94.25262529	93.14616913	92.06422241	91.00597398
200401A00013	4/1/2020	1.01	4/1/2025	4/1/2020	100.19296	98.95273105	97.74190912	96.55945472	95.40437653	94.27572909	93.17261011	92.09415804	91.03954981
200402A00044	4/2/2020	1.65	4/2/2030	4/2/2020	109.03616	102.7554037	96.87528051	91.36816088	86.20846736	81.37250741	76.83832458	72.58556216	68.59533845
200402A00014	4/2/2020	0.84	4/2/2025	4/2/2020	100.1803	98.93464255	97.71829043	96.53021007	95.36942033	94.23498513	93.12601093	92.04164429	90.98106967
200402A00010	4/2/2020	0.89	4/2/2024	4/2/2020	99.841022	99.57981732	99.31998077	99.06150201	98.80437041	98.54857541	98.29410659	98.04095364	97.78910634
200402A00041	4/2/2020	1.03	4/2/2025	4/2/2020	100.22173	98.97890883	97.76526681	96.57978231	95.42147959	94.28942769	93.18273786	92.10056122	91.04208649
200402A00009	4/2/2020	1.03	4/2/2025	4/2/2020	100.22173	98.97890883	97.76526681	96.57978231	95.42147959	94.28942769	93.18273786	92.10056122	91.04208649
200402A00013	4/2/2020	0.89	4/2/2024	4/2/2020	99.841022	99.57981732	99.31998077	99.06150201	98.80437041	98.54857541	98.29410659	98.04095364	97.78910634
200916A00016	9/16/2020	0.6	9/16/2024	9/16/2020	99.466225	98.75630454	98.05647054	97.36650876	96.68621144	96.01537661	95.3538079	94.70131434	94.05771019
200916A00015	9/16/2020	0.72	9/16/2025	9/16/2020	100.19398	98.51523319	96.87231017	95.26412641	93.68964448	92.14786854	90.6378422	89.15864651	87.70939816
200916A00019	9/16/2020	0.42	9/16/2024	9/16/2020	99.469249	98.75757582	98.05603845	97.36442119	96.68251473	96.01011562	95.34702606	94.69305372	94.04801153
200916A00023	9/16/2020	0.42	9/16/2024	9/16/2020	99.469249	98.75757582	98.05603845	97.36442119	96.68251473	96.01011562	95.34702606	94.69305372	94.04801153
200922A00015	9/24/2020	1.09	9/24/2025	9/24/2020	100.85898	99.15334211	97.48441378	95.85107293	94.25224619	92.68690373	91.15405698	89.65275656	88.18209027
200928A00009	9/28/2020	1.51	9/28/2032	9/28/2020	109.68291	101.0370086	93.13507848	85.90927098	79.29825491	73.2465583	67.7039806	62.62506661	57.96863555
201001A00011	10/1/2020	0.71	6/17/2025	10/1/2020	99.964536	98.52887996	97.1208295	95.73965854	94.38466645	93.05517642	91.7505345	90.47010865	89.21328774
201001A00012	10/1/2020	0.74	9/16/2025	10/1/2020	100.22851	98.54946048	96.90623552	95.29775526	93.72298213	92.18092012	90.67061272	89.19114085	87.74162105
201014A00002	10/14/2020	0.61	10/15/2024	10/14/2020	99.473169	98.6856662	97.91056331	97.14756971	96.39640343	95.65679118	94.92846804	94.21117714	93.50466936
201015A00003	10/15/2020	0.75	10/15/2025	10/15/2020	100.33602	98.57852967	96.8599244	95.17906714	93.53486154	91.92625216	90.35222263	88.81179378	87.30402197
201015A00002	10/15/2020	0.61	10/15/2024	10/15/2020	99.473169	98.6856662	97.91056331	97.14756971	96.39640343	95.65679118	94.92846804	94.21117714	93.50466936
201015A00032	10/19/2020	2.33	10/19/2026	10/19/2020	105.7836	102.9696799	100.2450773	97.60645766	95.0506281	92.57453376	90.17525101	87.8499809	85.59604303
201015A00030	10/19/2020	2.39	10/18/2027	10/19/2020	108.66129	104.8076526	101.1121867	97.56755528	94.16680525	90.90334252	87.77091118	84.76357424	81.87569555
201015A00025	10/19/2020	1.54	10/18/2027	10/19/2020	105.40811	101.6164103	97.98101534	94.49466397	91.15047126	87.94190801	84.86278033	81.90721043	79.06961876

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
201015A00024	10/19/2020	1.53	10/18/2027	10/19/2020	105.36984	101.5788663	97.94417803	94.4585123	91.11498498	87.90706761	84.82856702	81.87360615	79.03660609
201019A00007	10/19/2020	0.64	10/21/2024	10/19/2020	99.503946	98.70020359	97.90937022	97.13113671	96.36520395	95.61128226	94.86909099	94.13835815	93.41882012
201019A00005	10/19/2020	0.79	10/20/2025	10/19/2020	100.42216	98.65036573	96.91803693	95.22402919	93.56724393	91.94662236	90.36114371	88.80982354	87.29171215
200818A00018	3/31/2021	0.57	4/1/2024	3/31/2021	99.756484	99.49817957	99.24121273	98.98557297	98.73125001	98.47823369	98.22651396	97.97608085	97.72692451
200818A00016	3/31/2021	0.57	4/1/2024	3/31/2021	99.756484	99.49817957	99.24121273	98.98557297	98.73125001	98.47823369	98.22651396	97.97608085	97.72692451
200824A00020	8/26/2020	1.57	8/26/2025	8/26/2020	101.56564	99.92998004	98.32836767	96.75979993	95.22331771	93.71799908	92.24295739	90.79733962	89.38032473
200826A00028	8/28/2020	1.08	8/28/2024	8/28/2020	99.791405	99.13117524	98.47963853	97.83662383	97.20196498	96.5755001	95.95707147	95.34652539	94.74371206
200826A00029	8/28/2020	1.16	11/27/2024	8/28/2020	99.989148	99.08439053	98.19591176	97.32327555	96.46606146	95.62386382	94.79629107	93.98296513	93.18352087
200826A00039	8/28/2020	1.03	7/29/2024	8/28/2020	99.762839	99.18306934	98.61000401	98.04352764	97.48352726	96.92989247	96.38251538	95.84129051	95.30611475
200826A00038	8/28/2020	1.11	8/28/2024	8/28/2020	99.811541	99.15123667	98.49962522	97.85653647	97.22180426	96.5952667	95.97676605	95.3661486	94.76326453
200826A00021	8/26/2020	0.83	8/26/2025	8/26/2020	100.33056	98.70555529	97.11440055	95.55610433	94.02971263	92.5343084	91.0690097	89.63296807	88.22536683
200826A00019	8/26/2020	0.98	8/26/2026	8/26/2020	101.7979	99.18357124	96.64900643	94.19127262	91.80756722	89.49520985	87.25163601	85.0743912	82.9611253
200909A00001	9/9/2020	0.98	9/8/2028	9/9/2020	104.96967	100.2965774	95.8559432	91.63498352	87.62168794	83.80476915	80.17361513	76.71824477	73.42926676
201021A00012	10/21/2020	1.85	10/19/2035	10/21/2020	114.11142	102.4919659	92.17155692	82.9976933	74.83650073	67.57037085	61.09591281	55.32217164	50.16907754
201021A00011	10/21/2020	1.11	10/21/2027	10/21/2020	103.77494	100.006216	96.39350027	92.92954024	89.60745483	86.42071795	83.36313813	80.42883951	77.61224406
201028A00013	10/28/2020	0.68	10/28/2024	10/28/2020	99.536207	98.71366061	97.90461805	97.10874977	96.32573642	95.5552689	94.79704794	94.05078372	93.31619547
201028A00011	10/28/2020	0.91	4/28/2026	10/28/2020	101.2429	98.95434208	96.72838477	94.56298028	92.45615919	90.40602738	88.41076279	86.46861216	84.57788808
201029A00002	10/29/2020	0.59	10/29/2025	10/29/2020	100.33286	98.53298576	96.77375875	95.05402579	93.3726779	91.7286441	90.1208899	88.54841574	87.01025567
201030A00012	10/30/2020	0.63	10/30/2025	10/30/2020	100.40911	98.60591025	96.84347746	95.12066013	93.43634437	91.78945452	90.1789516	88.60383181	87.0631251
201030A00018	10/30/2020	1.15	10/22/2027	10/30/2020	103.93266	100.1582176	96.54008972	93.0710087	89.74408005	86.55276464	83.49085836	80.5524732	77.73201935
201030A00016	10/30/2020	1.14	10/8/2027	10/30/2020	103.83452	100.0998567	96.51846878	93.08322856	89.78738376	86.62453393	83.58860979	80.67385401	77.87480323
201030A00017	10/30/2020	1.14	10/15/2027	10/30/2020	103.8644	100.1102111	96.51080468	93.05898182	89.74792002	86.57115029	83.52253668	80.59625721	77.78678598
201030A00019	10/30/2020	1.15	10/29/2027	10/30/2020	103.96274	100.168762	96.53262461	93.0469825	89.70486914	86.4996752	83.42512841	80.47527466	77.64446029
201105A00016	11/9/2020	2.18	11/8/2027	11/9/2020	108.00362	104.1054857	100.369685	96.78863357	93.35514054	90.06238581	86.90389888	83.87353917	80.96547749
201105A00003	11/6/2020	2.24	11/4/2030	11/6/2020	113.42724	106.4361047	99.92548242	93.85987127	88.20656415	82.93541383	78.0186207	73.43053909	69.14750042
201116A00025	11/18/2020	1.96	11/15/2032	11/18/2020	113.76946	104.8263415	96.65878788	89.19544458	82.37185936	76.12978298	70.41654418	65.18449038	60.39048699
201116A00024	11/18/2020	2.36	11/15/2034	11/18/2020	119.58471	108.4997562	98.55851166	89.63630773	81.62267031	74.41963979	67.940297	62.10746917	56.8525932
201116A00021	11/16/2020	0.53	11/15/2024	11/16/2020	99.547227	98.67472671	97.81742432	96.9749257	96.14685012	95.33282984	94.53250953	93.74554575	92.97160645
201117A00016	11/17/2020	0.52	11/18/2024	11/17/2020	99.539394	98.65891474	97.79391079	96.94397737	96.1087235	95.28777164	94.48075712	93.68732754	92.90714231
201118A00009	11/18/2020	0.61	11/18/2025	11/18/2020	100.41578	98.56296185	96.75309019	94.98491462	93.25723301	91.56888565	89.91875347	88.30575634	86.72885141
201119A00023	11/23/2020	2.23	11/21/2030	11/23/2020	113.4119	106.3771493	99.82889906	93.73098653	88.05011234	82.75559928	77.81917344	73.21476474	68.9183249
201119A00021	11/23/2020	2.22	11/21/2030	11/23/2020	113.3425	106.3100956	99.76407884	93.66829077	87.98943847	82.69685065	77.76225897	73.15959857	68.864826
201123A00009	11/25/2020	1.02	11/25/2024	11/25/2020	99.857528	98.95876025	98.07607526	97.20904477	96.35725551	95.52030864	94.69781914	93.88941519	93.09473761

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
201123A00010	11/25/2020	1.48	11/24/2025	11/25/2020	101.83235	99.95488811	98.12112853	96.32979859	94.57966812	92.8695506	91.19830133	89.5648157	87.96802747
201123A00011	11/25/2020	1.41	11/24/2025	11/25/2020	101.69819	99.8220422	97.98957527	96.19951361	94.45062771	92.74173172	91.07168156	89.43937323	87.84374107
201203A00005	12/3/2020	0.78	12/3/2026	12/3/2020	101.90645	99.02047025	96.23039511	93.53252732	90.92333708	88.39944941	85.95763649	83.59481037	81.3080161
201204A00015	12/8/2020	1.07	12/8/2025	12/8/2020	101.09344	99.18601507	97.32387064	95.50565531	93.73007084	91.99586601	90.30183463	88.64681359	87.02968098
201210A00021	12/10/2020	0.89	12/10/2027	12/10/2020	103.61731	99.7051485	95.96069476	92.37591358	88.94319357	85.65532565	82.50547964	79.4871823	76.59429679
201215A00001	12/15/2020	0.76	12/15/2025	12/15/2020	100.50547	98.58518476	96.71094255	94.88136292	93.09511291	91.35090839	89.64751188	87.98373056	86.35841427
201216A00004	12/16/2020	0.74	9/8/2025	12/16/2020	100.2101	98.55212437	96.92920182	95.34028732	93.78437591	92.26050239	90.76773934	89.30519522	87.87201263
201216A00003	12/16/2020	0.59	7/1/2024	12/16/2020	99.590102	99.08559937	98.58618608	98.09178558	97.60232275	97.11772397	96.63791708	96.16283131	95.69239732
201216A00013	12/16/2020	0.59	12/16/2025	12/16/2020	100.44515	98.51765984	96.63653905	94.80039387	93.0078778	91.2576938	89.54859217	87.87936844	86.2488614
201218A00014	12/18/2020	0.57	12/18/2025	12/18/2020	100.41048	98.47795633	96.59205926	94.75137479	92.95454561	91.20026444	89.48727183	87.81435404	86.18034105
201221A00015	12/21/2020	0.88	12/4/2026	12/21/2020	101.82181	98.94331128	96.16037718	93.46932857	90.8666507	88.34898289	85.91311083	83.5559594	81.27458582
201221A00014	12/21/2020	0.76	12/19/2025	12/21/2020	100.53543	98.60375834	96.71865859	94.87872653	93.08260662	91.32899325	89.61662853	87.94430024	86.31083977
201223A00013	12/23/2020	0.9	12/11/2026	12/23/2020	101.90222	99.00378496	96.20217596	93.49364389	90.87460541	88.34163538	85.89145885	83.52094366	81.22709334
201223A00012	12/23/2020	0.91	12/18/2026	12/23/2020	101.95353	99.03557812	96.21571845	93.49012309	90.85513978	88.30727856	85.84320359	83.45972542	81.15379369
210104A00010	11/22/2021	0.88	11/20/2026	11/22/2021	101.78214	98.94096955	96.19298356	93.53464007	90.96255191	88.47347844	86.06431836	83.73210296	81.47398965
210104A00012	12/20/2021	0.89	12/18/2026	12/20/2021	101.89376	98.97671381	96.15772833	93.4329855	90.79883377	88.25178388	85.78850062	83.40579518	81.10061782
210104A00011	11/23/2021	0.88	11/23/2026	11/23/2021	101.79035	98.94127774	96.18588344	93.52060089	90.94201652	88.44686484	86.03202117	83.69449471	81.43142212
210616A00011	5/2/2022	0.95	5/2/2025	5/2/2022	100.21516	98.8995069	97.60715286	96.33753045	95.09009269	93.86430967	92.65966791	91.47566975	90.31183271
210616A00009	2/11/2022	0.86	2/11/2025	2/11/2022	99.869798	98.76218712	97.67896097	96.6193223	95.58250784	94.56778694	93.57445984	92.60185604	91.64933278
210616A00012	3/18/2022	0.9	3/18/2025	3/18/2022	100.01468	98.81229836	97.63859289	96.49254994	95.37320156	94.27962445	93.21093742	92.16629907	91.14490551
210616A00007	3/18/2022	0.9	3/18/2025	3/18/2022	100.01468	98.81229836	97.63859289	96.49254994	95.37320156	94.27962445	93.21093742	92.16629907	91.14490551
210616A00006	2/11/2022	0.86	2/11/2025	2/11/2022	99.869798	98.76218712	97.67896097	96.6193223	95.58250784	94.56778694	93.57445984	92.60185604	91.64933278
210616A00008	5/2/2022	0.95	5/2/2025	5/2/2022	100.21516	98.8995069	97.60715286	96.33753045	95.09009269	93.86430967	92.65966791	91.47566975	90.31183271
210623A00026	6/23/2021	0.78	6/24/2024	6/23/2021	99.694867	99.20892195	98.72770074	98.25113502	97.77915749	97.31170211	96.84870412	96.39009999	95.93582739
210623A00028	6/23/2021	1.22	6/23/2026	6/23/2021	102.1831	99.73464961	97.35718076	95.04823525	92.80545223	90.62656678	88.50940541	86.45188172	84.45199236
210624A00005	6/24/2021	1.22	6/24/2026	6/24/2021	102.18673	99.73562506	97.35565685	95.04435409	92.79934855	90.61836836	88.49923346	86.43985122	84.43821241
210624A00025	6/24/2021	1.43	6/24/2027	6/24/2021	104.40877	100.9466408	97.6175371	94.41564872	91.33544925	88.37168258	85.51934815	82.7736871	80.13016915
210624A00026	6/24/2021	1.6	6/23/2028	6/24/2021	106.92091	102.4287183	98.15051492	94.07500769	90.19156035	86.49014947	82.96132583	79.59617859	76.38630181
210324A00003	3/24/2021	1.18	3/24/2026	3/24/2021	101.74632	99.54441169	97.40059554	95.3129081	93.27947408	91.29849717	89.36825586	87.48709967	85.65344553
210324A00002	3/24/2021	2.06	3/24/2031	3/24/2021	112.63662	105.2996218	98.49280547	92.17505349	86.30864519	80.85895982	75.79420605	71.08517638	66.70502428
210624A00004	6/24/2021	1.01	6/24/2025	6/24/2021	100.4236	98.96623695	97.53722816	96.13582154	94.76128923	93.41292841	92.09006031	90.79202911	89.518201
210624A00003	6/24/2021	0.78	6/24/2024	6/24/2021	99.694867	99.20892195	98.72770074	98.25113502	97.77915749	97.31170211	96.84870412	96.39009999	95.93582739
210629A00005	6/29/2021	1.25	6/29/2026	6/29/2021	102.28027	99.81496739	97.42156807	95.09756715	92.84055878	90.64823552	88.51838369	86.44887887	84.43768177

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210629A00014	6/29/2021	1.78	12/28/2029	6/29/2021	109.66005	103.6160821	97.94327184	92.61692862	87.61412984	82.91358222	78.49549803	74.34148119	70.43442275
210629A00012	6/29/2021	1.14	12/29/2025	6/29/2021	101.32658	99.35998438	97.44139832	95.56935564	93.74244108	91.95929229	90.21859741	88.51909283	86.85956105
210629A00009	6/29/2021	1.14	12/31/2025	6/29/2021	101.33379	99.36183784	97.43810805	95.56112206	93.72945524	91.94173635	90.19664516	88.49291013	86.82930625
210629A00015	6/29/2021	1.89	6/27/2031	6/29/2021	111.66057	104.1121909	97.12800886	90.66293839	84.67571048	79.12853547	73.9867933	69.21875275	64.79531697
210701A00007	7/1/2021	1.22	7/1/2026	7/1/2021	102.21332	99.74340202	97.34564393	95.01752016	92.7566122	90.56060073	88.42726083	86.35445756	84.34014168
210706A00015	7/6/2021	1.06	12/31/2025	7/6/2021	101.1723	99.20201592	97.27991911	95.40453445	93.57443821	91.78826001	90.04468044	88.34242874	86.68028069
210706A00014	7/6/2021	1.15	6/26/2026	7/6/2021	102.01857	99.56439108	97.1815984	94.86770793	92.62033813	90.43720458	88.31611534	86.25496662	84.25173865
210330A00024	3/30/2021	0.68	3/29/2024	3/30/2021	99.790965	99.54078068	99.29184472	99.04414791	98.79768104	98.55243504	98.30840087	98.06556962	97.82393245
210330A00021	3/30/2021	2.16	3/28/2031	3/30/2021	113.38024	106.0057821	99.1644103	92.81474592	86.91883371	81.44184091	76.35178441	71.61928317	67.21733345
210330A00022	3/30/2021	1.27	3/30/2026	3/30/2021	101.97527	99.7540822	97.59182818	95.48651226	93.43622435	91.43913506	89.49349144	87.59761305	85.74988831
210407A00012	4/7/2021	0.94	4/7/2025	4/7/2021	100.12377	98.86959786	97.64345158	96.44438892	95.27151329	94.12396764	93.00093227	91.90162281	90.82528832
210407A00013	4/7/2021	1.23	4/7/2026	4/7/2021	101.91453	99.67305226	97.49154039	95.36798897	93.3004715	91.28714072	89.32622461	87.41602267	85.55490244
210420A00010	4/20/2021	1.08	12/12/2025	4/20/2021	101.14633	99.22726878	97.35400964	95.52518602	93.73947725	91.99561082	90.29236027	88.6285432	87.00301936
210420A00009	4/20/2021	1.08	12/5/2025	4/20/2021	101.10258	99.20312906	97.3485808	95.53760309	93.76891369	92.0412766	90.35350009	88.7044348	87.09297191
210518A00023	5/18/2021	1.17	5/18/2026	5/18/2021	101.92877	99.57821061	97.29328912	95.07181311	92.91167878	90.81086436	88.76742637	86.77949618	84.84527661
210706A00006	7/6/2021	1.15	7/6/2026	7/6/2021	102.05714	99.57558515	97.1668112	94.82826628	92.5575	90.35216304	88.21000227	86.12885619	84.10665054
210707A00002	7/7/2021	1.12	6/26/2026	7/7/2021	101.94339	99.49016891	97.10830781	94.79532843	92.54884986	90.36658826	88.24635228	86.18603868	84.18362822
210707A00008	7/9/2021	2.44	7/7/2031	7/9/2021	115.84869	108.1198005	100.9670933	94.34451357	88.20991787	82.52472	77.25357383	72.36408581	67.82655432
210709A00005	7/9/2021	1.69	7/9/2031	7/9/2021	110.18506	102.6592587	95.699319	89.25979927	83.29912856	77.77925607	72.66533634	67.92544422	63.53031644
210709A00006	7/13/2021	2.4	7/11/2031	7/13/2021	115.5647	107.8353938	100.6832535	94.06207967	87.92960281	82.24712621	76.97920678	72.09336594	67.55982766
210712A00010	6/27/2022	1.05	6/27/2025	6/27/2022	100.49067	99.02498823	97.58797343	96.17885574	94.79689593	93.44138038	92.11161993	90.8069489	89.52672404
210712A00008	6/27/2022	1.05	6/27/2025	6/27/2022	100.49067	99.02498823	97.58797343	96.17885574	94.79689593	93.44138038	92.11161993	90.8069489	89.52672404
210714A00020	7/14/2021	0.9	3/14/2025	7/14/2021	100.00385	98.81225221	97.64882714	96.51258488	95.40258237	94.31791967	93.25773761	92.22121543	91.20756869
210719A00009	7/19/2021	1.04	7/17/2026	7/19/2021	101.81958	99.31111611	96.87686094	94.51418212	92.22055743	89.99357001	87.83090317	85.73033557	83.68973657
210719A00004	7/19/2021	1	4/20/2026	7/19/2021	101.42906	99.15920765	96.95092931	94.80219468	92.71105171	90.67562521	88.69411318	86.76478344	84.88597048
210721A00009	7/21/2021	1.7	7/21/2031	7/21/2021	110.29304	102.731512	95.74059018	89.27429504	83.29057288	77.75094357	72.62017994	67.86601735	63.45889061
210722A00008	7/21/2023	1.84	7/22/2030	7/21/2023	110.44572	103.8296667	97.65332149	91.88520369	86.49623944	81.45956877	76.75036621	72.34567664	68.22426535
210722A00009	7/21/2023	1.96	7/22/2032	7/21/2023	113.42239	104.7911618	96.88503019	89.63923373	82.99510699	76.89947937	71.30413471	66.16532652	61.44334289
210729A00003	7/29/2021	1.11	7/29/2026	7/29/2021	102.0462	99.50210869	97.03394466	94.63898223	92.31461527	90.05834795	87.86778921	85.74064762	83.67472651
210729A00004	7/29/2021	1.74	7/29/2031	7/29/2021	110.61934	103.0245587	96.00407251	89.51149895	83.50443062	77.94407184	72.7949138	68.02444043	63.60286202
210729A00006	7/29/2021	1.87	11/30/2032	7/29/2021	113.00605	104.058365	95.89071931	88.43101119	81.61414332	75.38131141	69.67936734	64.46024952	59.68047323
210803A00005	8/5/2021	2.06	8/4/2026	8/5/2021	104.55007	101.9571681	99.44177355	97.00109602	94.63246497	92.33332354	90.10122282	87.93381654	85.82885597
210826A00009	8/26/2021	1.18	8/26/2026	8/26/2021	102.33267	99.7111326	97.1695228	94.70490566	92.31447354	89.99554123	87.74553958	85.56200961	83.44259692

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210826A00008	8/26/2021	0.89	2/26/2025	8/26/2021	99.948228	98.79986938	97.67768572	96.58079162	95.50834081	94.45952437	93.43356871	92.42973364	91.44731063
210826A00013	8/26/2021	1.97	2/28/2033	8/26/2021	114.16495	104.9350295	96.52821567	88.8666623	81.88026726	75.50586322	69.68649886	64.37079803	59.51238794
210907A00013	9/9/2021	2.14	9/9/2025	9/9/2021	102.6029	100.921227	99.27508362	97.66341089	96.08518963	94.53944102	93.02522456	91.54163621	90.08780656
210907A00014	9/9/2021	2.45	9/9/2026	9/9/2021	105.82942	103.1232881	100.5002325	97.95716618	95.49114298	93.09934675	90.77908473	88.52778114	86.3429711
210907A00015	9/9/2021	2.21	9/9/2026	9/9/2021	105.17843	102.4812041	99.86684216	97.3322682	94.87454226	92.4908543	90.1785174	87.93496137	85.75772673
210907A00004	9/7/2021	2.01	9/7/2033	9/7/2021	115.05623	105.2966759	96.45077917	88.42798973	81.14717746	74.53560414	68.528016	63.06583859	58.09646202
210907A00006	9/7/2021	2.1	9/7/2034	9/7/2021	116.68673	105.9249643	96.26066271	87.57568083	79.7651693	72.73601698	66.40548236	60.6999908	55.55407677
210907A00008	9/7/2021	2.42	9/7/2038	9/7/2021	122.73841	108.0958004	95.41392138	84.41690805	74.8691275	66.56912379	59.34450424	53.04761295	47.55186703
210907A00009	9/7/2021	2.5	9/7/2039	9/7/2021	125.44824	109.7615736	96.29111224	84.70769096	74.73277206	66.13042683	58.70062004	52.2735819	46.70508679
210907A00007	9/7/2021	2.35	9/4/2037	9/7/2021	120.8412	107.1876501	95.25664762	84.81980955	75.68018224	67.66777131	60.6357284	54.45709399	49.02201266
210907A00011	9/7/2021	2.65	9/6/2041	9/7/2021	132.10292	114.1873603	99.05438345	86.24858243	75.3916771	66.1690851	58.31888987	51.62276731	45.89851526
210907A00010	9/7/2021	2.58	9/7/2040	9/7/2021	128.70998	111.922558	97.62632542	85.43221456	75.01405417	66.09810599	58.45438906	51.88947701	46.24051225
210914A00012	9/14/2021	1.18	9/14/2027	9/14/2021	104.37635	100.6822721	97.13773458	93.73584597	90.47007111	87.33421469	84.32240126	81.42905654	78.64889002
210914A00014	9/14/2021	0.97	9/14/2026	9/14/2021	102.18477	99.50748259	96.91323564	94.39892521	91.96158308	89.59837326	87.30658498	85.08362617	82.92701727
210914A00017	9/14/2021	1.32	9/14/2028	9/14/2021	106.60579	101.8784464	97.38641365	93.11672917	89.05721481	85.19642751	81.52361046	78.0286479	74.70202322
210914A00015	9/14/2021	0.81	9/15/2025	9/14/2021	100.60202	98.91776355	97.26946971	95.65604839	94.076458	92.52969875	91.01481046	89.53087057	88.07699228
210914A00018	9/14/2021	1.43	9/14/2029	9/14/2021	108.20232	102.4508022	97.03839475	91.94334531	87.14541333	82.62575541	78.36682115	74.3522575	70.5668206
210916A00008	9/16/2021	1.48	9/15/2028	9/16/2021	106.73686	102.0235057	97.54430229	93.28636976	89.23760727	85.38664336	81.72278762	78.23598595	74.91677892
210916A00009	9/16/2021	2.25	9/16/2036	9/16/2021	119.07358	106.368908	95.1705248	85.29063042	76.56577034	68.85356747	62.02990788	55.98651462	50.62885458
210916A00003	9/16/2021	0.75	9/16/2024	9/16/2021	99.574754	98.86439831	98.16413288	97.47374398	96.79302377	96.12177021	95.45978686	94.8068827	94.16287191
210917A00012	9/17/2021	1.2	9/11/2026	9/17/2021	102.44638	99.78126019	97.19842355	94.69480638	92.26747999	89.91364553	87.63062715	85.41586559	83.26691217
210917A00004	9/17/2021	1.03	9/17/2025	9/17/2021	100.74944	99.06282443	97.41223224	95.79657004	94.21479347	92.66590007	91.14892715	89.66294981	88.20707902
210917A00003	9/17/2021	0.8	9/17/2024	9/17/2021	99.610664	98.89749312	98.19448955	97.50143689	96.81812499	96.14434959	95.47991211	94.82461944	94.17828378
210920A00015	9/9/2022	1.28	9/9/2026	9/9/2022	102.65586	99.99312872	97.41245479	94.91078853	92.48521446	90.13294604	87.85131897	85.63778475	83.48990481
210920A00014	9/9/2022	1.28	9/9/2026	9/9/2022	102.65586	99.99312872	97.41245479	94.91078853	92.48521446	90.13294604	87.85131897	85.63778475	83.48990481
210104A00009	12/20/2021	0.89	12/18/2026	12/20/2021	101.89376	98.97671381	96.15772833	93.4329855	90.79883377	88.25178388	85.78850062	83.40579518	81.10061782
210104A00006	11/22/2021	0.88	11/20/2026	11/22/2021	101.78214	98.94096955	96.19298356	93.53464007	90.96255191	88.47347844	86.06431836	83.73210296	81.47398965
210104A00007	11/23/2021	0.88	11/23/2026	11/23/2021	101.79035	98.94127774	96.18588344	93.52060089	90.94201652	88.44686484	86.03202117	83.69449471	81.43142212
210928A00007	9/28/2021	0.88	9/27/2024	9/28/2021	99.675612	98.93537826	98.20607853	97.48747176	96.77932436	96.08140948	95.39350679	94.71540224	94.04688785
210928A00009	9/28/2021	2.18	9/28/2033	9/28/2021	116.76293	106.8700079	97.90581174	89.77795348	82.40369275	75.70888374	69.62704155	64.0985143	59.06974871
210928A00008	9/28/2021	1.35	9/28/2026	9/28/2021	102.92498	100.2085683	97.57710837	95.02739092	92.55635125	90.16106292	87.83873023	85.58668131	83.40236158
210928A00010	9/28/2021	1.12	9/26/2025	9/28/2021	100.93546	99.22358587	97.54863865	95.90948947	94.30505582	92.73429923	91.19622299	89.68987001	88.21432077
210929A00011	3/16/2022	1.03	3/14/2025	3/16/2022	100.16186	98.96924863	97.80482475	96.66759986	95.55663044	94.47101617	93.40989744	92.37245312	91.35789839

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210929A00012	3/16/2022	1.03	3/14/2025	3/16/2022	100.16186	98.96924863	97.80482475	96.66759986	95.55663044	94.47101617	93.40989744	92.37245312	91.35789839
210121A00012	1/22/2021	0.64	10/15/2024	1/22/2021	99.497269	98.7096597	97.93445178	97.17135431	96.42008529	95.68037141	94.95194774	94.23455739	93.5279512
210121A00014	1/22/2021	0.64	10/25/2024	1/22/2021	99.503201	98.68880041	97.88764661	97.09941916	96.32380747	95.56051082	94.80923798	94.06970685	93.34164407
210122A00006	1/25/2021	0.61	8/15/2024	1/25/2021	99.493106	98.86874418	98.2521887	97.64329423	97.04191861	96.44792316	95.86117262	95.28153502	94.70888155
210122A00005	1/26/2021	0.6	7/15/2024	1/26/2021	99.548631	99.00693692	98.47112163	97.94109009	97.41674896	96.89800689	96.38477451	95.87696431	95.37449064
210127A00009	1/27/2021	1.3	7/27/2029	1/27/2021	106.63512	101.0827865	95.8511998	90.92021174	86.27103885	81.88616604	77.74925453	73.84505674	70.15933793
210127A00008	1/27/2021	0.93	1/27/2027	1/27/2021	102.13915	99.11270928	96.19092637	93.3695922	90.64469563	88.0124102	85.46908442	83.01123266	80.63552646
210127A00010	1/27/2021	1.41	7/26/2030	1/27/2021	107.60879	101.073659	94.97524518	89.28217524	83.96548033	78.99840336	74.35621935	70.01607116	65.9568193
210129A00002	2/3/2021	0.59	7/25/2024	2/3/2021	99.516084	98.94779326	98.38596336	97.83048503	97.28125112	96.73815687	96.20109983	95.66997984	95.14469894
210201A00001	2/1/2021	0.77	12/16/2025	2/1/2021	100.52783	98.60464086	96.72762503	94.89539702	93.10661832	91.35999951	89.6542981	87.98831647	86.36089994
210201A00003	2/2/2021	0.74	10/15/2025	2/2/2021	100.31796	98.56063124	96.84219072	95.1614952	93.51744839	91.90899495	90.33511858	88.79484018	87.28721618
210201A00007	2/3/2021	0.57	8/15/2024	2/3/2021	99.467688	98.843417	98.22695178	97.61814676	97.0168598	96.42295225	95.83628884	95.25673761	94.68416977
210208A00008	2/11/2021	0.78	11/17/2025	2/11/2021	100.47401	98.62806715	96.82476763	95.06287858	93.34120975	91.65861273	90.01397921	88.40623926	86.83435982
210208A00004	2/11/2021	0.76	10/15/2025	2/11/2021	100.35409	98.5964281	96.87765807	95.19663908	93.55227468	91.94350937	90.36932669	88.82874739	87.32082776
210216A00011	2/17/2021	0.83	12/15/2025	2/17/2021	100.64368	98.72199496	96.84638344	95.01546071	93.22789309	91.48239573	89.77773048	88.11270385	86.48616506
210217A00009	2/18/2021	0.68	11/15/2024	2/18/2021	99.542392	98.67182547	97.81639504	96.97570847	96.14938729	95.33706587	94.53839092	93.75302092	92.98062568
210217A00008	2/18/2021	0.63	8/15/2024	2/18/2021	99.505816	98.88140776	98.26480716	97.65586797	97.05444801	96.46040862	95.87361452	95.29393372	94.72123743
210218A00009	2/19/2021	0.62	7/15/2024	2/19/2021	99.559635	99.01790543	98.48205559	97.95198977	97.42761463	96.90883882	96.39557294	95.8877295	95.38522284
210218A00011	2/22/2021	0.85	10/24/2025	2/22/2021	100.54313	98.75940916	97.01561747	95.31061672	93.6433061	92.0126237	90.41754479	88.85708028	87.33027523
210218A00006	2/18/2021	0.5	2/20/2024	2/18/2021	99.854539	99.70832354	99.56254873	99.41721233	99.27231236	99.12784682	98.98381372	98.84021111	98.69703703
210218A00010	2/18/2021	1.72	2/18/2031	2/18/2021	110.06981	102.9159554	96.27482176	90.10702446	84.37640292	79.04973698	74.09649329	69.48859483	65.2002114
210219A00004	2/19/2021	0.91	2/19/2026	2/19/2021	101.02419	98.92208364	96.87370542	94.87730715	92.93121397	91.0338184	89.1835771	87.37900766	85.61868573
210219A00008	2/22/2021	0.86	12/1/2025	2/22/2021	100.66281	98.77847091	96.93845077	95.14144156	93.38618455	91.67146611	89.99611582	88.35900461	86.75904301
210224A00002	2/25/2021	0.88	11/3/2025	2/25/2021	100.62649	98.81546592	97.04552085	95.31548574	93.62423438	91.97067933	90.35377038	88.772493	87.22586689
210224A00004	2/26/2021	0.91	12/18/2025	2/26/2021	100.83024	98.89825426	97.01277409	95.17239647	93.37576973	91.62159195	89.90860874	88.23561115	86.60143369
210224A00007	2/26/2021	0.68	10/21/2024	2/26/2021	99.53674	98.73285056	97.94187175	97.16349442	96.39741945	95.64335711	94.90102673	94.1701563	93.45048216
210224A00006	2/26/2021	0.88	10/21/2025	2/26/2021	100.58901	98.81295834	97.07650827	95.37851964	93.7178927	92.09356728	90.50452103	88.94976781	87.42835606
210224A00003	2/26/2021	0.9	12/3/2025	2/26/2021	100.76537	98.87429347	97.02781631	95.22462167	93.46343914	91.74304396	90.06225514	88.41993353	86.81498007
210225A00016	3/1/2021	0.88	7/15/2025	3/1/2021	100.28462	98.77181219	97.28916	95.83582939	94.41101982	93.01395952	91.64390416	90.30013565	88.98196095
210225A00012	3/1/2021	0.91	8/25/2025	3/1/2021	100.46137	98.83785909	97.24812979	95.69119165	94.1660939	92.67192258	91.20779868	89.77287644	88.36634179
210225A00015	3/1/2021	0.7	8/26/2024	3/1/2021	99.538484	98.88454739	98.23915811	97.60214979	96.97336015	96.35263109	95.7398085	95.13474221	94.53728582
210225A00013	3/1/2021	0.93	10/6/2025	3/1/2021	100.63279	98.89686601	97.198884	95.5377017	93.91222398	92.32139878	90.76421498	89.23970036	87.7469197
210225A00003	3/1/2021	0.93	9/24/2025	3/1/2021	100.57918	98.87606588	97.20961218	95.57870118	93.98226072	92.41926217	90.88871811	89.38968025	87.92123748

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210225A00006	2/25/2021	0.98	2/25/2026	2/25/2021	101.19585	99.07558131	97.00979545	94.99671153	93.03462049	91.12188262	89.2569241	87.43823376	85.66436006
210225A00007	2/25/2021	1.79	8/23/2030	2/25/2021	110.17673	103.4857048	97.24460663	91.42085671	85.98440081	80.90749933	76.16453735	71.73185122	67.5875702
210226A00004	3/1/2021	1.04	12/5/2025	3/1/2021	101.0247	99.12603035	97.27224349	95.46201271	93.69405617	91.96713826	90.28006763	88.63169526	87.02091271
210226A00002	2/26/2021	0.86	2/26/2025	2/26/2021	99.913083	98.76494212	97.64297319	96.54629047	95.47404776	94.42543623	93.39968238	92.39604609	91.4138189
210302A00005	3/5/2021	0.92	9/10/2025	3/5/2021	100.53941	98.87300509	97.24190761	95.64506263	94.08145527	92.55011094	91.05009332	89.58050242	88.14047283
210303A00006	3/4/2021	0.97	10/10/2025	3/4/2021	100.71714	98.96962385	97.26050666	95.58864539	93.95294345	92.35234644	90.7858401	89.25244834	87.75123144
210304A00006	3/4/2021	1.02	3/4/2026	3/4/2021	101.30901	99.16813484	97.08264374	95.05071084	93.07058577	91.14058988	89.25911263	87.42460819	85.63559229
210304A00002	3/5/2021	0.93	7/10/2025	3/5/2021	100.36247	98.86239641	97.39207766	95.95070192	94.53748529	93.15167173	91.79253185	90.45936172	89.15148172
210305A00006	3/8/2021	1.02	8/11/2025	3/8/2021	100.60243	99.01448371	97.45907738	95.93527694	94.44218363	92.97893262	91.54469139	90.13865825	88.76006084
210308A00009	3/8/2021	0.62	3/8/2024	3/8/2021	99.827887	99.63507952	99.44302517	99.25171962	99.06115845	98.87133727	98.68225173	98.49389753	98.30627038
210309A00004	3/11/2021	0.87	11/25/2024	3/11/2021	99.720123	98.82203631	97.94002363	97.0736571	96.22252361	95.38622451	94.56437492	93.7566032	92.96255033
210309A00002	3/11/2021	0.77	7/25/2024	3/11/2021	99.620066	99.05143304	98.48926378	97.93344885	97.38388105	96.84045557	96.30306995	95.77162397	95.24601965
210310A00003	3/15/2021	0.79	8/26/2024	3/15/2021	99.5984	98.94423965	98.2986294	97.66140215	97.0323956	96.4114516	95.79841602	95.19313865	94.59547307
210311A00007	3/11/2021	1.06	3/11/2026	3/11/2021	101.42468	99.2628888	97.15740868	95.1063708	93.10798183	91.16052262	89.26234446	87.4118655	85.60756746
210312A00008	3/12/2021	1.13	3/12/2026	3/12/2021	101.58366	99.4172722	97.30736463	95.25205822	93.24955253	91.2981217	89.39611065	87.54193154	85.73406039
210315A00003	3/15/2021	1.13	3/13/2026	3/15/2021	101.58785	99.41861137	97.30598181	95.24807777	93.24309268	91.28929492	89.385024	87.52868694	85.71875495
210318A00007	3/22/2021	1.41	3/21/2024	3/22/2021	99.979593	99.75094882	99.52335838	99.29681417	99.07130895	98.84683555	98.62338685	98.40095582	98.17953549
210319A00003	3/19/2021	0.95	3/19/2025	3/19/2021	100.07885	98.8733717	97.69670417	96.54782583	95.42576229	94.32958418	93.25840468	92.21137699	91.18769222
211123A00011	11/23/2021	1.69	11/23/2026	11/23/2021	104.15485	101.2710859	98.48185636	95.78356292	93.17276526	90.64617221	88.20063442	85.83313742	83.54079512
211123A00012	11/23/2021	2.27	11/23/2033	11/23/2021	117.80566	107.7202549	98.59377429	90.32966625	82.84156591	76.05217396	69.89226397	64.29980278	59.21917059
211129A00011	11/29/2021	1.53	11/20/2026	11/29/2021	103.6742	100.8053472	98.03035733	95.34566661	92.74786651	90.23369597	87.80003408	85.44389328	83.16241289
211129A00012	11/29/2021	1.53	11/25/2026	11/29/2021	103.69685	100.8145637	98.0269811	95.33048851	92.72163309	90.19711199	87.75376496	85.38856735	83.09862355
211206A00017	12/6/2021	1.56	12/4/2026	12/6/2021	103.82743	100.9192228	98.10730893	95.3879918	92.75773347	90.21315099	87.75100867	85.36821086	83.06179505
211206A00009	12/6/2021	1.43	12/5/2025	12/6/2021	101.78398	99.87774276	98.01653224	96.19901892	94.423917	92.68998709	90.99603417	89.34090573	87.72348991
211206A00008	12/6/2021	1.24	12/6/2024	12/6/2021	100.08424	99.15493874	98.242802	97.34735913	96.46815527	95.60475196	94.75672639	93.92367072	93.10519143
220203A00009	2/3/2022	1.99	2/2/2027	2/3/2022	105.46128	102.366883	99.37946959	96.49472604	93.70854279	91.01700034	88.41635917	85.90305024	83.47366611
220204A00004	2/4/2022	2.08	1/8/2027	2/4/2022	105.58217	102.5530517	99.62693828	96.79975459	94.06761015	91.42679052	88.87374829	86.40509447	84.01759045
220204A00005	2/4/2022	1.83	1/10/2025	2/4/2022	100.79809	99.77111209	98.7649784	97.7790602	96.81275289	95.86547576	94.93667084	94.02580178	93.13235283
220209A00011	2/9/2022	2.14	1/11/2027	2/9/2022	105.78438	102.7441363	99.80745158	96.97021879	94.22851907	91.57861141	89.01692341	86.5400426	84.14470829
220209A00010	2/9/2022	2.14	1/11/2027	2/9/2022	105.78438	102.7441363	99.80745158	96.97021879	94.22851907	91.57861141	89.01692341	86.5400426	84.14470829
220209A00012	2/9/2022	1.98	7/29/2025	2/9/2022	102.0916	100.5255448	98.99110228	97.48737919	96.01351862	94.56869529	93.15211405	91.76300852	90.40063973
220209A00013	2/9/2022	1.98	7/29/2025	2/9/2022	102.0916	100.5255448	98.99110228	97.48737919	96.01351862	94.56869529	93.15211405	91.76300852	90.40063973
220214A00012	2/14/2022	2.47	12/28/2029	2/14/2022	113.83042	107.6630798	101.8722852	96.43306738	91.32223558	86.51824432	82.00106873	77.75208966	73.75398816

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220214A00010	2/14/2022	2.46	12/21/2029	2/14/2022	113.74319	107.5974835	101.8259008	96.40370381	91.30791534	86.51718337	82.01165814	77.77287915	73.78367109
220216A00003	2/16/2022	2.49	12/14/2029	2/16/2022	113.89656	107.7654249	102.006295	96.59465704	91.50773111	86.72434328	82.22480465	77.99079993	74.00528493
220216A00002	2/16/2022	2.09	2/14/2025	2/16/2022	101.27887	100.1546743	99.05535235	97.98008253	96.92808197	95.89860146	94.89092367	93.90436144	92.93825625
220217A00015	2/17/2022	2.28	2/16/2027	2/17/2022	106.46595	103.3171537	100.278147	97.34446659	94.51185505	91.77625439	89.13379513	86.58078629	84.11370591
220217A00012	2/17/2022	2.28	2/16/2027	2/17/2022	106.46595	103.3171537	100.278147	97.34446659	94.51185505	91.77625439	89.13379513	86.58078629	84.11370591
220217A00011	2/17/2022	2.08	2/14/2025	2/17/2022	101.26748	100.1433577	99.04410362	97.96890061	96.91696584	95.88755015	94.87993621	93.89343691	92.92739372
220217A00013	2/17/2022	2.08	2/14/2025	2/17/2022	101.26748	100.1433577	99.04410362	97.96890061	96.91696584	95.88755015	94.87993621	93.89343691	92.92739372
220217A00017	2/17/2022	2.27	1/29/2027	2/17/2022	106.30459	103.2080941	100.2182338	97.33072817	94.54149468	91.84663887	89.24244438	86.72536367	84.29200921
220217A00016	2/17/2022	2.24	9/15/2026	2/17/2022	105.29954	102.5846748	99.95359869	97.40318796	94.93045525	92.53254609	90.20673185	87.9504031	85.76106351
220217A00018	2/17/2022	2.28	2/17/2027	2/17/2022	106.47319	103.3215154	100.2798063	97.3435891	94.50859669	91.77076187	89.1262066	86.57123182	84.10230806
220217A00020	2/17/2022	2.08	2/13/2025	2/17/2022	101.26124	100.1398614	99.04322918	97.97053453	96.92100014	95.89388201	94.88846772	93.90407476	92.94004898
220218A00003	2/18/2022	2.16	9/4/2026	2/18/2022	105.0108	102.3291689	99.72961752	97.20910643	94.76473542	92.39373179	90.09344374	87.86133406	85.69497433
220222A00018	2/22/2022	2.5	12/19/2031	2/22/2022	117.05938	108.8476441	101.2797352	94.30167132	87.86426487	81.92267015	76.43597964	71.3668597	66.68122172
220224A00010	2/24/2022	2.04	3/10/2025	2/24/2022	101.36613	100.176571	99.01482206	97.87991639	96.7709319	95.6869883	94.62724478	93.59089779	92.57717902
220224A00023	2/24/2022	2.15	3/16/2026	2/24/2022	103.86991	101.6664322	99.52048794	97.43015692	95.39359919	93.40905143	91.474823	89.58929221	87.75090292
220224A00018	2/24/2022	2.15	3/16/2026	2/24/2022	103.86991	101.6664322	99.52048794	97.43015692	95.39359919	93.40905143	91.474823	89.58929221	87.75090292
211014A00018	10/14/2021	0.8	10/11/2024	10/14/2021	99.755763	98.97594442	98.20825901	97.45242552	96.70817112	95.97523129	95.25334954	94.54227707	93.84177251
211015A00029	10/15/2021	0.98	10/15/2024	10/15/2021	99.770399	98.98158595	98.20518775	97.44091308	96.6884797	95.94761408	95.21805105	94.49953349	93.79181204
211015A00031	10/15/2021	1.22	10/15/2025	10/15/2021	101.18514	99.41975594	97.6934071	96.00494835	94.35327939	92.73734102	91.15611319	89.60861325	88.09389415
220225A00014	2/25/2022	2.42	2/23/2029	2/25/2022	112.17744	106.894865	101.8943352	97.15928386	92.67420304	88.42457393	84.39679821	80.57813461	76.95664023
220225A00015	2/25/2022	2.26	2/25/2027	2/25/2022	106.46755	103.2938567	100.2315196	97.27597949	94.42289111	91.66811425	89.00770255	86.43789304	83.95509637
220301A00015	3/1/2022	2	1/4/2027	3/1/2022	105.3141	102.2997706	99.38770989	96.57388608	93.8544462	91.22571106	88.68416637	86.22645426	83.8493654
220301A00013	3/1/2022	2.01	2/16/2027	3/1/2022	105.61451	102.4791652	99.45326175	96.53234702	93.71217514	90.98869903	88.35805971	85.81657625	83.36073635
220301A00014	3/1/2022	1.85	1/10/2025	3/1/2022	100.81894	99.79184367	98.78559532	97.79956407	96.83314528	95.88575819	94.95684482	94.04586877	93.15231426
220302A00010	3/2/2022	2.14	1/13/2027	3/2/2022	105.79735	102.7515505	99.80963397	96.96747248	94.22112981	91.56684861	89.00104117	86.52028066	84.12129293
220302A00011	3/2/2022	2.14	1/13/2027	3/2/2022	105.79735	102.7515505	99.80963397	96.96747248	94.22112981	91.56684861	89.00104117	86.52028066	84.12129293
220304A00004	3/4/2022	2.12	12/29/2028	3/4/2022	110.34416	105.2608339	100.4428632	95.87501311	91.54300587	87.43345152	83.53378809	79.83222616	76.31769742
210525A00004	5/25/2021	1.02	12/19/2025	5/25/2021	101.05168	99.11476615	97.22452449	95.37954927	93.57848217	91.82001493	90.1028871	88.42588396	86.78783453
210526A00017	5/26/2021	2.13	5/26/2033	5/26/2021	115.91644	106.3815415	97.71502174	89.83305942	82.66032402	76.12907787	70.17837638	64.75335606	59.80460035
210526A00018	5/26/2021	1.11	5/26/2026	5/26/2021	101.81429	99.44358442	97.13964575	94.90022796	92.72317339	90.60640926	88.54794383	86.54586269	84.59832532
210526A00014	5/26/2021	1.01	12/19/2025	5/26/2021	101.03183	99.095112	97.20506811	95.36028686	93.55941004	91.80112948	90.08418485	88.4073615	86.76948857
220308A00011	3/8/2022	2.07	1/10/2025	3/8/2022	101.04827	100.0198911	99.01238145	98.02510659	97.05746146	96.10886492	95.17875857	94.26660566	93.37189003
220309A00010	3/9/2022	2.27	3/8/2027	3/9/2022	106.58183	103.3751793	100.2819351	97.29740903	94.41714067	91.63688228	88.95258688	86.36039739	83.85663631

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220311A00008	3/11/2022	2.07	3/11/2024	3/11/2022	100.11382	99.91238497	99.71176639	99.51196414	99.31297318	99.11478854	98.91740525	98.7208184	98.52502314
220311A00013	3/15/2022	2.35	3/15/2027	3/15/2022	106.89331	103.6616525	100.5448258	97.53806272	94.6368244	91.83678943	89.13384198	86.52406051	84.00370714
220314A00006	3/14/2022	2.36	3/14/2025	3/14/2022	101.77844	100.5754428	99.40080029	98.25352228	97.13266077	96.03731111	94.96660957	93.91973104	92.89588685
220314A00005	3/14/2022	2.36	3/14/2025	3/14/2022	101.77844	100.5754428	99.40080029	98.25352228	97.13266077	96.03731111	94.96660957	93.91973104	92.89588685
220314A00008	3/14/2022	2.38	7/28/2025	3/14/2022	102.72141	101.1529163	99.61603565	98.10988123	96.63359732	95.1863597	93.76737416	92.3758752	91.01112465
220314A00004	3/14/2022	2.44	3/12/2027	3/14/2022	107.1596	103.9322233	100.8192342	97.81589492	94.91769482	92.1203387	89.4197352	86.81198551	84.29337298
220314A00007	3/14/2022	2.44	3/12/2027	3/14/2022	107.1596	103.9322233	100.8192342	97.81589492	94.91769482	92.1203387	89.4197352	86.81198551	84.29337298
220314A00009	3/14/2022	2.38	7/28/2025	3/14/2022	102.72141	101.1529163	99.61603565	98.10988123	96.63359732	95.1863597	93.76737416	92.3758752	91.01112465
220315A00014	3/15/2022	2.78	3/15/2032	3/15/2022	119.77425	111.2229111	103.3570299	96.11779632	89.45174707	83.31025159	77.64905116	72.42784445	67.60991422
220315A00015	3/15/2022	3.18	3/13/2037	3/15/2022	131.34788	117.4484827	105.2255098	94.46495115	84.98126465	76.61345047	69.2216876	62.68444663	56.89600902
220315A00018	3/15/2022	2.43	3/15/2027	3/15/2022	107.15155	103.9157172	100.7948281	97.78410916	94.87901766	92.07522877	89.36862333	86.75527657	84.23144753
220315A00037	3/17/2022	2.63	3/16/2027	3/17/2022	107.80574	104.5564708	101.4226076	98.39935916	95.48216305	92.66667548	89.94875948	87.32447343	84.79006039
220315A00036	3/17/2022	2.63	3/16/2027	3/17/2022	107.80574	104.5564708	101.4226076	98.39935916	95.48216305	92.66667548	89.94875948	87.32447343	84.79006039
220315A00021	3/15/2022	2.15	3/15/2024	3/15/2022	100.1391	99.92663389	99.71508474	99.50444278	99.29470211	99.0858569	98.87790137	98.67082978	98.46463643
220317A00026	5/3/2022	2.59	5/3/2027	5/3/2022	108.06163	104.6765957	101.4160413	98.27475455	95.24776452	92.33033315	89.51794329	86.80628719	84.19125571
220317A00027	5/3/2022	2.59	5/3/2027	5/3/2022	108.06163	104.6765957	101.4160413	98.27475455	95.24776452	92.33033315	89.51794329	86.80628719	84.19125571
220317A00028	5/3/2022	2.59	5/3/2027	5/3/2022	108.06163	104.6765957	101.4160413	98.27475455	95.24776452	92.33033315	89.51794329	86.80628719	84.19125571
220317A00011	3/17/2022	2.48	3/17/2025	3/17/2022	101.94545	100.7332595	99.54982718	98.39413769	97.26522384	96.16216298	95.08407439	94.03011699	92.9994871
220317A00023	5/3/2022	2.52	5/2/2025	5/3/2022	102.33486	101.0042048	99.6971055	98.41298568	97.15129159	95.91148679	94.69305155	93.49548217	92.31829036
220323A00016	6/2/2022	2.78	6/2/2025	6/2/2022	102.91347	101.4946146	100.1022876	98.73580993	97.39452447	96.07779582	94.78500953	93.51557121	92.26890569
220323A00017	6/2/2022	2.78	6/2/2025	6/2/2022	102.91347	101.4946146	100.1022876	98.73580993	97.39452447	96.07779582	94.78500953	93.51557121	92.26890569
220324A00007	3/24/2022	2.72	3/24/2025	3/24/2022	102.2931	101.059707	99.85600004	98.68092007	97.53345474	96.41263893	95.31755203	94.24731542	93.20109009
220324A00015	3/24/2022	2.79	3/3/2026	3/24/2022	105.18	102.9988061	100.8737502	98.80298551	96.78474304	94.81732601	92.89910633	91.02852118	89.20406981
220325A00010	3/28/2022	2.78	3/21/2025	3/28/2022	102.34406	101.1184544	99.92215989	98.75413356	97.6133819	96.49895752	95.40995646	94.34551572	93.30481102
220325A00011	3/28/2022	2.79	4/25/2025	3/28/2022	102.64397	101.3290223	100.0382953	98.77115203	97.52698032	96.30518917	95.10520779	93.92648471	92.76848698
220325A00012	3/28/2022	2.85	3/23/2026	3/28/2022	105.48989	103.2480858	101.0651256	98.9390278	96.86789812	94.84992203	92.88336039	90.96654559	89.09787796
220325A00017	3/28/2022	2.86	3/23/2027	3/28/2022	108.61345	105.3309655	102.1655451	99.11230618	96.16659919	93.32399901	90.58029235	87.93146601	85.37369589
220325A00018	3/28/2022	2.85	9/10/2026	3/28/2022	106.9227	104.1989318	101.5587379	98.99901199	96.51678956	94.10923705	91.77364514	89.50742225	87.30808848
220325A00019	3/28/2022	2.86	3/23/2027	3/28/2022	108.61345	105.3309655	102.1655451	99.11230618	96.16659919	93.32399901	90.58029235	87.93146601	85.37369589
220325A00020	3/28/2022	2.86	3/23/2027	3/28/2022	108.61345	105.3309655	102.1655451	99.11230618	96.16659919	93.32399901	90.58029235	87.93146601	85.37369589
220325A00015	3/28/2022	2.86	3/23/2027	3/28/2022	108.61345	105.3309655	102.1655451	99.11230618	96.16659919	93.32399901	90.58029235	87.93146601	85.37369589
211207A00012	12/7/2021	1.62	12/4/2026	12/7/2021	104.0044	101.093568	98.27909703	95.55728562	92.92459372	90.37763641	87.91317612	85.52811539	83.21948998
211207A00011	12/7/2021	1.62	12/1/2026	12/7/2021	103.98927	101.0867779	98.28011655	95.56560933	92.93974532	90.39916697	87.94066243	85.56115849	83.25771366

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
211207A00017	12/7/2021	1.3	11/15/2024	12/7/2021	100.0933	99.22007102	98.36201458	97.51873372	96.68984932	95.87499515	95.07381729	94.28597366	93.51113348
211209A00006	12/9/2021	1.61	12/8/2026	12/9/2021	103.99498	101.0734576	98.24900576	95.51787857	92.87649731	90.32144072	87.84943707	85.45735675	83.14220528
211209A00007	12/9/2021	1.61	12/8/2026	12/9/2021	103.99498	101.0734576	98.24900576	95.51787857	92.87649731	90.32144072	87.84943707	85.45735675	83.14220528
220329A00007	3/29/2022	2.94	3/29/2029	3/29/2022	115.12381	109.6674267	104.5059596	99.62183957	94.99863963	90.62099727	86.47453911	82.54581161	78.8222169
220329A00009	3/29/2022	2.94	3/29/2029	3/29/2022	115.12381	109.6674267	104.5059596	99.62183957	94.99863963	90.62099727	86.47453911	82.54581161	78.8222169
220331A00004	3/31/2022	2.66	5/20/2024	3/31/2022	100.48163	100.0883638	99.69818119	99.31104584	98.92692208	98.54577477	98.16756935	97.79227175	97.41984845
220331A00003	3/31/2022	2.66	5/17/2024	3/31/2022	100.47038	100.0853	99.70317703	99.32397917	98.94767285	98.57422498	98.20360297	97.83577474	97.47070866
220331A00012	3/31/2022	2.81	3/17/2025	3/31/2022	102.34928	101.1344753	99.94847472	98.7902588	97.65885925	96.5533523	95.4728562	94.41652884	93.38356558
220331A00011	3/31/2022	2.73	10/15/2024	3/31/2022	101.17621	100.3812064	99.5986817	98.82834791	98.06992153	97.32312782	96.58770042	95.86338108	95.14991931
220331A00010	3/31/2022	2.83	2/18/2026	3/31/2022	105.15549	103.0107814	100.9205963	98.88316806	96.89680181	94.95987066	93.07081244	91.22812656	89.43037105
211210A00014	12/10/2021	1.54	12/10/2025	12/10/2021	102.04132	100.1186455	98.24169999	96.40911663	94.61958086	92.87182593	91.16463078	89.49681808	87.86725238
211210A00015	12/10/2021	1.63	12/10/2026	12/10/2021	104.06433	101.1363676	98.30585169	95.56902016	92.92227405	90.362173	87.88542734	85.48889057	83.16955228
211210A00016	12/10/2021	1.76	12/10/2027	12/10/2021	106.55305	102.5974885	98.8104468	95.18388219	91.71017397	88.3821031	85.19282886	82.13586696	79.20506914
211213A00011	12/13/2021	1.32	12/13/2024	12/13/2021	100.17904	99.23051743	98.2998706	97.38659489	96.49020754	95.61024352	94.74625474	93.89780928	93.06449069
220404A00014	4/4/2022	2.94	4/5/2027	4/4/2022	108.99164	105.6667988	102.4616089	99.37106243	96.39039091	93.51505512	90.74073247	88.0633051	85.47884876
211214A00014	12/14/2021	1.31	12/13/2024	12/14/2021	100.16938	99.22091286	98.29031559	97.3770888	96.48074973	95.60083337	94.73689164	93.88849266	93.05521995
211214A00015	12/14/2021	1.49	12/12/2025	12/14/2021	101.95253	100.0253486	98.14413216	96.30750326	94.51413697	92.76275672	91.05213208	89.38107685	87.74844714
211220A00006	12/20/2021	1.21	12/20/2024	12/20/2021	100.08981	99.12304461	98.17484774	97.24469298	96.33206939	95.43648516	94.55746673	93.69455794	92.84731924
211221A00010	12/21/2021	1.31	12/20/2024	12/21/2021	100.18829	99.22099409	98.27228284	97.34162054	96.42849609	95.53241754	94.65291119	93.78952073	92.94180649
211221A00023	12/21/2021	1.53	6/19/2026	12/21/2021	102.93944	100.4918811	98.11492712	95.80613668	93.56317207	91.38379007	89.26583762	87.20724753	85.20603454
211221A00025	12/21/2021	1.59	12/21/2026	12/21/2021	104.00028	101.0435166	98.18614157	95.42427882	92.75422203	90.17242999	87.67551827	85.26025126	82.92353479
211222A00035	12/22/2021	2.15	12/22/2033	12/22/2021	116.69196	106.5861668	97.44985449	89.18460335	81.70246065	74.92477929	68.78119077	63.20869612	58.15086066
211227A00009	12/27/2021	1.6	12/23/2026	12/27/2021	104.04023	101.0774507	98.21444033	95.44729488	92.77228773	90.1858586	87.68460507	85.26527467	82.92475733
211227A00005	12/27/2021	1.61	12/18/2026	12/27/2021	104.04516	101.095829	98.24537279	95.48993887	92.82585008	90.24959256	87.75780753	85.34728355	83.0149491
200428A00002	4/28/2020	1.47	4/26/2030	4/28/2020	108.77099	102.4038458	96.44788851	90.87453378	85.65732267	80.77175147	76.19511808	71.90638102	67.88603027
220106A00009	1/6/2022	2.57	1/4/2036	1/6/2022	122.65863	110.3659944	99.453303	89.75703984	81.13388104	73.45811216	66.61938381	60.52076326	55.07704154
220106A00010	1/6/2022	2.64	1/6/2037	1/6/2022	124.1799	110.8935598	99.20513281	88.91200591	79.83828913	71.83116747	64.75776779	58.50246465	52.96456195
220106A00013	1/6/2022	2.75	1/6/2039	1/6/2022	127.9911	112.6974247	99.47754073	88.03515979	78.11790193	69.51058409	62.02956479	55.51797301	49.84167951
220106A00008	1/6/2022	2.5	1/5/2035	1/6/2022	121.20353	109.9052148	99.78359109	90.7090616	82.56694534	75.25569203	68.68531821	62.77603668	57.45705429
220106A00011	1/6/2022	2.7	1/6/2038	1/6/2022	125.88939	111.6115837	99.16195791	88.29386784	78.7952203	70.48347801	63.20140452	56.81344025	51.20261319
220106A00007	1/6/2022	2.42	1/6/2034	1/6/2022	119.43083	109.1543133	99.86355759	91.45833401	83.84909387	76.95578465	70.70679904	65.03804507	59.89212278
220111A00002	1/11/2022	1.75	1/16/2026	1/11/2022	102.64965	100.6216197	98.64378115	96.7145627	94.83245643	92.99601225	91.20383524	89.4545831	87.74696375
220112A00008	1/12/2022	1.47	11/20/2024	1/12/2022	100.25705	99.36966198	98.49791914	97.64140663	96.79972806	95.97250066	95.15935474	94.35993312	93.57389063

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220114A00007	1/14/2022	1.7	1/27/2026	1/14/2022	102.60311	100.5463843	98.54102923	96.58541627	94.67798435	92.8172332	91.00172047	89.23005904	87.50091441
220114A00010	1/14/2022	1.86	1/13/2027	1/14/2022	104.94062	101.9079765	98.97887513	96.14920587	93.41504324	90.7726402	88.21841891	85.74896204	83.36100453
220114A00009	1/14/2022	1.74	4/21/2026	1/14/2022	103.15198	100.8591898	98.62853819	96.45797862	94.34554454	92.28934643	90.2875683	88.33846431	86.44035555
220119A00009	1/19/2022	1.35	1/19/2024	1/19/2022	99.993714	99.93556621	99.87750146	99.81951924	99.76161939	99.70380171	99.64606605	99.58841221	99.53084003
220121A00014	1/21/2022	1.78	11/3/2025	1/21/2022	102.29948	100.4724891	98.68687905	96.94147014	95.23512806	93.56675761	91.93530109	90.33973675	88.77907736
220121A00013	1/21/2022	1.78	11/3/2025	1/21/2022	102.29948	100.4724891	98.68687905	96.94147014	95.23512806	93.56675761	91.93530109	90.33973675	88.77907736
220124A00007	1/24/2022	1.88	1/22/2027	1/24/2022	105.05372	101.9953407	99.04197718	96.18943297	93.43370306	90.77096595	88.19757397	85.71004431	83.30505043
220124A00008	1/24/2022	1.88	1/22/2027	1/24/2022	105.05372	101.9953407	99.04197718	96.18943297	93.43370306	90.77096595	88.19757397	85.71004431	83.30505043
220125A00008	1/25/2022	1.31	1/26/2024	1/25/2022	99.987785	99.91029539	99.83293087	99.75569119	99.67857607	99.6015852	99.5247183	99.44797507	99.37135523
220126A00003	1/26/2022	1.9	12/18/2026	1/26/2022	104.91169	101.9493615	99.08622958	96.31843398	93.6422872	91.0542655	88.5510006	86.12927192	83.7859992
220126A00002	1/26/2022	1.9	12/18/2026	1/26/2022	104.91169	101.9493615	99.08622958	96.31843398	93.64228721	91.0542655	88.5510006	86.12927192	83.7859992
220131A00006	1/31/2022	1.83	2/1/2027	1/31/2022	105.36789	102.2678852	99.27520875	96.38552782	93.5947155	90.89883585	88.29413384	85.77702576	83.34409033
220131A00003	1/31/2022	1.98	2/1/2027	1/31/2022	105.42371	102.3326612	99.34840209	96.46663789	93.68326907	90.99438549	88.3962564	85.88532098	83.45817951
220131A00011	1/31/2022	1.52	1/31/2024	1/31/2022	100.0044	99.91309555	99.82195729	99.73098804	99.64018731	99.54955465	99.45908959	99.36879165	99.27866037
210610A00012	6/11/2021	1.9	6/10/2026	6/11/2021	103.80998	101.3751145	99.00975011	96.7115159	94.47813241	92.30741141	90.19725166	88.14563493	86.15062214
210610A00014	6/11/2021	2.03	6/10/2026	6/11/2021	104.13001	101.6911561	99.32189078	97.01984048	94.78272314	92.60834806	90.49461167	88.43949344	86.44105214
210611A00006	6/11/2021	1.85	6/11/2031	6/11/2021	111.31947	103.8241287	96.8862795	90.4615954	84.50948895	78.99277636	73.87737621	69.13203621	64.72808528
220502A00030	5/4/2022	3.24	6/20/2025	5/4/2022	103.72542	102.2529165	100.8088131	99.39236262	98.00284012	96.63954564	95.301803	93.98895879	92.7003814
220201A00011	2/1/2022	1.86	4/20/2026	2/1/2022	103.42541	101.1320365	98.90073474	96.72945894	94.61624287	92.55919765	90.55650815	88.60642956	86.70728417
211115A00032	11/15/2021	1.75	11/12/2027	11/15/2021	106.35516	102.4783043	98.76366925	95.20365033	91.79103696	88.51899147	85.38102783	82.37099176	79.48304208
211117A00010	11/17/2021	1.18	11/18/2024	11/17/2021	99.991896	99.11114913	98.24584171	97.39557061	96.5599466	95.73859378	94.93114903	94.13726146	93.35659189
211119A00009	11/19/2021	1.68	11/19/2027	11/19/2021	106.11997	102.2292067	98.50203371	94.93074312	91.50803189	88.22697642	85.08101084	82.06390666	79.1697537
211019A00009	10/19/2021	1.48	10/9/2026	10/19/2021	103.33664	100.5846552	97.91953068	95.3379951	92.83692726	90.41334396	88.06439272	85.78734513	83.5795905
211019A00011	10/19/2021	1.48	10/16/2026	10/19/2021	103.37003	100.5985441	97.91506869	95.31630259	92.79909222	90.36042139	87.9974043	85.70727897	83.48740113
211026A00013	10/26/2021	1.52	10/26/2026	10/26/2021	103.53141	100.7304423	98.0191811	95.39427855	92.85253248	90.39087725	88.00637712	85.69622	83.45771156
211026A00012	10/26/2021	1.52	10/26/2026	10/26/2021	103.53141	100.7304423	98.0191811	95.39427855	92.85253248	90.39087725	88.00637712	85.69622	83.45771156
211028A00019	10/28/2021	1.1	10/28/2024	10/28/2021	99.888627	99.06446879	98.2538331	97.45638991	96.67181953	95.89981251	95.14006927	94.39229964	93.65622257
211028A00020	10/28/2021	2.05	1/28/2031	10/28/2021	112.36872	105.1906609	98.5217459	92.32320588	86.55941267	81.19761211	76.20767811	71.56188906	67.23472428
211028A00021	10/28/2021	2.28	10/28/2033	10/28/2021	117.83217	107.8107776	98.73604596	90.51326842	83.05766412	76.29329594	70.15210806	64.57307254	59.501432
211028A00012	10/28/2021	1.64	10/15/2027	10/28/2021	105.77388	101.9834201	98.34882582	94.8628624	91.51866753	88.30973429	85.22989054	82.27327969	79.43434279
211028A00013	10/28/2021	1.65	10/22/2027	10/28/2021	105.85183	102.0407422	98.38708119	94.88352875	91.52314997	88.29936714	85.20593937	82.23694346	79.386756
220707A00041	7/7/2022	3.41	7/7/2025	7/7/2022	104.13638	102.6146967	101.1230377	99.66058679	98.22655674	96.82018827	95.4407487	94.08753076	92.75985155
220711A00021	7/11/2022	3.27	7/11/2025	7/11/2022	104.20772	102.6702394	101.16327	99.68597946	98.23756119	96.8172376	95.42425862	94.05790048	92.71746457

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220712A00016	7/15/2022	3.35	1/15/2026	7/15/2022	105.94015	103.8801675	101.8709552	99.91092511	97.99855528	96.1323821	94.31099751	92.53304649	90.79722462
220712A00006	7/12/2022	3.36	7/12/2024	7/12/2022	101.05956	100.5210711	99.98833012	99.4612427	98.93971897	98.42367101	97.91301272	97.40765983	96.9075298
220714A00034	7/14/2022	3.62	1/16/2024	7/14/2022	100.10796	100.0580189	100.0081396	99.95832716	99.90858133	99.858902	99.80928903	99.75974228	99.71026161
220714A00035	7/14/2022	3.62	7/15/2024	7/14/2022	101.21013	100.6631819	100.1221503	99.58694285	99.05746572	98.53362705	98.01533695	97.50250741	96.99505231
220715A00001	7/15/2022	3.44	7/15/2027	7/15/2022	111.68089	108.03256	104.5249282	101.1517927	97.9072578	94.78571992	91.78185145	88.8905855	86.10710157
220715A00047	7/15/2022	3.44	7/15/2027	7/15/2022	111.68089	108.03256	104.5249282	101.1517927	97.9072578	94.78571992	91.78185145	88.8905855	86.10710157
220715A00027	7/15/2022	3.44	7/15/2027	7/15/2022	111.68089	108.03256	104.5249282	101.1517927	97.9072578	94.78571992	91.78185145	88.8905855	86.10710157
220719A00004	7/19/2022	3.46	7/19/2027	7/19/2022	111.79559	108.1338732	104.6136914	101.2287876	97.9732177	94.84133306	91.82776386	88.92740384	86.1353957
220721A00017	7/21/2022	3.51	1/22/2024	7/21/2022	100.13664	100.0700741	100.0036075	99.9372408	99.8709739	99.80480653	99.73873848	99.67276953	99.60689945
220502A00025	5/2/2022	3.21	5/2/2025	5/2/2022	103.26644	101.9291994	100.6156197	99.32512843	98.05716881	96.81120157	95.58670423	94.38317043	93.20010933
220506A00016	5/6/2022	3.35	5/6/2027	5/6/2022	110.64836	107.2114588	103.9008198	100.7111491	97.63740094	94.67476647	91.8186613	89.06471395	86.40875478
220509A00014	7/15/2022	3.37	7/15/2027	7/15/2022	111.43136	107.7874644	104.2841426	100.9151954	97.67473162	94.55715184	91.5571325	88.66961056	85.88976925
220509A00013	7/15/2022	3.37	7/15/2027	7/15/2022	111.43136	107.7874644	104.2841426	100.9151954	97.67473162	94.55715184	91.5571325	88.66961056	85.88976925
220509A00016	7/15/2022	3.37	7/15/2027	7/15/2022	111.43136	107.7874644	104.2841426	100.9151954	97.67473162	94.55715184	91.5571325	88.66961056	85.88976925
220510A00016	5/13/2022	3.23	5/5/2027	5/13/2022	110.23388	106.8067514	103.5054964	100.32484	97.2597543	94.30544754	91.45735141	88.7111096	86.06256684
220510A00015	5/13/2022	3.13	11/3/2025	5/13/2022	104.80896	102.9580239	101.1489164	99.38044673	97.65146857	95.96087502	94.30759715	92.69060238	91.10889305
220511A00015	5/11/2022	3.29	5/11/2027	5/11/2022	110.49642	107.0481205	103.7270053	100.5277239	97.44517467	94.47449653	91.61105631	88.85043683	86.18842566
220511A00002	5/11/2022	3.18	5/12/2025	5/11/2022	103.31061	101.9457224	100.6054303	99.28912153	97.99620764	96.72611877	95.4783032	94.25222657	93.04737121
220512A00007	5/12/2022	2.91	5/13/2024	5/12/2022	100.54951	100.1751234	99.80353572	99.43471351	99.06862585	98.70524227	98.34453279	97.98646784	97.6310183
220512A00013	5/12/2022	3.18	5/12/2027	5/12/2022	110.13381	106.6888549	103.3711184	100.1752404	97.09611336	94.12887082	91.26887458	88.51170288	85.85313909
220722A00050	9/15/2022	3.25	9/15/2025	9/15/2022	104.55343	102.8385373	101.1600724	99.51693976	97.90808707	96.33250426	94.78922109	93.27730526	91.79586048
220722A00049	9/15/2022	3.25	9/15/2025	9/15/2022	104.55343	102.8385373	101.1600724	99.51693976	97.90808707	96.33250426	94.78922109	93.27730526	91.79586048
220722A00051	9/15/2022	3.23	9/15/2027	9/15/2022	111.54776	107.7308101	104.0666947	100.548406	97.16930274	93.92308777	90.80378768	87.80573407	84.92354593
220722A00044	9/1/2022	3.23	9/1/2027	9/1/2022	111.41022	107.6340727	104.0078683	100.524791	97.17837852	93.96249992	90.87133643	87.89936358	85.04133436
220727A00010	7/27/2022	3.38	7/24/2024	7/27/2022	101.12176	100.5508822	99.98645407	99.42836181	98.87649914	98.33076211	97.79104909	97.25726068	96.72929964
220727A00004	7/27/2022	3.23	7/27/2027	7/27/2022	111.05488	107.3837746	103.8553806	100.4633556	97.20167543	94.06461719	91.04674225	88.14288036	85.34811481
220727A00049	7/27/2022	3.31	7/25/2025	7/27/2022	104.15489	102.5831612	101.0429921	99.53349495	98.05381967	96.60314717	95.18068805	93.78568129	92.41739291
220727A00009	7/27/2022	3.31	7/28/2025	7/27/2022	104.19947	102.6188059	101.0699696	99.55206883	98.06424227	96.60566021	95.17552317	93.77306058	92.39752937
220727A00027	7/27/2022	3.23	7/27/2027	7/27/2022	111.05488	107.3837746	103.8553806	100.4633556	97.20167543	94.06461719	91.04674225	88.14288036	85.34811481
220727A00035	10/24/2022	3.33	10/24/2029	10/24/2022	118.62748	112.4974482	106.7290119	101.298905	96.18547755	91.36857335	86.82941926	82.55052366	78.51558269
220728A00070	7/28/2022	3.19	1/29/2024	7/28/2022	100.14817	100.0622519	99.97648093	99.89085553	99.80537528	99.72003984	99.63484884	99.54980195	99.4648988
220909A00017	9/9/2022	3.85	9/9/2024	9/9/2022	101.75394	101.053829	100.3633651	99.68235047	99.01059194	98.3479014	97.69409583	97.04899714	96.41243197
220729A00043	7/29/2022	3.04	7/29/2027	7/29/2022	110.39066	106.7258429	103.2037814	99.81812379	96.56283455	93.43218048	90.42071361	87.52325526	84.73488109

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220729A00045	7/29/2022	3.03	7/29/2027	7/29/2022	110.35463	106.690456	103.1690232	99.78397632	96.52928061	93.39920344	90.38829746	87.49138456	84.70354094
220729A00047	7/29/2022	3.06	1/29/2027	7/29/2022	108.75662	105.6219807	102.5949519	99.67122431	96.84668362	94.11740493	91.47964271	88.92982141	86.46452664
220912A00033	9/12/2022	3.9	10/7/2024	9/12/2022	102.04613	101.2689012	100.5035325	99.74974955	99.00729031	98.27590071	97.55533421	96.84535153	96.14572044
220912A00046	11/15/2022	3.85	11/14/2025	11/15/2022	106.26646	104.3721774	102.521253	100.7124412	98.94453707	97.21637801	95.52684185	93.87484522	92.25934192
220912A00044	11/15/2022	3.85	11/14/2025	11/15/2022	106.26646	104.3721774	102.521253	100.7124412	98.94453707	97.21637801	95.52684185	93.87484522	92.25934192
220912A00050	11/15/2022	3.76	11/15/2027	11/15/2022	114.22025	110.1828239	106.3129233	102.6027199	99.04478886	95.63208927	92.35794196	89.21600911	86.20027507
220912A00051	11/15/2022	3.76	11/15/2027	11/15/2022	114.22025	110.1828239	106.3129233	102.6027199	99.04478886	95.63208927	92.35794196	89.21600911	86.20027507
220913A00018	9/13/2022	3.91	9/13/2027	9/13/2022	114.06486	110.2066236	106.5021922	102.9445368	99.52699204	96.24323687	93.08727454	90.05341376	87.13625112
220913A00017	9/13/2022	3.98	9/14/2026	9/13/2022	110.03654	107.2592421	104.5671165	101.9569933	99.42584642	96.97078397	94.58904123	92.27797397	90.03505221
220404A00010	4/4/2022	2.93	4/2/2027	4/4/2022	108.93253	105.6167582	102.4200608	99.3374495	96.36417744	93.49572687	90.72779637	88.05628894	85.47730077
220408A00012	4/8/2022	3.12	6/29/2026	4/8/2022	106.98162	104.4565542	102.0047207	99.62357346	97.31066751	95.06365794	92.88029497	90.7584195	88.69595883
220408A00013	4/8/2022	3.15	1/14/2027	4/8/2022	108.89694	105.8008507	102.8100114	99.92024668	97.12757262	94.42818644	91.81845698	89.29491592	86.85424939
220408A00014	4/8/2022	3.12	6/29/2026	4/8/2022	106.98162	104.4565542	102.0047207	99.62357346	97.31066751	95.06365794	92.88029497	90.7584195	88.69595883
220802A00009	8/2/2022	3	8/2/2027	8/2/2022	110.2834	106.6096024	103.0792844	99.68603774	96.42378191	93.28674179	90.26943041	87.3666328	84.57339084
220411A00002	4/11/2022	3.18	4/9/2027	4/11/2022	109.81803	106.4687548	103.2402433	100.1274396	97.12553498	94.22995075	91.43632573	88.74050436	86.13852559
220412A00010	4/12/2022	3.09	3/15/2027	4/12/2022	109.28201	106.0117514	102.8573478	99.81399231	96.87711206	94.04235337	91.30556945	88.66280904	86.11030576
220412A00017	4/12/2022	3.09	3/19/2027	4/12/2022	109.32149	106.0390341	102.8732036	99.81914245	96.87223423	94.02808454	91.28250849	88.63151923	86.07131707
220412A00018	4/12/2022	3.09	3/15/2027	4/12/2022	109.28201	106.0117514	102.8573478	99.81399231	96.87711206	94.04235337	91.30556945	88.66280904	86.11030576
220412A00016	4/12/2022	3.09	3/19/2027	4/12/2022	109.32149	106.0390341	102.8732036	99.81914245	96.87223423	94.02808454	91.28250849	88.63151923	86.07131707
220418A00015	4/22/2022	3.03	7/28/2025	4/22/2022	103.75447	102.1774628	100.632226	99.11786181	97.63351046	96.17834392	94.75156433	93.35240262	91.9801172
220418A00016	4/22/2022	3.11	9/15/2026	4/22/2022	107.67375	104.9262254	102.2632601	99.6817018	97.17853982	94.75089727	92.39602398	90.11128983	87.89417858
220419A00013	4/19/2022	2.84	4/19/2024	4/19/2022	100.42317	100.1144853	99.80770355	99.50281133	99.19979112	98.89862564	98.5992978	98.30179076	98.00608785
220419A00014	4/19/2022	3.06	4/18/2025	4/19/2022	102.93995	101.6399751	100.3658407	99.1167863	97.89208376	96.69103318	95.51296173	94.35722229	93.22319217
220419A00015	4/19/2022	3.14	4/17/2026	4/19/2022	106.36977	104.0497462	101.7921225	99.594836	97.45590648	95.37343253	93.34558765	91.37061675	89.4468328
220419A00016	4/19/2022	3.21	4/19/2027	4/19/2022	110.01217	106.6325855	103.3757083	100.2364145	97.20982152	94.29127733	91.47634848	88.76080834	86.14062624
220420A00033	4/20/2022	3.29	4/20/2027	4/20/2022	110.28788	106.9009972	103.6371345	100.4911547	97.45816379	94.53349866	91.71271498	88.99157554	86.36603938
220420A00061	6/15/2022	3.3	6/15/2027	6/15/2022	110.87834	107.3273063	103.9106625	100.6225998	97.45759201	94.41038112	91.4759622	88.64957006	85.92666633
220420A00037	6/15/2022	3.3	6/15/2027	6/15/2022	110.87834	107.3273063	103.9106625	100.6225998	97.45759201	94.41038112	91.4759622	88.64957006	85.92666633
220420A00032	4/20/2022	3.26	10/16/2026	4/20/2022	108.37966	105.5372057	102.784463	100.1180745	97.53483425	95.03167562	92.60566436	90.25399199	87.97396953
220420A00034	6/15/2022	3.3	6/15/2027	6/15/2022	110.87834	107.3273063	103.9106625	100.6225998	97.45759201	94.41038112	91.4759622	88.64957006	85.92666633
220421A00012	4/21/2022	3.31	4/21/2026	4/21/2022	106.8008	104.464973	102.1921942	99.98039056	97.82756941	95.73181626	93.69129104	91.70422474	89.76891615
220421A00016	4/21/2022	3.31	4/21/2026	4/21/2022	106.8008	104.464973	102.1921942	99.98039056	97.82756941	95.73181626	93.69129104	91.70422474	89.76891615
220421A00014	4/21/2022	3.24	5/30/2025	4/21/2022	103.54843	102.1327495	100.74339	99.37967977	98.04096992	96.7266331	95.43606248	94.16867095	92.9238903

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220422A00014	4/22/2022	3.36	9/29/2026	4/22/2022	108.49192	105.6952934	102.985604	100.3595766	97.81408218	95.34613287	92.95287408	90.63157753	88.37963455
220425A00026	4/25/2022	3.13	2/25/2026	4/25/2022	105.86712	103.6951841	101.5787836	99.51610553	97.50541138	95.54503318	93.63336989	91.76888416	89.95009918
220425A00027	4/29/2022	3.15	8/20/2026	4/29/2022	107.54519	104.8695431	102.2745897	99.75738639	97.3151204	94.9451006	92.64475131	90.41160648	88.24330412
220425A00028	4/29/2022	3.16	4/23/2027	4/29/2022	109.88349	106.4952102	103.2303327	100.083703	97.05041149	94.12577942	91.3053469	88.58486126	85.96026625
220426A00004	4/26/2022	3.41	4/26/2032	4/26/2022	125.26274	116.3758077	108.2051248	100.6888135	93.7706538	87.39953608	81.52897272	76.1166584	71.1240743
220427A00011	4/29/2022	3.15	4/29/2027	4/29/2022	109.90628	106.5013868	103.2210289	100.0600124	97.01338336	94.07641961	91.2446181	88.51368383	85.87951906
220428A00016	5/2/2022	3.09	10/15/2024	5/2/2022	101.46541	100.6691283	99.88534331	99.11376308	98.35410386	97.60609064	96.86945686	96.14394401	95.42930138
220428A00019	4/28/2022	3.27	4/28/2027	4/28/2022	110.29885	106.8900866	103.6058519	100.4409498	97.39042778	94.44956505	91.61386027	88.87902014	86.24094878
220518A00009	5/18/2022	3.38	5/18/2028	5/18/2022	114.61457	110.0499024	105.6960049	101.5420428	97.57779374	93.79360997	90.18038308	86.72951121	83.43286831
220519A00010	5/19/2022	3.15	11/19/2026	5/19/2022	108.3808	105.4457688	102.6061191	99.85824312	97.19868817	94.62415076	92.13146908	89.71761614	87.37969326
220525A00020	5/25/2022	2.79	5/24/2024	5/25/2022	100.54952	100.1452157	99.74416375	99.34632463	98.9516598	98.56013132	98.17170189	97.78633478	97.40399385
220526A00010	5/26/2022	3	5/26/2026	5/26/2022	106.38896	103.9621705	101.6033624	99.3102549	97.08065504	94.91245621	92.80363407	90.7522429	88.75641199
220526A00011	5/26/2022	3.29	5/24/2029	5/26/2022	117.37876	111.7081372	106.3512401	101.2890513	96.50379895	91.97887177	87.69873744	83.64886723	79.81566631
220527A00014	5/27/2022	2.99	5/27/2026	5/27/2022	106.37361	103.9442585	101.5830316	99.28764207	97.05589008	94.88566254	92.77492899	90.72173786	88.72421293
220527A00015	5/27/2022	3.03	5/27/2027	5/27/2022	109.7659	106.2854777	102.9351096	99.70924683	96.6026113	93.61017678	90.72715569	87.9489864	85.27132137
220527A00011	5/27/2022	2.75	5/24/2024	5/27/2022	100.53325	100.1289815	99.72796923	99.33016957	98.93554395	98.54405447	98.15566381	97.77033524	97.38803262
220601A00023	6/1/2022	2.9	6/3/2024	6/1/2022	100.63986	100.2081596	99.78016129	99.35581957	98.93508767	98.5179196	98.10427017	97.69409492	97.28735016
220601A00024	6/1/2022	3.09	6/2/2025	6/1/2022	103.35842	101.9362282	100.5406258	99.17092854	97.82647766	96.50663635	95.21078873	93.93833907	92.68871093
220603A00024	6/3/2022	2.94	6/3/2024	6/3/2022	100.65724	100.2254926	99.79744954	99.37306339	98.95228733	98.53507538	98.12138233	97.71116374	97.3043759
220913A00005	9/13/2022	4.09	9/13/2024	9/13/2022	101.965	101.2531581	100.5512719	99.85913693	99.17655077	98.50331641	97.83924227	97.18414196	96.53783415
220804A00037	8/4/2022	3.35	8/4/2025	8/4/2022	104.32924	102.7286474	101.160524	99.62394847	98.11803341	96.64192433	95.19479832	93.77586254	92.38435285
220609A00034	10/3/2022	3.32	9/30/2024	10/3/2022	101.54289	100.7867095	100.0417882	99.30787139	98.58471639	97.87208779	97.16975695	96.47750181	95.79510666
220609A00038	10/3/2022	3.28	3/29/2024	10/3/2022	100.44653	100.1952464	99.94521706	99.6964311	99.44887928	99.20255247	98.95744163	98.71353782	98.47083218
220915A00036	9/15/2022	4.23	9/16/2024	9/15/2022	102.09264	101.3721736	100.6618991	99.96160094	99.2710697	98.59010169	97.91849888	97.25606869	96.60262378
220915A00033	9/15/2022	4.3	3/15/2024	9/15/2022	100.59791	100.384749	100.1725033	99.96116709	99.75073453	99.54119977	99.332557	99.12480047	98.91792449
220915A00035	9/15/2022	4.2	3/17/2025	9/15/2022	104.05025	102.824445	101.6276265	100.458769	99.31689929	98.20108913	97.11045229	96.04414241	95.0013507
220915A00040	9/15/2022	4.16	9/15/2025	9/15/2022	106.12226	104.3934207	102.7012597	101.0446775	99.42261503	97.83405568	96.2780229	94.75357834	93.25981986
220915A00039	9/15/2022	4.29	4/15/2024	9/15/2022	100.83777	100.5392328	100.242476	99.9474838	99.65424058	99.36273066	99.0729386	98.78484914	98.49844721
220915A00041	9/15/2022	4.28	5/15/2024	9/15/2022	101.08173	100.7006574	100.3224687	99.94713242	99.57461634	99.20488857	98.83791777	98.47367306	98.11212401
220804A00023	8/4/2022	3.19	8/4/2027	8/4/2022	110.98963	107.2976447	103.7498902	100.3399215	97.06162163	93.90918106	90.87708056	87.96007475	85.15317692
220808A00025	8/8/2022	3.25	8/6/2027	8/8/2022	111.22664	107.5249116	103.9679205	100.5491965	97.26259458	94.10227906	91.06270616	88.13860757	85.32497507
220916A00045	9/16/2022	4.1	9/16/2032	9/16/2022	133.58572	123.8967374	115.0154819	106.8695703	99.3934911	92.52791781	86.21909396	80.41828216	75.08127037
220811A00021	8/11/2022	3.47	8/11/2025	8/11/2022	104.59052	102.9689688	101.3805584	99.82433602	98.29938709	96.8048315	95.33982205	93.90354288	92.49520798

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220812A00014	8/12/2022	3.54	8/12/2024	8/12/2022	101.33477	100.7119096	100.0967135	99.48904179	98.8887567	98.29572394	97.70981243	97.13089424	96.55884448
220812A00002	8/12/2022	3.17	8/12/2027	8/12/2022	111.49154	107.7556762	104.1666719	100.7179242	97.40316639	94.21644893	91.15212178	88.20481723	85.36943407
220812A00001	8/12/2022	3.17	8/12/2027	8/12/2022	111.49154	107.7556762	104.1666719	100.7179242	97.40316639	94.21644893	91.15212178	88.20481723	85.36943407
220919A00033	9/19/2022	4	9/17/2027	9/19/2022	114.44842	110.5719761	106.8503679	103.2764997	99.84364741	96.54543526	93.37581548	90.32904911	87.39968817
220920A00025	9/20/2022	4.23	9/18/2026	9/20/2022	110.76652	107.9682486	105.2559911	102.6265367	100.0768206	97.6039146	95.20501979	92.87745955	90.6186734
220920A00024	9/20/2022	4.25	9/19/2025	9/20/2022	106.34285	104.6009571	102.8961939	101.2274325	99.59359606	97.9936507	96.42660377	94.89150159	93.38742754
220920A00026	9/20/2022	4.1	9/20/2027	9/20/2022	114.85926	110.9668449	107.2301028	103.6418917	100.1954409	96.88433095	93.70247344	90.64409133	87.70370104
220816A00009	8/16/2022	3.33	8/16/2027	8/16/2022	111.61797	107.8817786	104.2924795	100.8434671	97.5284698	94.34153377	91.27700519	88.32951304	85.49395316
220920A00015	9/20/2022	4.33	10/21/2024	9/20/2022	102.5292	101.7118869	100.9076363	100.1161358	99.33708351	98.57018707	97.81516313	97.07173709	96.33964281
220817A00047	8/17/2022	3.29	8/17/2027	8/17/2022	111.98173	108.2231545	104.6126868	101.143646	97.80969544	94.60482068	91.52331081	88.5597413	85.70895775
220817A00038	10/14/2022	3.41	10/15/2027	10/14/2022	112.53346	108.6145797	104.8554207	101.2485997	97.78711371	94.46432167	91.2739232	88.20993927	85.2666939
220817A00036	10/14/2022	3.41	10/15/2027	10/14/2022	112.53346	108.6145797	104.8554207	101.2485997	97.78711371	94.46432167	91.2739232	88.20993927	85.2666939
220817A00037	10/14/2022	3.41	10/15/2027	10/14/2022	112.53346	108.6145797	104.8554207	101.2485997	97.78711371	94.46432167	91.2739232	88.20993927	85.2666939
221018A00031	10/18/2022	4.71	10/17/2025	10/18/2022	107.51738	105.6875749	103.8981203	102.1478432	100.4356133	98.76034178	97.12097972	95.51651621	93.94597661
221018A00030	10/18/2022	4.71	10/17/2025	10/18/2022	107.51738	105.6875749	103.8981203	102.1478432	100.4356133	98.76034178	97.12097972	95.51651621	93.94597661
220921A00069	9/21/2022	3.98	9/21/2027	9/21/2022	114.94142	111.0310128	107.2774101	103.673398	100.2121411	96.88716003	93.6923097	90.62176038	87.66997914
220921A00074	9/21/2022	3.98	9/21/2027	9/21/2022	114.94142	111.0310128	107.2774101	103.673398	100.2121411	96.88716003	93.6923097	90.62176038	87.66997914
220921A00014	9/21/2022	4.08	9/21/2027	9/21/2022	114.79644	110.9024215	107.16425	103.5747676	100.1271918	96.8150925	93.63237119	90.57324162	87.63221167
220921A00050	9/21/2022	4.51	4/29/2024	9/21/2022	101.0279	100.6906627	100.3556696	100.0229017	99.69233697	99.36395357	99.03773001	98.71364509	98.39167786
220819A00034	8/19/2022	3.73	8/19/2032	8/19/2022	128.83703	119.4859802	110.9106019	103.0418417	95.81715533	89.1798596	83.07855462	77.46660531	72.3016764
221019A00008	10/19/2022	4.8	10/17/2025	10/19/2022	107.68047	105.8491469	104.0582007	102.3064595	100.5927921	98.91610902	97.27536062	95.66953529	94.09765774
221019A00009	10/19/2022	4.8	10/17/2025	10/19/2022	107.68047	105.8491469	104.0582007	102.3064595	100.5927921	98.91610902	97.27536062	95.66953529	94.09765774
220823A00015	8/23/2022	3.78	8/30/2032	8/23/2022	129.35662	119.9535559	111.3323146	103.4231225	96.16279497	89.49408488	83.36509469	77.72875034	72.54232921
220823A00009	8/23/2022	3.52	8/23/2027	8/23/2022	112.38665	108.6172343	104.9964992	101.5177284	98.17455116	94.96092135	91.87109865	88.89963122	86.04133927
220823A00006	8/23/2022	3.66	2/23/2024	8/23/2022	100.33659	100.1815304	100.0269582	99.87287149	99.71926807	99.5661456	99.41350184	99.2613345	99.10964137
220823A00002	8/23/2022	3.38	8/23/2027	8/23/2022	112.37555	108.5932196	104.9603886	101.4702968	98.11652693	94.89298943	91.79390326	88.81377837	85.9473992
220823A00034	8/23/2022	3.61	8/23/2024	8/23/2022	101.45494	100.8019617	100.1573896	99.52106477	98.89282957	98.27253029	97.66001713	97.05514402	96.45776854
221020A00046	10/20/2022	4.95	1/21/2025	10/20/2022	104.20019	103.1241186	102.0703903	101.0383087	100.0272104	99.03645876	98.0654429	97.11357601	96.18029447
221020A00052	10/20/2022	4.95	10/21/2024	10/20/2022	103.03751	102.217915	101.4114099	100.6176803	99.8364237	99.06734723	98.31016712	97.56460835	96.83040435
220614A00011	6/14/2022	3.71	6/14/2024	6/14/2022	101.0681	100.6053681	100.1468805	99.69258307	99.24241832	98.79632986	98.35426233	97.91616138	97.48197362
220615A00010	6/15/2022	3.86	6/15/2027	6/15/2022	112.8282	109.2432774	105.7936915	102.4735999	99.27744397	96.19993422	93.23603584	90.38095495	87.63012574
220617A00027	6/17/2022	3.45	6/17/2024	6/17/2022	100.96593	100.4953264	100.0291196	99.56724736	99.10964937	98.65626632	98.20704001	97.76191331	97.32083014
220622A00006	6/22/2022	3.58	6/22/2027	6/22/2022	111.92716	108.3388921	104.8869445	101.5653964	98.36861821	95.29125422	92.32820819	89.47462915	86.7258982

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220623A00005	6/23/2022	3.45	6/23/2027	6/23/2022	111.4822	107.8989969	104.4521008	101.1355838	97.94381121	94.87142308	91.91331931	89.06464546	86.32077953
220624A00044	6/24/2022	3.43	6/24/2025	6/24/2022	104.04333	102.5577927	101.1011006	99.67248657	98.27121	96.89655568	95.54783287	94.22437428	92.92553501
220624A00049	6/24/2022	3.29	6/24/2024	6/24/2022	100.99333	100.5029056	100.0172454	99.53628311	99.05995082	98.58818177	98.12091052	97.65807284	97.19960578
220624A00003	6/24/2022	3.5	6/24/2027	6/24/2022	111.66773	108.0785766	104.6260209	101.3041221	98.10723003	95.02997016	92.06722868	89.21413828	86.46606488
220624A00033	6/24/2022	3.5	6/24/2027	6/24/2022	111.66773	108.0785766	104.6260209	101.3041221	98.10723003	95.02997016	92.06722868	89.21413828	86.46606488
220929A00043	9/29/2022	4.44	9/28/2029	9/29/2022	124.88885	118.6543017	112.7805023	107.2444903	102.0248935	97.10181061	92.4567017	88.07228711	83.93245499
220929A00041	9/29/2022	4.38	9/29/2027	9/29/2022	116.02625	112.0869661	108.3058619	104.6756428	101.189398	97.84057746	94.62297077	91.53068684	88.55813551
221021A00022	10/21/2022	4.84	10/21/2024	10/21/2022	102.94732	102.1281358	101.3220307	100.5286966	99.74783109	98.9791414	98.22234383	97.47716345	96.74333375
220824A00011	8/24/2022	3.7	8/22/2025	8/24/2022	105.07912	103.4239011	101.8029043	100.2151281	98.65961427	97.13544152	95.64172351	94.1776073	92.74227172
220929A00063	9/29/2022	4.38	9/29/2027	9/29/2022	116.02625	112.0869661	108.3058619	104.6756428	101.189398	97.84057746	94.62297077	91.53068684	88.55813551
220929A00034	9/29/2022	4.67	5/31/2024	9/29/2022	101.38008	100.9546435	100.5327828	100.1144496	99.69959981	99.28819005	98.88017763	98.47552055	98.07417755
220930A00046	9/30/2022	4.55	8/30/2024	9/30/2022	102.14008	101.4656384	100.8001128	100.1433284	99.49511391	98.85530221	98.22373061	97.60024058	96.98467764
220930A00049	9/30/2022	4.55	6/28/2024	9/30/2022	101.58814	101.0858763	100.5885802	100.0961787	99.60859984	99.12577303	98.64762902	98.17409992	97.70511914
221024A00018	10/24/2022	4.91	10/24/2024	10/24/2022	103.03937	102.2116375	101.3972496	100.5958851	99.80723269	99.0309913	98.26686913	97.51458348	96.77386042
221003A00067	10/3/2022	4.48	11/13/2024	10/3/2022	102.89728	102.0159453	101.1497571	100.298327	99.46127931	98.6382513	97.82889214	97.03286271	96.24983504
221025A00027	10/25/2022	4.57	10/25/2027	10/25/2022	117.10098	113.0665126	109.196607	105.4836728	101.9205066	98.50027343	95.21648661	92.06298759	89.03392783
220825A00006	8/25/2022	3.56	8/25/2027	8/25/2022	112.55508	108.7770862	105.1482595	101.6618523	98.31146656	95.09103039	91.99477957	89.01723983	86.15321048
220825A00022	8/25/2022	3.68	8/25/2025	8/25/2022	105.07694	103.41369	101.7849372	100.1896696	98.62691737	97.0957484	95.59526606	94.12460766	92.68294281
221027A00004	10/27/2022	4.76	10/28/2024	10/27/2022	102.95971	102.1215115	101.2969928	100.4858254	99.68768659	98.90226397	98.12925508	97.36836697	96.61931584
221027A00009	10/27/2022	4.68	10/27/2025	10/27/2022	107.59772	105.7392435	103.9222846	102.145665	100.4082491	98.70894058	97.04668103	95.42044818	93.8292545
221027A00061	12/15/2022	4.45	12/15/2027	12/15/2022	117.30892	113.1267193	109.1208041	105.2827864	101.6047211	98.07908184	94.69873633	91.45692384	88.34723373
221027A00056	4/25/2023	4.48	4/25/2030	4/25/2023	127.0845	120.1826371	113.7145232	107.6504491	101.9628905	96.62633822	91.61714003	86.91335694	82.49463059
221027A00060	12/1/2022	4.46	12/1/2027	12/1/2022	117.16283	113.0236312	109.0573104	105.2557187	101.6111337	98.11623576	94.76408496	91.54809935	88.46203459
221027A00050	10/27/2022	4.52	10/27/2027	10/27/2022	116.93588	112.898813	109.0266654	105.3118245	101.747069	98.32554665	95.04075363	91.88651497	88.85696619
221027A00063	12/15/2022	4.45	12/15/2027	12/15/2022	117.30892	113.1267193	109.1208041	105.2827864	101.6047211	98.07908184	94.69873633	91.45692384	88.34723373
221027A00047	10/27/2022	4.88	4/26/2024	10/27/2022	101.12382	100.7945759	100.4674828	100.1425153	99.81965285	99.49887495	99.18016146	98.86349249	98.5488484
221027A00062	12/15/2022	4.45	12/15/2027	12/15/2022	117.30892	113.1267193	109.1208041	105.2827864	101.6047211	98.07908184	94.69873633	91.45692384	88.34723373
221028A00027	10/28/2022	4.73	10/28/2024	10/28/2022	102.93454	102.0964538	101.2720489	100.460994	99.66296637	98.87765372	98.10475356	97.34397297	96.59502819
220829A00057	8/29/2022	3.67	8/31/2026	8/29/2022	109.04352	106.3178961	103.6750259	101.1118707	98.6255221	96.2131991	93.87224111	91.60010197	89.3943441
220829A00048	8/29/2022	3.75	2/25/2025	8/29/2022	103.28794	102.1215701	100.9815867	99.86709689	98.77725181	97.71123983	96.66828465	95.64764339	94.64860478
220830A00093	11/16/2022	3.69	11/16/2029	11/16/2022	120.9035	114.6443436	108.7569384	103.2171963	98.00270661	93.09261512	88.46750831	84.10930679	80.00116727
221031A00035	10/31/2022	4.67	10/30/2026	10/31/2022	112.53744	109.5964691	106.7489813	103.9915111	101.3207362	98.73347518	96.22668036	93.79743172	91.44293073
221031A00036	10/31/2022	4.59	10/29/2027	10/31/2022	117.23315	113.1846252	109.3016468	105.5765684	102.0021409	98.57148518	95.27807155	92.1156999	89.07848159

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
221031A00033	10/31/2022	4.74	10/31/2025	10/31/2022	107.76192	105.8909058	104.0619016	102.2737172	100.5252057	98.81525984	97.14281004	95.50682304	93.90630036
221031A00042	10/31/2022	4.73	10/30/2026	10/31/2022	112.70862	109.7651917	106.9153069	104.1554972	101.4824385	98.8929475	96.38397484	93.95259888	91.59601952
221031A00061	10/31/2022	4.94	4/30/2024	10/31/2022	101.18321	100.8429058	100.5048884	100.1691359	99.83562565	99.50433531	99.17524275	98.84832617	98.52356406
220831A00078	8/31/2022	3.81	8/30/2024	8/31/2022	101.6393	100.9667475	100.3030936	99.6481636	99.00178615	98.36379452	97.73402626	97.11232312	96.49853084
220831A00079	8/31/2022	3.79	8/29/2025	8/31/2022	105.30274	103.6268121	101.9857804	100.378623	98.80435385	97.26202525	95.75072593	94.26957928	92.81774172
221102A00012	11/2/2022	4.82	11/3/2025	11/2/2022	107.95046	106.0695452	104.2310223	102.4336841	100.6763689	98.95795534	97.27736036	95.63353787	94.02547714
221102A00026	11/2/2022	4.66	11/2/2027	11/2/2022	117.5576	113.4916808	109.5923736	105.8519724	102.2631647	98.81901218	95.51292975	92.33866567	89.29028296
220901A00035	9/1/2022	3.82	9/1/2028	9/1/2022	117.70406	112.7727521	108.0812091	103.6164265	99.36618028	95.31897419	91.46399241	87.79105522	84.29057784
220901A00033	9/1/2022	3.72	9/1/2027	9/1/2022	113.22192	109.4124159	105.7538278	102.239307	98.86235623	95.61681111	92.49682099	89.49683091	86.61156469
220906A00046	9/6/2022	3.79	9/7/2027	9/6/2022	113.54897	109.7168698	106.0370786	102.5026559	99.10702257	95.8439379	92.7074802	89.69202821	86.79224388
220907A00010	9/7/2022	3.9	9/9/2032	9/7/2022	131.76853	122.1764956	113.3843256	105.3203879	97.91984589	91.1239775	84.8795681	79.13836641	73.856597
220907A00023	9/7/2022	3.76	9/8/2026	9/7/2022	109.3719	106.6200528	103.9522585	101.3654077	98.85652764	96.4227763	94.06143606	91.76990703	89.54570106
220907A00021	3/13/2023	3.92	3/29/2024	3/13/2023	100.6079	100.3563456	100.1060472	99.85699312	99.60917422	99.36258137	99.11720551	98.87303769	98.63006903
220907A00024	5/15/2023	3.81	5/31/2024	5/15/2023	101.01357	100.5890649	100.1681301	99.75071723	99.3367821	98.92628141	98.51917254	98.11541356	97.71496324
220907A00027	8/14/2023	3.65	8/30/2024	8/14/2023	101.53102	100.8588791	100.19563	99.54110094	98.89512069	98.25752258	97.62814424	97.00682745	96.39341802
220907A00025	7/17/2023	3.7	7/31/2024	7/17/2023	101.34896	100.7584876	100.1748898	99.59805012	99.02785169	98.46418025	97.90692417	97.35597437	96.81122422
220907A00022	4/17/2023	3.87	4/30/2024	4/17/2023	100.81878	100.4792474	100.141998	99.80700962	99.47425972	99.14372591	98.81538612	98.48921858	98.16520181
220908A00030	9/8/2022	3.85	9/9/2024	9/8/2022	101.75394	101.053829	100.3633651	99.68235047	99.01059194	98.3479014	97.69409583	97.04899714	96.41243197
220908A00029	9/8/2022	3.88	3/8/2024	9/8/2022	100.46042	100.2667106	100.0737578	99.88155661	99.69010261	99.49939138	99.30941857	99.12017983	98.93167088
221129A00044	11/29/2022	4.56	11/28/2025	11/29/2022	107.78668	105.8399709	103.9385566	102.0811088	100.2663477	98.49303923	96.75999315	95.06606115	93.41013503
221129A00045	11/29/2022	4.56	11/28/2025	11/29/2022	107.78668	105.8399709	103.9385566	102.0811088	100.2663477	98.49303923	96.75999315	95.06606115	93.41013503
221129A00051	11/29/2022	4.56	12/2/2025	11/29/2022	107.85844	105.8996213	103.9866276	102.1181073	100.2927587	98.50932701	96.76660205	95.0634166	93.39864447
221129A00052	11/29/2022	4.56	12/2/2025	11/29/2022	107.85844	105.8996213	103.9866276	102.1181073	100.2927587	98.50932701	96.76660205	95.0634166	93.39864447
221129A00065	11/29/2022	4.28	11/30/2027	11/29/2022	116.43924	112.3170923	108.3671526	104.581303	100.9518527	97.47151212	94.13336952	90.93086954	87.85779293
221129A00066	11/29/2022	4.28	11/29/2027	11/29/2022	116.42645	112.3074174	108.3603458	104.5771383	100.95012	97.47201586	94.13592776	90.93531304	87.86396426
221129A00077	11/29/2022	4.38	12/1/2026	11/29/2022	112.10693	109.0844976	106.1608588	103.3322395	100.5950355	97.94579952	95.38123384	92.89818258	90.49362495
221107A00048	11/7/2022	4.96	9/8/2025	11/7/2022	107.40415	105.6828809	103.997811	102.3478632	100.7320021	99.149233	97.59860011	96.07918458	94.5901027
221107A00053	11/7/2022	4.95	10/7/2025	11/7/2022	107.81017	106.0056233	104.2403442	102.5131563	100.8229313	99.16858537	97.54907636	95.96340199	94.41059795
221005A00041	10/5/2022	4.3	10/5/2027	10/5/2022	115.8023	111.8499942	108.0570644	104.4161578	100.9203069	97.56290656	94.33769223	91.23872062	88.26035093
221006A00095	10/6/2022	4.65	4/8/2024	10/6/2022	100.88225	100.6027959	100.3249051	100.0485608	99.77375002	99.50045994	99.22867787	98.95839127	98.68958772
221006A00097	10/6/2022	4.58	10/7/2024	10/6/2022	102.57743	101.7979248	101.0302978	100.2742807	99.52961114	98.79603453	98.07330394	97.3611797	96.65942917
221006A00012	10/6/2022	4.37	10/6/2027	10/6/2022	116.08089	112.1204562	108.3197751	104.6714785	101.168583	97.80446776	94.57285352	91.46778253	88.48360011
221129A00083	11/29/2022	4.38	11/30/2026	11/29/2022	112.09427	109.0748489	106.1540291	103.3280535	100.5933278	97.94641411	95.38402344	92.90300823	90.50035553

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
221129A00047	11/29/2022	4.56	12/1/2025	11/29/2022	107.82554	105.8701956	103.9605259	102.0951873	100.2728842	98.49236772	96.75243315	95.05191857	93.38970281
221129A00050	11/29/2022	4.56	12/2/2025	11/29/2022	107.85844	105.8996213	103.9866276	102.1181073	100.2927587	98.50932701	96.76660205	95.0634166	93.39864447
221129A00062	11/29/2022	4.39	11/27/2026	11/29/2022	112.08615	109.0751203	106.1621667	103.3435601	100.6157344	97.975278	95.41892683	92.94355672	90.54617678
221129A00069	11/29/2022	4.28	11/26/2027	11/29/2022	116.38879	112.2787936	108.3400678	104.5645589	100.9446364	97.47306653	94.14298971	90.94789906	87.88162047
221129A00085	11/29/2022	4.38	11/30/2026	11/29/2022	112.09427	109.0748489	106.1540291	103.3280535	100.5933278	97.94641411	95.38402344	92.90300823	90.50035553
221129A00034	11/29/2022	4.38	12/1/2025	11/29/2022	107.75461	105.7948656	103.8809864	102.0116239	100.1854747	98.40128254	96.65783577	94.95396584	93.28854527
221129A00035	11/29/2022	4.09	11/29/2027	11/29/2022	116.22729	112.0972731	108.1400933	104.3475923	100.7120419	97.22611715	93.88287345	90.67572464	87.59842264
221129A00043	11/29/2022	4.59	12/1/2025	11/29/2022	107.88362	105.9276961	104.0174616	102.151569	100.3287223	98.54767232	96.8072141	95.10618544	93.44346492
221129A00056	11/29/2022	4.31	11/29/2027	11/29/2022	116.54475	112.4234017	108.4740837	104.6886984	101.0595682	97.57941547	94.24133979	91.03879615	87.96557489
221130A00041	11/30/2022	4.95	12/2/2024	11/30/2022	103.54404	102.6079714	101.6888982	100.7863565	99.8999025	99.02910818	98.17356052	97.33286097	96.50662477
221130A00044	11/30/2022	5.09	5/30/2024	11/30/2022	101.54833	101.1251984	100.7055982	100.2894813	99.8768046	99.46752547	99.06160212	98.65899337	98.25965876
221130A00110	11/30/2022	4.15	11/30/2027	11/30/2022	115.92624	111.8141483	107.8739564	104.0975568	100.4772705	97.0058187	93.67630028	90.48216984	87.41721771
221130A00085	11/30/2022	4.19	11/30/2027	11/30/2022	116.08408	111.9689003	108.025709	104.2464018	100.6232958	97.14910899	93.81693697	90.62023129	87.55277931
220627A00055	6/27/2022	3.55	6/26/2026	6/27/2022	108.03256	105.5021645	103.0448458	100.658068	98.33940007	96.08650987	93.89715963	91.76920145	89.7005731
221107A00029	11/7/2022	4.83	11/9/2026	11/7/2022	113.13017	110.1531776	107.2715678	104.4817701	101.7803678	99.1640904	96.62980617	94.17451564	91.79534527
221107A00030	11/7/2022	4.7	11/5/2027	11/7/2022	117.7535	113.6754227	109.7647411	106.0136953	102.4149262	98.9614519	95.6466465	92.46422025	89.40820063
221107A00010	11/7/2022	5.12	11/7/2024	11/7/2022	103.38703	102.5196568	101.666903	100.8284001	100.0037925	99.19273592	98.39489769	97.60995584	96.83759882
221108A00033	11/8/2022	4.7	11/8/2027	11/8/2022	117.79465	113.7073924	109.7882244	106.0293367	102.4233264	98.96317104	95.64220697	92.45410912	89.39287212
221108A00036	11/8/2022	4.95	11/7/2025	11/8/2022	108.24752	106.3529584	104.5012983	102.6913198	100.9218411	99.19172161	97.49986008	95.84519295	94.22669285
221108A00041	11/8/2022	5.15	4/8/2024	11/8/2022	101.02214	100.7424279	100.4642806	100.187681	99.91261595	99.63907271	99.36703855	99.09650091	98.82744738
221130A00032	11/30/2022	4.37	11/30/2027	11/30/2022	116.79439	112.6652843	108.7085961	104.9162042	101.2804096	97.79391526	94.44980208	91.2415078	88.16280654
221130A00033	11/30/2022	4.37	11/30/2027	11/30/2022	116.79439	112.6652843	108.7085961	104.9162042	101.2804096	97.79391526	94.44980208	91.2415078	88.16280654
221130A00076	11/30/2022	4.15	11/30/2027	11/30/2022	116.47736	112.3395582	108.374979	104.5754443	100.9332046	97.44091501	94.09161239	90.87869314	87.79589282
221130A00019	11/30/2022	4.63	11/26/2025	11/30/2022	107.89567	105.9532631	104.0559377	102.2023709	100.3912922	98.62147631	96.89174133	95.20094683	93.54799217
221202A00013	12/2/2022	4.78	12/3/2024	12/2/2022	103.39727	102.4592259	101.5382605	100.6339136	99.7457376	98.87330082	98.01618695	97.17399419	96.34633473
221202A00018	12/2/2022	4.16	12/2/2027	12/2/2022	115.99061	111.8715512	107.9249027	104.142521	100.5166944	97.04011406	93.70585073	90.50733291	87.43832657
221202A00025	12/2/2022	4.06	12/2/2026	12/2/2022	111.57827	108.5516856	105.6243691	102.7925249	100.0525208	97.40088335	94.83429007	92.34956197	89.94365648
221205A00065	12/5/2022	4.13	12/6/2027	12/5/2022	115.92154	111.792439	107.8366475	104.0459577	100.4125975	96.92920162	93.58878865	90.38473852	87.31077209
221205A00048	12/5/2022	4.4	12/5/2025	12/5/2022	107.5662	105.6023219	103.6845774	101.8116047	99.98208794	98.19475893	96.44839479	94.74181622	93.07388551
221205A00024	12/5/2022	4.13	12/3/2027	12/5/2022	115.88443	111.7646055	107.8173626	104.0345434	100.4084231	96.93168056	93.59737541	90.39892575	87.33008798
200407A00004	4/7/2020	0.99	4/7/2025	4/7/2020	100.38964	99.1305241	97.89958458	96.69587412	95.51849016	94.36656997	93.23928851	92.13585631	91.05551764
221206A00025	12/6/2022	4.27	12/4/2026	12/6/2022	111.82045	108.7938115	105.8664046	103.0344291	100.2942545	97.64240915	95.0755721	92.5905659	90.18434946
221206A00039	12/6/2022	4.29	12/7/2026	12/6/2022	111.91665	108.8801512	105.943459	103.1027465	100.3543525	97.69477654	95.12067034	92.62883087	90.21619287

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
221206A00036	12/6/2022	4.13	12/6/2027	12/6/2022	115.92154	111.792439	107.8366475	104.0459577	100.4125975	96.92920162	93.58878865	90.38473852	87.31077209
221011A00114	10/11/2022	4.66	8/12/2024	10/11/2022	102.03724	101.4118862	100.7942239	100.1841075	99.58139891	98.98596363	98.39767023	97.81639048	97.24199921
221011A00122	10/11/2022	4.64	12/11/2024	10/11/2022	103.36073	102.4011017	101.4593565	100.5350009	99.62755564	98.73655886	97.86156539	97.00214602	96.1578868
221206A00011	12/6/2022	4.29	12/7/2026	12/6/2022	111.91665	108.8801512	105.943459	103.1027465	100.3543525	97.69477654	95.12067034	92.62883087	90.21619287
221207A00010	12/7/2022	4.08	12/7/2027	12/7/2022	115.73563	111.6073465	107.6524909	103.8628473	100.2306323	96.74847013	93.40936974	90.20670225	87.1341804
221207A00009	12/7/2022	4.38	12/8/2025	12/7/2022	107.5649	105.592708	103.6670346	101.7865004	99.9497734	98.15556976	96.40265199	94.68982673	93.01594297
221207A00012	12/7/2022	4.21	12/7/2026	12/7/2022	111.68004	108.6470488	105.7137847	102.876416	100.1312843	97.47489168	94.90389247	92.41508605	90.00540952
221207A00074	12/7/2022	4.66	12/6/2024	12/7/2022	103.32042	102.3745962	101.4461512	100.5346089	99.63950991	98.76041152	97.89688669	97.0485235	96.21492446
221207A00017	12/7/2022	3.86	12/7/2027	12/7/2022	115.41433	111.2773873	107.3146832	103.5179444	99.87933576	96.39143363	93.04720209	89.83997051	86.76341268
221207A00035	12/7/2022	4.31	1/7/2026	12/7/2022	107.81901	105.7610733	103.7534223	101.7945043	99.88282512	98.0169476	96.19548831	94.41711543	92.6805463
221207A00032	12/7/2022	4.52	12/7/2032	12/7/2022	136.75375	126.7567313	117.6066773	109.2263988	101.5461493	94.50286894	88.03951139	82.10444124	76.65089469
221208A00020	12/8/2022	4.11	12/8/2027	12/8/2022	115.86691	111.7331936	107.77322	103.9787544	100.3419947	96.85554803	93.51240698	90.3059276	87.22980853
221208A00110	12/8/2022	4.07	12/8/2027	12/8/2022	115.70818	111.5775909	107.6206494	103.8291231	100.1952133	96.71153047	93.37107067	90.16719304	87.09359922
221208A00052	2/15/2023	4.01	2/15/2028	2/15/2023	116.29389	111.9576595	107.8109007	103.8442731	100.0489465	96.41657431	92.93926417	89.60955049	86.42036879
221208A00051	2/15/2023	4.27	2/13/2026	2/15/2023	108.19387	106.0298666	103.9204527	101.86387	99.85843246	97.90252143	95.99458207	94.13312041	92.31670044
221208A00054	2/1/2023	4.02	2/1/2028	2/1/2023	116.16971	111.8750959	107.7667539	103.8355672	100.0729161	96.47064924	93.02105505	89.71683556	86.55108185
221014A00027	10/14/2022	4.63	10/14/2027	10/14/2022	117.17869	113.1744412	109.3323421	105.6449163	102.1050747	98.70609421	95.44159618	92.30552707	89.29213976
221014A00031	10/14/2022	4.89	4/12/2024	10/14/2022	100.99102	100.7003676	100.4114068	100.124118	99.83848657	99.55449822	99.27213863	98.9913937	98.71224952
221212A00040	12/12/2022	4.45	12/12/2025	12/12/2022	107.77285	105.7870958	103.8484314	101.9554521	100.1068023	98.3011759	96.53731391	94.81400274	93.13007203
221212A00041	12/12/2022	4.15	12/10/2027	12/12/2022	116.0505	111.9074588	107.9387514	104.1360986	100.4916628	96.99801796	93.64812601	90.43531427	87.35325461
221212A00011	12/12/2022	3.89	12/10/2027	12/12/2022	115.57	111.4214006	107.4478492	103.6410165	99.99301672	96.49637894	93.14402323	89.929238	86.84565889
220628A00053	8/15/2022	3.6	8/13/2027	8/15/2022	112.5717	108.8263944	105.2279016	101.7696303	98.44532699	95.24905439	92.17517359	89.21832702	86.37342275
220628A00034	6/28/2022	3.61	6/28/2027	6/28/2022	112.09603	108.4885188	105.018636	101.6803755	98.46802995	95.37617148	92.39963614	89.53350968	86.77311401
220628A00044	8/15/2022	3.6	8/13/2027	8/15/2022	112.5717	108.8263944	105.2279016	101.7696303	98.44532699	95.24905439	92.17517359	89.21832702	86.37342275
220628A00052	8/15/2022	3.6	8/13/2027	8/15/2022	112.5717	108.8263944	105.2279016	101.7696303	98.44532699	95.24905439	92.17517359	89.21832702	86.37342275
220629A00003	6/29/2022	3.59	6/29/2027	6/29/2022	112.03625	108.4270841	104.955713	101.6161264	98.40260573	95.30971228	92.33227223	89.46536205	86.704295
220629A00002	6/29/2022	3.48	6/28/2024	6/29/2022	101.0495	100.5488082	100.0530747	99.56222457	99.07618611	98.59488879	98.1182635	97.64624248	97.17875927
220630A00044	6/30/2022	3.34	6/30/2025	6/30/2022	103.96185	102.4609644	100.9895017	99.54666781	98.1317001	96.74386259	95.38244475	94.04676035	92.73614646
220630A00036	6/30/2022	3.42	6/30/2027	6/30/2022	111.4485	107.8468155	104.382829	101.0505255	97.84418499	94.75836801	91.78790008	88.92785732	86.17355288
220630A00057	6/30/2022	3.34	6/30/2025	6/30/2022	103.96185	102.4609644	100.9895017	99.54666781	98.1317001	96.74386259	95.38244475	94.04676035	92.73614646
220701A00049	7/1/2022	3.19	7/1/2025	7/1/2022	103.74422	102.2422742	100.7698037	99.32601182	97.91013344	96.52143007	95.15918885	93.82272134	92.51136251
220701A00050	7/1/2022	3.26	7/1/2027	7/1/2022	110.89507	107.3002823	103.8431111	100.5175372	97.31783868	94.23857471	91.27456966	88.42089879	85.67287465
220701A00024	7/1/2022	3.08	7/1/2025	7/1/2022	103.57757	102.0769377	100.6057566	99.16323183	97.74859892	96.36111996	95.00008263	93.66479903	92.35460466

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220705A00005	7/5/2022	3.15	1/5/2024	7/5/2022	100.03304	100.0136094	99.99420034	99.97481138	99.95544249	99.93609363	99.91676477	99.89745588	99.87816692
220705A00011	7/5/2022	3.14	7/7/2025	7/5/2022	103.72288	102.2044885	100.7160623	99.25678827	97.82588064	96.42258163	95.04615993	93.69590964	92.37114916
220706A00032	7/6/2022	3.15	7/6/2027	7/6/2022	111.03884	107.4150644	103.9306899	100.579594	97.35595367	94.25423345	91.26916912	88.39575303	85.62922003
230104A00044	1/4/2023	4.2	1/4/2028	1/4/2023	116.56271	112.3385136	108.2947711	104.4227809	100.7143097	97.16156382	93.75716343	90.4941182	87.36580456
221110A00025	11/10/2022	4.39	11/10/2026	11/10/2022	111.87514	108.9135981	106.0471621	103.2722697	100.5855091	97.98361466	95.4634596	93.02204925	90.65651484
221110A00024	11/10/2022	4.51	11/10/2025	11/10/2022	107.46271	105.5675977	103.7155982	101.9054768	100.1360416	98.4061422	96.71466817	95.06054716	93.44274349
221110A00023	11/10/2022	4.71	11/8/2024	11/10/2022	103.04318	102.1747097	101.3209352	100.4814816	99.65598995	98.84411347	98.04551662	97.25987487	96.48687419
221110A00026	11/10/2022	4.29	11/10/2027	11/10/2022	116.22683	112.1643096	108.2694013	104.5343001	100.9516087	97.51431048	94.21574819	91.04960331	88.0098773
221110A00074	11/10/2022	4.75	11/12/2024	11/10/2022	103.12415	102.244445	101.3798022	100.529841	99.69418904	98.87248635	98.06438506	97.26954876	96.48765208
221110A00076	11/10/2022	4.45	11/10/2026	11/10/2022	112.04814	109.0840878	106.2152048	103.4379243	100.7488329	98.14466304	95.62228613	93.17870585	90.81105181
221110A00075	11/10/2022	4.56	11/10/2025	11/10/2022	107.55662	105.6605989	103.8077114	101.9967186	100.2264281	98.49568918	96.80339081	95.1484603	93.52986157
221110A00038	11/10/2022	4.34	11/10/2027	11/10/2022	116.42137	112.3550896	108.456533	104.7178936	101.13177	97.69114152	94.38934698	91.22006424	88.17729124
221110A00108	11/10/2022	4.48	12/10/2025	11/10/2022	107.80614	105.8256042	103.8919085	102.0036577	100.159507	98.35816029	96.59836857	94.87892746	93.19867541
221110A00110	11/10/2022	4.47	1/13/2026	11/10/2022	108.22166	106.1431468	104.1156545	102.1375965	100.2074479	98.32374157	96.48506613	94.69006314	92.93742477
221110A00065	1/17/2023	4.25	1/14/2028	1/17/2023	116.89091	112.6320303	108.5559704	104.6538668	100.9173384	97.3384546	93.90970809	90.62399005	87.47456669
221110A00064	1/17/2023	4.25	1/14/2028	1/17/2023	116.89091	112.6320303	108.5559704	104.6538668	100.9173384	97.3384546	93.90970809	90.62399005	87.47456669
230104A00004	1/4/2023	4.19	1/4/2028	1/4/2023	116.52228	112.2988951	108.2559386	104.3847099	100.6769766	97.12494611	93.72123939	90.45886695	87.33120603
230105A00020	1/5/2023	4.32	1/5/2028	1/5/2023	117.06067	112.8236627	108.7676422	104.8838755	101.1641033	97.60050789	94.18568664	90.9126278	87.77468766
221212A00071	12/12/2022	4.15	12/13/2027	12/12/2022	116.08777	111.9354529	107.9581947	104.1476723	100.4960003	96.99570823	93.63971657	90.42131422	87.33413727
221212A00063	12/12/2022	4.45	12/12/2025	12/12/2022	107.77285	105.7870958	103.8484314	101.9554521	100.1068023	98.3011759	96.53731391	94.81400274	93.13007203
221212A00117	6/12/2023	4.11	6/12/2026	6/12/2023	109.27366	106.7652976	104.328237	101.96004	99.65836894	97.42098004	95.24571874	93.13051572	91.07338294
221213A00017	12/13/2022	4.1	12/14/2026	12/13/2022	111.43786	108.3888338	105.4407174	102.5896125	99.83179393	97.16370113	94.58192962	92.08322343	89.66446764
221213A00049	12/13/2022	4.01	12/13/2027	12/13/2022	115.53028	111.3889824	107.4224088	103.6222426	99.98061086	96.49005551	93.14350864	89.93427026	86.85598707
221213A00042	12/13/2022	4.49	3/13/2025	12/13/2022	104.35484	103.1380156	101.9496977	100.7888868	99.65463409	98.54603391	97.46222148	96.40237052	95.36569116
221213A00047	12/13/2022	3.8	12/13/2027	12/13/2022	115.24706	111.0962832	107.1210684	103.3130445	99.66428566	96.16728409	92.81492575	89.60046755	86.51751598
221213A00004	12/13/2022	3.99	12/13/2027	12/13/2022	115.45063	111.3109152	107.345868	103.5471812	99.90698379	96.4178194	93.0726218	89.86469255	86.7876799
221213A00061	12/13/2022	4.15	12/11/2026	12/13/2022	111.55065	108.5083573	105.5664668	102.7211123	99.96859715	97.30538748	94.72810409	92.23351464	89.8185265
221214A00102	12/14/2022	4.33	12/15/2025	12/14/2022	107.554	105.5625049	103.6184278	101.7203503	99.86690199	98.0567627	96.28866024	94.56136833	92.8737046
221214A00030	12/14/2022	4.02	12/14/2027	12/14/2022	115.58216	111.4370018	107.4668285	103.6633128	100.018565	96.52511123	93.17586897	89.96412462	86.88351221
221114A00002	11/14/2022	4.37	11/15/2027	11/14/2022	116.60211	112.5184531	108.6037358	104.8500727	101.2499869	97.79638765	94.48254824	91.30208547	88.24894034
221214A00031	12/14/2022	3.97	12/14/2027	12/14/2022	115.38292	111.2417009	107.2753487	103.4755364	99.83437918	96.3444073	92.99854249	89.79007512	86.712643
221214A00020	12/14/2022	4.2	12/12/2025	12/14/2022	107.28127	105.3004617	103.3666493	101.4784294	99.63444884	97.83340401	96.07403842	94.35514075	92.6755429
221214A00003	12/14/2022	4.26	12/12/2025	12/14/2022	107.39925	105.4172539	103.482277	101.5929149	99.74781368	97.94566926	96.18522454	94.46526763	92.78462989

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
221214A00022	12/14/2022	4.17	2/13/2026	12/14/2022	107.9799	105.8182335	103.7111054	101.6567627	99.65352088	97.69976244	95.79393376	93.93454204	92.12015239
221117A00025	11/17/2022	4.28	11/17/2027	11/17/2022	116.2758	112.1929318	108.2792577	104.526866	100.9282583	97.47632404	94.16431823	90.98584078	87.93481706
230126A00033	1/26/2023	4.84	7/26/2024	1/26/2023	101.97557	101.3965412	100.8241019	100.2581358	99.69853352	99.14518811	98.59799493	98.05685173	97.52165849
230126A00034	1/26/2023	4.56	1/24/2025	1/26/2023	103.81951	102.7374395	101.6780083	100.6405137	99.62427846	98.62865298	97.65301382	96.69676252	95.75932432
230126A00036	1/26/2023	4.19	1/26/2026	1/26/2023	107.80238	105.6928826	103.6357497	101.6293277	99.67202981	97.76233116	95.8987655	94.07992263	92.30444575
221215A00115	12/15/2022	4	12/15/2027	12/15/2022	115.51448	111.3678142	107.396335	103.5916932	99.94598504	96.45172341	93.10181372	89.88953112	86.80849921
230306A00040	3/6/2023	5.05	3/6/2025	3/6/2023	105.12729	103.9218524	102.7442217	101.5934397	100.4685939	99.36881271	98.29326329	97.2411494	96.21170938
221117A00012	11/17/2022	4.54	11/14/2025	11/17/2022	107.56996	105.6630409	103.799723	101.9787498	100.1989099	98.45903447	96.75799538	95.0947035	93.46810708
221117A00013	11/17/2022	4.54	11/14/2025	11/17/2022	107.56996	105.6630409	103.799723	101.9787498	100.1989099	98.45903447	96.75799538	95.0947035	93.46810708
221117A00014	11/17/2022	4.54	11/14/2025	11/17/2022	107.56996	105.6630409	103.799723	101.9787498	100.1989099	98.45903447	96.75799538	95.0947035	93.46810708
221117A00008	11/17/2022	4.82	11/15/2024	11/17/2022	103.22101	102.3326909	101.4597255	100.6017158	99.75827893	98.92904525	98.11365738	97.31176987	96.52304873
221118A00023	11/18/2022	4.12	11/18/2027	11/18/2022	116.20812	112.1091054	108.1804353	104.4141298	100.8026209	97.3387335	94.01566193	90.82694958	87.76646893
221118A00019	11/18/2022	4.55	11/18/2025	11/18/2022	107.63987	105.7215007	103.847219	102.015744	100.2258451	98.47633493	96.76606776	95.09393765	93.45887686
221118A00018	11/18/2022	4.55	11/18/2025	11/18/2022	107.63987	105.7215007	103.847219	102.015744	100.2258451	98.47633493	96.76606776	95.09393765	93.45887686
230126A00015	1/26/2023	4.08	1/26/2027	1/26/2023	111.88704	108.7119555	105.6452407	102.6825719	99.81982137	97.05305039	94.37849979	91.79258038	89.2918642
230127A00096	1/27/2023	4.21	1/27/2026	1/27/2023	107.85623	105.7434418	103.6831374	101.6736606	99.71341939	97.80088381	95.93458293	94.11310206	92.33508016
230127A00095	1/27/2023	4.59	1/27/2025	1/27/2023	103.88983	102.7991677	101.7314884	100.6860737	99.66223132	98.65929762	97.67663589	96.71363505	95.76970839
221215A00082	12/15/2022	4.27	12/15/2025	12/15/2022	107.43554	105.445239	103.5023356	101.6054093	99.75309041	97.94405927	96.1770443	94.4508198	92.76420392
221216A00045	12/16/2022	4.38	5/16/2025	12/16/2022	105.01079	103.6226291	102.259644	100.9212071	99.60671109	98.31556861	97.04721086	95.80108718	94.57666425
221216A00049	12/16/2022	4.29	8/15/2025	12/16/2022	105.97332	104.3293244	102.7190378	101.14149	99.59574563	98.08090521	96.59610289	95.14050507	93.7133089
221216A00044	12/16/2022	4.43	4/16/2025	12/16/2022	104.71128	103.4040122	102.1232433	100.8681741	99.63803816	98.4321	97.24965311	96.09001872	94.95254442
221216A00047	12/16/2022	4.34	6/16/2025	12/16/2022	105.31286	103.8387271	102.3928088	100.9743668	99.5826854	98.2170733	96.87686251	95.56140743	94.27008389
221216A00048	12/16/2022	4.32	7/16/2025	12/16/2022	105.64083	104.0820338	102.5542357	101.0565782	99.58823731	98.14841875	96.7363565	95.35131161	93.99257101
230306A00029	3/6/2023	5.26	9/6/2024	3/6/2023	102.84859	102.1505663	101.4620577	100.7828693	100.1128122	99.45170277	98.79936217	98.15561635	97.52029586
230307A00057	3/7/2023	5.08	3/7/2025	3/7/2023	105.17781	103.9692895	102.7887103	101.6351061	100.507558	99.40518849	98.32715911	97.27266832	96.24094947
230307A00056	3/7/2023	5.08	3/7/2025	3/7/2023	105.17781	103.9692895	102.7887103	101.6351061	100.507558	99.40518849	98.32715911	97.27266832	96.24094947
230307A00058	3/7/2023	5.29	3/7/2025	3/7/2023	105.2364	104.030434	102.8522984	101.7010326	100.5757227	99.47549594	98.39951821	97.34699221	96.31715523
230307A00021	3/7/2023	4.63	3/7/2028	3/7/2023	119.16059	114.7046418	110.4449719	106.371801	102.4758972	98.74854066	95.18149112	91.76695919	88.49757863
230307A00022	3/7/2023	4.77	3/8/2027	3/7/2023	114.60346	111.2679496	108.0492317	104.9425043	101.9431953	99.04694973	96.24961792	93.54724432	90.93605702
221118A00046	11/18/2022	4.4	11/18/2026	11/18/2022	112.00349	109.0182351	106.129487	103.333607	100.627111	98.00666475	95.46907695	93.01129211	90.63038403
221118A00045	11/18/2022	4.57	11/18/2025	11/18/2022	107.67787	105.7591329	103.8844879	102.0526565	100.2624077	98.51255421	96.80194994	95.12948884	93.49410301
221121A00052	11/21/2022	4.35	11/22/2027	11/21/2022	116.61325	112.5099587	108.5771728	104.8069005	101.1915643	97.72397927	94.39733151	91.20515637	88.14131903
230130A00095	2/3/2023	4.25	5/26/2026	2/3/2023	109.41454	106.9506533	104.555556	102.2269394	99.96258735	97.76037085	95.61824402	93.5342404	91.50646931

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230130A00096	1/30/2023	4.67	1/30/2025	1/30/2023	104.01602	102.9164145	101.8401528	100.7864938	99.75472982	98.74418264	97.75420166	96.78416272	95.83346669
221216A00008	12/16/2022	4.27	12/16/2025	12/16/2022	107.44778	105.4545881	103.5089226	101.6093601	99.75452537	97.94309352	96.1737879	94.44537796	92.7566773
221216A00009	12/16/2022	4.27	12/16/2025	12/16/2022	107.44778	105.4545881	103.5089226	101.6093601	99.75452537	97.94309352	96.1737879	94.44537796	92.7566773
221216A00007	12/16/2022	4.27	12/16/2025	12/16/2022	107.44778	105.4545881	103.5089226	101.6093601	99.75452537	97.94309352	96.1737879	94.44537796	92.7566773
221216A00010	12/16/2022	4.27	12/16/2025	12/16/2022	107.44778	105.4545881	103.5089226	101.6093601	99.75452537	97.94309352	96.1737879	94.44537796	92.7566773
221219A00043	12/19/2022	4.07	12/17/2027	12/19/2022	115.81802	111.6596595	107.6771412	103.8620799	100.2065333	96.70297852	93.34428737	90.12370369	87.03482186
230307A00034	3/7/2023	4.41	3/7/2028	3/7/2023	118.82835	114.3626189	110.0941071	106.0129719	102.1099189	98.37616958	94.80342987	91.38386	88.11004696
230307A00039	3/7/2023	5.29	3/7/2025	3/7/2023	105.2364	104.030434	102.8522984	101.7010326	100.5757227	99.47549594	98.39951821	97.34699221	96.31715523
230307A00114	3/7/2023	4.65	3/7/2028	3/7/2023	119.24493	114.7872252	110.5258495	106.4510277	102.5535258	98.82462158	95.25607296	91.84008855	88.56930031
230308A00044	3/8/2023	5.68	3/11/2024	3/8/2023	100.84424	100.6417228	100.4400345	100.2391659	100.0391122	99.83986811	99.64142882	99.44378938	99.24694488
221121A00064	11/21/2022	4.34	11/22/2027	11/21/2022	116.57401	112.4714835	108.5394393	104.7698863	101.1552475	97.68833921	94.36234806	91.17081024	88.10759164
221121A00047	11/21/2022	4.89	11/21/2033	11/21/2022	143.69427	132.3752477	122.0979527	112.7593399	104.267114	96.53855651	89.4994848	83.08333012	77.23031889
221122A00029	11/22/2022	4.31	11/22/2027	11/22/2022	116.45629	112.3560579	108.4262389	104.6588435	101.0462973	97.58141903	94.25739773	91.06777186	88.00640947
221122A00040	11/22/2022	4.31	11/22/2027	11/22/2022	116.45629	112.3560579	108.4262389	104.6588435	101.0462973	97.58141903	94.25739773	91.06777186	88.00640947
230308A00021	3/8/2023	5.39	3/7/2025	3/8/2023	105.35602	104.149301	102.9704203	101.8184213	100.6923898	99.59145266	98.51477554	97.46156084	96.43104559
230309A00033	3/9/2023	4.82	3/9/2027	3/9/2023	114.77854	111.4372473	108.2130158	105.1010245	102.0966882	99.19563934	96.39371669	93.6869537	91.07156815
230309A00034	3/9/2023	4.64	3/9/2028	3/9/2023	119.23098	114.7675529	110.5009407	106.4213308	102.5194561	98.78656379	95.21438348	91.79509768	88.52131414
230309A00030	3/9/2023	5.01	3/9/2026	3/9/2023	110.12925	107.8753891	105.679586	103.539924	101.4545654	99.42174845	97.43978297	95.50704706	93.62198368
230309A00068	4/10/2023	5.21	4/9/2025	4/10/2023	105.62536	104.3291252	103.061082	101.820311	100.6059305	99.41709674	98.25300232	97.11287379	95.99597003
230309A00027	3/9/2023	4.68	3/9/2028	3/9/2023	119.3999	114.9329319	110.6628996	106.5799796	102.6749006	98.93890539	95.36371965	91.94152198	88.66491644
230309A00032	3/9/2023	4.82	3/9/2027	3/9/2023	114.77854	111.4372473	108.2130158	105.1010245	102.0966882	99.19563934	96.39371669	93.6869537	91.07156815
230309A00031	3/9/2023	5.01	3/9/2026	3/9/2023	110.12925	107.8753891	105.679586	103.539924	101.4545654	99.42174845	97.43978297	95.50704706	93.62198368
230309A00035	3/9/2023	4.64	3/9/2028	3/9/2023	119.23098	114.7675529	110.5009407	106.4213308	102.5194561	98.78656379	95.21438348	91.79509768	88.52131414
230309A00005	3/9/2023	5.06	3/9/2026	3/9/2023	110.23954	107.9844372	105.787422	103.6465725	101.5600503	99.526093	97.54300975	95.60917803	93.72304016
230309A00080	3/9/2023	4.68	3/9/2028	3/9/2023	119.3999	114.9329319	110.6628996	106.5799796	102.6749006	98.93890539	95.36371965	91.94152198	88.66491644
230309A00091	3/9/2023	4.68	3/9/2028	3/9/2023	119.3999	114.9329319	110.6628996	106.5799796	102.6749006	98.93890539	95.36371965	91.94152198	88.66491644
230309A00096	3/9/2023	4.68	3/9/2028	3/9/2023	119.3999	114.9329319	110.6628996	106.5799796	102.6749006	98.93890539	95.36371965	91.94152198	88.66491644
230310A00040	3/10/2023	4.38	3/10/2028	3/10/2023	118.14643	113.7027087	109.455312	105.3944381	101.5108321	97.79575295	94.240942	90.8385933	87.58132595
230310A00049	3/10/2023	4.7	3/10/2026	3/10/2023	109.4595	107.2102405	105.0190191	102.8839155	100.8030902	98.77477958	96.79729219	94.86900477	92.98835909
230310A00048	3/10/2023	5.03	3/10/2025	3/10/2023	104.96754	103.7550342	102.5707096	101.4135907	100.2827458	99.1772852	98.09635911	97.03915532	96.00489718
230310A00037	3/10/2023	4.69	3/10/2026	3/10/2023	109.43741	107.1884039	104.9974256	102.86256	100.781968	98.75388602	96.77662272	94.84855498	92.96812471
230310A00039	3/10/2023	4.33	3/10/2028	3/10/2023	117.93515	113.4958522	109.2527362	105.1960051	101.3164094	97.60521358	94.05416397	90.65545944	87.40172371
230310A00073	3/10/2023	4.7	3/6/2026	3/10/2023	109.40342	107.1664419	104.9869561	102.8630711	100.7929726	98.77492068	96.80724591	94.88834607	93.01668274

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230310A00120	3/10/2023	4.33	3/10/2028	3/10/2023	117.93515	113.4958522	109.2527362	105.1960051	101.3164094	97.60521358	94.05416397	90.65545944	87.40172371
230310A00114	3/10/2023	4.5	3/10/2027	3/10/2023	113.76464	110.4367052	107.2255843	104.1264674	101.1347724	98.2461354	95.45639872	92.76159949	90.1579592
230310A00024	3/10/2023	4.38	3/10/2028	3/10/2023	118.14643	113.7027087	109.455312	105.3944381	101.5108321	97.79575295	94.240942	90.8385933	87.58132595
230310A00071	3/10/2023	4.38	3/10/2028	3/10/2023	118.14643	113.7027087	109.455312	105.3944381	101.5108321	97.79575295	94.240942	90.8385933	87.58132595
230310A00030	3/10/2023	4.38	3/10/2028	3/10/2023	118.14643	113.7027087	109.455312	105.3944381	101.5108321	97.79575295	94.240942	90.8385933	87.58132595
221123A00034	11/23/2022	4.43	11/23/2026	11/23/2022	112.15327	109.1521654	106.2484808	103.4385209	100.7187548	98.08580454	95.53643727	93.06755845	90.67620501
221123A00039	11/23/2022	4.29	11/23/2027	11/23/2022	116.39039	112.2886743	108.3575545	104.5890283	100.9755084	97.50980134	94.18508515	90.99488788	87.93306796
230106A00017	1/6/2023	4.23	1/6/2028	1/6/2023	116.7091	112.476347	108.4245719	104.5450375	100.8294791	97.27007412	93.85941546	90.59048754	87.45664325
230106A00019	1/6/2023	4.23	1/6/2028	1/6/2023	116.7091	112.476347	108.4245719	104.5450375	100.8294791	97.27007412	93.85941546	90.59048754	87.45664325
230109A00042	1/9/2023	4.07	12/20/2027	1/9/2023	115.85464	111.6870165	107.6959761	103.8730757	100.2103249	96.70015589	93.33539897	90.10925925	87.01529515
230109A00083	1/9/2023	4.79	1/11/2038	1/9/2023	154.6434	138.4424589	124.2487137	111.7961865	100.855753	91.22984535	82.74794558	75.26274205	68.64685075
230110A00055	1/10/2023	4.06	1/10/2028	1/10/2023	116.06917	111.838081	107.7884259	103.9114227	100.1987664	96.64259703	93.23547357	89.97034912	86.84054787
230110A00070	1/10/2023	4.27	1/9/2026	1/10/2023	107.76193	105.6991332	103.6868305	101.7234557	99.80750552	97.9375338	96.11214887	94.330011	92.58983012
230110A00040	1/13/2023	4.07	12/13/2027	1/13/2023	115.7692	111.623184	107.6520313	103.8474267	100.2014921	96.70676381	93.35616919	90.14300339	87.06090858
230110A00043	1/10/2023	3.84	1/10/2028	1/10/2023	115.74123	111.5011595	107.4433779	103.5590443	99.83979782	96.27772709	92.86534289	89.59555354	86.46164146
230110A00047	1/10/2023	3.84	1/10/2028	1/10/2023	115.74123	111.5011595	107.4433779	103.5590443	99.83979782	96.27772709	92.86534289	89.59555354	86.46164146
230110A00023	1/10/2023	4.3	1/12/2026	1/10/2023	107.86012	105.7881253	103.7669668	101.7950662	99.8709053	97.99302375	96.16001632	94.37053054	92.62326422
230111A00046	1/11/2023	4.28	1/13/2026	1/11/2023	107.83133	105.756913	103.7334345	101.7593119	99.8330223	97.95310091	96.11813835	94.32677815	92.5777144
230111A00072	1/11/2023	4.21	1/12/2026	1/11/2023	107.67548	105.605415	103.5861528	101.6161115	99.69377393	97.81768066	95.98642751	94.1986629	92.45308556
230111A00069	1/11/2023	4.54	1/10/2025	1/11/2023	103.62298	102.5802418	101.5585712	100.557334	99.57592048	98.613745	97.67024479	96.74487891	95.83712713
230111A00019	1/11/2023	3.83	1/11/2028	1/11/2023	115.71238	111.4700825	107.4102713	103.5240917	99.80316981	96.23958154	92.82582628	89.5548017	86.41978036
230111A00039	1/11/2023	4.6	1/13/2025	1/11/2023	103.7235	102.6720039	101.6419151	100.6325843	99.64338719	98.67372465	97.72302096	96.79072289	95.87629858
230111A00013	1/11/2023	4.25	1/9/2026	1/11/2023	107.72106	105.6586926	103.6468081	101.6838432	99.76829507	97.8987177	96.07371962	94.29196133	92.55215294
230111A00004	1/11/2023	3.83	1/11/2028	1/11/2023	115.71238	111.4700825	107.4102713	103.5240917	99.80316981	96.23958154	92.82582628	89.5548017	86.41978036
230112A00044	1/12/2023	4	1/12/2028	1/12/2023	115.84942	111.6171706	107.5666444	103.6890363	99.97601848	96.41971027	93.01265135	89.7477771	86.61839534
230112A00041	1/12/2023	4.2	1/12/2026	1/12/2023	107.65496	105.5851139	103.5660624	101.5962277	99.67409266	97.7981981	95.96713986	94.17956649	92.43417682
230112A00042	1/12/2023	4.09	1/12/2027	1/12/2023	111.75195	108.6175191	105.589126	102.66258	99.83387895	97.09920207	94.45490066	91.89748922	89.42363707
230112A00014	1/12/2023	4.09	1/12/2027	1/12/2023	111.75195	108.6175191	105.589126	102.66258	99.83387895	97.09920207	94.45490066	91.89748922	89.42363707
230112A00004	1/12/2023	4	1/12/2028	1/12/2023	115.84942	111.6171706	107.5666444	103.6890363	99.97601848	96.41971027	93.01265135	89.7477771	86.61839534
230112A00065	1/12/2023	4.09	1/12/2027	1/12/2023	111.75195	108.6175191	105.589126	102.66258	99.83387895	97.09920207	94.45490066	91.89748922	89.42363707
230112A00066	1/12/2023	4	1/12/2028	1/12/2023	115.84942	111.6171706	107.5666444	103.6890363	99.97601848	96.41971027	93.01265135	89.7477771	86.61839534
230112A00062	3/15/2023	3.83	3/15/2028	3/15/2023	115.88168	111.4705868	107.2555002	103.2265917	99.3745829	95.69071286	92.16670609	88.79474253	85.56742967
230112A00061	3/15/2023	4.01	3/13/2026	3/15/2023	107.97202	105.7307958	103.5476656	101.4206982	99.34804504	97.32793456	95.35866763	93.43861412	91.56620942

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230112A00063	3/15/2023	3.83	3/15/2028	3/15/2023	115.88168	111.4705868	107.2555002	103.2265917	99.3745829	95.69071286	92.16670609	88.79474253	85.56742967
230112A00060	3/15/2023	4.01	3/13/2026	3/15/2023	107.97202	105.7307958	103.5476656	101.4206982	99.34804504	97.32793456	95.35866763	93.43861412	91.56620942
230113A00055	1/13/2023	3.88	1/13/2028	1/13/2023	115.37319	111.1477584	107.1039646	103.2329978	99.52652788	95.97667201	92.57596834	89.31735105	86.19412709
230113A00080	1/13/2023	4.18	1/13/2026	1/13/2023	107.6259	105.5536321	103.532266	101.5602147	99.63595619	97.75802689	95.92501847	94.13557553	92.38839315
230117A00040	1/17/2023	4.07	1/19/2027	1/17/2023	111.77345	108.6193973	105.5725293	102.6285871	99.78350656	97.03340879	94.37459061	91.80351543	89.31680461
230117A00048	1/17/2023	3.97	1/14/2028	1/17/2023	115.75112	111.515275	107.4615145	103.5810123	99.8654152	96.30681872	92.89774066	89.63109608	86.50017402
230117A00015	1/17/2023	4.52	1/17/2025	1/17/2023	103.68921	102.6269803	101.5866039	100.5674068	99.56874582	98.59000359	97.63058736	96.6899277	95.76747739
230117A00087	1/17/2023	3.93	1/18/2028	1/17/2023	115.63518	111.3905088	107.3287183	103.4409171	99.71869843	96.15410861	92.73961965	89.46810425	86.33281214
230118A00058	1/23/2023	4	2/17/2026	1/23/2023	107.66322	105.4938078	103.3793492	101.3180718	99.30827091	97.34830987	95.43661713	93.57168293	91.75205639
230118A00029	1/18/2023	3.81	1/18/2028	1/18/2023	115.14537	110.910624	106.8584406	102.9799453	99.26674315	95.71089185	92.30487427	89.04157344	85.91424896
230118A00019	1/18/2023	3.59	1/18/2028	1/18/2023	114.81312	110.5694138	106.5091345	102.6233445	98.90359287	95.34188492	91.93065488	88.66274046	85.53135908
230130A00045	1/30/2023	4.02	1/28/2028	1/30/2023	116.12222	111.839743	107.7426274	103.821817	100.0687518	96.47533552	93.03390777	89.73721804	86.57840141
230130A00086	1/30/2023	4.16	2/1/2027	1/30/2023	112.20813	109.0112447	105.9238803	102.9416414	100.0603401	97.27598149	94.58475368	91.98301788	89.46729961
230130A00087	1/30/2023	4.04	1/28/2028	1/30/2023	116.20441	111.9202553	107.8215174	103.8991361	100.144549	96.54965803	93.10680092	89.80872537	86.64856481
221220A00024	12/20/2022	4.7	12/20/2024	12/20/2022	103.52645	102.5414815	101.5753328	100.6274648	99.69736126	98.78452529	97.88847833	97.0087594	96.14492428
230310A00021	3/10/2023	4.38	3/10/2028	3/10/2023	118.14643	113.7027087	109.455312	105.3944381	101.5108321	97.79575295	94.240942	90.8385933	87.58132595
230310A00017	3/10/2023	4.43	3/9/2029	3/10/2023	122.7773	117.1821318	111.8835916	106.8642555	102.1078251	97.59904417	93.32362602	89.26818642	85.42018147
230310A00089	3/10/2023	4.7	3/10/2026	3/10/2023	109.4595	107.2102405	105.0190191	102.8839155	100.8030902	98.77477958	96.79729219	94.86900477	92.98835909
230310A00088	3/10/2023	5.03	3/10/2025	3/10/2023	104.96754	103.7550342	102.5707096	101.4135907	100.2827458	99.1772852	98.09635911	97.03915532	96.00489718
230310A00092	3/10/2023	4.38	3/10/2028	3/10/2023	118.14643	113.7027087	109.455312	105.3944381	101.5108321	97.79575295	94.240942	90.8385933	87.58132595
230310A00091	3/10/2023	4.53	3/10/2027	3/10/2023	113.86107	110.5315787	107.3189471	104.2183589	101.2252307	98.33519733	95.54409983	92.84797417	90.24304069
230310A00062	3/10/2023	4.38	4/10/2028	3/10/2023	118.55147	114.0087023	109.6701345	105.5254433	101.5648843	97.77925823	94.15987718	90.69853304	87.38746824
230310A00069	3/10/2023	4.7	3/9/2026	3/10/2023	109.44548	107.1992908	105.011003	102.8787035	100.8005591	98.77481225	96.79977688	94.87383504	92.99543348
230310A00068	3/10/2023	5.03	3/10/2025	3/10/2023	104.96754	103.7550342	102.5707096	101.4135907	100.2827458	99.1772852	98.09635911	97.03915532	96.00489718
230310A00054	9/8/2023	4.09	9/11/2028	9/8/2023	119.08723	114.0956642	109.3475622	104.8296694	100.5295263	96.43541901	92.53633001	88.82189276	85.28234937
230310A00047	6/9/2023	4.22	6/9/2028	6/9/2023	118.58893	113.8751562	109.3807186	105.0942228	101.0049287	97.10270701	93.37800156	89.82179349	86.42556848
230313A00102	3/13/2023	4.15	3/13/2028	3/13/2023	117.2128	112.7796965	108.5430193	104.4929384	100.6201732	96.91596011	93.37202	89.98052864	86.73408879
230313A00112	3/13/2023	4.15	3/13/2028	3/13/2023	117.2128	112.7796965	108.5430193	104.4929384	100.6201732	96.91596011	93.37202	89.98052864	86.73408879
230313A00159	3/13/2023	4.41	3/13/2026	3/13/2023	108.85871	106.607488	104.4145662	102.2780065	100.1959551	98.16663451	96.18834036	94.25943734	92.37835587
230313A00158	3/13/2023	4.41	3/13/2026	3/13/2023	108.85871	106.607488	104.4145662	102.2780065	100.1959551	98.16663451	96.18834036	94.25943734	92.37835587
230313A00078	3/13/2023	4.41	3/13/2026	3/13/2023	108.85871	106.607488	104.4145662	102.2780065	100.1959551	98.16663451	96.18834036	94.25943734	92.37835587
230313A00093	3/16/2023	4.65	3/17/2025	3/16/2023	104.60092	103.3715575	102.1712368	100.9989341	99.85367484	98.73452911	97.6406093	96.57106766	95.52509409
230313A00177	3/13/2023	4.41	3/13/2026	3/13/2023	108.85871	106.607488	104.4145662	102.2780065	100.1959551	98.16663451	96.18834036	94.25943734	92.37835587

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230313A00179	3/13/2023	4.29	3/15/2027	3/13/2023	113.15557	109.8227227	106.6073837	103.5046889	100.510011	97.61894356	94.82728968	92.13104989	89.52641162
230313A00180	3/13/2023	4.15	3/13/2028	3/13/2023	117.2128	112.7796965	108.5430193	104.4929384	100.6201732	96.91596011	93.37202	89.98052864	86.73408879
230130A00127	1/30/2023	4.02	2/1/2028	1/30/2023	116.16971	111.8750959	107.7667539	103.8355672	100.0729161	96.47064924	93.02105505	89.71683556	86.55108185
230131A00004	1/31/2023	3.76	1/31/2028	1/31/2023	115.66021	111.3628444	107.2522974	103.3194089	99.5555208	95.95244569	92.50243863	89.19817066	86.03270401
230131A00032	2/3/2023	4.17	7/30/2026	2/3/2023	110.00416	107.3529908	104.7802573	102.2831554	99.85900112	97.50522428	95.21936232	92.99905521	90.84204041
230131A00034	2/3/2023	3.99	12/23/2027	2/3/2023	115.57047	111.3999783	107.4066051	103.5818649	99.91772636	96.40658385	93.0412327	89.81484573	86.72095149
230131A00006	1/31/2023	4.23	2/2/2026	1/31/2023	107.97189	105.8411894	103.7636956	101.7377208	99.76164078	97.83389507	95.95298388	94.11746524	92.32595233
230131A00009	1/31/2023	3.98	1/31/2028	1/31/2023	115.99316	111.7049462	107.6026661	103.6772249	99.92002211	96.32292417	92.87823609	89.57867542	86.41734769
221220A00025	12/20/2022	4.38	12/22/2025	12/20/2022	107.76097	105.7475837	103.7825879	101.8645154	99.99195508	98.16354808	96.37798548	94.63400601	92.93039403
221221A00043	12/21/2022	4.26	12/19/2025	12/21/2022	107.48497	105.4827096	103.5283919	101.6205711	99.75785447	97.93890055	96.16241688	94.42715793	92.73192301
221221A00053	12/21/2022	4.15	12/21/2027	12/21/2022	116.18718	112.010106	108.010054	104.1785606	100.5076117	96.98961768	93.61738797	90.38410834	87.28331902
230131A00072	1/31/2023	4.99	4/30/2024	1/31/2023	101.20024	100.8598992	100.5218459	100.1860577	99.85251191	99.52118621	99.19205848	98.8651069	98.54030996
230131A00057	1/31/2023	4.1	1/29/2027	1/31/2023	111.98462	108.7997554	105.723796	102.7523838	99.88136273	97.10676785	94.4248152	91.83189237	89.32454958
230131A00071	1/31/2023	4.22	1/30/2026	1/31/2023	107.91369	105.7920359	103.7232241	101.7055771	99.73748719	97.81740967	95.94385955	94.11540889	92.33068412
230131A00067	1/31/2023	4.02	2/2/2026	1/31/2023	107.80999	105.6756361	103.5946846	101.5654394	99.58626771	97.65560094	95.77193153	93.93381022	92.13984321
230131A00095	1/31/2023	4.22	1/30/2026	1/31/2023	107.91369	105.7920359	103.7232241	101.7055771	99.73748719	97.81740967	95.94385955	94.11540889	92.33068412
230201A00012	2/1/2023	4.08	2/1/2027	2/1/2023	111.95916	108.7661591	105.6825784	102.7040266	99.82631912	97.04546421	94.35765286	91.75924919	89.24678144
230201A00011	2/1/2023	3.93	2/1/2028	2/1/2023	115.79887	111.5118348	107.4108307	103.48675	99.73098241	96.13538518	92.69225518	89.39430247	86.23462572
230201A00022	2/1/2023	5.04	2/1/2024	2/1/2023	100.33632	100.2419447	100.1477527	100.0537423	99.95991298	99.86626427	99.77279562	99.67950649	99.58639636
230313A00048	3/13/2023	4.25	3/13/2026	3/13/2023	108.50403	106.2568111	104.067806	101.9350832	99.85679106	97.83115453	95.85647127	93.93110805	92.05349729
230313A00152	3/13/2023	4.18	3/13/2028	3/13/2023	117.33982	112.9040493	108.6647939	104.6122179	100.7370376	97.03048598	93.48428092	90.09059526	86.84202899
230313A00052	3/13/2023	4.17	3/15/2027	3/13/2023	112.76821	109.4416255	106.2323801	103.1356193	100.1467211	97.26128454	94.47511766	91.7842258	89.18480103
230313A00057	3/13/2023	4.06	3/13/2028	3/13/2023	116.83175	112.4066382	108.1776956	104.1350997	100.26958	96.57238249	93.03523724	89.65032877	86.41026818
230313A00036	3/13/2023	4.06	3/13/2028	3/13/2023	116.83175	112.4066382	108.1776956	104.1350997	100.26958	96.57238249	93.03523724	89.65032877	86.41026818
230313A00096	3/13/2023	4.36	3/14/2033	3/13/2023	136.23116	125.9779844	116.6170238	108.0648435	100.2462645	93.09350075	86.54539536	80.54673896	75.04766163
230313A00099	3/13/2023	4.59	3/13/2025	3/13/2023	104.47611	103.2585107	102.0694278	100.9078643	99.77287097	98.6635419	97.57901197	96.51845461	95.48107968
230313A00104	3/13/2023	4.58	3/13/2025	3/13/2023	104.46398	103.2464612	102.0574548	100.8959666	99.76104728	98.6517911	97.56733292	96.50684621	95.46954083
230313A00090	3/13/2023	4.41	3/13/2026	3/13/2023	108.85871	106.607488	104.4145662	102.2780065	100.1959551	98.16663451	96.18834036	94.25943734	92.37835587
230313A00091	3/13/2023	4.15	3/13/2028	3/13/2023	117.2128	112.7796965	108.5430193	104.4929384	100.6201732	96.91596011	93.37202	89.98052864	86.73408879
230313A00072	3/13/2023	4.06	3/13/2028	3/13/2023	116.83175	112.4066382	108.1776956	104.1350997	100.26958	96.57238249	93.03523724	89.65032877	86.41026818
230313A00149	3/13/2023	4.15	3/13/2028	3/13/2023	117.2128	112.7796965	108.5430193	104.4929384	100.6201732	96.91596011	93.37202	89.98052864	86.73408879
230313A00215	3/13/2023	4.13	3/13/2028	3/13/2023	117.12812	112.6967947	108.4618363	104.4134187	100.5422636	96.83960953	93.29717939	89.90715089	86.66212865
230313A00113	3/13/2023	4.58	3/13/2025	3/13/2023	104.46398	103.2464612	102.0574548	100.8959666	99.76104728	98.6517911	97.56733292	96.50684621	95.46954083

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230313A00075	3/13/2023	4.71	9/13/2024	3/13/2023	102.40848	101.694869	100.9912373	100.2973742	99.61307679	98.93814785	98.27239552	97.61563316	96.96767917
230313A00069	3/13/2023	4.71	9/13/2024	3/13/2023	102.40848	101.694869	100.9912373	100.2973742	99.61307679	98.93814785	98.27239552	97.61563316	96.96767917
230313A00070	3/13/2023	4.71	9/13/2024	3/13/2023	102.40848	101.694869	100.9912373	100.2973742	99.61307679	98.93814785	98.27239552	97.61563316	96.96767917
230313A00095	3/16/2023	4.65	3/17/2025	3/16/2023	104.60092	103.3715575	102.1712368	100.9989341	99.85367484	98.73452911	97.6406093	96.57106766	95.52509409
230313A00032	3/13/2023	4.45	3/13/2025	3/13/2023	104.30633	103.0898175	101.9018056	100.7412958	99.60733934	98.49903072	97.41550529	96.35593689	95.31953576
230313A00118	3/13/2023	5.02	3/13/2024	3/13/2023	100.73009	100.5222461	100.3152718	100.1091617	99.90391047	99.69951262	99.49596277	99.29325561	99.09138584
230313A00109	3/13/2023	4.58	3/13/2025	3/13/2023	104.46398	103.2464612	102.0574548	100.8959666	99.76104728	98.6517911	97.56733292	96.50684621	95.46954083
230314A00006	3/14/2023	4.92	1/13/2025	3/14/2023	104.0597	103.0063179	101.9743666	100.9631996	99.97219208	99.00074418	98.04827964	97.11424466	96.19810684
230314A00003	3/14/2023	4.64	3/16/2026	3/14/2023	109.41012	107.1439514	104.9366122	102.7861403	100.6906595	98.64837132	96.65755139	94.71654559	92.82376647
221223A00016	12/23/2022	4.73	12/23/2024	12/23/2022	103.59227	102.5988066	101.6244697	100.6687136	99.73100967	98.81084906	97.90774193	97.02121651	96.15081834
221223A00035	12/23/2022	4.44	12/23/2025	12/23/2022	107.89334	105.8758307	103.9068679	101.9849786	100.1087454	98.27680345	96.48783809	94.74058261	93.03381615
230202A00096	2/2/2023	3.81	2/2/2028	2/2/2023	115.31568	111.0357356	106.9417333	103.0245577	99.27559608	95.68670349	92.25017514	88.95871981	85.80543529
230202A00038	2/2/2023	3.84	2/2/2028	2/2/2023	115.43937	111.1569023	107.0604508	103.1409035	99.38964443	95.79852582	92.35984006	89.06629324	85.9109806
230202A00008	2/2/2023	3.81	2/2/2028	2/2/2023	115.31568	111.0357356	106.9417333	103.0245577	99.27559608	95.68670349	92.25017514	88.95871981	85.80543529
230202A00050	2/2/2023	3.82	2/2/2028	2/2/2023	115.35691	111.0761245	106.9813058	103.0633397	99.3136122	95.7239776	92.28673011	88.99457762	85.84061706
230203A00021	2/8/2023	4.21	6/17/2026	2/8/2023	109.57968	107.0539808	104.6004236	102.2165291	99.89992071	97.64831728	95.45952914	93.33145366	91.26207126
230203A00053	2/10/2023	4.32	2/10/2026	2/10/2023	108.26291	106.1065851	104.0044975	101.9549088	99.95614928	98.00661551	96.10476702	94.24912341	92.43826149
230203A00045	2/14/2023	4.31	2/13/2026	2/14/2023	108.27945	106.1145199	104.0041917	101.9467129	99.94039709	97.98362502	96.07484139	94.21255176	92.39531966
230203A00058	2/3/2023	4.34	2/3/2026	2/3/2023	108.21663	106.0804796	103.9977145	101.9666339	99.98560686	98.05306619	96.16750595	94.32747829	92.5315908
230203A00059	2/3/2023	4.67	2/3/2025	2/3/2023	104.06943	102.9585275	101.8714443	100.8074186	99.76572123	98.74565336	97.74654522	96.76775443	95.80866465
230203A00046	2/10/2023	4.65	2/10/2025	2/10/2023	104.14035	103.0098141	101.9039355	100.8219132	99.76297967	98.72640024	97.71147099	96.71751735	95.74389258
230203A00051	2/14/2023	4.64	2/14/2025	2/14/2023	104.18216	103.0403975	101.9237772	100.8314727	99.76269432	98.7166864	97.69272539	96.69011812	95.70820024
230203A00048	2/10/2023	4.65	2/10/2025	2/10/2023	104.14035	103.0098141	101.9039355	100.8219132	99.76297967	98.72640024	97.71147099	96.71751735	95.74389258
230203A00043	2/14/2023	4.31	2/13/2026	2/14/2023	108.27945	106.1145199	104.0041917	101.9467129	99.94039709	97.98362502	96.07484139	94.21255176	92.39531966
230203A00057	2/3/2023	4.34	2/3/2026	2/3/2023	108.21663	106.0804796	103.9977145	101.9666339	99.98560686	98.05306619	96.16750595	94.32747829	92.5315908
230203A00050	2/14/2023	4.64	2/14/2025	2/14/2023	104.18216	103.0403975	101.9237772	100.8314727	99.76269432	98.7166864	97.69272539	96.69011812	95.70820024
230203A00054	2/10/2023	4.32	2/10/2026	2/10/2023	108.26291	106.1065851	104.0044975	101.9549088	99.95614928	98.00661551	96.10476702	94.24912341	92.43826149
230314A00043	3/14/2023	4.84	3/14/2025	3/14/2023	104.79282	103.5704514	102.3767547	101.210731	100.0714241	98.95792122	97.86935099	96.80488083	95.76371494
230314A00067	3/14/2023	4.16	3/14/2028	3/14/2023	117.8637	113.3971285	109.1288583	105.0489431	101.147996	97.4171538	93.8480447	90.43275763	87.16381423
230314A00081	3/14/2023	4.16	3/14/2028	3/14/2023	117.8637	113.3971285	109.1288583	105.0489431	101.147996	97.4171538	93.8480447	90.43275763	87.16381423
230314A00028	3/14/2023	4.43	7/14/2027	3/14/2023	115.19646	111.488506	107.9228379	104.493197	101.1936367	98.01850499	94.96242732	92.02029182	89.18723468
230314A00032	3/14/2023	4.45	4/14/2027	3/14/2023	114.06988	110.6366635	107.3270306	104.1358281	101.0581485	98.08931704	95.22487965	92.46059074	89.79240226
230314A00034	3/14/2023	4.45	4/14/2027	3/14/2023	114.06988	110.6366635	107.3270306	104.1358281	101.0581485	98.08931704	95.22487965	92.46059074	89.79240226

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230314A00017	3/14/2023	4.39	1/18/2028	3/14/2023	117.51277	113.2300672	109.1314493	105.2079756	101.4511937	97.85310619	94.40614361	91.10313902	87.93730436
230314A00019	3/14/2023	4.39	1/18/2028	3/14/2023	117.51277	113.2300672	109.1314493	105.2079756	101.4511937	97.85310619	94.40614361	91.10313902	87.93730436
230314A00021	3/14/2023	4.41	10/13/2027	3/14/2023	116.32582	112.3406321	108.5168905	104.8471434	101.3243301	97.9417543	94.6930635	91.57222914	88.57352804
230314A00011	3/14/2023	4.38	3/14/2028	3/14/2023	118.2	113.7431878	109.4837288	105.4117417	101.5179029	97.79340807	94.22994013	90.81963886	87.55507313
230314A00024	3/14/2023	4.41	10/13/2027	3/14/2023	116.32582	112.3406321	108.5168905	104.8471434	101.3243301	97.9417543	94.6930635	91.57222914	88.57352804
230314A00016	3/14/2023	4.38	3/14/2028	3/14/2023	118.2	113.7431878	109.4837288	105.4117417	101.5179029	97.79340807	94.22994013	90.81963886	87.55507313
230314A00030	3/14/2023	4.43	7/14/2027	3/14/2023	115.19646	111.488506	107.9228379	104.493197	101.1936367	98.01850499	94.96242732	92.02029182	89.18723468
221228A00044	12/28/2022	4.31	12/28/2027	12/28/2022	116.91794	112.7063486	108.6739045	104.8120074	101.1125146	97.56771664	94.17031134	90.9133804	87.79036699
230207A00025	2/7/2023	4.62	2/7/2025	2/7/2023	104.24578	103.1201886	102.0190107	100.9414542	99.88676372	98.85421564	97.84311665	96.85280218	95.88263486
230207A00046	2/7/2023	4.83	2/7/2025	2/7/2023	104.30193	103.1786665	102.0797153	101.0042942	99.95165178	98.92106831	97.91185421	96.92334838	95.95491679
230208A00055	2/8/2023	4.22	2/6/2026	2/8/2023	108.28353	106.1327771	104.0360171	101.9915237	99.99763941	98.05277198	96.15539172	94.30402831	92.49726804
230208A00060	2/8/2023	4.06	2/8/2027	2/8/2023	112.41011	109.1800174	106.061319	103.049517	100.1403236	97.32965042	94.61359765	91.98844404	89.4506376
230314A00073	3/14/2023	4.84	3/14/2025	3/14/2023	104.79282	103.5704514	102.3767547	101.210731	100.0714241	98.95792122	97.86935099	96.80488083	95.76371494
230315A00116	3/15/2023	4.36	3/16/2026	3/15/2023	108.78712	106.5280055	104.3275701	102.1838611	100.0950061	98.05921085	96.07475463	94.13998697	92.25332398
230315A00112	3/15/2023	4.5	3/14/2025	3/15/2023	104.37956	103.1598454	101.9687609	100.8053072	99.6685291	98.55751499	97.47139451	96.4093361	95.37054496
230315A00117	3/15/2023	4.17	3/15/2027	3/15/2023	112.76821	109.4416255	106.2323801	103.1356193	100.1467211	97.26128454	94.47511766	91.7842258	89.18480103
230315A00097	3/15/2023	4.08	3/15/2027	3/15/2023	112.47769	109.1558027	105.9511274	102.858817	99.87425365	96.99304027	94.21098864	91.52410774	88.92859309
230315A00133	3/15/2023	3.9	3/15/2028	3/15/2023	116.77159	112.3250088	108.076224	104.0153045	100.1328758	96.42008701	92.86857827	89.47045049	86.21823702
230315A00098	3/15/2023	4.08	3/15/2027	3/15/2023	112.47769	109.1558027	105.9511274	102.858817	99.87425365	96.99304027	94.21098864	91.52410774	88.92859309
230315A00131	3/15/2023	4.13	3/15/2027	3/15/2023	112.63909	109.3145932	106.1073789	103.0125961	100.0256244	97.14206487	94.35772698	91.66861777	89.07093083
230315A00048	3/15/2023	4.61	3/15/2024	3/15/2023	100.66406	100.4508028	100.2384567	100.0270204	99.81648804	99.60685386	99.398112	99.19025671	98.9832823
230315A00049	3/15/2023	4.28	3/14/2025	3/15/2023	104.11216	102.8941591	101.704765	100.5429742	99.40783236	98.29842861	97.21389325	96.1533954	95.11614086
230315A00085	3/15/2023	4.43	9/16/2024	3/15/2023	102.23735	101.5162986	100.8054489	100.1045812	99.41348613	98.73195982	98.05980417	97.39682651	96.7428394
230315A00063	3/15/2023	4.09	3/15/2028	3/15/2023	116.98394	112.5496912	108.3122033	104.2616174	100.3886256	96.68443908	93.14075566	89.7497299	86.50394506
230315A00076	3/15/2023	4.28	3/14/2025	3/15/2023	104.11216	102.8941591	101.704765	100.5429742	99.40783236	98.29842861	97.21389325	96.1533954	95.11614086
230315A00047	3/15/2023	4.66	3/15/2024	3/15/2023	100.67473	100.4614567	100.2490943	100.0376419	99.82709345	99.61744323	99.40868538	99.20081417	98.99382388
230315A00070	3/15/2023	4.77	3/15/2024	3/15/2023	100.69821	100.4848951	100.2724971	100.0610091	99.85042534	99.64073984	99.43194683	99.22404058	99.01701536
230315A00072	3/15/2023	4.61	3/15/2024	3/15/2023	100.66406	100.4508028	100.2384567	100.0270204	99.81648804	99.60685386	99.398112	99.19025671	98.9832823
230315A00074	3/15/2023	4.43	9/16/2024	3/15/2023	102.23735	101.5162986	100.8054489	100.1045812	99.41348613	98.73195982	98.05980417	97.39682651	96.7428394
230315A00030	3/15/2023	4.03	3/15/2028	3/15/2023	116.72957	112.3006671	108.0683487	104.0227653	100.1546157	96.45511764	92.91597499	89.5293482	86.28782613
230315A00128	3/15/2023	4.43	3/14/2025	3/15/2023	104.29448	103.0753088	101.8847622	100.7218376	99.58558014	98.47507842	97.38946229	96.32790042	95.2895982
230315A00079	3/15/2023	4.43	9/16/2024	3/15/2023	102.23735	101.5162986	100.8054489	100.1045812	99.41348613	98.73195982	98.05980417	97.39682651	96.7428394
230208A00036	2/8/2023	4.43	2/6/2026	2/8/2023	108.44557	106.2985111	104.2052479	102.1640616	100.1733032	98.23138894	96.33679688	94.48806419	92.68378421

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230208A00038	2/8/2023	4.27	2/8/2027	2/8/2023	112.63956	109.4159969	106.3033507	103.2971512	100.3931368	97.58724358	94.87559476	92.25449079	89.72040006
230208A00040	2/8/2023	4.26	2/8/2029	2/8/2023	121.57357	116.0945165	110.902468	105.9807758	101.3138525	96.88709388	92.68681134	88.70016973	84.91512939
230208A00041	2/8/2023	4.32	2/8/2030	2/8/2023	125.38514	118.7562441	112.5324548	106.6866987	101.1938575	96.03061439	91.17531596	86.60784461	82.30950172
230208A00039	2/8/2023	4.17	2/8/2028	2/8/2023	116.87357	112.5449668	108.4046543	104.4433863	100.6524222	97.02349799	93.54879725	90.22092452	87.03288001
230208A00029	2/8/2023	4.27	2/8/2027	2/8/2023	112.63956	109.4159969	106.3033507	103.2971512	100.3931368	97.58724358	94.87559476	92.25449079	89.72040006
230209A00028	2/9/2023	4.9	12/9/2024	2/9/2023	103.58521	102.6298583	101.6922097	100.7717714	99.86807178	98.98065622	98.10908658	97.25294026	96.41180964
230209A00049	2/9/2023	4.17	2/9/2028	2/9/2023	116.88583	112.5541721	108.4110403	104.4471683	100.6538002	97.02265798	93.54591227	90.2161555	87.02637665
230315A00007	3/15/2023	4.2	3/16/2026	3/15/2023	108.43112	106.1760364	103.9795461	101.8397015	99.75463278	97.72254772	95.7417279	93.81052491	91.92735684
230315A00013	3/15/2023	4.2	3/16/2026	3/15/2023	108.43112	106.1760364	103.9795461	101.8397015	99.75463278	97.72254772	95.7417279	93.81052491	91.92735684
230315A00023	3/15/2023	4.2	3/16/2026	3/15/2023	108.43112	106.1760364	103.9795461	101.8397015	99.75463278	97.72254772	95.7417279	93.81052491	91.92735684
230315A00024	3/15/2023	4.03	3/15/2028	3/15/2023	116.72957	112.3006671	108.0683487	104.0227653	100.1546157	96.45511765	92.91597499	89.5293482	86.28782613
230315A00045	3/15/2023	4.28	3/14/2025	3/15/2023	104.11216	102.8941591	101.704765	100.5429742	99.40783236	98.29842861	97.21389325	96.1533954	95.11614086
230315A00042	3/15/2023	4.61	3/15/2024	3/15/2023	100.66406	100.4508028	100.2384567	100.0270204	99.81648804	99.60685386	99.398112	99.19025671	98.9832823
230315A00043	3/15/2023	4.43	9/16/2024	3/15/2023	102.23735	101.5162986	100.8054489	100.1045812	99.41348613	98.73195982	98.05980417	97.39682651	96.7428394
230315A00125	3/15/2023	4.11	3/15/2027	3/15/2023	112.57453	109.251077	106.0448783	102.9510845	99.96507612	97.08245503	94.29903165	91.61081376	89.01399574
230315A00130	3/15/2023	4.43	3/14/2025	3/15/2023	104.29448	103.0753088	101.8847622	100.7218376	99.58558014	98.47507842	97.38946229	96.32790042	95.2895982
230315A00068	3/15/2023	4.2	3/16/2026	3/15/2023	108.43112	106.1760364	103.9795461	101.8397015	99.75463278	97.72254772	95.7417279	93.81052491	91.92735684
230315A00014	3/15/2023	4.61	3/15/2024	3/15/2023	100.66406	100.4508028	100.2384567	100.0270204	99.81648804	99.60685386	99.398112	99.19025671	98.9832823
230316A00054	3/16/2023	4.62	3/17/2025	3/16/2023	104.56421	103.3350834	102.1349961	100.9629231	99.8178898	98.69896645	97.6052655	96.53593931	95.49017786
230316A00050	3/16/2023	4.2	3/16/2026	3/16/2023	108.43112	106.1760364	103.9795461	101.8397015	99.75463278	97.72254772	95.7417279	93.81052491	91.92735684
230316A00067	3/16/2023	3.89	3/16/2027	3/16/2023	112.31851	108.98559	105.770623	102.6687131	99.67520171	96.78565385	93.99584554	91.30175226	88.69953809
230316A00072	3/16/2023	4.1	3/16/2027	3/16/2023	112.55491	109.2288378	106.0202049	102.9241466	99.93603316	97.05145643	94.26621769	91.57631613	88.97793809
230316A00021	3/16/2023	4.2	3/16/2026	3/16/2023	108.43112	106.1760364	103.9795461	101.8397015	99.75463278	97.72254772	95.7417279	93.81052491	91.92735684
230316A00055	3/16/2023	4.03	3/16/2028	3/16/2023	116.742	112.309858	108.0745629	104.0262387	100.1555674	96.45375061	92.91247782	89.52389587	86.28058111
221229A00043	12/29/2022	4.96	7/1/2024	12/29/2022	101.82611	101.314982	100.808988	100.3080545	99.81210586	99.32106779	98.83486759	98.35343396	97.87669702
221229A00075	12/29/2022	5.2	12/29/2037	12/29/2022	160.16038	143.6292442	129.1302043	116.3954199	105.1940064	95.32674434	86.62157281	78.92974447	72.1225435
230316A00039	3/16/2023	4.63	3/17/2025	3/16/2023	104.57644	103.3472414	102.1470763	100.9749268	99.82981815	98.71082067	97.61704677	96.54764876	95.5018166
230316A00032	3/16/2023	4.39	3/16/2026	3/16/2023	108.85387	106.5939997	104.3928246	102.248391	100.1588261	98.12233518	96.13719714	94.20176111	92.31444282
230316A00058	3/16/2023	4.1	3/16/2027	3/16/2023	112.55491	109.2288378	106.0202049	102.9241466	99.93603316	97.05145643	94.26621769	91.57631613	88.97793809
230316A00060	3/16/2023	3.89	3/16/2027	3/16/2023	112.31851	108.98559	105.770623	102.6687131	99.67520171	96.78565385	93.99584554	91.30175226	88.69953809
230316A00082	3/16/2023	4.3	3/16/2028	3/16/2023	117.8874	113.4311831	109.1725957	105.1017323	101.2092441	97.4863039	93.92457324	90.51617259	87.2536531
230316A00078	3/16/2023	4.34	3/16/2027	3/16/2023	113.33028	109.9916733	106.770833	103.6628874	100.6631956	97.76733904	94.97110883	92.27049453	89.66167322
230316A00001	3/16/2023	3.81	3/16/2028	3/16/2023	116.40123	111.9594594	107.7154797	103.6593507	99.78169061	96.07364258	92.52684128	89.13338285	85.88579646

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230316A00052	3/16/2023	4.56	9/16/2024	3/16/2023	102.33141	101.6099799	100.8987562	100.1975184	99.50605681	98.82416761	98.15165261	97.48831909	96.83397956
230316A00113	3/16/2023	4.28	3/16/2026	3/16/2023	108.90781	106.6414404	104.4340374	102.2836372	100.1883557	98.14638697	96.15599969	94.21553315	92.32339372
230316A00076	3/16/2023	4.45	3/16/2026	3/16/2023	108.98737	106.7259881	104.5233336	102.3774508	100.2864661	98.24858386	96.26208216	94.32530939	92.43668049
230316A00026	3/16/2023	4.56	9/16/2024	3/16/2023	102.33141	101.6099799	100.8987562	100.1975184	99.50605681	98.82416761	98.15165261	97.48831909	96.83397956
230317A00015	3/17/2023	4.13	3/17/2028	3/17/2023	117.17892	112.73462	108.4877106	104.4282878	100.547005	96.83503713	93.28404884	89.8861636	86.63393589
230317A00016	3/17/2023	4.22	3/17/2027	3/17/2023	112.95558	109.6200952	106.4024065	103.2976362	100.301138	97.40848798	94.61547287	91.91807799	89.3124766
230317A00051	3/17/2023	4.35	3/17/2026	3/17/2023	108.77793	106.5160152	104.3129149	102.1666659	100.0753897	98.03728613	96.05062906	94.11376285	92.22509869
230317A00032	5/18/2023	4.27	5/19/2025	5/18/2023	104.89243	103.4968792	102.1267716	100.7814703	99.46035877	98.16284036	96.88833775	95.636292	94.40616187
230317A00026	3/17/2023	4.22	3/17/2027	3/17/2023	112.95558	109.6200952	106.4024065	103.2976362	100.301138	97.40848798	94.61547287	91.91807799	89.3124766
230317A00025	3/17/2023	4.35	3/17/2026	3/17/2023	108.77793	106.5160152	104.3129149	102.1666659	100.0753897	98.03728613	96.05062906	94.11376285	92.22509869
230317A00027	3/17/2023	4.77	9/17/2024	3/17/2023	102.494	101.7692104	101.0547077	100.3502711	99.65568848	98.97075368	98.29526628	97.62903139	96.97185945
230317A00033	3/17/2023	4.77	9/17/2024	3/17/2023	102.494	101.7692104	101.0547077	100.3502711	99.65568848	98.97075368	98.29526628	97.62903139	96.97185945
230317A00049	3/17/2023	4.1	3/17/2028	3/17/2023	117.05157	112.6099487	108.3656306	104.3087153	100.4298595	96.72024156	93.17152907	89.77584851	86.52575713
230317A00050	3/17/2023	4.1	3/17/2028	3/17/2023	117.05157	112.6099487	108.3656306	104.3087153	100.4298595	96.72024156	93.17152907	89.77584851	86.52575713
230317A00047	3/17/2023	4.1	3/17/2028	3/17/2023	117.05157	112.6099487	108.3656306	104.3087153	100.4298595	96.72024156	93.17152907	89.77584851	86.52575713
230317A00048	3/17/2023	4.1	3/17/2028	3/17/2023	117.05157	112.6099487	108.3656306	104.3087153	100.4298595	96.72024156	93.17152907	89.77584851	86.52575713
230317A00031	5/18/2023	4.3	5/19/2025	5/18/2023	104.93434	103.5384783	102.1680698	100.8224726	99.50107016	98.20326567	96.92848166	95.67615908	94.44575657
230320A00033	3/20/2023	4.35	3/20/2026	3/20/2023	108.8171	106.546039	104.3342054	102.1796139	100.080367	98.03464663	96.04070969	94.0968846	92.20156751
230320A00092	3/20/2023	4.31	3/20/2026	3/20/2023	108.72766	106.457616	104.2467781	102.0931619	99.99487056	97.95008644	95.9570671	94.01414145	92.11970615
230320A00006	3/20/2023	4.25	3/20/2026	3/20/2023	108.5935	106.3249815	104.1156371	101.9634839	99.86662586	97.82324615	95.83160321	93.89002671	91.99691411
221128A00034	11/28/2022	4.27	11/26/2027	11/28/2022	116.34944	112.240212	108.3022319	104.5274461	100.9082248	97.43733516	94.10791834	90.91346824	87.84781149
221129A00032	11/29/2022	5.04	5/22/2024	11/29/2022	101.4443	101.0432561	100.6453954	100.2506775	99.85906517	99.47052182	99.08501137	98.70249832	98.32294771
221129A00038	11/29/2022	4.56	11/26/2025	11/29/2022	107.76112	105.8200395	103.9240137	102.0717221	100.2618947	98.49330693	96.76477749	95.07516655	93.42337408
221129A00039	11/29/2022	4.56	11/26/2025	11/29/2022	107.76112	105.8200395	103.9240137	102.0717221	100.2618947	98.49330693	96.76477749	95.07516655	93.42337408
221129A00046	11/29/2022	4.56	12/1/2025	11/29/2022	107.82554	105.8701956	103.9605259	102.0951873	100.2728842	98.49236772	96.75243315	95.05191857	93.38970281
221129A00054	11/29/2022	4.56	12/3/2025	11/29/2022	107.87151	105.9097804	103.9940052	102.122828	100.2949417	98.50908625	96.76404659	95.05865078	93.39176815
221129A00055	11/29/2022	4.56	12/3/2025	11/29/2022	107.87151	105.9097804	103.9940052	102.122828	100.2949417	98.50908625	96.76404659	95.05865078	93.39176815
221129A00073	11/29/2022	4.39	12/2/2026	11/29/2022	112.14902	109.1231505	106.1962681	103.3645913	100.6245053	97.97255326	95.40542828	92.91996589	90.51313718
221129A00053	11/29/2022	4.56	12/2/2025	11/29/2022	107.85844	105.8996213	103.9866276	102.1181073	100.2927587	98.50932701	96.76660205	95.0634166	93.39864447
221129A00064	11/29/2022	4.28	11/30/2027	11/29/2022	116.43924	112.3170923	108.3671526	104.581303	100.9518527	97.47151212	94.13336952	90.93086954	87.85779293
221129A00067	11/29/2022	4.28	11/29/2027	11/29/2022	116.42645	112.3074174	108.3603458	104.5771383	100.95012	97.47201586	94.13592776	90.93531304	87.86396426
221129A00068	11/29/2022	4.28	11/29/2027	11/29/2022	116.42645	112.3074174	108.3603458	104.5771383	100.95012	97.47201586	94.13592776	90.93531304	87.86396426
221129A00075	11/29/2022	4.38	12/1/2026	11/29/2022	112.10693	109.0844976	106.1608588	103.3322395	100.5950355	97.94579952	95.38123384	92.89818258	90.49362495

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
221129A00076	11/29/2022	4.38	12/1/2026	11/29/2022	112.10693	109.0844976	106.1608588	103.3322395	100.5950355	97.94579952	95.38123384	92.89818258	90.49362495
221129A00078	11/29/2022	4.38	12/1/2026	11/29/2022	112.10693	109.0844976	106.1608588	103.3322395	100.5950355	97.94579952	95.38123384	92.89818258	90.49362495
221129A00048	11/29/2022	4.56	12/1/2025	11/29/2022	107.82554	105.8701956	103.9605259	102.0951873	100.2728842	98.49236772	96.75243315	95.05191857	93.38970281
221129A00049	11/29/2022	4.56	12/1/2025	11/29/2022	107.82554	105.8701956	103.9605259	102.0951873	100.2728842	98.49236772	96.75243315	95.05191857	93.38970281
221129A00070	11/29/2022	4.28	11/26/2027	11/29/2022	116.38879	112.2787936	108.3400678	104.5645589	100.9446364	97.47306653	94.14298971	90.94789906	87.88162047
221129A00072	11/29/2022	4.39	12/2/2026	11/29/2022	112.14902	109.1231505	106.1962681	103.3645913	100.6245053	97.97255326	95.40542828	92.91996589	90.51313718
221129A00084	11/29/2022	4.38	11/30/2026	11/29/2022	112.09427	109.0748489	106.1540291	103.3280535	100.5933278	97.94641411	95.38402344	92.90300823	90.50035553
221129A00086	11/29/2022	4.38	11/30/2026	11/29/2022	112.09427	109.0748489	106.1540291	103.3280535	100.5933278	97.94641411	95.38402344	92.90300823	90.50035553
221129A00040	11/29/2022	4.56	11/26/2025	11/29/2022	107.76112	105.8200395	103.9240137	102.0717221	100.2618947	98.49330693	96.76477749	95.07516655	93.42337408
221129A00041	11/29/2022	4.56	11/28/2025	11/29/2022	107.78668	105.8399709	103.9385566	102.0811088	100.2663477	98.49303923	96.75999315	95.06606115	93.41013503
221129A00042	11/29/2022	4.56	11/28/2025	11/29/2022	107.78668	105.8399709	103.9385566	102.0811088	100.2663477	98.49303923	96.75999315	95.06606115	93.41013503
221129A00059	11/29/2022	4.39	11/27/2026	11/29/2022	112.08615	109.0751203	106.1621667	103.3435601	100.6157344	97.975278	95.41892683	92.94355672	90.54617678
221129A00060	11/29/2022	4.39	11/27/2026	11/29/2022	112.08615	109.0751203	106.1621667	103.3435601	100.6157344	97.975278	95.41892683	92.94355672	90.54617678
221129A00061	11/29/2022	4.39	11/27/2026	11/29/2022	112.08615	109.0751203	106.1621667	103.3435601	100.6157344	97.975278	95.41892683	92.94355672	90.54617678
221129A00071	11/29/2022	4.28	11/26/2027	11/29/2022	116.38879	112.2787936	108.3400678	104.5645589	100.9446364	97.47306653	94.14298971	90.94789906	87.88162047
221129A00037	11/29/2022	4.56	11/26/2025	11/29/2022	107.76112	105.8200395	103.9240137	102.0717221	100.2618947	98.49330693	96.76477749	95.07516655	93.42337408
230404A00040	4/4/2023	4.28	4/4/2025	4/4/2023	104.36651	103.0910877	101.8448591	100.6268189	99.43601008	98.27151874	97.13247189	96.01803494	94.9274097
230404A00019	4/4/2023	4.45	4/4/2025	4/4/2023	104.58295	103.3060766	102.0584213	100.838978	99.64678932	98.48094069	97.34055847	96.22480751	95.13288903
230405A00028	4/5/2023	3.78	4/5/2028	4/5/2023	115.91016	111.4376446	107.1662753	103.0858695	99.1868216	95.46006494	91.89703831	88.48965462	85.2302718
230405A00049	4/5/2023	3.81	4/5/2028	4/5/2023	116.03909	111.5638284	107.2898054	103.2068325	99.30530061	95.57613974	92.01078545	88.60114758	85.33958111
230405A00022	4/5/2023	3.8	4/5/2028	4/5/2023	115.99611	111.5217671	107.2486287	103.1665115	99.26580761	95.53744814	91.97286974	88.56398326	85.30314468
230405A00012	4/5/2023	3.8	4/5/2028	4/5/2023	115.99611	111.5217671	107.2486287	103.1665115	99.26580761	95.53744814	91.97286974	88.56398326	85.30314468
230405A00010	4/5/2023	3.96	4/6/2026	4/5/2023	108.14283	105.8317608	103.5820365	101.3916089	99.25851069	97.18085556	95.1568342	93.18471043	91.2628176
230405A00008	4/5/2023	4.01	10/6/2025	4/5/2023	106.12099	104.3347337	102.5873486	100.8776644	99.20456108	97.56696246	95.96383433	94.39418223	92.85704948
230405A00044	4/5/2023	3.8	4/5/2028	4/5/2023	115.99611	111.5217671	107.2486287	103.1665115	99.26580761	95.53744814	91.97286974	88.56398326	85.30314468
230406A00042	4/6/2023	3.99	4/7/2025	4/6/2023	104.23803	102.9528989	101.6963856	100.4675296	99.26541644	98.08917199	96.93796022	95.81098113	94.70746882
230406A00105	4/6/2023	3.84	4/6/2028	4/6/2023	116.17907	111.698056	107.4186141	103.3305419	99.42421337	95.69054222	92.12094851	88.70732723	85.44201917
230406A00023	4/6/2023	3.84	4/6/2028	4/6/2023	116.17907	111.698056	107.4186141	103.3305419	99.42421337	95.69054222	92.12094851	88.70732723	85.44201917
230406A00026	4/6/2023	3.92	4/6/2027	4/6/2023	112.22332	108.8426134	105.5831705	102.4399228	99.40804722	96.48295201	93.66026405	90.93581691	88.30563959
230406A00038	4/6/2023	4.24	4/7/2025	4/6/2023	104.35246	103.0697626	101.8155672	100.5889242	99.388924	98.21469715	97.06541195	95.94027248	94.8385167
230406A00029	4/6/2023	3.84	4/6/2028	4/6/2023	116.17907	111.698056	107.4186141	103.3305419	99.42421337	95.69054222	92.12094851	88.70732723	85.44201917
230406A00017	4/6/2023	3.99	4/7/2025	4/6/2023	104.23803	102.9528989	101.6963856	100.4675296	99.26541644	98.08917199	96.93796022	95.81098113	94.70746882
230406A00050	4/6/2023	3.67	4/6/2027	4/6/2023	111.85036	108.4648169	105.2010108	102.0538454	99.01846956	96.09026507	93.26483414	90.53798717	87.90573148

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230410A00011	4/10/2023	4.08	4/9/2027	4/10/2023	112.78528	109.3870785	106.1109489	102.9517941	99.90476131	96.96522988	94.12879823	91.39127212	88.74865347
230410A00012	4/10/2023	3.98	4/10/2028	4/10/2023	116.82689	112.3209462	108.0179842	103.9077327	99.98049516	96.22711794	92.63895647	89.20784395	85.9260622
230411A00018	4/11/2023	4.96	4/11/2024	4/11/2023	101.00146	100.7135341	100.4272629	100.1426326	99.85962888	99.57823787	99.29844565	99.02023851	98.74360292
230411A00045	4/11/2023	4.66	10/11/2024	4/11/2023	102.68328	101.8924734	101.1138838	100.3472321	99.59224476	98.84865648	98.11621001	97.3946558	96.68375172
230412A00001	4/12/2023	4.62	10/11/2024	4/12/2023	102.65159	101.8609183	101.0824651	100.3159483	99.56109448	98.81763827	98.08532248	97.36389757	96.65312143
230412A00002	4/12/2023	4.42	4/11/2025	4/12/2023	104.63427	103.3398299	102.0730115	100.8329336	99.6187497	98.42964898	97.26485463	96.12362207	95.00523725
230210A00040	2/10/2023	4.29	8/10/2027	2/10/2023	115.0483	111.2663716	107.631959	104.1384683	100.7796358	97.5495138	94.44245262	91.45308355	88.57630326
230210A00043	2/10/2023	4.34	2/10/2027	2/10/2023	112.8846	109.6514909	106.529747	103.5148769	100.6025962	97.78881961	95.06965021	92.44136956	89.90042824
230210A00045	2/10/2023	4.43	8/10/2026	2/10/2023	110.81965	108.1275416	105.5156912	102.9812007	100.5213001	98.13333761	95.814774	93.56317691	91.37621557
230214A00042	2/14/2023	4.96	2/14/2025	2/14/2023	104.54649	103.4025274	102.2837364	101.1892942	100.1184104	99.07032844	98.04432404	97.03970327	96.05580105
230214A00031	2/14/2023	4.31	2/14/2028	2/14/2023	117.52901	113.1701053	109.0012709	105.0131437	101.1968771	97.54410846	94.04692966	90.69785978	87.48981942
230214A00049	2/14/2023	4.38	2/14/2029	2/14/2023	122.25881	116.7448717	111.5203134	106.5683144	101.873125	97.4199914	93.19508736	89.18545075	85.37892475
230214A00050	2/14/2023	4.31	2/14/2028	2/14/2023	117.52901	113.1701053	109.0012709	105.0131437	101.1968771	97.54410846	94.04692966	90.69785978	87.48981942
230215A00035	2/15/2023	4.47	2/17/2026	2/15/2023	108.9624	106.7731664	104.6394229	102.5593717	100.5312895	98.5535225	96.62448257	94.74264415	92.90654123
230215A00045	2/15/2023	4.37	2/15/2028	2/15/2023	117.7912	113.4240874	109.2474382	105.2518714	101.4285189	97.76899773	94.26538091	90.91016984	87.69626858
230215A00008	2/15/2023	4.49	2/16/2027	2/15/2023	113.43516	110.1762446	107.0299859	103.9918156	101.0573832	98.22254079	95.48333319	92.83598699	90.27690118
230216A00045	2/16/2023	4.43	5/16/2028	2/16/2023	119.22639	114.5667104	110.1206769	105.8773552	101.8264233	97.95813775	94.26329818	90.73321451	87.3596759
230216A00046	2/16/2023	4.42	4/17/2028	2/16/2023	118.81256	114.2445564	109.8826342	105.716363	101.735898	97.93194367	94.29571963	90.81892938	87.49373093
230217A00052	2/17/2023	4.55	2/17/2027	2/17/2023	113.63787	110.3728932	107.2208335	104.1771096	101.2373582	98.39741971	95.65332768	93.00129819	90.43772035
230217A00036	2/17/2023	4.44	2/17/2028	2/17/2023	118.10836	113.7290716	109.540917	105.534465	101.7008091	98.03153105	94.5186707	91.15469859	87.93249002
230221A00004	2/21/2023	4.47	2/18/2028	2/21/2023	118.24638	113.8614357	109.6679343	105.6564329	101.8180065	98.14421951	94.62709572	91.25909068	88.03306565
230321A00025	3/21/2023	4.57	3/21/2025	3/21/2023	104.55419	103.3141758	102.1037128	100.9217509	99.7672901	98.63937693	97.5371015	96.45959515	95.40602812
230321A00052	3/21/2023	4.62	3/21/2025	3/21/2023	104.61592	103.3755088	102.1646501	100.9822989	99.82745513	98.69916518	97.59651896	96.51864765	95.46472134
230321A00053	3/21/2023	4.27	3/21/2028	3/21/2023	117.82557	113.3557318	109.0847209	105.0025387	101.0997538	97.3674625	93.79725602	90.38118964	87.11175426
230321A00029	3/21/2023	4.57	3/21/2025	3/21/2023	104.55419	103.3141758	102.1037128	100.9217509	99.7672901	98.63937693	97.5371015	96.45959515	95.40602812
230321A00074	3/21/2023	4.23	3/21/2028	3/21/2023	117.65532	113.1890787	108.9215403	104.842718	100.9431851	97.21404209	93.64688448	90.23377147	86.96719773
230321A00002	3/21/2023	4.33	3/19/2027	3/21/2023	113.33785	109.990289	106.7610741	103.645293	100.6382723	97.73556258	94.93292656	92.22632704	89.61191606
230321A00001	3/21/2023	4.48	3/23/2026	3/21/2023	109.14802	106.8644879	104.6406636	102.4745406	100.3642003	98.30780462	96.30359171	94.34987221	92.44502548
230321A00009	3/21/2023	4.27	3/21/2028	3/21/2023	117.82557	113.3557318	109.0847209	105.0025387	101.0997538	97.3674625	93.79725602	90.38118964	87.11175426
230321A00020	3/21/2023	4.73	11/18/2024	3/21/2023	103.17553	102.2792925	101.3986864	100.5333029	99.68274912	98.84664545	98.02462517	97.21633391	96.4214291
230322A00015	3/22/2023	4.24	3/22/2028	3/22/2023	117.71089	113.2404906	108.9690856	104.8866629	100.9837771	97.25151207	93.68144725	90.26562726	86.99653318
230322A00004	3/22/2023	4.3	3/22/2028	3/22/2023	117.96642	113.4906294	109.2140093	105.1265404	101.2187708	97.48177756	93.90713402	90.4868788	87.21348732
230322A00007	3/22/2023	4.54	3/21/2031	3/22/2023	130.6453	122.6790948	115.2746348	108.3889282	101.9825062	96.01911502	90.46543739	85.29083902	80.46713882

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230322A00009	3/22/2023	4.59	3/22/2032	3/22/2023	134.76097	125.5887273	117.1395757	109.3519666	102.1699222	95.54250299	89.42332839	83.77014546	78.5444406
230322A00005	3/22/2023	4.42	3/22/2029	3/22/2023	122.87201	117.2352439	111.8991355	106.8459192	102.0589814	97.52277758	93.2227577	89.1452964	85.2776292
230322A00006	3/22/2023	4.53	3/22/2030	3/22/2023	127.08767	120.2828351	113.8999843	107.9104877	102.2878117	97.00735712	92.04630762	87.38349082	82.99925098
230322A00020	3/22/2023	4.2	3/22/2029	3/22/2023	122.4689	116.8180728	111.4695299	106.405371	101.6088574	97.06432999	92.75713334	88.67354526	84.80071224
230118A00039	1/18/2023	3.81	1/18/2028	1/18/2023	115.14537	110.910624	106.8584406	102.9799453	99.26674315	95.71089185	92.30487427	89.04157344	85.91424896
230118A00023	1/18/2023	3.8	1/18/2028	1/18/2023	115.10455	110.8706336	106.8192508	102.941531	99.2290802	95.67395712	92.26864549	89.00602921	85.87936869
230118A00034	1/18/2023	3.89	1/18/2028	1/18/2023	115.47191	111.2305472	107.1719591	103.2872598	99.56804667	96.00636969	92.59470452	89.32592731	86.19329108
230118A00033	1/18/2023	3.81	1/18/2028	1/18/2023	115.14537	110.910624	106.8584406	102.9799453	99.26674315	95.71089185	92.30487427	89.04157344	85.91424896
230118A00087	1/18/2023	4.02	1/16/2026	1/18/2023	107.33178	105.2544507	103.2282845	101.2516853	99.32311844	97.44110801	95.60423425	93.81113092	92.06048285
230119A00034	1/19/2023	3.82	1/19/2028	1/19/2023	115.1976	110.9590149	106.903239	103.0213837	99.3050389	95.74624795	92.3374805	89.07160725	85.94187633
230119A00108	1/19/2023	3.81	1/19/2028	1/19/2023	115.15676	110.9189979	106.8640236	102.9829448	99.26735239	95.70929057	92.30122994	89.03604207	85.90697593
230119A00105	1/19/2023	3.9	1/19/2027	1/19/2023	111.25049	108.1044996	105.065494	102.1292152	99.29160576	96.54879323	93.89708051	91.33293683	88.85298921
230223A00033	2/23/2023	4.5	2/23/2028	2/23/2023	118.43726	114.0342886	109.8240259	105.7969351	101.9440108	98.2567429	94.72708599	91.34743145	88.11058095
230322A00029	3/22/2023	4.67	3/21/2025	3/22/2023	104.67766	103.4368418	102.2255873	101.0428468	99.88762017	98.75895343	97.65593642	96.57770015	95.52341455
230322A00030	3/22/2023	4.86	9/23/2024	3/22/2023	102.62475	101.8831873	101.1523706	100.4320704	99.72206047	99.02212117	98.33203897	97.65160635	96.9806216
230323A00030	3/23/2023	4.72	3/23/2037	3/23/2023	151.44009	136.2502529	122.8536854	111.0239893	100.5646867	91.3051128	83.09689332	75.8109184	69.33474224
230323A00029	3/23/2023	4.39	3/24/2031	3/23/2023	129.58567	121.6480188	114.2714105	107.4128324	101.0328028	95.09506095	89.56628721	84.41584933	79.61557165
230323A00065	3/23/2023	3.85	3/23/2028	3/23/2023	116.65796	112.1898678	107.9214849	103.8427328	99.94410422	96.21662582	92.6518246	89.24169689	85.97867936
230323A00054	3/23/2023	3.95	3/23/2028	3/23/2023	116.48802	112.0404648	107.7913002	103.730537	99.848746	96.13702678	92.58697433	89.19064841	85.94054492
230323A00056	3/23/2023	4	3/23/2027	3/23/2023	112.3185	108.9757535	105.7516764	102.6413249	99.63999656	96.74321518	93.94671871	91.24644714	88.63853153
230323A00058	3/23/2023	3.96	9/23/2027	3/23/2023	114.36981	110.4782267	106.7426662	103.15595	99.71127869	96.40220623	93.2226197	90.1667196	87.22900164
230323A00081	3/23/2023	3.85	3/23/2028	3/23/2023	116.65796	112.1898678	107.9214849	103.8427328	99.94410422	96.21662582	92.6518246	89.24169689	85.97867936
230323A00034	3/23/2023	4.23	3/23/2026	3/23/2023	108.58695	106.309825	104.0922683	101.9322841	99.82795766	97.77745453	95.77901636	93.83095709	91.9316593
230323A00051	3/23/2023	3.85	3/23/2028	3/23/2023	116.65796	112.1898678	107.9214849	103.8427328	99.94410422	96.21662582	92.6518246	89.24169689	85.97867936
230323A00048	3/23/2023	4.07	3/23/2028	3/23/2023	116.99942	112.5410611	108.281453	104.210585	100.3190144	96.59782753	93.0386068	89.63340008	86.3746919
230323A00064	3/23/2023	4.25	3/21/2025	3/23/2023	104.15908	102.9216446	101.7137145	100.5342439	99.38223389	98.25673212	97.15682976	96.08165917	95.03039155
230324A00029	3/24/2023	4.01	3/24/2025	3/24/2023	104.09599	102.847697	101.629417	100.4400761	99.27865089	98.14416581	97.03569028	95.95233615	94.89325536
230324A00031	3/24/2023	4.01	3/24/2025	3/24/2023	104.09599	102.847697	101.629417	100.4400761	99.27865089	98.14416581	97.03569028	95.95233615	94.89325536
230324A00009	3/24/2023	4.19	3/24/2025	3/24/2023	104.12024	102.8748643	101.6593756	100.4727087	99.31384594	98.18181698	97.07569627	95.99460039	94.93768574
230324A00023	3/24/2023	3.69	3/24/2028	3/24/2023	115.98611	111.529257	107.2718947	103.2039463	99.31590601	95.5988019	92.04416304	88.64398808	85.39071626
230324A00006	3/24/2023	4.06	3/24/2026	3/24/2023	108.21769	105.9418817	103.7256938	101.5671216	99.46424648	97.41523028	95.41831142	93.47180077	91.57407805
230324A00032	3/24/2023	3.93	3/24/2028	3/24/2023	116.41494	111.9659579	107.7155696	103.6537629	99.77109371	96.05864791	92.50800787	89.11122171	85.86077462
230327A00045	3/27/2023	4.42	3/27/2025	3/27/2023	104.44326	103.1875608	101.9621742	100.7660119	99.59803594	98.45725702	97.34273175	96.25355993	95.18888212

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230327A00046	3/27/2023	4.22	3/27/2026	3/27/2023	108.6153	106.3262715	104.0973569	101.9265339	99.81186242	97.75148382	95.74361719	93.78655513	91.87866009
230327A00047	3/27/2023	4.08	3/27/2028	3/27/2023	117.09228	112.6200736	108.3476738	104.2649931	100.3625185	96.63127136	93.06277401	89.64901865	86.38243824
230412A00033	4/12/2023	4.04	4/12/2027	4/12/2023	112.68885	109.2839888	106.001725	102.8369363	99.78474993	96.84052538	93.99984144	91.2584845	88.61243748
230412A00028	4/12/2023	3.69	4/12/2028	4/12/2023	116.20044	111.6850266	107.3738724	103.2566079	99.32345149	95.56516981	91.97304363	88.53883632	85.25476435
230412A00006	4/12/2023	4.04	4/12/2027	4/12/2023	112.68885	109.2839888	106.001725	102.8369363	99.78474993	96.84052538	93.99984144	91.2584845	88.61243748
230412A00007	4/12/2023	3.95	4/12/2028	4/12/2023	116.72027	112.2110361	107.9051925	103.7924399	99.86305874	96.10787272	92.5182157	89.0859002	85.80318824
230412A00005	4/12/2023	4.16	4/10/2026	4/12/2023	108.64656	106.3187904	104.0530308	101.8472189	99.69937487	97.60759926	95.57006924	93.58503471	91.65081488
230413A00082	4/13/2023	4.01	4/13/2027	4/13/2023	112.60142	109.1952623	105.9118463	102.7460486	99.69299059	96.74802585	93.90672737	91.16487581	88.5184484
230328A00010	3/28/2023	4.68	9/30/2024	3/28/2023	102.57933	101.8188062	101.0695826	100.3314084	99.60404026	98.88724196	98.18078413	97.48444396	96.79800503
230328A00011	3/28/2023	4.53	3/28/2025	3/28/2023	104.59357	103.3341472	102.10518	100.9055763	99.73429114	98.59032889	97.47274001	96.38061854	95.31309964
230328A00020	3/28/2023	3.98	3/28/2028	3/28/2023	117.27716	112.7810047	108.4862322	104.3826592	100.4606763	96.71121491	93.12571382	89.69608732	86.41469577
230328A00019	3/28/2023	4.12	3/27/2026	3/28/2023	108.69244	106.3965082	104.1609782	101.9838146	99.86306472	97.79685867	95.78340455	93.82098461	91.90795148
230328A00024	3/28/2023	4.2	3/28/2028	3/28/2023	117.61789	113.1315867	108.8456981	104.7501087	100.835274	97.09218613	93.51233995	90.08770191	86.81068079
230328A00026	3/28/2023	4.34	3/28/2029	3/28/2023	122.517	116.8714074	111.5279396	106.4686886	101.6769123	97.13694948	92.83414379	88.75477324	84.88598542
230328A00098	3/28/2023	4.24	3/29/2027	3/28/2023	113.17676	109.80244	106.5483038	103.4093295	100.3807364	97.4579748	94.63671387	91.91282896	89.28239045
230328A00111	3/28/2023	4.36	3/27/2026	3/28/2023	108.93104	106.6383903	104.4059328	102.23164	100.1135694	98.04986048	96.03873034	94.07846967	92.16743909
230328A00100	3/28/2023	4.19	3/28/2028	3/28/2023	117.57514	113.0897376	108.8047248	104.7099826	100.7959678	97.05367365	93.47459601	90.05070233	86.77440239
230328A00122	3/28/2023	4.58	3/28/2025	3/28/2023	104.65627	103.39643	102.1670554	100.9670511	99.795372	98.6510222	97.53305201	96.44055532	95.37266712
230329A00020	3/29/2023	4.23	3/29/2028	3/29/2023	117.75913	113.2668585	108.975348	104.8744611	100.9546324	97.20683478	93.62254497	90.19371268	86.9127311
230329A00055	3/29/2023	4.59	3/28/2025	3/29/2023	104.66881	103.4088865	102.1794305	100.9793461	99.80758817	98.66316087	97.54511441	96.45254268	95.38458062
230329A00043	3/29/2023	4.36	3/27/2026	3/29/2023	108.93104	106.6383903	104.4059328	102.23164	100.1135694	98.04986048	96.03873034	94.07846967	92.16743909
230330A00011	3/30/2023	4.21	3/30/2028	3/30/2023	117.68565	113.1921337	108.8995701	104.7978069	100.8772677	97.12891469	93.54421456	90.11510722	86.83397652
230413A00018	4/13/2023	3.96	4/13/2027	4/13/2023	112.43602	109.0325992	105.751846	102.5886399	99.53810508	96.59559729	93.75669184	91.01717156	88.37301576
230413A00020	4/13/2023	3.88	4/13/2028	4/13/2023	116.42925	111.9234577	107.6210926	103.5118478	99.58599832	95.83436315	92.24827128	88.81953057	85.54039861
230413A00021	4/13/2023	4.07	4/13/2026	4/13/2023	108.47475	106.1408505	103.8693247	101.6581062	99.50520937	97.40872864	95.36683434	93.37776924	91.43984505
230413A00017	4/13/2023	3.88	4/13/2028	4/13/2023	116.42925	111.9234577	107.6210926	103.5118478	99.58599832	95.83436315	92.24827128	88.81953057	85.54039861
230413A00045	4/13/2023	4.33	4/11/2025	4/13/2023	104.51796	103.2243036	101.9582629	100.7189498	99.50551798	98.31715704	97.15309052	96.01257413	94.89489413
230413A00031	4/13/2023	4.07	4/13/2026	4/13/2023	108.47475	106.1408505	103.8693247	101.6581062	99.50520937	97.40872864	95.36683434	93.37776924	91.43984505
230413A00030	4/13/2023	4.33	4/14/2025	4/13/2023	104.55558	103.2542975	101.9799484	100.7317008	99.50875637	98.31034976	97.1357466	95.984242	94.85515909
230414A00009	4/14/2023	5.04	4/12/2024	4/14/2023	101.03464	100.7439108	100.4548674	100.1674965	99.88178341	99.59771367	99.31527305	99.03444745	98.75522294
230417A00034	4/17/2023	4.63	4/17/2025	4/17/2023	104.98588	103.6742611	102.3889491	101.1291586	99.89413843	98.68316752	97.49555281	96.33062812	95.18775278
230417A00042	4/17/2023	4.58	4/17/2025	4/17/2023	104.92043	103.6092662	102.324397	101.0650417	99.83044963	98.6198998	97.43269935	96.26818227	95.12570808
230417A00045	4/17/2023	4.21	4/16/2027	4/17/2023	113.29987	109.8738906	106.5715315	103.3876345	100.3172891	97.3558173	94.49876147	91.74187224	89.08109768

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230417A00046	4/17/2023	4.13	4/17/2028	4/17/2023	117.55662	113.0155488	108.679666	104.5385783	100.5824762	96.80209768	93.18869432	89.73400001	86.43020172
230417A00044	4/17/2023	4.32	4/17/2026	4/17/2023	109.0992	106.7471277	104.4581304	102.2301259	100.0611148	97.94917723	95.89246874	93.88921709	91.93771871
230417A00036	4/17/2023	4.63	4/17/2025	4/17/2023	104.98588	103.6742611	102.3889491	101.1291586	99.89413843	98.68316752	97.49555281	96.33062812	95.18775278
230417A00037	4/17/2023	4.39	4/16/2026	4/17/2023	109.24869	106.8975814	104.6094483	102.3822096	100.2138671	98.10250251	96.04627308	94.04340843	92.09220697
230417A00023	4/17/2023	3.86	4/7/2028	4/17/2023	116.87878	112.3628519	108.0504469	103.9312526	99.99553473	96.23410562	92.63829005	89.1998936	85.91117312
230419A00030	4/19/2023	4.39	4/20/2026	4/19/2023	109.29839	106.9358237	104.6367902	102.3992015	100.2210494	98.10040494	96.03541431	94.02429548	92.06533492
230419A00016	4/19/2023	4.41	4/18/2025	4/19/2023	104.92218	103.6052385	102.3144819	101.0491416	99.80847902	98.59178403	97.39837417	96.22759308	95.07880924
230419A00072	4/19/2023	4.53	10/20/2025	4/19/2023	107.23037	105.3948731	103.6000206	101.8446402	100.1276015	98.44781483	96.80423004	95.19583417	93.62165011
230419A00035	4/19/2023	4.16	4/19/2028	4/19/2023	117.71043	113.1604742	108.8163019	104.6674853	100.704184	96.91710633	93.29747526	89.83699748	86.52783396
230419A00005	4/19/2023	5.1	4/19/2024	4/19/2023	101.1242	100.8141153	100.5059452	100.1996712	99.89527559	99.59274105	99.29205049	98.99318697	98.69613381
230419A00024	4/19/2023	4.66	4/18/2025	4/19/2023	105.03859	103.7241512	102.4357934	101.1727539	99.93429775	98.7197189	97.52833845	96.35950343	95.21258555
230420A00067	4/20/2023	4.57	4/21/2025	4/20/2023	104.96015	103.6388638	102.3429762	101.0717716	99.82456451	98.60069508	97.39952769	96.22044996	95.06287167
230420A00071	4/20/2023	4.31	4/20/2026	4/20/2023	109.11269	106.7523047	104.455413	102.2199211	100.0438223	97.9251889	95.86216826	93.85297956	91.89591039
230420A00003	4/20/2023	4.06	4/20/2026	4/20/2023	108.84406	106.4805559	104.1807612	101.9425754	99.76398139	97.64304158	95.57789405	93.56674912	91.60788603
230420A00024	4/20/2023	4.31	4/20/2026	4/20/2023	109.11269	106.7523047	104.455413	102.2199211	100.0438223	97.9251889	95.86216826	93.85297956	91.89591039
230421A00023	4/21/2023	4.04	4/21/2028	4/21/2023	117.21328	112.6684331	108.3294939	104.1860265	100.2281778	96.44664362	92.83263514	89.37784756	86.07443086
230421A00025	4/21/2023	4.04	4/21/2028	4/21/2023	117.21328	112.6684331	108.3294939	104.1860265	100.2281778	96.44664362	92.83263514	89.37784756	86.07443086
230421A00036	4/21/2023	4.48	4/21/2025	4/21/2023	104.84136	103.5208967	102.2258186	100.9554101	99.70898588	98.48588647	97.28547662	96.10714427	94.95029951
230421A00015	4/21/2023	4.54	4/21/2025	4/21/2023	104.92055	103.5995414	102.3039237	101.0329844	99.7860383	98.56242554	97.36151066	96.1826814	95.02534762
230421A00003	4/21/2023	4.72	10/21/2024	4/21/2023	102.84894	102.0301949	101.2245262	100.4316235	99.6511846	98.88291685	98.1265366	97.38176901	96.64834765
230421A00041	4/21/2023	4.22	4/21/2027	4/21/2023	113.39459	109.9532645	106.6365495	103.4392467	100.3564076	97.38331718	94.51548068	91.74861261	89.07862557
230421A00043	4/21/2023	4.1	4/21/2028	4/21/2023	117.4738	112.9233471	108.5789939	104.4302907	100.4673772	96.68094222	93.06219021	89.60281005	86.29494568
230421A00044	4/21/2023	4.13	10/21/2027	4/21/2023	115.35833	111.3686263	107.5415885	103.8697064	100.3458556	96.96327765	93.71555915	90.59661239	87.60065683
230421A00020	4/21/2023	4.23	4/21/2026	4/21/2023	108.93896	106.577916	104.2804513	102.0444791	99.86799163	97.74905973	95.68582921	93.67651748	91.71941026
230421A00064	4/21/2023	4.1	4/21/2028	4/21/2023	117.4738	112.9233471	108.5789939	104.4302907	100.4673772	96.68094222	93.06219021	89.60281005	86.29494568
230421A00006	4/21/2023	4.04	4/21/2028	4/21/2023	117.21328	112.6684331	108.3294939	104.1860265	100.2281778	96.44664362	92.83263514	89.37784756	86.07443086
230119A00137	1/19/2023	3.9	1/19/2027	1/19/2023	111.25049	108.1044996	105.065494	102.1292152	99.29160576	96.54879323	93.89708051	91.33293683	88.85298921
230119A00075	1/19/2023	4.44	1/21/2025	1/19/2023	103.65315	102.5802189	101.5295772	100.5005377	99.49243817	98.50464298	97.53654215	96.58754992	95.65710356
230120A00027	1/20/2023	4.13	1/20/2026	1/20/2023	107.60599	105.5148935	103.4754571	101.4860608	99.54514874	97.65122498	95.80285082	93.99864206	92.23726656
230120A00063	1/20/2023	4.83	7/22/2024	1/20/2023	101.94091	101.3727117	100.8108581	100.2552474	99.7057757	99.16234161	98.6248458	98.09319116	97.56728268
230120A00065	1/20/2023	4.52	1/21/2025	1/20/2023	103.73896	102.6655365	101.6144106	100.584894	99.576324	98.58806507	97.61950698	96.67006382	95.73917272
230120A00079	1/20/2023	3.68	1/20/2028	1/20/2023	115.20434	110.947089	106.8739535	102.9759529	99.24459833	95.67185971	92.25013815	88.97224043	85.83135504
230120A00021	1/20/2023	4.13	1/20/2026	1/20/2023	107.60599	105.5148935	103.4754571	101.4860608	99.54514874	97.65122498	95.80285082	93.99864206	92.23726656

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230120A00022	1/20/2023	3.9	1/20/2028	1/20/2023	115.536	111.2877636	107.2227745	103.3321152	99.60735329	96.04051113	92.62403879	89.35078862	86.21399147
230120A00071	1/20/2023	4.31	1/21/2025	1/20/2023	103.68453	102.6089135	101.5556858	100.524151	99.513643	98.52352262	97.55317641	96.60201533	95.66947356
230120A00103	1/20/2023	3.92	1/20/2026	1/20/2023	107.44633	105.3516717	103.3088634	101.3162762	99.37234593	97.47556885	95.62449888	93.81774485	92.05396793
230120A00029	1/20/2023	3.9	1/20/2028	1/20/2023	115.536	111.2877636	107.2227745	103.3321152	99.60735329	96.04051113	92.62403879	89.35078862	86.21399147
230120A00114	1/20/2023	4.13	1/20/2026	1/20/2023	107.60599	105.5148935	103.4754571	101.4860608	99.54514874	97.65122498	95.80285082	93.99864206	92.23726656
230120A00117	1/20/2023	3.9	1/20/2028	1/20/2023	115.536	111.2877636	107.2227745	103.3321152	99.60735329	96.04051113	92.62403879	89.35078862	86.21399147
230123A00078	1/23/2023	4.41	6/23/2025	1/23/2023	105.49753	104.0033333	102.5380804	101.1010004	99.69135093	98.3084155	96.95150197	95.61994166	94.31308834
230123A00051	1/23/2023	3.75	1/21/2028	1/23/2023	115.50285	111.2367279	107.1551314	103.2490569	99.50999416	95.92989278	92.50113503	89.21651	86.06918958
230124A00041	1/24/2023	4.6	1/24/2025	1/24/2023	103.86275	102.7804244	101.7207476	100.683011	99.66653725	98.67067664	97.69480566	96.73832577	95.80066215
230124A00015	1/24/2023	4.09	1/25/2027	1/24/2023	111.90614	108.7335081	105.6690946	102.7085803	99.84784586	97.08296096	94.41017396	91.82590281	89.32672626
230124A00022	1/24/2023	4.39	1/24/2025	1/24/2023	103.808	102.7234671	101.6616661	100.6218904	99.60345883	98.60571818	97.6280416	96.66982737	95.73049763
230124A00045	1/24/2023	3.99	1/24/2028	1/24/2023	115.95139	111.6835647	107.6001153	103.6920573	99.95089181	96.36857903	92.93751122	89.6504868	86.5006864
230124A00056	3/28/2023	4.19	3/28/2033	3/28/2023	134.79385	124.5635233	115.2283802	106.7043239	98.91560657	91.79396206	85.27782904	79.31165891	73.84529848
230124A00055	6/15/2023	4.13	6/15/2032	6/15/2023	131.71886	122.4297444	113.8945321	106.0474121	98.82865721	92.18403393	86.06427001	80.42457701	75.22422068
230124A00058	6/15/2023	4.21	6/15/2034	6/15/2023	138.5589	126.9045651	116.3842763	106.8799582	98.28646488	90.51009852	83.46730765	77.08353936	71.29222657
230124A00046	1/24/2023	3.99	1/24/2028	1/24/2023	115.95139	111.6835647	107.6001153	103.6920573	99.95089181	96.36857903	92.93751122	89.6504868	86.5006864
230124A00004	1/24/2023	3.99	1/24/2028	1/24/2023	115.95139	111.6835647	107.6001153	103.6920573	99.95089181	96.36857903	92.93751122	89.6504868	86.5006864
230124A00024	1/24/2023	4.23	1/23/2026	1/24/2023	107.84967	105.7478284	103.6980307	101.6986375	99.7480769	97.84483758	95.98746635	94.17456529	92.40478922
230124A00025	1/24/2023	4.09	1/25/2027	1/24/2023	111.90614	108.7335081	105.6690946	102.7085803	99.84784586	97.08296096	94.41017396	91.82590281	89.32672626
230124A00035	1/24/2023	4.23	1/26/2026	1/24/2023	107.88598	105.7755964	103.7175901	101.7103118	99.75217438	97.84165251	95.97727945	94.15764457	92.38139065
230125A00030	1/25/2023	3.91	1/25/2028	1/25/2023	115.63519	111.3710059	107.2912114	103.3868139	99.64930808	96.07064851	92.64322232	89.35982338	86.21362824
230125A00023	1/25/2023	3.69	1/25/2028	1/25/2023	115.30265	111.0293978	106.9414121	103.0296348	99.28550334	95.70091936	92.26822056	88.98015487	85.82985604
230502A00034	5/2/2023	4.92	5/2/2024	5/2/2023	101.19637	100.8505644	100.5071218	100.1660211	99.82723825	99.49074975	99.15653229	98.8245629	98.49481894
230502A00122	5/2/2023	3.7	5/3/2027	5/2/2023	112.25497	108.788071	105.448247	102.2301795	99.12879686	96.13926527	93.25697649	90.47753603	87.79675209
230502A00079	5/2/2023	3.6	5/2/2028	5/2/2023	116.02731	111.4596331	107.1009737	102.9406799	98.968693	95.17551548	91.55217639	88.09019967	84.78157435
230502A00024	5/2/2023	4.38	5/2/2025	5/2/2023	104.84609	103.4976685	102.1731004	100.8718053	99.59322149	98.3368049	97.10202834	95.88838095	94.69536758
230502A00002	5/2/2023	5.05	5/28/2024	5/2/2023	101.5104	101.0928309	100.6786939	100.2679508	99.8605602	99.45648105	99.05567315	98.65809688	98.2637133
230502A00017	5/2/2023	4.26	5/4/2026	5/2/2023	109.16699	106.7675505	104.4335822	102.1629387	99.95355735	97.80345423	95.71072118	93.67352229	91.69009074
230502A00045	5/2/2023	4.38	5/2/2025	5/2/2023	104.84609	103.4976685	102.1731004	100.8718053	99.59322149	98.3368049	97.10202834	95.88838095	94.69536758
230502A00047	5/2/2023	4.1	5/1/2026	5/2/2023	108.75367	106.367552	104.0463585	101.7879712	99.59035042	97.45153448	95.3696361	93.34283926	91.36939608
230502A00052	5/2/2023	3.96	5/3/2027	5/2/2023	112.6692	109.2067143	105.8708248	102.6562376	99.55791018	96.57103621	93.69103309	90.91353037	88.23435884
230502A00042	5/2/2023	4.64	11/4/2024	5/2/2023	102.93733	102.0802191	101.2374288	100.4085994	99.59338559	98.79145328	98.0024793	97.22615086	96.46216521
230502A00055	5/2/2023	4.08	5/4/2026	5/2/2023	108.74221	106.3478552	104.0188618	101.7530881	99.54847429	97.40303957	95.31487865	93.2821584	91.30311466

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230502A00076	5/2/2023	3.95	5/3/2027	5/2/2023	112.63557	109.1736478	105.8383082	102.624256	99.52644926	96.54008217	93.66057258	90.88355049	88.20484714
230502A00081	5/2/2023	3.96	5/3/2027	5/2/2023	112.6692	109.2067143	105.8708248	102.6562376	99.55791018	96.57103621	93.69103309	90.91353037	88.23435884
230502A00120	5/2/2023	4.38	5/2/2025	5/2/2023	104.84609	103.4976685	102.1731004	100.8718053	99.59322149	98.3368049	97.10202834	95.88838095	94.69536758
230502A00025	5/2/2023	4.81	11/1/2024	5/2/2023	103.0481	102.1986223	101.3631988	100.5414778	99.73312381	98.93781204	98.15522829	97.38506832	96.62703757
230502A00058	5/2/2023	4.39	5/2/2025	5/2/2023	104.85959	103.5110743	102.1864122	100.8850247	99.60635015	98.34984425	97.11497983	95.901246	94.70814756
230502A00086	5/2/2023	4.08	5/1/2026	5/2/2023	108.70664	106.3210805	104.0004359	101.742586	99.5454914	97.40719067	95.3257969	93.29949437	91.3265355
230503A00017	5/3/2023	4.41	11/4/2024	5/3/2023	102.87582	102.0171412	101.1728389	100.3425506	99.52592894	98.72263806	97.93235292	97.15475902	96.38955194
230503A00004	5/3/2023	3.94	5/3/2027	5/3/2023	112.60193	109.1405812	105.8057915	102.5922743	99.49498834	96.50912814	93.63011207	90.85357062	88.17533543
230503A00012	5/3/2023	3.82	5/3/2028	5/3/2023	116.39066	111.8299109	107.4774248	103.3226039	99.3554406	95.56648462	91.94680894	88.48797837	85.18201991
230224A00018	2/24/2023	5.19	2/24/2025	2/24/2023	104.95618	103.7822263	102.6346972	101.5127047	100.4154016	99.34197763	98.29165762	97.26369977	96.25739374
230224A00014	2/24/2023	4.98	2/24/2025	2/24/2023	104.89855	103.7221385	102.5722509	101.4479996	100.3485327	99.27303561	98.22072899	97.19086715	96.18273604
230503A00025	5/3/2023	3.84	5/3/2028	5/3/2023	116.47817	111.9155187	107.5612011	103.4046094	99.43573356	95.64512076	92.02384177	88.56345922	85.25599805
230503A00029	5/3/2023	4.08	5/4/2026	5/3/2023	108.74221	106.3478552	104.0188618	101.7530881	99.54847429	97.40303957	95.31487865	93.2821584	91.30311466
230503A00030	5/3/2023	3.84	5/3/2028	5/3/2023	116.47817	111.9155187	107.5612011	103.4046094	99.43573356	95.64512076	92.02384177	88.56345922	85.25599805
230503A00034	5/3/2023	3.84	5/3/2028	5/3/2023	116.47817	111.9155187	107.5612011	103.4046094	99.43573356	95.64512076	92.02384177	88.56345922	85.25599805
230503A00014	5/3/2023	3.94	5/3/2027	5/3/2023	112.60193	109.1405812	105.8057915	102.5922743	99.49498834	96.50912814	93.63011207	90.85357062	88.17533543
230503A00022	5/3/2023	4.4	5/2/2025	5/3/2023	104.87309	103.52448	102.199724	100.8982442	99.6194788	98.36288359	97.12793132	95.91411105	94.72092755
230503A00072	5/3/2023	3.83	5/4/2026	5/3/2023	108.46853	106.0710116	103.7390816	101.4705874	99.26345865	97.11570419	95.02540908	92.99073101	91.00989715
230503A00020	5/3/2023	3.84	5/3/2028	5/3/2023	116.47817	111.9155187	107.5612011	103.4046094	99.43573356	95.64512076	92.02384177	88.56345922	85.25599805
230503A00031	5/3/2023	4.4	5/2/2025	5/3/2023	104.87309	103.52448	102.199724	100.8982442	99.6194788	98.36288359	97.12793132	95.91411105	94.72092755
230503A00032	5/3/2023	4.08	5/1/2026	5/3/2023	108.70664	106.3210805	104.0004359	101.742586	99.5454914	97.40719067	95.3257969	93.29949437	91.3265355
230503A00036	5/3/2023	4.15	5/2/2025	5/3/2023	104.75308	103.4018842	102.0746442	100.7707726	99.48970424	98.23089201	96.99380574	95.77793179	94.58277232
230503A00038	5/3/2023	4.15	5/2/2025	5/3/2023	104.75308	103.4018842	102.0746442	100.7707726	99.48970424	98.23089201	96.99380574	95.77793179	94.58277232
230504A00085	5/4/2023	4.24	5/5/2025	5/4/2023	104.69121	103.335626	102.0041522	100.6962	99.41119868	98.14859555	96.90785521	95.68845894	94.48990404
230224A00015	2/24/2023	4.86	3/17/2026	2/24/2023	109.91407	107.6392897	105.4235844	103.2649881	101.1616147	99.11165698	97.1133818	95.16512684	93.26529688
230530A00027	5/30/2023	4.22	5/30/2028	5/30/2023	118.47118	113.7878624	109.3212437	105.060132	100.9939734	97.11281099	93.40724741	89.86841093	86.48792312
230530A00161	5/30/2023	5.08	11/29/2024	5/30/2023	103.62645	102.6981553	101.7865557	100.8912048	100.0116705	99.14753586	98.29839835	97.46386949	96.64357409
230530A00184	5/30/2023	5.5	5/30/2024	5/30/2023	101.72193	101.2983609	100.8783249	100.4617749	100.0486677	99.63896073	99.23261209	98.82958061	98.4298258
230530A00171	5/30/2023	4.43	5/29/2026	5/30/2023	109.88868	107.4105978	105.0018759	102.6601845	100.3832824	98.16901733	96.01532096	93.92020562	91.88176051
230530A00166	5/30/2023	4.81	5/30/2025	5/30/2023	105.78893	104.3565593	102.9507997	101.5709679	100.2164076	98.88648404	97.58058347	96.29811203	95.03849503
230530A00118	5/30/2023	4.4	5/28/2027	5/30/2023	114.47736	110.9134105	107.4819485	104.1773337	100.9941995	97.92743542	94.97217344	92.12377513	89.37781958
230530A00041	5/30/2023	4.93	5/27/2025	5/30/2023	105.92055	104.495399	103.096581	101.7234286	100.3752951	99.05155535	97.75160448	96.4748572	95.22074703
230530A00058	5/30/2023	5.5	5/30/2024	5/30/2023	101.72193	101.2983609	100.8783249	100.4617749	100.0486677	99.63896073	99.23261209	98.82958061	98.4298258

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230530A00048	5/30/2023	4.45	5/29/2026	5/30/2023	109.93726	107.4585748	105.0492685	102.7070053	100.4295436	98.21473077	96.06049814	93.96485773	91.92589839
230530A00018	5/30/2023	5.13	11/25/2024	5/30/2023	103.62242	102.7049961	101.80389	100.9186671	100.0489096	99.19421394	98.35419064	97.52846353	96.71666924
230531A00036	5/31/2023	4.79	5/30/2025	5/31/2023	105.76038	104.3282305	102.9226798	101.5430534	100.188695	98.85897002	97.55326473	96.2709854	95.01155739
230531A00037	5/31/2023	4.41	5/29/2026	5/31/2023	109.84011	107.3626207	104.9544833	102.6133637	100.3370213	98.1233039	95.97014377	93.8755535	91.83762262
230531A00042	5/31/2023	4.01	5/28/2027	5/31/2023	113.61171	110.0507896	106.6226522	103.3216374	100.1423546	97.07967085	94.12869739	91.28477638	88.54346887
230531A00038	5/31/2023	4.01	5/28/2027	5/31/2023	113.61171	110.0507896	106.6226522	103.3216374	100.1423546	97.07967085	94.12869739	91.28477638	88.54346887
230531A00091	5/31/2023	4.26	6/1/2027	5/31/2023	114.0469	110.4792464	107.044685	103.7375319	100.5523792	97.48407783	94.52772388	91.67864544	88.93239044
230531A00090	5/31/2023	4.41	6/1/2026	5/31/2023	109.87734	107.3912507	104.9749737	102.6261502	100.3425178	98.12190355	95.96222007	93.86146146	91.81769968
230531A00088	5/31/2023	4.79	5/30/2025	5/31/2023	105.76038	104.3282305	102.9226798	101.5430534	100.188695	98.85897002	97.55326473	96.2709854	95.01155739
230531A00099	5/31/2023	4.41	5/29/2026	5/31/2023	109.84011	107.3626207	104.9544833	102.6133637	100.3370213	98.1233039	95.97014377	93.8755535	91.83762262
230531A00062	5/31/2023	4.39	4/30/2026	5/31/2023	109.42293	107.0316307	104.7052801	102.4417618	100.2390381	98.0951488	96.00820826	93.97640182	91.99798284
230531A00063	5/31/2023	4.37	5/29/2026	5/31/2023	109.74296	107.2666667	104.8596981	102.5197221	100.2444989	98.03187703	95.87978939	93.78624928	91.74934684
230531A00061	5/31/2023	4.42	4/1/2026	5/31/2023	109.13038	106.8214691	104.573474	102.3843443	100.2521168	98.17491084	96.15092332	94.17842531	92.25575807
230531A00060	5/31/2023	4.44	2/27/2026	5/31/2023	108.73929	106.5299656	104.3770716	102.2787631	100.233272	98.23890252	96.29402663	94.39708138	92.54656545
230531A00006	5/31/2023	5.05	11/25/2024	5/31/2023	103.54914	102.6320767	101.7313291	100.8464604	99.97705259	99.1227024	98.28302039	97.45763047	96.64616935
230601A00012	6/1/2023	4.72	6/2/2025	6/1/2023	105.69797	104.2582607	102.8454365	101.4588103	100.0977154	98.76150748	97.44956321	96.1612798	94.89607397
230601A00006	6/1/2023	4.77	6/2/2025	6/1/2023	105.76974	104.3294887	102.9161362	101.5289907	100.1673853	98.83067531	97.51823727	96.22946816	94.9637845
230601A00007	6/1/2023	5.04	12/2/2024	6/1/2023	103.62821	102.6917202	101.7722274	100.8692716	99.9824086	99.11121037	98.2552638	97.41417022	96.58754477
230601A00040	6/1/2023	4.35	6/1/2026	6/1/2023	109.73112	107.2468361	104.8323241	102.4852276	100.2032851	97.98432494	95.82626072	93.72708758	91.68487842
230601A00018	6/1/2023	4.1	6/1/2026	6/1/2023	109.45026	106.9626541	104.5450629	102.1951205	99.91055364	97.6891792	95.52890011	93.42770137	91.38364628
230601A00025	6/1/2023	4.12	6/1/2028	6/1/2023	118.04918	113.3695927	108.9068919	104.6498652	100.5879351	96.71112301	93.010012	89.47571253	86.09983007
230601A00022	6/1/2023	5.04	12/2/2024	6/1/2023	103.62821	102.6917202	101.7722274	100.8692716	99.9824086	99.11121037	98.2552638	97.41417022	96.58754477
230602A00012	6/2/2023	4.39	6/2/2026	6/2/2023	109.84095	107.3526025	104.9342028	102.5833893	100.2978925	98.07553318	95.91421764	93.81193413	91.76674907
230602A00027	6/2/2023	4.2	6/2/2026	6/2/2023	109.70657	107.2130749	104.7898136	102.4344111	100.1445847	97.9181426	95.75297939	93.64707208	91.59847647
230602A00030	6/2/2023	4.2	6/2/2026	6/2/2023	109.70657	107.2130749	104.7898136	102.4344111	100.1445847	97.9181426	95.75297939	93.64707208	91.59847647
230602A00020	6/2/2023	3.94	6/2/2028	6/2/2023	117.88545	113.1883766	108.7096611	104.4379854	100.3626743	96.47365857	92.76143706	89.21704207	85.83200647
230605A00022	6/5/2023	4.39	6/4/2027	6/5/2023	114.53289	110.9486211	107.4982769	104.1761328	100.9767363	97.89489669	94.92567097	92.06435038	89.30644825
230504A00084	5/4/2023	3.5	5/4/2028	5/4/2023	115.61019	111.0458379	106.6907125	102.5341328	98.56601682	94.77684544	91.15762816	87.69987105	84.39554689
230504A00054	5/4/2023	3.95	5/4/2026	5/4/2023	108.43543	106.044742	103.7193416	101.4570849	99.25591431	97.11385121	95.02899239	92.99950669	91.02363192
230504A00058	5/4/2023	3.69	5/4/2028	5/4/2023	115.83269	111.2811724	106.9377741	102.7918875	98.83350363	95.0531709	91.44196178	87.99144091	84.69363549
230504A00049	5/4/2023	3.95	5/4/2026	5/4/2023	108.43543	106.044742	103.7193416	101.4570849	99.25591431	97.11385121	95.02899239	92.99950669	91.02363192
230504A00034	5/4/2023	3.95	5/4/2026	5/4/2023	108.43543	106.044742	103.7193416	101.4570849	99.25591431	97.11385121	95.02899239	92.99950669	91.02363192
230504A00055	5/4/2023	4.24	5/5/2025	5/4/2023	104.69121	103.335626	102.0041522	100.6962	99.41119868	98.14859555	96.90785521	95.68845894	94.48990404

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230504A00064	5/4/2023	4.35	11/4/2024	5/4/2023	102.68841	101.8324666	100.9908258	100.1631325	99.34904163	98.54821932	97.76034266	96.9850991	96.22218614
230504A00046	5/4/2023	4.24	5/5/2025	5/4/2023	104.69121	103.335626	102.0041522	100.6962	99.41119868	98.14859555	96.90785521	95.68845894	94.48990404
230504A00047	5/4/2023	4.5	11/4/2024	5/4/2023	102.81716	101.9606144	101.1183791	100.2900982	99.47542644	98.67402999	97.88558575	97.10978105	96.34631324
230504A00092	5/4/2023	4.5	11/4/2024	5/4/2023	102.81716	101.9606144	101.1183791	100.2900982	99.47542644	98.67402999	97.88558575	97.10978105	96.34631324
230504A00065	5/4/2023	4.11	5/5/2025	5/4/2023	104.51462	103.1602949	101.8300567	100.5233194	99.23951267	97.97808448	96.73849995	95.52024083	94.32280493
230504A00041	5/4/2023	3.95	5/4/2026	5/4/2023	108.43543	106.044742	103.7193416	101.4570849	99.25591431	97.11385121	95.02899239	92.99950669	91.02363192
230504A00042	5/4/2023	3.83	5/4/2027	5/4/2023	112.24354	108.7853981	105.4538502	102.2436037	99.149611	96.16706128	93.29136776	90.51815627	87.84325419
230504A00043	5/4/2023	3.76	5/4/2028	5/4/2023	116.13914	111.5809852	107.2311688	103.0790771	99.11469187	95.32855343	91.71172617	88.25576712	84.95269626
230504A00069	5/4/2023	3.82	5/4/2026	5/4/2023	108.12864	105.7416287	103.4198214	101.1610817	98.96335432	96.82466285	94.74310612	92.71685499	90.74414919
230504A00040	5/4/2023	4.5	11/4/2024	5/4/2023	102.81716	101.9606144	101.1183791	100.2900982	99.47542644	98.67402999	97.88558575	97.10978105	96.34631324
230504A00018	5/4/2023	4.24	5/5/2025	5/4/2023	104.69121	103.335626	102.0041522	100.6962	99.41119868	98.14859555	96.90785521	95.68845894	94.48990404
230504A00021	5/4/2023	3.76	5/4/2028	5/4/2023	116.13914	111.5809852	107.2311688	103.0790771	99.11469187	95.32855343	91.71172617	88.25576712	84.95269626
230504A00019	5/4/2023	3.95	5/4/2026	5/4/2023	108.43543	106.044742	103.7193416	101.4570849	99.25591431	97.11385121	95.02899239	92.99950669	91.02363192
230504A00020	5/4/2023	3.83	5/4/2027	5/4/2023	112.24354	108.7853981	105.4538502	102.2436037	99.149611	96.16706128	93.29136776	90.51815627	87.84325419
230504A00011	5/4/2023	3.7	5/4/2026	5/4/2023	108.16127	105.7674292	103.4391041	101.1741384	98.970464	96.82609192	94.73910933	92.70767594	90.73002085
230504A00057	5/4/2023	3.86	5/4/2026	5/4/2023	108.22304	105.8348943	103.5119814	101.2521596	99.05337278	96.91364388	94.83107112	92.80382475	90.83014388
230505A00046	5/5/2023	4.33	5/5/2025	5/5/2023	104.81346	103.457009	102.1246798	100.8158866	99.53005823	98.26664168	97.02510117	95.80491764	94.60558803
230505A00048	5/5/2023	4.01	5/5/2026	5/5/2023	108.58868	106.1933772	103.8635405	101.5970242	99.3917632	97.24577122	95.15713798	93.1240256	91.14466544
230505A00022	5/5/2023	3.85	5/5/2028	5/5/2023	116.54438	111.9745951	107.6136924	103.4510299	99.47656026	95.68079616	92.0547763	88.59003358	85.27856542
230505A00016	5/5/2023	3.85	5/5/2028	5/5/2023	116.54438	111.9745951	107.6136924	103.4510299	99.47656026	95.68079616	92.0547763	88.59003358	85.27856542
230505A00014	5/5/2023	3.59	5/5/2028	5/5/2023	116.01627	111.4402372	107.0739797	102.9067868	98.92854671	95.12971268	91.50126828	88.03469531	84.7219438
230505A00027	5/5/2023	4.01	5/5/2026	5/5/2023	108.58868	106.1933772	103.8635405	101.5970242	99.3917632	97.24577122	95.15713798	93.1240256	91.14466544
230505A00017	5/5/2023	4.01	5/5/2026	5/5/2023	108.58868	106.1933772	103.8635405	101.5970242	99.3917632	97.24577122	95.15713798	93.1240256	91.14466544
230505A00035	5/5/2023	3.9	5/5/2027	5/5/2023	112.49091	109.0257867	105.6875705	102.4709522	99.37086897	96.38249537	93.50123091	90.72268846	88.04268321
230505A00002	5/5/2023	4.01	5/5/2026	5/5/2023	108.58868	106.1933772	103.8635405	101.5970242	99.3917632	97.24577122	95.15713798	93.1240256	91.14466544
230505A00001	5/5/2023	4.33	5/5/2025	5/5/2023	104.81346	103.457009	102.1246798	100.8158866	99.53005823	98.26664168	97.02510117	95.80491764	94.60558803
230505A00005	5/5/2023	3.99	5/5/2026	5/5/2023	108.54143	106.1466907	103.8174079	101.551434	99.3467039	97.2012318	95.11310771	93.08049406	91.1016225
230505A00013	5/5/2023	4.33	5/5/2025	5/5/2023	104.81346	103.457009	102.1246798	100.8158866	99.53005823	98.26664168	97.02510117	95.80491764	94.60558803
230509A00060	5/9/2023	3.92	5/9/2028	5/9/2023	116.89673	112.3078814	107.9291848	103.7499127	99.75993648	95.94969329	92.31015183	88.8327799	85.50951442
230509A00009	5/9/2023	4.45	5/9/2025	5/9/2023	105.0243	103.655314	102.3108554	100.9903154	99.69310937	98.41867146	97.16645357	95.93592486	94.72657097
230509A00010	5/9/2023	4.14	5/8/2026	5/9/2023	108.93189	106.5240993	104.1823035	101.9043315	99.68809508	97.53158644	95.43287467	93.3901023	91.40148211
230509A00019	5/9/2023	4.7	11/8/2024	5/9/2023	103.03448	102.1660576	101.3123237	100.4729102	99.64745831	98.83562104	98.03706295	97.25145951	96.47849672
230509A00037	5/9/2023	4.47	11/8/2024	5/9/2023	102.97224	102.1022262	101.2469574	100.4060633	99.57918315	98.76596808	97.96608074	97.17919481	96.40499457

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230509A00118	5/9/2023	4.12	5/8/2026	5/9/2023	108.88447	106.4772515	104.1360135	101.8585875	99.64288557	97.4869003	95.38870108	93.34643074	91.35830238
230509A00047	5/9/2023	4.43	5/9/2025	5/9/2023	104.99691	103.6281232	102.2838577	100.9635076	99.66648824	98.39223393	97.14019666	95.90984565	94.70066662
230509A00048	5/9/2023	4.43	5/9/2025	5/9/2023	104.99691	103.6281232	102.2838577	100.9635076	99.66648824	98.39223393	97.14019666	95.90984565	94.70066662
230509A00035	5/9/2023	4.14	5/8/2026	5/9/2023	108.93189	106.5240993	104.1823035	101.9043315	99.68809508	97.53158644	95.43287467	93.3901023	91.40148211
230509A00036	5/9/2023	4.02	5/10/2027	5/9/2023	112.95559	109.4685072	106.1095559	102.8733481	99.75475518	96.74889007	93.85109444	91.0569268	88.3621512
230510A00007	5/10/2023	4.39	5/9/2025	5/10/2023	104.94213	103.5737417	102.2298624	100.9098919	99.61324597	98.33935888	97.08768284	95.85768723	94.6488579
230510A00033	5/10/2023	4.39	5/12/2025	5/10/2023	104.97751	103.6006007	102.2484892	100.9205604	99.61622024	98.33489372	97.07602408	95.83907213	94.62351554
230510A00014	5/10/2023	4.07	5/11/2026	5/10/2023	108.80142	106.3868271	104.0386411	101.7546653	99.53279217	97.37099536	95.26732652	93.21991165	91.22694786
230510A00062	8/10/2023	3.78	8/10/2026	8/10/2023	109.11029	106.4408718	103.8511935	101.3383721	98.89965297	96.53239929	94.23408622	92.00229521	89.83470876
230510A00057	5/10/2023	3.98	5/11/2026	5/10/2023	108.58729	106.1752857	103.8296271	101.548125	99.32867338	97.16924746	95.06790037	93.02275953	91.03202341
230510A00012	5/10/2023	5.02	5/10/2024	5/10/2023	101.31309	100.9451406	100.5798738	100.2172627	99.85727828	99.4998919	99.14507538	98.79280097	98.44304129
230510A00023	5/10/2023	4.74	9/30/2024	5/10/2023	102.62506	101.8643398	101.1149264	100.3765644	99.64901043	98.93202818	98.22538827	97.52886788	96.84225055
230510A00022	5/10/2023	5.01	5/15/2024	5/10/2023	101.36059	100.9788675	100.6000295	100.2240476	99.85088948	99.48052321	99.11291744	98.74804124	98.38586417
230510A00009	5/10/2023	4.07	5/11/2026	5/10/2023	108.80142	106.3868271	104.0386411	101.7546653	99.53279217	97.37099536	95.26732652	93.21991165	91.22694786
230510A00031	5/10/2023	4.14	5/9/2025	5/10/2023	104.82055	103.4495355	102.1031277	100.7807237	99.48173592	98.20559554	96.95175172	95.71967101	94.50883656
230511A00034	5/11/2023	4	5/12/2025	5/11/2023	104.66218	103.2840196	101.9307316	100.6016995	99.29632635	98.01403458	96.75426497	95.51647597	94.30014304
230511A00053	5/11/2023	4.53	11/12/2024	5/11/2023	102.93049	102.0517032	101.1879759	100.3389193	99.5041611	98.68334169	97.87611336	97.0821399	96.30109614
230511A00052	5/11/2023	4.25	5/12/2025	5/11/2023	104.78464	103.4091272	102.0583832	100.7317989	99.42878076	98.14875447	96.89116381	95.65547016	94.44115174
230511A00069	5/11/2023	3.98	5/12/2026	5/11/2023	108.59887	106.1839423	103.8355089	101.5513748	99.32942699	97.16763414	95.06404319	93.01677567	91.02402443
230511A00068	5/11/2023	4.31	5/12/2025	5/11/2023	104.8673	103.4911873	102.1398572	100.8126967	99.50911197	98.22852843	96.97038964	95.73415672	94.51930765
230511A00067	5/11/2023	4.58	11/13/2024	5/11/2023	102.98559	102.1038275	101.2372207	100.3853769	99.54792064	98.72448879	97.91473053	97.11830664	96.33488906
230511A00038	5/11/2023	3.95	5/11/2026	5/11/2023	108.51592	106.1047719	103.7599558	101.4792783	99.26063378	97.10199816	95.00142498	92.95704216	90.9670486
230511A00044	5/11/2023	3.79	5/11/2027	5/11/2023	112.18906	108.7121226	105.3631591	102.1367852	99.02787245	96.03153451	93.14311376	90.35816965	87.67246733
230511A00029	5/11/2023	4.25	5/9/2025	5/11/2023	104.75042	103.3834062	102.0408786	100.7222371	99.42689802	98.15429621	96.90388448	95.67513274	94.46752741
230511A00011	5/11/2023	4.54	11/5/2024	5/11/2023	102.86247	102.0029961	101.1579293	100.3269076	99.50958257	98.70561695	97.91468462	97.13646998	96.37066756
230511A00036	5/11/2023	3.79	5/19/2027	5/11/2023	112.28066	108.7796654	105.4082917	102.1610559	99.03273425	96.01835056	93.11316336	90.31265343	87.6125122
230511A00023	5/11/2023	3.95	5/19/2026	5/11/2023	108.60791	106.1733812	103.8063878	101.5046784	99.26609172	97.08855096	94.97005967	92.90869835	90.90262094
230511A00015	5/11/2023	4.25	5/12/2025	5/11/2023	104.78464	103.4091272	102.0583832	100.7317989	99.42878076	98.14875447	96.89116381	95.65547016	94.44115174
230511A00032	5/11/2023	3.7	5/11/2026	5/11/2023	108.2397	105.8253669	103.4775978	101.1941872	98.9730185	96.81205698	94.70934636	92.66300515	90.67122337
230511A00046	5/11/2023	3.95	5/11/2026	5/11/2023	108.51592	106.1047719	103.7599558	101.4792783	99.26063378	97.10199816	95.00142498	92.95704216	90.9670486
230511A00050	5/11/2023	3.98	5/11/2026	5/11/2023	108.58729	106.1752857	103.8296271	101.548125	99.32867338	97.16924746	95.06790037	93.02275953	91.03202341
230512A00026	5/12/2023	4	5/12/2026	5/12/2023	108.64651	106.2310053	103.882009	101.597324	99.37483679	97.21251592	95.10840789	93.06063393	91.06738659
230512A00033	5/12/2023	3.75	5/12/2026	5/12/2023	108.37019	105.951485	103.599527	101.3121009	99.08708213	96.92242863	94.81617703	92.76643912	90.77139852

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230512A00009	5/12/2023	4.08	5/12/2025	5/12/2023	104.77252	103.3935572	102.0394854	100.7096827	99.40355186	98.12051493	96.86001235	95.62150226	94.40445981
230512A00010	5/12/2023	3.75	5/12/2026	5/12/2023	108.37019	105.951485	103.599527	101.3121009	99.08708213	96.92242863	94.81617703	92.76643912	90.77139852
230512A00042	5/12/2023	4	5/12/2026	5/12/2023	108.64651	106.2310053	103.882009	101.597324	99.37483679	97.21251592	95.10840789	93.06063393	91.06738659
230512A00037	5/12/2023	3.86	5/12/2027	5/12/2023	112.43767	108.9537124	105.598042	102.3652603	99.25022329	96.24802982	93.35400843	90.56370548	87.87287383
230512A00008	5/12/2023	3.75	5/12/2026	5/12/2023	108.37019	105.951485	103.599527	101.3121009	99.08708213	96.92242863	94.81617703	92.76643912	90.77139852
230512A00007	5/12/2023	4.08	5/12/2025	5/12/2023	104.77252	103.3935572	102.0394854	100.7096827	99.40355186	98.12051493	96.86001235	95.62150226	94.40445981
230515A00034	5/15/2023	4.69	11/15/2024	5/15/2023	103.1055	102.2177362	101.3453214	100.4878556	99.64495625	98.81625363	98.00139055	97.20002172	96.41181323
230424A00012	4/24/2023	4.28	4/24/2026	4/24/2023	109.09154	106.7205448	104.4135861	102.1685622	99.98345658	97.85633133	95.78532294	93.76863926	91.80455615
230424A00037	4/24/2023	4.79	10/24/2024	4/24/2023	102.94	102.1127152	101.2987717	100.4978465	99.70962861	98.93381685	98.17011955	97.41825413	96.67794671
230424A00026	4/24/2023	4.28	4/24/2026	4/24/2023	109.09154	106.7205448	104.4135861	102.1685622	99.98345658	97.85633133	95.78532294	93.76863926	91.80455615
230424A00010	4/24/2023	4.55	4/24/2025	4/24/2023	104.97319	103.6444341	102.3404003	101.0604263	99.8038761	98.57013609	97.35861409	96.16873843	94.99995705
230424A00011	4/24/2023	4.55	4/24/2025	4/24/2023	104.97319	103.6444341	102.3404003	101.0604263	99.8038761	98.57013609	97.35861409	96.16873843	94.99995705
230424A00005	4/24/2023	4.08	4/24/2028	4/24/2023	117.42212	112.86442	108.5135073	104.3588938	100.3906806	96.59951909	92.97657819	89.51351254	86.20243343
230424A00064	4/24/2023	4.28	4/24/2026	4/24/2023	109.09154	106.7205448	104.4135861	102.1685622	99.98345658	97.85633133	95.78532294	93.76863926	91.80455615
230606A00015	6/6/2023	4.24	6/6/2028	6/6/2023	118.64299	113.9363761	109.4483726	105.1676435	101.083502	97.18586835	93.46523152	89.91261467	86.51954213
230606A00014	6/6/2023	4.35	6/7/2027	6/6/2023	114.43288	110.8420695	107.3857509	104.0581554	100.8537957	97.76744835	94.7941398	91.92913286	89.16791423
230606A00008	6/6/2023	3.98	6/6/2028	6/6/2023	118.11041	113.3971709	108.9034874	104.6179517	100.5298081	96.62891267	92.9056955	89.35112492	85.95667462
230606A00029	6/6/2023	4.45	6/5/2026	6/6/2023	110.02489	107.5261324	105.0978199	102.7375691	100.4430875	98.21217369	96.04271338	93.93267511	91.88010665
230515A00011	5/15/2023	4.11	5/15/2026	5/15/2023	108.94434	106.5168702	104.1564301	101.8607969	99.62783445	97.45548948	95.34178802	93.28483181	91.28279488
230515A00024	5/15/2023	4.69	11/15/2024	5/15/2023	103.1055	102.2177362	101.3453214	100.4878556	99.64495625	98.81625363	98.00139055	97.20002172	96.41181323
230515A00045	5/15/2023	4.08	5/15/2026	5/15/2023	108.87264	106.4460338	104.0864438	101.7916425	99.5594944	97.3879467	95.27502595	93.21883434	91.21754638
230516A00013	5/16/2023	4.11	5/15/2026	5/16/2023	108.94434	106.5168702	104.1564301	101.8607969	99.62783445	97.45548948	95.34178802	93.28483181	91.28279488
230425A00076	4/25/2023	4.95	4/25/2024	4/25/2023	101.137	100.8104635	100.4860448	100.1637187	99.84346493	99.52526353	99.20909478	98.89493924	98.58277769
230425A00045	4/25/2023	3.95	4/25/2028	4/25/2023	116.86795	112.3194086	107.9774963	103.8317307	99.8722151	96.08960307	92.47506531	89.02025824	85.71729478
230425A00047	4/25/2023	4.01	4/26/2027	4/25/2023	112.75393	109.3095532	105.9904412	102.7913735	99.70737462	96.73370233	93.86583511	91.09946077	88.43046558
230425A00050	4/25/2023	4.14	4/24/2026	4/25/2023	108.76501	106.3978801	104.0947037	101.8533825	99.67190261	97.54832817	95.48079791	93.46752174	91.50677756
230425A00020	4/25/2023	4.62	10/25/2024	4/25/2023	102.80998	101.9805749	101.1645921	100.3617038	99.57159612	98.79396538	98.02851729	97.27496678	96.53303766
230425A00124	4/25/2023	4.42	4/25/2025	4/25/2023	104.81332	103.483222	102.177601	100.8958136	99.63724078	98.40128498	97.18736904	95.99493541	94.82344526
230425A00006	4/25/2023	3.89	4/24/2026	4/25/2023	108.49455	106.1242938	103.8182142	101.5742006	99.3902287	97.26435261	95.19470169	93.17947696	91.21694789
230425A00037	4/25/2023	4.65	10/25/2024	4/25/2023	102.8349	102.0053873	101.1892927	100.3862938	99.59607694	98.81833816	98.05278321	97.29912704	96.55709339
230607A00001	6/7/2023	4.9	6/6/2025	6/7/2023	106.00829	104.5555426	103.1301201	101.7313117	100.3584357	99.01083277	97.68786586	96.38891873	95.11339534
230607A00012	6/7/2023	4.24	6/7/2028	6/7/2023	118.65482	113.945159	109.4543721	105.1711035	101.0846477	97.18490765	93.46235645	89.90800249	86.51335648
230607A00007	6/7/2023	4.24	6/7/2028	6/7/2023	118.65482	113.945159	109.4543721	105.1711035	101.0846477	97.18490765	93.46235645	89.90800249	86.51335648

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230425A00053	4/25/2023	4.14	4/24/2026	4/25/2023	108.76501	106.3978801	104.0947037	101.8533825	99.67190261	97.54832817	95.48079791	93.46752174	91.50677756
230425A00031	4/25/2023	3.69	4/25/2028	4/25/2023	116.34411	111.7893229	107.4420514	103.2917407	99.32843082	95.54271689	91.92571539	88.46903249	85.16473451
230425A00040	4/25/2023	3.89	4/24/2026	4/25/2023	108.49455	106.1242938	103.8182142	101.5742006	99.3902287	97.26435261	95.19470169	93.17947696	91.21694789
230425A00028	4/25/2023	4.42	4/25/2025	4/25/2023	104.81332	103.483222	102.177601	100.8958136	99.63724078	98.40128498	97.18736904	95.99493541	94.82344526
230425A00030	4/25/2023	4.01	4/26/2027	4/25/2023	112.75393	109.3095532	105.9904412	102.7913735	99.70737462	96.73370233	93.86583511	91.09946077	88.43046558
230425A00029	4/25/2023	4.14	4/24/2026	4/25/2023	108.76501	106.3978801	104.0947037	101.8533825	99.67190261	97.54832817	95.48079791	93.46752174	91.50677756
230425A00032	4/25/2023	3.95	4/25/2028	4/25/2023	116.86795	112.3194086	107.9774963	103.8317307	99.8722151	96.08960307	92.47506531	89.02025824	85.71729478
230426A00051	4/26/2023	4.69	10/28/2024	4/26/2023	102.90098	102.0630435	101.2387903	100.4278854	99.63000607	98.84484004	98.07208486	97.31144765	96.56264466
230426A00025	4/26/2023	3.62	4/26/2028	4/26/2023	116.04938	111.4981774	107.154516	103.0078411	99.04818787	95.26614632	91.65282814	88.19983483	84.89922826
230426A00057	4/26/2023	4.44	4/25/2025	4/26/2023	104.83994	103.5096539	102.2038502	100.9218831	99.66313355	98.42700394	97.21291703	96.02031517	94.84865947
230426A00037	4/26/2023	3.94	4/26/2027	4/26/2023	112.51986	109.0793952	105.7640896	102.5687258	99.48833213	96.5181697	93.65372028	90.89067482	88.22492259
230426A00036	4/26/2023	4.06	4/27/2026	4/26/2023	108.61297	106.2395203	103.9303951	101.6834938	99.4967961	97.36835925	95.29631462	93.27886441	91.31427847
230426A00043	4/26/2023	4.35	4/22/2025	4/26/2023	104.68237	103.3605522	102.0638752	100.791641	99.54318145	98.31785291	97.11503503	95.93412975	94.77456028
230426A00030	4/26/2023	3.81	4/27/2026	4/26/2023	108.3413	105.9647171	103.6526844	101.4030878	99.21389649	97.08315772	95.00899342	92.98959682	91.02322927
230426A00063	4/26/2023	4.69	10/25/2024	4/26/2023	102.86814	102.0384705	101.2222268	100.4190806	99.62871804	98.85083519	98.08513778	97.3313407	96.5891677
230426A00046	4/26/2023	3.95	4/26/2028	4/26/2023	116.87931	112.3277454	107.9830601	103.8347574	99.87292685	96.08820889	92.47176153	89.01522905	85.71071282
230426A00045	4/26/2023	4.34	4/25/2025	4/26/2023	104.70685	103.3774944	102.0726044	100.7915357	99.53366972	98.29840911	97.08517707	95.89341635	94.72258841
230426A00062	4/26/2023	4.13	4/27/2026	4/26/2023	108.77681	106.4014176	104.0903885	101.8416233	99.65310058	97.52287651	95.44908136	93.42991623	91.46364997
230426A00026	4/26/2023	4.61	10/25/2024	4/26/2023	102.80167	101.9723041	101.1563586	100.3535071	99.56343585	98.78584113	98.02042864	97.26691337	96.52501909
230426A00049	4/26/2023	4.13	4/27/2026	4/26/2023	108.77681	106.4014176	104.0903885	101.8416233	99.65310058	97.52287651	95.44908136	93.42991623	91.46364997
230426A00033	4/26/2023	3.88	4/26/2028	4/26/2023	116.57441	112.0294174	107.6910872	103.5489299	99.5930435	95.81407678	92.20319558	88.75205168	85.45275357
230426A00065	6/15/2023	3.87	6/15/2028	6/15/2023	117.0866	112.3895217	107.912167	103.6430775	99.57144876	95.68709341	91.98040269	88.44231048	85.06425986
230426A00064	6/15/2023	3.87	6/15/2028	6/15/2023	117.0866	112.3895217	107.912167	103.6430775	99.57144876	95.68709341	91.98040269	88.44231048	85.06425986
230426A00040	4/26/2023	3.9	4/26/2028	4/26/2023	116.66152	112.114654	107.774508	103.6305949	99.67301017	95.89240024	92.2799287	88.82724522	85.52645621
230608A00049	6/8/2023	4.47	6/8/2026	6/8/2023	110.11158	107.6036015	105.1665496	102.7980108	100.4956701	98.25730483	96.08078053	93.96404666	91.90513289
230426A00007	4/26/2023	3.92	7/11/2028	4/26/2023	117.60128	112.8192969	108.2640005	103.9233996	99.78620522	95.84178253	92.08010942	88.49173781	85.06775774
230426A00011	4/26/2023	3.96	9/12/2028	4/26/2023	118.48208	113.5018632	108.7648632	104.2578259	99.9682941	95.88455668	91.99559929	88.29105884	84.76118112
230426A00014	4/26/2023	3.98	10/10/2028	4/26/2023	118.88075	113.8118681	108.9939272	104.4131117	100.0564407	95.91171545	91.96746764	88.21291168	84.63790015
230426A00003	4/26/2023	3.89	5/9/2028	4/26/2023	116.76498	112.1789926	107.8030636	103.626467	99.63907814	95.8313378	92.19421812	88.71919021	85.39819411
230426A00004	4/26/2023	3.89	5/9/2028	4/26/2023	116.76498	112.1789926	107.8030636	103.626467	99.63907814	95.8313378	92.19421812	88.71919021	85.39819411
230426A00009	4/26/2023	3.94	8/8/2028	4/26/2023	118.00787	113.136607	108.4993349	104.0835151	99.87734888	95.86973111	92.05020579	88.40892428	84.93660669
230426A00010	4/26/2023	3.94	8/8/2028	4/26/2023	118.00787	113.136607	108.4993349	104.0835151	99.87734888	95.86973111	92.05020579	88.40892428	84.93660669
230426A00005	4/26/2023	3.91	6/13/2028	4/26/2023	117.24454	112.5494761	108.0737505	103.8059347	99.73525624	95.85155712	92.14525551	88.60731005	85.22918659

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230426A00006	4/26/2023	3.91	6/13/2028	4/26/2023	117.24454	112.5494761	108.0737505	103.8059347	99.73525624	95.85155712	92.14525551	88.60731005	85.22918659
230426A00013	4/26/2023	3.98	10/10/2028	4/26/2023	118.88075	113.8118681	108.9939272	104.4131117	100.0564407	95.91171545	91.96746764	88.21291168	84.63790015
230426A00008	4/26/2023	3.92	7/11/2028	4/26/2023	117.60128	112.8192969	108.2640005	103.9233996	99.78620522	95.84178253	92.08010942	88.49173781	85.06775774
230426A00012	4/26/2023	3.96	9/12/2028	4/26/2023	118.48208	113.5018632	108.7648632	104.2578259	99.9682941	95.88455668	91.99559929	88.29105884	84.76118112
230427A00069	4/27/2023	4.5	4/28/2025	4/27/2023	104.95882	103.6203285	102.305658	101.0142153	99.74543091	98.49875369	97.27365001	96.06960314	94.88611255
230427A00066	4/27/2023	4.07	4/27/2027	4/27/2023	112.96646	109.5157837	106.1906595	102.985855	99.89638415	96.91749428	94.0446537	91.27354027	88.60003056
230608A00003	6/8/2023	4.23	6/8/2028	6/8/2023	118.6219	113.910184	109.4175705	105.132687	101.0448108	97.1438287	93.42019912	89.86491686	86.46948011
230608A00015	6/8/2023	4.81	6/9/2025	6/8/2023	105.91634	104.4562738	103.0238075	101.6182279	100.2388427	98.8849829	97.55600168	96.25127377	94.97019438
230609A00034	6/9/2023	3.99	6/9/2028	6/9/2023	118.1899	113.4665043	108.9634979	104.6694077	100.5734199	96.6653374	92.93554056	89.37495205	85.97500325
230609A00076	7/10/2023	4.19	7/10/2028	7/10/2023	118.82201	114.0153937	109.4361624	105.0723082	100.9125205	96.94614387	93.16313587	89.55402883	86.10989368
230427A00013	4/27/2023	4.74	10/28/2024	4/27/2023	102.94293	102.1048063	101.2803635	100.4692711	99.67120644	98.88585714	98.11292073	97.3521043	96.60312408
230427A00077	4/27/2023	4.14	10/27/2026	4/27/2023	110.98944	108.0790281	105.261063	102.532109	99.88887928	97.32822652	94.84713638	92.44272109	90.11221334
230427A00057	4/27/2023	4.74	10/28/2024	4/27/2023	102.94293	102.1048063	101.2803635	100.4692711	99.67120644	98.88585714	98.11292073	97.3521043	96.60312408
230428A00018	4/28/2023	3.99	4/28/2028	4/28/2023	117.07648	112.5151047	108.1612334	104.0043375	100.0344737	96.24225142	92.61879869	89.15573126	85.84512321
230428A00017	4/28/2023	4.17	4/28/2026	4/28/2023	108.88226	106.5028997	104.1880729	101.9356715	99.74367065	97.61012313	95.53315569	93.51096585	91.54181878
230609A00036	6/9/2023	4.91	6/6/2025	6/9/2023	106.02275	104.5698964	103.1443667	101.745453	100.3724732	99.02476843	97.70170129	96.40265558	95.12703519
230609A00043	6/9/2023	4.32	9/29/2027	6/9/2023	115.79977	111.8647361	108.0877596	104.4615464	100.9791903	97.63414584	94.42020652	91.33148536	88.36239601
230609A00038	6/9/2023	4.91	6/10/2025	6/9/2023	106.07481	104.6108677	103.1746438	101.7654218	100.3825053	99.0252212	97.69291897	96.38496968	95.10076505
230609A00039	6/9/2023	4.73	12/10/2025	6/9/2023	108.29635	106.3108898	104.3723684	102.479384	100.6305891	98.82468532	97.06042111	95.33658982	93.65202771
230609A00042	6/9/2023	4.46	11/25/2026	6/9/2023	112.26605	109.2578329	106.3474141	103.5310823	100.8052871	98.16663219	95.61186769	93.13788274	90.74169898
230609A00040	6/9/2023	4.38	5/12/2027	6/9/2023	114.19945	110.6856623	107.3009837	104.0399814	100.8974838	97.86856317	94.94852254	92.13288394	89.41737686
230609A00041	6/9/2023	4.53	7/13/2026	6/9/2023	110.7134	108.101073	105.5649905	103.1024647	100.7109243	98.38790444	96.13104217	93.9380709	91.80681613
230609A00016	6/9/2023	4.91	6/9/2025	6/9/2023	106.0618	104.6006247	103.1670739	101.7604285	100.3799954	99.02510524	97.6951107	96.38938608	95.10732615
221118A00080	11/18/2022	4.61	11/18/2025	11/18/2022	107.75387	105.8343973	103.9590257	102.1264814	100.335533	98.58499276	96.8737143	95.20059122	93.56455529
230228A00010	2/28/2023	4.5	2/26/2027	2/28/2023	114.03883	110.7313065	107.5390665	104.4573937	101.4817989	98.6080045	95.83193344	93.14969793	90.55758952
230228A00009	2/28/2023	4.69	2/27/2026	2/28/2023	109.57686	107.3525454	105.1850993	103.0726603	101.0134448	99.00574163	97.04790856	95.1383689	93.2756083
230428A00040	4/28/2023	4.78	10/28/2024	4/28/2023	102.9765	102.1382166	101.3136221	100.5023797	99.70416674	98.91867081	98.14558943	97.38462963	96.63550761
230428A00029	4/28/2023	4.23	4/28/2026	4/28/2023	109.02286	106.6418302	104.3253678	102.0713652	99.87779663	97.74271385	95.66424267	93.64057972	91.66998929
230428A00026	4/28/2023	4.56	4/28/2025	4/28/2023	105.03916	103.7001124	102.3848873	101.0928993	99.82357864	98.57637398	97.35075146	96.14619409	94.96220113
230428A00054	4/28/2023	4.62	3/13/2025	4/28/2023	104.51249	103.2946592	102.1053468	100.9435575	99.80834203	98.69879429	97.61404911	96.55327984	95.51569623
230428A00066	4/28/2023	4.78	10/28/2024	4/28/2023	102.9765	102.1382166	101.3136221	100.5023797	99.70416674	98.91867081	98.14558943	97.38462963	96.63550761
230612A00023	6/12/2023	4.32	6/12/2026	6/12/2023	110.12531	107.5993798	105.1453159	102.7606579	100.4430466	98.19021761	95.99999693	93.8702966	91.79911083
230612A00024	6/12/2023	4.69	6/12/2025	6/12/2023	106.01643	104.5437165	103.0990518	101.6816986	100.2909489	98.92611864	97.58654671	96.27159414	94.9806431

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230612A00058	6/12/2023	5.16	12/12/2024	6/12/2023	103.8732	102.9081926	101.9612058	101.03174	100.1193111	99.22345285	98.34371559	97.47966601	96.6308862
230613A00091	6/13/2023	4.58	6/15/2026	6/13/2023	110.47191	107.9404385	105.4810503	103.091276	100.7687461	98.5111868	96.31641492	94.18233391	92.10692986
230301A00029	3/1/2023	4.59	3/1/2028	3/1/2023	118.90806	114.4754144	110.237396	106.1843446	102.3071348	98.59714529	95.0462273	91.64667619	88.39120436
230301A00036	3/1/2023	4.91	3/2/2026	3/1/2023	109.8065	107.5766889	105.4039377	103.2863742	101.2222061	99.2097139	97.24724765	95.33322336	93.46611975
230501A00011	5/1/2023	4.09	4/26/2027	5/1/2023	113.02144	109.5725909	106.2491289	103.045828	99.95770889	96.98002533	94.10825206	91.3380733	88.66537185
230501A00022	5/1/2023	4.54	5/1/2025	5/1/2023	105.04991	103.7028015	102.3794826	101.0793719	99.80191011	98.5465555	97.31278319	96.1000845	94.90796636
230501A00039	5/1/2023	4.33	5/1/2025	5/1/2023	104.98428	103.6342153	102.3080395	101.0051701	99.72504431	98.46711735	97.23086129	96.01576458	94.82133141
230501A00038	5/1/2023	4.33	5/1/2025	5/1/2023	104.98428	103.6342153	102.3080395	101.0051701	99.72504431	98.46711735	97.23086129	96.01576458	94.82133141
230501A00013	5/1/2023	4.54	5/1/2025	5/1/2023	105.04991	103.7028015	102.3794826	101.0793719	99.80191011	98.5465555	97.31278319	96.1000845	94.90796636
230613A00019	6/13/2023	4.49	6/15/2026	6/13/2023	110.24911	107.7204316	105.2637735	102.8766696	100.5567525	98.30174986	96.1094803	93.97784885	91.9048431
230613A00021	6/13/2023	4.35	6/14/2027	6/13/2023	114.52165	110.9100415	107.434392	104.0888393	100.8678085	97.76599466	94.77834761	91.90005869	89.1265477
230613A00010	6/13/2023	4.9	6/13/2025	6/13/2023	106.09921	104.6270539	103.182922	101.766081	100.3758235	99.01146583	97.67234762	96.3578303	95.06729649
230613A00061	6/13/2023	4.56	6/15/2026	6/13/2023	110.4224	107.8915481	105.4327666	103.0435857	100.7216364	98.46464526	96.27042945	94.13689279	92.06202169
230613A00062	6/13/2023	4.97	6/13/2025	6/13/2023	106.2018	104.7288575	103.2839554	101.8663574	100.4753556	99.1102662	97.77042836	96.45520325	95.16397315
230613A00055	6/13/2023	5.14	2/13/2025	6/13/2023	104.73679	103.5944199	102.4771252	101.3840822	100.3145057	99.26764384	98.24277694	97.23921527	96.25629779
230501A00041	5/1/2023	4.58	4/28/2025	5/1/2023	105.06595	103.7267071	102.411297	101.1191272	99.84962788	98.60224742	97.37645194	96.1717244	94.98756399
230705A00033	7/5/2023	5.12	7/7/2025	7/5/2023	106.7552	105.2126819	103.7005485	102.2179774	100.764172	99.3383637	97.93981092	96.56779786	95.22163333
230705A00034	7/5/2023	4.75	7/6/2026	7/5/2023	111.17729	108.5789184	106.055946	103.6057314	101.2257474	98.91357063	96.66687707	94.48343681	92.36110979
230705A00036	7/5/2023	5.39	12/13/2024	7/5/2023	104.10854	103.1395794	102.1887606	101.2555763	100.3395378	99.44017452	98.55703308	97.68967629	96.83768261
230705A00035	7/5/2023	5.03	8/8/2025	7/5/2023	107.08776	105.4533155	103.8521129	102.2832015	100.7456681	99.23863379	97.76125217	96.31270813	94.89221618
230705A00103	7/5/2023	4.56	7/6/2027	7/5/2023	115.54841	111.8573088	108.3071098	104.8916456	101.6050565	98.44177085	95.39648945	92.46417035	89.64001499
230705A00111	7/5/2023	4.9	1/6/2026	7/5/2023	109.00739	106.9398299	104.9226858	102.9544072	101.0334984	99.15852012	97.32808725	95.54086603	93.79557193
230705A00019	7/5/2023	4.44	7/6/2027	7/5/2023	115.61596	111.9111931	108.3481284	104.9205556	101.6225715	98.44856388	95.3931953	92.45138788	89.61830928
230705A00006	7/5/2023	4.26	7/5/2028	7/5/2023	119.72518	114.8937822	110.2906351	105.9036995	101.7216337	97.73375156	93.92998153	90.30082758	86.83733338
230613A00034	6/13/2023	4.56	6/12/2026	6/13/2023	110.38393	107.8617053	105.4110828	103.0296191	100.7149677	98.46487615	96.27718174	94.14980725	92.08075705
230613A00080	6/13/2023	5.22	12/13/2024	6/13/2023	103.94441	102.9763016	102.0263254	101.0939726	100.1787549	99.28020197	98.39786052	97.53129364	96.68007999
230614A00029	6/14/2023	4.55	6/15/2026	6/14/2023	110.39764	107.8671029	105.4086247	103.0197405	100.6980816	98.44137449	96.24743671	94.11417222	92.03956761
230614A00031	6/14/2023	4.94	6/16/2025	6/14/2023	106.19713	104.7162017	103.2636102	101.8386093	100.4404802	99.06852851	97.72208344	96.40049663	95.10314124
230614A00047	6/14/2023	4.94	6/16/2025	6/14/2023	106.19713	104.7162017	103.2636102	101.8386093	100.4404802	99.06852851	97.72208344	96.40049663	95.10314124
230614A00048	6/14/2023	4.55	6/15/2026	6/14/2023	110.39764	107.8671029	105.4086247	103.0197405	100.6980816	98.44137449	96.24743671	94.11417222	92.03956761
230614A00001	6/14/2023	4.55	6/12/2026	6/14/2023	110.35926	107.8373407	105.3870196	103.0058507	100.6914877	98.44167846	96.25426034	94.12715633	92.05837096
230615A00023	6/15/2023	4.58	6/15/2026	6/15/2023	110.47191	107.9404385	105.4810503	103.091276	100.7687461	98.5111868	96.31641492	94.18233391	92.10692986
230615A00033	6/15/2023	4.58	6/15/2026	6/15/2023	110.47191	107.9404385	105.4810503	103.091276	100.7687461	98.5111868	96.31641492	94.18233391	92.10692986

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230330A00061	3/30/2023	4.65	3/31/2025	3/30/2023	104.7839	103.5155436	102.2773406	101.0682197	99.88716033	98.73318891	97.60537674	96.5028372	95.42472346
230330A00062	3/30/2023	4.42	3/30/2026	3/30/2023	109.10536	106.8021914	104.5596594	102.3757223	100.2484213	98.17588059	96.15630231	94.18796288	92.26920916
230330A00029	3/30/2023	4.6	4/1/2025	3/30/2023	104.73407	103.4635836	102.2230119	101.0113047	99.82745686	98.67050976	97.53954832	96.43369871	95.35212606
230331A00057	3/31/2023	4.08	3/31/2028	3/31/2023	117.14084	112.6560827	108.372137	104.2788534	100.3666576	96.62651324	93.04988859	89.62872489	86.35540724
230331A00055	3/31/2023	4.5	3/31/2025	3/31/2023	104.59457	103.3274747	102.0905094	100.8826056	99.70274306	98.54994901	97.42329519	96.3218955	95.24490359
230626A00020	6/26/2023	4.49	6/26/2026	6/26/2023	110.38804	107.8277924	105.3412843	102.925959	100.579366	98.29915444	96.08306864	93.92894342	91.83469993
230626A00019	6/26/2023	4.91	6/20/2025	6/26/2023	106.20498	104.7133037	103.2503616	101.8153956	100.4076719	99.02648236	97.67114257	96.34099134	95.03538953
230626A00026	6/26/2023	4.84	6/26/2025	6/26/2023	106.17799	104.6705039	103.192349	101.7427469	100.3209418	98.92620407	97.55782908	96.21513625	94.89746793
230626A00021	6/26/2023	4.49	6/26/2026	6/26/2023	110.38804	107.8277924	105.3412843	102.925959	100.579366	98.29915444	96.08306864	93.92894342	91.83469993
230626A00022	6/26/2023	4.34	6/25/2027	6/26/2023	114.62605	110.9823799	107.4769698	104.1038112	100.857191	97.73167471	94.72209148	91.82351964	89.03127326
230626A00023	6/26/2023	4.18	6/26/2028	6/26/2023	118.60812	113.8466414	109.3088764	104.9830878	100.8582201	96.92385304	93.17016171	89.58787922	86.16826221
230627A00035	6/27/2023	4.21	6/27/2028	6/27/2023	118.7556	113.9880505	109.4445783	105.1134285	100.9835225	97.04441827	93.28627085	89.69979477	86.27622933
230627A00037	6/27/2023	4.56	6/26/2026	6/27/2023	110.56345	108.0009774	105.5122957	103.0948445	100.746172	98.46392585	96.2458491	94.08977527	91.99362427
230627A00036	6/27/2023	4.38	6/28/2027	6/27/2023	114.80472	111.1496754	107.6335927	104.2504234	100.9944136	97.86009099	94.84224907	91.93593282	89.13642514
230627A00049	6/27/2023	4.95	6/27/2025	6/27/2023	106.35626	104.8447052	103.3626127	101.9091937	100.4836881	99.0853619	97.71350665	96.36743785	95.04649419
230627A00030	6/27/2023	4.17	6/27/2028	6/27/2023	118.57451	113.8110058	109.2714473	104.9440778	100.8178244	96.88225044	93.12751615	89.54434089	86.12396857
230627A00087	6/27/2023	4.95	6/30/2025	6/27/2023	106.39655	104.8765344	103.3862674	101.9249536	100.4918217	99.08612706	97.70715119	96.35419999	95.02660296
230627A00089	6/27/2023	4.56	6/30/2026	6/27/2023	110.61535	108.04124	105.5415337	103.11364	100.7550771	98.46346464	96.23651906	94.07204876	91.96794987
230627A00065	6/27/2023	4.95	6/27/2025	6/27/2023	106.35626	104.8447052	103.3626127	101.9091937	100.4836881	99.0853619	97.71350665	96.36743785	95.04649419
230627A00090	6/27/2023	4.21	6/27/2028	6/27/2023	118.7556	113.9880505	109.4445783	105.1134285	100.9835225	97.04441827	93.28627085	89.69979477	86.27622933
230627A00102	6/27/2023	4.95	6/27/2025	6/27/2023	106.35626	104.8447052	103.3626127	101.9091937	100.4836881	99.0853619	97.71350665	96.36743785	95.04649419
230627A00078	6/27/2023	4.95	6/27/2025	6/27/2023	106.35626	104.8447052	103.3626127	101.9091937	100.4836881	99.0853619	97.71350665	96.36743785	95.04649419
230627A00060	6/27/2023	4.89	6/27/2025	6/27/2023	106.26602	104.7551711	103.2737721	101.8210346	100.3961989	98.99853141	97.62732377	96.28189187	94.96157465
230627A00004	6/27/2023	4.47	6/29/2026	6/27/2023	110.37565	107.8074323	105.3134138	102.8910112	100.5377514	98.25126235	96.02926835	93.86958519	91.77011606
230627A00005	6/27/2023	4.3	6/28/2027	6/27/2023	114.5233	110.8731916	107.3619089	103.9834054	100.7319322	97.60202143	94.5884711	91.68633042	88.89088632
230627A00006	6/27/2023	4.12	6/27/2028	6/27/2023	118.34813	113.5897	109.0550335	104.7323894	100.6107017	96.67954065	92.92907278	89.35002353	85.93364261
230628A00028	6/28/2023	4.58	6/24/2026	6/28/2023	110.58781	108.0304545	105.5465888	103.1336698	100.7892602	98.51102187	96.29671101	94.14417365	92.0513415
230628A00045	6/28/2023	4.18	6/28/2028	6/28/2023	118.63144	113.8638927	109.320584	104.9897438	100.8602788	96.92173341	93.16425023	89.57853246	86.155809
230628A00017	6/28/2023	4.41	6/28/2027	6/28/2023	114.91026	111.2533569	107.7354741	104.3505551	101.0928441	97.95686708	94.93741581	92.02953372	89.2285022
230628A00015	6/28/2023	4.98	6/27/2025	6/28/2023	106.40138	104.8894722	103.407033	101.9532732	100.5274326	99.12877714	97.75659808	96.41021084	95.08895396
230628A00016	6/28/2023	4.58	6/26/2026	6/28/2023	110.61356	108.0504589	105.5611561	103.1430975	100.7938308	98.51100339	96.2923578	94.13572723	92.03903122
230628A00018	6/28/2023	4.23	6/28/2028	6/28/2023	118.85796	114.0853309	109.5371244	105.2015535	101.0675175	97.1245543	93.36280001	89.77295174	86.34623261
230628A00053	6/28/2023	5.47	6/28/2024	6/28/2023	102.05127	101.5476545	101.0490149	100.5552794	100.0663761	99.58223425	99.10278442	98.62795865	98.15769025

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230628A00059	6/28/2023	4.87	6/27/2025	6/28/2023	106.23594	104.7253264	103.2441585	101.7916483	100.3670359	98.96958792	97.59859615	96.25337654	94.93326814
230628A00068	6/28/2023	4.29	6/28/2027	6/28/2023	114.48812	110.8386311	107.3279484	103.9500281	100.699122	97.56976274	94.55674886	91.65513012	88.86019397
230628A00055	6/28/2023	5.19	12/27/2024	6/28/2023	104.10247	103.0953872	102.1078898	101.1394059	100.189389	99.25731372	98.34267436	97.44498406	96.56377394
230628A00061	6/28/2023	4.47	6/26/2026	6/28/2023	110.33792	107.7783109	105.2924239	102.877706	100.5317072	98.2520769	96.03655994	93.88299147	91.78929298
230628A00038	6/28/2023	4.58	6/24/2026	6/28/2023	110.58781	108.0304545	105.5465888	103.1336698	100.7892602	98.51102187	96.29671101	94.14417365	92.0513415
230629A00019	6/29/2023	4.51	6/24/2027	6/29/2023	115.20954	111.55841	108.0456193	104.6651647	101.4113356	98.27869985	95.26208826	92.35658064	89.55749227
230629A00025	6/29/2023	4.7	6/24/2026	6/29/2023	110.88785	108.3266984	105.8391221	103.4225739	101.0746142	98.79290235	96.57519235	94.41932802	92.32323897
230629A00045	6/29/2023	4.69	6/29/2026	6/29/2023	110.92875	108.3535014	105.8526083	103.4234825	101.0636465	98.77072381	96.54243438	94.37658997	92.27108983
230629A00108	6/29/2023	5.52	6/28/2024	6/29/2023	102.07644	101.5727512	101.0740385	100.5802306	100.0912553	99.60704192	99.12752113	98.65262489	98.18228651
230629A00120	6/29/2023	5.03	6/27/2025	6/29/2023	106.47658	104.964084	103.4810668	102.0267391	100.6003402	99.20113588	97.82841714	96.48149916	95.15972024
230629A00109	6/29/2023	5.3	12/27/2024	6/29/2023	104.2129	103.2052258	102.217142	101.2480795	100.2974919	99.36485345	98.44965835	97.55141956	96.66966804
230629A00046	6/29/2023	4.51	6/29/2027	6/29/2023	115.27516	111.609102	108.0824482	104.6891248	101.4233574	98.2796542	95.25279028	92.33779331	89.52992983
230629A00008	6/29/2023	4.34	6/29/2028	6/29/2023	119.36839	114.581547	110.0197768	105.6712567	101.5248513	97.57006593	93.79700641	90.19634134	86.75926722
230629A00037	6/29/2023	4.69	6/29/2026	6/29/2023	110.92875	108.3535014	105.8526083	103.4234825	101.0636465	98.77072381	96.54243438	94.37658997	92.27108983
230629A00076	6/29/2023	4.51	6/29/2027	6/29/2023	115.27516	111.609102	108.0824482	104.6891248	101.4233574	98.2796542	95.25279028	92.33779331	89.52992983
230629A00070	6/29/2023	5.09	6/30/2025	6/29/2023	106.60827	105.0865839	103.5946818	102.1317611	100.6970496	99.28980223	97.90929958	96.55484692	95.22577309
230629A00072	6/29/2023	4.69	6/29/2026	6/29/2023	110.92875	108.3535014	105.8526083	103.4234825	101.0636465	98.77072381	96.54243438	94.37658997	92.27108983
230629A00042	6/29/2023	4.69	6/29/2026	6/29/2023	110.92875	108.3535014	105.8526083	103.4234825	101.0636465	98.77072381	96.54243438	94.37658997	92.27108983
230629A00041	6/29/2023	5.09	6/30/2025	6/29/2023	106.60827	105.0865839	103.5946818	102.1317611	100.6970496	99.28980223	97.90929958	96.55484692	95.22577309
230630A00086	6/30/2023	4.72	6/30/2026	6/30/2023	111.01804	108.4388106	105.9340938	103.5013	101.1379441	98.84164266	96.6101089	94.44114826	92.33265402
230630A00088	6/30/2023	4.54	6/30/2027	6/30/2023	115.39461	111.7235617	108.1921701	104.7943475	101.5243059	98.37654064	95.34581512	92.42714587	89.61578898
230630A00011	6/30/2023	5.37	12/27/2024	6/30/2023	104.28317	103.275123	102.286666	101.3172354	100.3662846	99.43328783	98.51773908	97.61915124	96.7370552
230630A00003	6/30/2023	4.54	6/30/2027	6/30/2023	115.39461	111.7235617	108.1921701	104.7943475	101.5243059	98.37654064	95.34581512	92.42714587	89.61578898
230630A00079	6/30/2023	4.65	6/30/2026	6/30/2023	110.84186	108.2648734	105.7623487	103.3316987	100.9704398	98.67618977	96.44666335	94.27966722	92.17309595
230630A00080	6/30/2023	5.02	6/30/2025	6/30/2023	106.50241	104.9815591	103.4904746	102.0283574	100.5944356	99.18796465	97.80822539	96.45452345	95.12618803
230630A00081	6/30/2023	5.53	6/28/2024	6/30/2023	102.08148	101.5777705	101.0790432	100.5852208	100.0962311	99.61200346	99.13246847	98.65755814	98.18720576
230630A00062	6/30/2023	4.6	6/30/2026	6/30/2023	111.05772	108.4708157	105.9587882	103.5190259	101.1490275	98.84639439	96.60882542	94.43411239	92.32013565
230630A00030	6/30/2023	4.23	6/30/2028	6/30/2023	119.52484	114.7126531	110.1273108	105.7568698	101.5900828	97.61635107	93.82568385	90.2086599	86.75639213
230630A00028	6/30/2023	4.42	6/30/2027	6/30/2023	115.46143	111.7768356	108.2326891	104.82286	101.5415178	98.38311761	95.34238511	92.41430141	89.5940893
230630A00094	6/30/2023	4.42	6/30/2027	6/30/2023	115.46143	111.7768356	108.2326891	104.82286	101.5415178	98.38311761	95.34238511	92.41430141	89.5940893
230630A00066	6/30/2023	5.26	2/7/2025	6/30/2023	104.78324	103.6571051	102.5553309	101.4771292	100.4217473	99.3884647	98.37659071	97.38546331	96.41444753
230630A00061	6/30/2023	5	7/11/2025	6/30/2023	106.64384	105.0907126	103.5683058	102.0757789	100.6123213	99.17715148	97.76951537	96.38868538	95.03395911
230630A00055	6/30/2023	4.35	6/30/2028	6/30/2023	119.4263	114.6352427	110.0695453	105.7173705	101.5675637	97.60961239	93.83360599	90.23019784	86.79057028

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230703A00015	7/3/2023	4.34	7/3/2028	7/3/2023	119.41862	114.6189727	110.0454289	105.6860925	101.5297566	97.56586083	93.78445007	90.17613676	86.73206545
230703A00013	7/3/2023	4.34	7/3/2028	7/3/2023	119.41862	114.6189727	110.0454289	105.6860925	101.5297566	97.56586083	93.78445007	90.17613676	86.73206545
230703A00019	7/3/2023	4.61	7/3/2026	7/3/2023	111.12486	108.5285096	106.0074731	103.5591173	101.1809201	98.87046287	96.62542582	94.44358309	92.32279839
230703A00021	7/3/2023	4.99	7/3/2025	7/3/2023	106.74712	105.2118205	103.7067143	102.2309853	100.7838457	99.36453514	97.97231998	96.60649186	95.26636666
230703A00018	7/3/2023	4.61	7/3/2026	7/3/2023	111.12486	108.5285096	106.0074731	103.5591173	101.1809201	98.87046287	96.62542582	94.44358309	92.32279839
230703A00025	7/3/2023	4.73	7/3/2026	7/3/2023	111.08491	108.4962791	105.9825942	103.5412455	101.1697269	98.86563531	96.62666532	94.45060487	92.33533072
230703A00043	7/3/2023	4.53	7/6/2027	7/3/2023	115.44221	111.7529875	108.2046107	104.7909176	101.5060501	98.3444386	95.30078549	92.37005046	89.54743649
230703A00029	7/3/2023	4.89	2/3/2026	7/3/2023	109.3783	107.2296483	105.1346253	103.0915302	101.0987249	99.15463573	97.25775027	95.40661449	93.59982998
230703A00027	7/3/2023	5.45	11/4/2024	7/3/2023	103.63257	102.7722174	101.9262163	101.0942138	100.2758635	99.4708309	98.678792	97.89943337	97.13245158
230703A00028	7/3/2023	5.11	7/3/2025	7/3/2023	106.69743	105.1663516	103.6653293	102.1935485	100.7502262	99.33460691	97.94596134	96.58358542	95.2467991
230516A00123	5/16/2023	5.01	5/16/2024	5/16/2023	101.37083	100.9863488	100.6047962	100.2261402	99.85034775	99.47738635	99.10722397	98.73982903	98.37517045
230516A00067	5/16/2023	4.44	5/16/2025	5/16/2023	105.09411	103.7053395	102.3417593	101.0027373	99.68766604	98.39595779	97.12704353	95.88037235	94.6554107
230516A00069	5/16/2023	4.1	5/15/2026	5/16/2023	108.92044	106.4932581	104.1331013	101.8377455	99.60505443	97.43297522	95.319534	93.26283266	91.26104538
230516A00009	5/16/2023	4.46	5/16/2025	5/16/2023	105.12188	103.7329097	102.3691311	101.029914	99.71465103	98.42275418	97.15365442	95.90680074	94.68165951
230516A00035	5/16/2023	4.11	5/15/2026	5/16/2023	108.94434	106.5168702	104.1564301	101.8607969	99.62783445	97.45548948	95.34178802	93.28483181	91.28279488
230517A00048	5/17/2023	4.17	5/15/2026	5/17/2023	109.08775	106.658543	104.2964028	101.9991057	99.76451455	97.59057503	95.47531217	93.41682674	91.41329186
230517A00020	5/17/2023	4.47	7/17/2025	5/17/2023	105.88698	104.3234056	102.7909449	101.2887406	99.81596416	98.37181716	96.95552954	95.56635854	94.20358745
230517A00014	5/17/2023	4.14	5/18/2026	5/17/2023	109.05211	106.6149677	104.245326	101.9409404	99.69965326	97.51939109	95.39816054	93.33404499	91.32520109
230517A00046	5/17/2023	4.53	5/16/2025	5/17/2023	105.21908	103.8294051	102.4649323	101.1250326	99.80909847	98.51654156	97.24679253	95.9993001	94.77353037
230518A00019	5/18/2023	3.81	5/18/2028	5/18/2023	117.13293	112.4952341	108.0714654	103.8506266	99.82233929	95.97680903	92.3047895	88.797549	85.4468392
230518A00017	5/18/2023	4.28	5/18/2026	5/18/2023	109.38789	106.9466667	104.5730314	102.2647376	100.0196251	97.83561794	95.7107204	93.64301362	91.63065208
230519A00028	5/19/2023	4.73	5/19/2025	5/19/2023	105.53498	104.1347315	102.7600097	101.4101721	100.0846001	98.78269506	97.50387773	96.24758724	95.01328054
230519A00029	5/19/2023	4.39	5/19/2026	5/19/2023	109.66443	107.2170466	104.8374742	102.5234549	100.2728193	98.08348296	95.95344202	93.88076984	91.8636135
230519A00038	5/19/2023	3.92	5/19/2028	5/19/2023	117.63203	112.9805225	108.5435688	104.310137	100.2698156	96.41277936	92.72975306	89.21197788	85.85118009
230519A00026	5/19/2023	4.73	5/19/2025	5/19/2023	105.53498	104.1347315	102.7600097	101.4101721	100.0846001	98.78269506	97.50387773	96.24758724	95.01328054
230519A00025	5/19/2023	4.95	11/19/2024	5/19/2023	103.38493	102.484956	101.600723	100.7318151	99.87783565	99.03840148	98.21314251	97.40170111	96.60373161
230519A00027	5/19/2023	4.39	5/19/2026	5/19/2023	109.66443	107.2170466	104.8374742	102.5234549	100.2728193	98.08348296	95.95344202	93.88076984	91.8636135
230519A00011	5/19/2023	4.73	5/19/2025	5/19/2023	105.53498	104.1347315	102.7600097	101.4101721	100.0846001	98.78269506	97.50387773	96.24758724	95.01328054
230519A00013	5/19/2023	4.39	5/19/2026	5/19/2023	109.66443	107.2170466	104.8374742	102.5234549	100.2728193	98.08348296	95.95344202	93.88076984	91.8636135
230519A00041	5/19/2023	3.92	5/19/2028	5/19/2023	117.63203	112.9805225	108.5435688	104.310137	100.2698156	96.41277936	92.72975306	89.21197788	85.85118009
230522A00058	5/22/2023	4.7	5/19/2025	5/22/2023	105.49307	104.0931324	102.7187115	101.3691698	100.0438887	98.74226975	97.46373382	96.20772016	94.97368584
230522A00046	5/22/2023	4.17	5/22/2028	5/22/2023	118.15221	113.4987625	109.059714	104.8240446	100.7813556	96.92183339	93.23621353	89.71574737	86.35217059
230522A00093	5/22/2023	4.17	5/22/2028	5/22/2023	118.15221	113.4987625	109.059714	104.8240446	100.7813556	96.92183339	93.23621353	89.71574737	86.35217059

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230522A00029	5/22/2023	4.67	5/22/2025	5/22/2023	105.48885	104.0806717	102.6982954	101.3410718	100.0083726	98.69958978	97.4141351	96.15143919	94.9109508
230522A00026	5/22/2023	4.35	5/22/2026	5/22/2023	109.60618	107.1511236	104.7643057	102.4434503	100.1863678	97.99095433	95.85518768	93.77712389	91.75489357
230522A00014	5/23/2023	5.14	5/22/2024	5/23/2023	101.48443	101.0832918	100.6853341	100.2905198	99.89881167	99.51017306	99.1245679	98.74196068	98.36231644
230522A00043	5/22/2023	4.17	5/16/2028	5/22/2023	118.0795	113.4448499	109.0230072	104.8030694	100.7747482	96.92833191	93.25465083	89.7450438	86.39132755
230523A00048	5/23/2023	4.44	5/26/2026	5/23/2023	109.87443	107.4049027	105.0042894	102.6702754	100.4006411	98.19325388	96.04606474	93.95710402	91.92447802
230523A00047	5/23/2023	4.77	5/23/2025	5/23/2023	105.6422	104.2301321	102.843986	101.4831032	100.1468512	98.83461852	97.5458134	96.27986308	95.03621311
230523A00045	5/23/2023	5	11/22/2024	5/23/2023	103.46662	102.5581071	101.6656191	100.7887325	99.92703992	99.08014825	98.24767774	97.42926158	96.62454533
230523A00031	5/23/2023	4.76	11/22/2024	5/23/2023	103.39282	102.4826709	101.5886076	100.7102043	99.84705146	98.99875365	98.1649291	97.345209	96.53923701
230523A00008	5/23/2023	4.44	5/26/2026	5/23/2023	109.87443	107.4049027	105.0042894	102.6702754	100.4006411	98.19325388	96.04606474	93.95710402	91.92447802
230523A00030	5/23/2023	5.3	5/23/2024	5/23/2023	101.55968	101.1556303	100.7548025	100.3571606	99.96266646	99.57128288	99.18297304	98.79770077	98.41543044
230523A00011	5/23/2023	5.46	2/26/2024	5/23/2023	100.64871	100.4849941	100.3218194	100.1591783	99.99706821	99.83548648	99.67443056	99.51389789	99.35388592
230523A00014	5/23/2023	5.3	5/22/2024	5/23/2023	101.54864	101.1473488	100.749236	100.3542675	99.96240606	99.57361504	99.18785834	98.80510045	98.4253064
230523A00027	5/23/2023	5.3	5/23/2024	5/23/2023	101.55968	101.1556303	100.7548025	100.3571606	99.96266646	99.57128288	99.18297304	98.79770077	98.41543044
230523A00091	5/23/2023	4.77	5/23/2036	5/23/2023	149.86027	135.6099917	122.9513972	111.6942399	101.6721027	92.73929347	84.76816164	77.64677394	71.27690049
230523A00090	5/23/2023	4.71	5/23/2035	5/23/2023	146.49172	133.4586214	121.7818649	111.3102758	101.9103728	93.46420773	85.86748216	79.0279003	72.86372873
230523A00083	5/23/2023	4.21	5/23/2028	5/23/2023	118.34155	113.6810843	109.2354156	104.9934979	100.9449087	97.07981228	93.38892369	89.8634751	86.49518433
230523A00086	5/23/2023	4.42	5/23/2030	5/23/2023	126.95486	119.9766435	113.4419815	107.3201693	101.5827828	96.20349852	91.15792887	86.42346982	81.97916207
230523A00085	5/23/2023	4.39	5/23/2029	5/23/2023	123.35638	117.5288439	112.0211161	106.8138954	101.8891403	97.22998446	92.8206536	88.64638993	84.69338138
230523A00088	5/23/2023	4.59	5/23/2033	5/23/2023	139.03112	128.4511667	118.8062046	110.0074515	101.975025	94.6370081	87.92861623	81.79145574	76.17286249
230523A00089	5/23/2023	4.65	5/23/2034	5/23/2023	142.95851	131.1467011	120.4722359	110.8176707	102.0783254	94.16083493	86.98187124	80.46701553	74.5497623
230524A00009	5/24/2023	3.9	5/24/2028	5/24/2023	117.60239	112.9371265	108.4876952	104.2429595	100.1924175	96.32616069	92.63483652	89.10961487	85.74215599
230524A00006	5/24/2023	5.47	2/26/2024	5/24/2023	100.65034	100.4866279	100.3234511	100.160808	99.99869579	99.83711201	99.67605405	99.51551935	99.35550536
230524A00028	5/24/2023	4.36	5/26/2026	5/24/2023	109.68079	107.2136398	104.815349	102.4836076	100.2161974	98.01098734	95.8659297	93.77905618	91.74847435
230524A00021	5/24/2023	4.44	5/23/2025	5/24/2023	105.40539	103.9914185	102.6034559	101.2408439	99.9029469	98.58915035	97.29885952	96.0314989	94.78651137
230524A00020	5/24/2023	4.44	5/23/2025	5/24/2023	105.40539	103.9914185	102.6034559	101.2408439	99.9029469	98.58915035	97.29885952	96.0314989	94.78651137
230524A00038	5/24/2023	4.36	5/26/2026	5/24/2023	109.68079	107.2136398	104.815349	102.4836076	100.2161974	98.01098734	95.8659297	93.77905618	91.74847435
230524A00036	5/24/2023	5.34	5/24/2024	5/24/2023	101.587	101.1801465	100.7765644	100.3762101	99.97904479	99.58503049	99.1941297	98.80630558	98.42152183
230524A00037	5/24/2023	4.69	5/23/2025	5/24/2023	105.52957	104.1183341	102.7330026	101.3729205	100.0374558	98.72599734	97.43795375	96.17275259	94.92983971
230525A00024	5/25/2023	5.06	11/25/2024	5/25/2023	103.5583	102.6411916	101.7403992	100.8554862	99.98603471	99.13164134	98.29191667	97.46648461	96.65498184
230705A00008	7/5/2023	4.63	7/6/2026	7/5/2023	111.21754	108.6114162	106.0810499	103.6237885	101.2370884	98.91851099	96.66571741	94.4764639	92.34859725
230705A00040	7/5/2023	4.38	7/5/2028	7/5/2023	119.62572	114.8155785	110.2321995	105.8636425	101.6986592	97.72665051	93.93762581	90.32216436	86.87137993
230706A00034	7/6/2023	5.18	7/7/2025	7/6/2023	106.84709	105.3038393	103.7909875	102.3077104	100.8532111	99.42672073	98.02749732	96.65482477	95.30801164
230726A00023	7/26/2023	4.24	7/26/2028	7/26/2023	119.901	115.0038836	110.3404819	105.8983394	101.6657334	97.63162632	93.78562213	90.11792531	86.61930287

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230726A00058	7/26/2023	4.99	7/28/2025	7/26/2023	107.11288	105.5041277	103.9277742	102.3829096	100.8686561	99.384168	97.92863073	96.5012591	95.10129607
230726A00060	7/26/2023	4.99	7/28/2025	7/26/2023	107.11288	105.5041277	103.9277742	102.3829096	100.8686561	99.384168	97.92863073	96.5012591	95.10129607
230726A00012	7/26/2023	4.24	7/26/2028	7/26/2023	119.901	115.0038836	110.3404819	105.8983394	101.6657334	97.63162632	93.78562213	90.11792531	86.61930287
230727A00020	7/27/2023	4.39	7/27/2028	7/27/2023	119.95055	115.0688355	110.4196721	105.9906829	101.7702198	97.74731454	93.91163537	90.2534467	86.76357128
230727A00070	7/27/2023	4.75	7/27/2026	7/27/2023	111.47037	108.8084055	106.2248842	103.7170119	101.2821131	98.91762499	96.6210919	94.39015995	92.22257216
230706A00006	7/6/2023	4.59	7/6/2028	7/6/2023	120.59439	115.7595291	111.1524369	106.7611174	102.5742743	98.5812631	94.77205055	91.13717579	87.6677148
230706A00029	7/6/2023	5.53	1/6/2025	7/6/2023	104.5941	103.5569248	102.5404552	101.5440719	100.5671822	99.60921672	98.66962793	97.74788935	96.84349446
230706A00032	7/6/2023	5.53	1/6/2025	7/6/2023	104.5941	103.5569248	102.5404552	101.5440719	100.5671822	99.60921672	98.66962793	97.74788935	96.84349446
230706A00031	7/6/2023	5.72	7/8/2024	7/6/2023	102.2881	101.7566816	101.2308027	100.7103805	100.1953301	99.68556849	99.18101422	98.6815876	98.18721053
230707A00031	7/7/2023	4.84	7/7/2026	7/7/2023	111.41949	108.8151708	106.2864521	103.8306907	101.4453506	99.12800012	96.87630716	94.68803431	92.56103439
230707A00038	7/7/2023	5.35	1/7/2025	7/7/2023	104.42316	103.3841904	102.3660175	101.3680233	100.3896106	99.43020592	98.48925779	97.56623599	96.66063046
230707A00035	7/7/2023	5.07	7/7/2025	7/7/2023	106.67863	105.1367174	103.6251827	102.1431999	100.6899727	99.26473284	97.86673893	96.49527543	95.14965141
230707A00021	9/1/2023	4.61	8/30/2030	9/1/2023	129.12419	121.7940717	114.9459506	108.5452907	102.560218	96.96129954	91.72134319	86.81521577	82.21967627
230707A00022	9/1/2023	4.61	8/30/2030	9/1/2023	129.12419	121.7940717	114.9459506	108.5452907	102.560218	96.96129954	91.72134319	86.81521577	82.21967627
230707A00023	9/1/2023	4.61	8/30/2030	9/1/2023	129.12419	121.7940717	114.9459506	108.5452907	102.560218	96.96129954	91.72134319	86.81521577	82.21967627
230727A00016	7/27/2023	4.51	7/27/2033	7/27/2023	138.88385	128.1253558	118.3338923	109.4161017	101.2881414	93.87466717	87.10792969	80.92697134	75.27691221
230727A00063	7/27/2023	4.38	7/27/2028	7/27/2023	120.56115	115.6460276	110.9654022	106.5067752	102.2583842	98.20915436	94.34865465	90.66705682	87.1550971
230727A00073	7/27/2023	4.81	7/27/2026	7/27/2023	111.62584	108.9618441	106.3763344	103.8665184	101.4297192	99.06337278	96.76502206	94.53231199	92.36298443
230727A00075	7/27/2023	4.5	7/27/2028	7/27/2023	120.45771	115.5644432	110.9041319	106.4643804	102.2335238	98.20057806	94.35519667	90.68762974	87.1886865
230728A00017	7/28/2023	5.15	7/22/2025	7/28/2023	107.03607	105.4488888	103.8934247	102.3687978	100.8741572	99.40868329	97.97158567	96.56210235	95.17949828
230710A00066	7/10/2023	5	7/10/2025	7/10/2023	106.62963	105.0794241	103.559852	102.0700766	100.609291	99.17671685	97.77160341	96.39322605	95.04088527
230710A00013	7/10/2023	4.55	7/10/2029	7/10/2023	124.72153	118.7204075	113.055337	107.7056045	102.6518821	97.87612799	93.36149454	89.09224274	85.05366371
230711A00089	7/11/2023	5.32	12/16/2024	7/11/2023	104.0821	103.1050983	102.1465394	101.2059066	100.2826994	99.37643549	98.48665046	97.61289666	96.75474257
230711A00087	7/11/2023	5.04	6/16/2025	7/11/2023	106.34451	104.8624474	103.4087438	101.9826498	100.583446	99.21043771	97.86295359	96.54034483	95.24198413
230711A00012	7/11/2023	5.07	7/11/2025	7/11/2023	106.75182	105.1978287	103.6745719	102.1812097	100.7169312	99.28095432	97.87252481	96.49091463	95.13542108
230711A00013	7/11/2023	4.78	7/13/2026	7/11/2023	111.35156	108.7310031	106.1868719	103.7164766	101.3172401	98.98669277	96.72246628	94.52228929	92.3839826
230728A00004	7/28/2023	4.77	7/28/2026	7/28/2023	111.53621	108.870534	106.2834674	103.7722041	101.334061	98.96646802	96.66696264	94.43318461	92.26287093
230728A00006	7/28/2023	4.46	7/28/2028	7/28/2023	120.28618	115.3938984	110.7346901	106.296145	102.0665863	98.03501852	94.19108501	90.52502664	87.02764421
230728A00005	7/28/2023	4.59	7/28/2027	7/28/2023	115.96198	112.1999737	108.5834009	105.1058132	101.7610857	98.54339961	95.44722473	92.46730358	89.59863615
230711A00038	7/11/2023	4.89	10/10/2025	7/11/2023	107.74523	105.9328851	104.160132	102.4257985	100.7287559	99.0679187	97.44224285	95.85072348	94.29239319
230711A00037	7/11/2023	5.48	7/19/2024	7/11/2023	102.281	101.7197751	101.1647344	100.6157735	100.0727926	99.53569418	99.00438276	98.47876496	97.95874938
230711A00027	7/11/2023	5.07	7/11/2025	7/11/2023	106.75182	105.1978287	103.6745719	102.1812097	100.7169312	99.28095432	97.87252481	96.49091463	95.13542108
230712A00056	7/12/2023	4.22	7/12/2028	7/12/2023	118.98337	114.1672893	109.5792242	105.2071185	101.0396214	97.06603998	93.27629736	89.66089377	86.21087045

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230712A00002	7/12/2023	4.31	7/12/2028	7/12/2023	119.39458	114.5692133	109.972185	105.5914236	101.4155654	97.43390495	93.63635335	90.01339962	86.55607428
230712A00040	7/12/2023	4.45	7/12/2027	7/12/2023	115.24053	111.5375591	107.9765054	104.5511339	101.2555208	98.08403477	95.03132101	92.0922858	89.26208235
230731A00036	7/31/2023	5.1	7/31/2025	7/31/2023	107.08729	105.4745928	103.8944178	102.345843	100.8279847	99.33999218	97.88104588	96.45035593	95.04716084
230731A00037	7/31/2023	4.74	7/31/2026	7/31/2023	111.49941	108.8258548	106.2313231	103.7129904	101.2681526	98.89421976	96.58871081	94.34924794	92.17355162
230731A00012	7/31/2023	4.5	7/31/2029	7/31/2023	124.66021	118.5993395	112.8808638	107.4835013	102.3874047	97.5740591	93.02618547	88.72765168	84.66339031
230801A00028	8/1/2023	5.14	8/1/2025	8/1/2023	107.16553	105.5494667	103.9660246	102.4142797	100.8933445	99.40236442	97.94051625	96.50700672	95.10107112
230801A00001	8/1/2023	5.14	8/1/2025	8/1/2023	107.16553	105.5494667	103.9660246	102.4142797	100.8933445	99.40236442	97.94051625	96.50700672	95.10107112
230801A00022	8/1/2023	4.65	8/2/2027	8/1/2023	116.24726	112.4660225	108.8313503	105.3367268	101.9759623	98.74317745	95.6327856	92.63947641	89.75820049
230712A00039	7/12/2023	4.62	7/13/2026	7/12/2023	110.94313	108.3278478	105.7888678	103.323509	100.929198	98.60346824	96.34395485	94.14838953	92.01459606
230712A00041	7/12/2023	4.31	7/12/2028	7/12/2023	119.39458	114.5692133	109.972185	105.5914236	101.4155654	97.43390495	93.63635335	90.01339962	86.55607428
230712A00051	7/12/2023	4.62	7/13/2026	7/12/2023	110.94313	108.3278478	105.7888678	103.323509	100.929198	98.60346824	96.34395485	94.14838953	92.01459606
230712A00046	7/12/2023	4.52	7/13/2026	7/12/2023	110.68787	108.0758758	105.5401153	103.0779043	100.6866716	98.36395291	96.1073852	93.91470217	91.78372947
230712A00018	7/12/2023	4.31	7/12/2028	7/12/2023	119.39458	114.5692133	109.972185	105.5914236	101.4155654	97.43390495	93.63635335	90.01339962	86.55607428
230712A00019	7/12/2023	4.31	7/12/2028	7/12/2023	119.39458	114.5692133	109.972185	105.5914236	101.4155654	97.43390495	93.63635335	90.01339962	86.55607428
230712A00014	7/12/2023	4.62	7/13/2026	7/12/2023	110.94313	108.3278478	105.7888678	103.323509	100.929198	98.60346824	96.34395485	94.14838953	92.01459606
230712A00015	7/12/2023	4.62	7/13/2026	7/12/2023	110.94313	108.3278478	105.7888678	103.323509	100.929198	98.60346824	96.34395485	94.14838953	92.01459606
230712A00016	7/12/2023	4.45	7/12/2027	7/12/2023	115.24053	111.5375591	107.9765054	104.5511339	101.2555208	98.08403477	95.03132101	92.0922858	89.26208235
230712A00021	7/12/2023	4.31	7/12/2028	7/12/2023	119.39458	114.5692133	109.972185	105.5914236	101.4155654	97.43390495	93.63635335	90.01339962	86.55607428
230712A00017	7/12/2023	4.45	7/12/2027	7/12/2023	115.24053	111.5375591	107.9765054	104.5511339	101.2555208	98.08403477	95.03132101	92.0922858	89.26208235
230712A00020	7/12/2023	4.31	7/12/2028	7/12/2023	119.39458	114.5692133	109.972185	105.5914236	101.4155654	97.43390495	93.63635335	90.01339962	86.55607428
230712A00027	7/12/2023	4.29	1/12/2028	7/12/2023	117.0283	112.7722688	108.6987077	104.7987848	101.0641438	97.48687683	94.05949788	90.77491763	87.62642039
230712A00009	7/12/2023	4.89	6/16/2025	7/12/2023	106.12344	104.6430788	103.1910434	101.7665891	100.3689973	98.99757391	97.65164836	96.33057253	95.0337198
230712A00005	7/12/2023	5.2	12/16/2024	7/12/2023	103.96526	102.9888643	102.0309098	101.0908735	100.1682549	99.26257212	98.37336071	97.50017324	96.64257836
230713A00058	7/13/2023	4.08	7/13/2028	7/13/2023	119.00198	114.1634319	109.5545851	105.1632715	100.9780305	96.98806722	93.18321006	89.55387146	86.09101103
230615A00103	6/15/2023	4.99	6/16/2025	6/15/2023	106.27082	104.7893245	103.336177	101.9106296	100.5119631	99.13948311	97.79251852	96.47042073	95.17256269
230615A00105	6/15/2023	5.55	6/10/2024	6/15/2023	101.87526	101.4212207	100.9712517	100.5252934	100.0832924	99.64519569	99.21095171	98.78050954	98.35381922
230616A00012	6/16/2023	4.41	6/16/2026	6/16/2023	110.39892	107.858664	105.3909592	102.993312	100.6633315	98.39872315	96.19728424	94.0568998	91.97553842
230616A00037	6/16/2023	4.48	6/16/2027	6/16/2023	115.00002	111.3745883	107.8857584	104.5276314	101.2945998	98.18132758	95.18273592	92.29398887	89.51048063
230616A00038	6/16/2023	4.32	6/16/2028	6/16/2023	119.12105	114.3759671	109.8524136	105.5388408	101.4243632	97.49871713	93.75222148	90.17574191	86.76065697
230801A00021	8/1/2023	4.49	8/1/2028	8/1/2023	120.47487	115.56686	110.8930745	106.4410222	102.198948	98.15578496	94.30110972	90.6251018	87.11850521
230801A00024	8/1/2023	4.82	8/3/2026	8/1/2023	111.74889	109.0637713	106.4581796	103.9292665	101.4743041	99.09068004	96.77589218	94.52754277	92.34333349
230802A00007	8/2/2023	5.46	8/2/2024	8/2/2023	102.41876	101.8192426	101.2267592	100.6411906	100.0624161	99.49031778	98.92478042	98.36569146	97.8129409
230802A00022	9/8/2023	4.41	9/8/2028	9/8/2023	120.56729	115.5496	110.7758355	106.232748	101.9078828	97.78952906	93.86667074	90.12894114	86.56658095

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230802A00017	8/2/2023	4.79	8/3/2026	8/2/2023	111.67058	108.9864884	106.3819054	103.8539783	101.3999797	99.01729806	96.70343187	94.455984	92.27265672
230713A00021	7/13/2023	4.44	7/13/2026	7/13/2023	110.48366	107.8742982	105.3411132	102.8814205	100.4926505	98.17234065	95.91812949	93.72775228	91.5990362
230713A00031	7/13/2023	4.49	7/13/2026	7/13/2023	110.61129	108.0002842	105.4654895	103.0042228	100.6139137	98.29209831	96.03641431	93.84459596	91.71446949
230713A00023	7/13/2023	4.2	7/13/2028	7/13/2023	118.90416	114.0869599	109.4979628	105.1250968	100.9569962	96.98295417	93.19288115	89.57726569	86.12713835
230713A00019	7/13/2023	4.51	7/13/2026	7/13/2023	110.66234	108.0506786	105.51524	103.0533438	100.662419	98.34000138	96.08372824	93.89133343	91.76064281
230713A00026	7/13/2023	4.49	7/13/2026	7/13/2023	110.61129	108.0002842	105.4654895	103.0042228	100.6139137	98.29209831	96.03641431	93.84459596	91.71446949
230713A00025	7/13/2023	4.82	7/14/2025	7/13/2023	106.39156	104.8323052	103.3039818	101.8057391	100.3367575	98.89624648	97.4834438	96.09761401	94.7380473
230713A00014	7/13/2023	4.2	7/13/2028	7/13/2023	118.90416	114.0869599	109.4979628	105.1250968	100.9569962	96.98295417	93.19288115	89.57726569	86.12713835
230616A00039	6/16/2023	5.07	6/16/2025	6/16/2023	106.38872	104.9063212	103.4522839	102.0258619	100.6263357	99.25301047	97.90521464	96.58229929	95.283637
230616A00040	6/16/2023	4.66	6/16/2026	6/16/2023	110.68305	108.1462166	105.6816759	103.2869497	100.9596596	98.69752293	96.49834846	94.36003186	92.28055184
230616A00106	6/16/2023	4.61	6/16/2026	6/16/2023	110.55914	108.0238562	105.5608355	103.1675961	100.8417605	98.58104726	96.38326589	94.24631297	92.16816809
230620A00065	6/20/2023	4.56	6/18/2026	6/20/2023	110.46087	107.9213916	105.4544529	103.0575578	100.7283149	98.46442924	96.26369798	94.12400586	92.04332128
230714A00030	7/14/2023	4.52	7/17/2026	7/14/2023	110.74116	108.1171171	105.5698844	103.0967491	100.6951121	98.3624824	96.09647214	93.8947915	91.75524397
230714A00034	7/14/2023	4.37	7/16/2027	7/14/2023	115.00947	111.2990784	107.7312708	104.2997657	100.9985968	97.82209323	94.76486338	91.82177925	88.98796215
230714A00026	7/14/2023	4.18	7/14/2028	7/14/2023	118.82484	114.0065247	109.4166004	105.042979	100.8742796	96.89978162	93.10938272	89.49355983	86.04333279
230714A00018	7/14/2023	4.24	7/14/2027	7/14/2023	115.01376	111.2964642	107.7221451	104.2844979	100.9775365	97.79557143	94.73319359	91.78525838	88.94687141
230714A00019	7/14/2023	4.85	7/14/2025	7/14/2023	106.43808	104.8784519	103.3497605	101.8511563	100.3818193	98.94095889	97.52781276	96.14164525	94.78174642
230714A00020	7/14/2023	4.52	7/14/2026	7/14/2023	110.70119	108.086186	105.5475572	103.0826146	100.6887801	98.36358273	96.10465329	93.90971959	91.77660177
230714A00022	7/14/2023	4.36	7/14/2027	7/14/2023	114.94712	111.2435969	107.6822324	104.2567736	100.9612785	97.7900991	94.73786503	91.79946824	88.9700486
230714A00023	7/14/2023	4.18	7/14/2028	7/14/2023	118.82484	114.0065247	109.4166004	105.042979	100.8742796	96.89978162	93.10938272	89.49355983	86.04333279
230717A00106	7/17/2023	5.49	7/11/2024	7/17/2023	102.20191	101.6625757	101.1289587	100.6009656	100.0785076	99.56149774	99.0498509	98.54348369	98.04231445
230807A00024	8/7/2023	5.03	8/7/2025	8/7/2023	107.07372	105.4421119	103.8436506	102.2773917	100.7424257	99.23787723	97.76290342	96.31669235	94.8984616
230807A00023	8/7/2023	5.26	2/7/2025	8/7/2023	104.78324	103.6571051	102.5553309	101.4771292	100.4217473	99.3884647	98.37659071	97.38546331	96.41444753
230807A00010	8/7/2023	4.4	8/7/2028	8/7/2023	120.13182	115.2146659	110.5329675	106.0741249	101.8262867	97.77829723	93.91965208	90.24045615	86.73138496
230807A00033	8/7/2023	4.57	8/7/2026	8/7/2023	111.50547	108.8048777	106.1846967	103.6420294	101.1741037	98.77826564	96.45197371	94.19279323	91.99839103
230303A00059	3/3/2023	4.56	3/3/2027	3/3/2023	114.30106	110.9746712	107.7646072	104.6660898	101.6745738	98.7857292	95.99542951	93.29974087	90.69491159
230303A00057	3/3/2023	4.77	3/3/2027	3/3/2023	114.53094	111.211407	108.0076914	104.9150479	101.9289593	99.04512153	96.25943293	93.56798268	90.96704077
230717A00022	7/17/2023	4.59	7/17/2026	7/17/2023	110.92062	108.2942493	105.7447441	103.269387	100.8655773	98.53082259	96.26273358	94.05901906	91.91748118
230717A00061	7/17/2023	4.93	7/17/2025	7/17/2023	106.6041	105.0347224	103.4965611	101.9887554	100.5104741	99.06091608	97.63930886	96.24490728	94.87699229
230620A00042	6/20/2023	5.15	12/20/2024	6/20/2023	103.96957	102.9822542	102.0137907	101.0636388	100.1312814	99.21622101	98.3179784	97.43609197	96.57011691
230807A00018	8/7/2023	4.65	8/7/2026	8/7/2023	111.3583	108.6673086	106.0563007	103.5224019	101.0628589	98.67503579	96.35640794	94.10455677	91.91716433
230808A00014	8/8/2023	4.6	8/7/2026	8/8/2023	111.22723	108.5379673	105.9286544	103.3964124	100.9384889	98.55224919	96.23516981	93.9848332	91.79892242
230808A00057	8/8/2023	4.19	8/8/2028	8/8/2023	119.82795	114.8952503	110.199489	105.7279613	101.4687115	97.41048779	93.54269666	89.85536058	86.3390788

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230808A00060	8/8/2023	4.19	8/8/2028	8/8/2023	119.82795	114.8952503	110.199489	105.7279613	101.4687115	97.41048779	93.54269666	89.85536058	86.3390788
230808A00008	8/8/2023	4.67	4/24/2026	8/8/2023	110.00115	107.6193964	105.3019015	103.0465626	100.8513569	98.71434011	96.63364268	94.60746662	92.63408224
230808A00054	8/8/2023	4.19	8/8/2028	8/8/2023	119.82795	114.8952503	110.199489	105.7279613	101.4687115	97.41048779	93.54269666	89.85536058	86.3390788
230808A00010	8/8/2023	4.95	8/8/2025	8/8/2023	106.9582	105.3248383	103.7247028	102.1568397	100.6203364	99.11431425	97.63792756	96.19036157	94.77083128
230809A00020	8/9/2023	4.51	11/9/2026	8/9/2023	112.2084	109.2447556	106.3761728	103.5990876	100.9100937	98.30593002	95.78347434	93.33973616	90.97185056
230620A00015	6/20/2023	5.46	6/20/2024	6/20/2023	101.95209	101.4705569	100.9935891	100.5211226	100.0530937	99.5894398	99.13009972	98.67501325	98.22412132
230620A00007	6/20/2023	5.21	12/20/2024	6/20/2023	104.02865	103.0410238	102.0722518	101.1217953	100.1891374	99.27378044	98.37524507	97.49306965	96.62680926
230620A00091	6/20/2023	4.56	6/22/2026	6/20/2023	110.51216	107.9611839	105.483372	103.0761962	100.7372347	98.46416434	96.25475505	94.10686612	92.01844175
230620A00089	6/20/2023	4.98	6/20/2025	6/20/2023	106.30892	104.8164337	103.352702	101.9169598	100.5084733	99.1265336	97.7704562	96.43957953	95.13326413
230620A00035	6/20/2023	4.36	6/20/2030	6/20/2023	126.80975	119.757567	113.158693	106.981393	101.1963196	95.77631923	90.696257	85.93285696	81.46455525
230621A00045	6/21/2023	4.95	6/23/2025	6/21/2023	106.30375	104.803293	103.3318843	101.8887542	100.4731576	99.08437517	97.72171218	96.38449738	95.07208206
230621A00016	6/21/2023	4.55	6/22/2026	6/21/2023	110.48721	107.9365507	105.4590467	103.052172	100.7135052	98.44072303	96.23159584	94.08398303	91.99582898
230621A00022	6/21/2023	4.24	6/21/2028	6/21/2023	118.82044	114.068128	109.5383972	105.2196124	101.1008046	97.17163312	93.42234646	89.84374525	86.42714827
230621A00041	6/21/2023	4.24	6/21/2028	6/21/2023	118.82044	114.068128	109.5383972	105.2196124	101.1008046	97.17163312	93.42234646	89.84374525	86.42714827
230622A00039	6/26/2023	4.49	6/26/2026	6/26/2023	110.38804	107.8277924	105.3412843	102.925959	100.579366	98.29915444	96.08306864	93.92894342	91.83469993
230622A00056	6/26/2023	4.49	6/26/2026	6/26/2023	110.38804	107.8277924	105.3412843	102.925959	100.579366	98.29915444	96.08306864	93.92894342	91.83469993
230622A00005	6/22/2023	4.05	6/22/2028	6/22/2023	118.61172	113.8425653	109.2974714	104.9646957	100.8331692	96.89245853	93.13272593	89.5446923	86.11960237
230622A00004	6/22/2023	4.23	6/22/2027	6/22/2023	114.68775	111.0390219	107.5287175	104.1508229	100.8996207	97.76967222	94.75580241	91.85308544	89.05683138
230622A00095	6/22/2023	4.38	6/22/2027	6/22/2023	114.72814	111.0909287	107.5914146	104.2236247	100.9818814	97.86078359	94.85519155	91.96021258	89.17118785
230622A00093	6/22/2023	4.55	6/22/2026	6/22/2023	110.48721	107.9365507	105.4590467	103.052172	100.7135052	98.44072303	96.23159584	94.08398303	91.99582898
230622A00096	6/22/2023	4.21	6/22/2028	6/22/2023	118.69687	113.9445259	109.4149332	105.0964329	100.9780415	97.04940486	93.30075893	89.72289308	86.30711573
230622A00083	6/22/2023	4.55	6/22/2026	6/22/2023	110.48721	107.9365507	105.4590467	103.052172	100.7135052	98.44072303	96.23159584	94.08398303	91.99582898
230622A00027	6/22/2023	4.49	6/22/2026	6/22/2023	110.33752	107.7887511	105.3130946	102.9080268	100.5711277	98.30007516	96.09264059	93.94668451	91.86015234
230622A00028	6/22/2023	4.35	6/22/2027	6/22/2023	114.6231	110.9877273	107.489997	104.1239411	100.883884	97.76442624	94.76042968	91.8670032	89.07948949
230622A00030	6/22/2023	4.17	6/22/2028	6/22/2023	118.51632	113.768011	109.2423089	104.9275671	100.8128075	96.88768139	93.14242976	89.56784679	86.15524548
230622A00047	6/22/2023	4.49	6/22/2026	6/22/2023	110.33752	107.7887511	105.3130946	102.9080268	100.5711277	98.30007516	96.09264059	93.94668451	91.86015234
230622A00045	6/22/2023	4.91	6/23/2025	6/22/2023	106.24403	104.7440368	103.273084	101.830402	100.415246	99.02689668	97.66465957	96.32786362	95.01586031
230622A00049	6/22/2023	4.71	12/17/2025	6/22/2023	108.33118	106.32626	104.369179	102.4584932	100.5928169	98.77081555	96.99120301	95.25273982	93.55423098
230623A00003	6/23/2023	4.29	6/23/2027	6/23/2023	114.42554	110.7908755	107.2939589	103.9288149	100.6897589	97.57138288	94.56854101	91.67633492	88.8901006
230623A00002	6/23/2023	4.45	6/23/2026	6/23/2023	110.25025	107.6998708	105.2227353	102.8163099	100.4781675	98.20597981	95.99751217	93.85061943	91.76324165
230623A00004	6/23/2023	4.13	6/23/2028	6/23/2023	118.34731	113.5999889	109.0754103	104.7619051	100.6484818	96.72477954	92.98102821	89.40801188	85.99703436
230623A00057	6/23/2023	4.52	6/23/2026	6/23/2023	110.42508	107.8724917	105.3931963	102.9846583	100.6444493	98.37023954	96.15979313	94.01096359	91.92168978
230623A00058	6/23/2023	4.38	6/23/2027	6/23/2023	114.7409	111.1007196	107.5984437	104.2280897	100.9839675	97.86066428	94.85302905	91.95615879	89.165385

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230623A00027	6/23/2023	4.13	6/23/2028	6/23/2023	118.34731	113.5999889	109.0754103	104.7619051	100.6484818	96.72477954	92.98102821	89.40801188	85.99703436
230623A00026	6/23/2023	4.29	6/23/2027	6/23/2023	114.42554	110.7908755	107.2939589	103.9288149	100.6897589	97.57138288	94.56854101	91.67633492	88.8901006
230623A00025	6/23/2023	4.45	6/23/2026	6/23/2023	110.25025	107.6998708	105.2227353	102.8163099	100.4781675	98.20597981	95.99751217	93.85061943	91.76324165
230623A00051	6/23/2023	4.18	6/23/2028	6/23/2023	118.57312	113.820765	109.2913174	104.9731086	100.8551404	96.92704496	93.17904604	89.60192162	86.18696978
230623A00056	6/23/2023	4.18	6/23/2028	6/23/2023	118.57312	113.820765	109.2913174	104.9731086	100.8551404	96.92704496	93.17904604	89.60192162	86.18696978
230623A00040	6/23/2023	5.48	6/24/2024	6/23/2023	102.00901	101.5164122	101.0285844	100.5454584	100.0669664	99.59304173	99.12361916	98.65863463	98.19802531
230623A00053	6/23/2023	4.4	6/23/2026	6/23/2023	110.46349	107.9033501	105.4168534	103.0014495	100.6546944	98.3742435	96.15784687	94.00334473	91.90866329
230623A00037	6/23/2023	4.13	6/23/2028	6/23/2023	118.34731	113.5999889	109.0754103	104.7619051	100.6484818	96.72477954	92.98102821	89.40801188	85.99703436
230623A00036	6/23/2023	4.45	6/23/2026	6/23/2023	110.25025	107.6998708	105.2227353	102.8163099	100.4781675	98.20597981	95.99751217	93.85061943	91.76324165
230905A00030	9/5/2023	4.55	9/5/2028	9/5/2023	121.1922	116.1684303	111.3883378	106.8387063	102.5071162	98.38188786	94.45203366	90.70721237	87.1376876
230905A00033	9/5/2023	4.71	9/4/2026	9/5/2023	112.26099	109.4727018	106.7691867	104.1473216	101.6041177	99.13671718	96.74238698	94.41851202	92.16258924
230525A00094	5/25/2023	4.31	5/25/2028	5/25/2023	118.80962	114.1331384	109.6723217	105.4160645	101.353894	97.47592771	93.772837	90.23581336	86.85653666
230525A00014	5/25/2023	5.22	8/23/2024	5/25/2023	102.51347	101.8565873	101.2081496	100.5679945	99.93596381	99.31190321	98.69566241	98.08709484	97.48605759
230525A00007	5/25/2023	5.53	2/26/2024	5/25/2023	100.66016	100.4964303	100.3332412	100.1705857	100.0084613	99.84686521	99.68579502	99.52524811	99.36522196
230526A00009	5/26/2023	5.33	8/23/2024	5/26/2023	102.58579	101.9286424	101.2799407	100.6395239	100.0072339	99.38291626	98.76642078	98.1576008	97.55631337
230526A00026	5/26/2023	4.49	5/26/2027	5/26/2023	114.75949	111.196391	107.7655028	104.4612078	101.278159	98.21126399	95.25567163	92.40675924	89.66012054
230526A00033	5/26/2023	4.63	5/27/2031	5/26/2023	131.98607	123.7795096	116.1640867	109.0936927	102.526055	96.42239669	90.74713073	85.46758215	80.55373564
230526A00027	5/26/2023	4.49	5/26/2027	5/26/2023	114.75949	111.196391	107.7655028	104.4612078	101.278159	98.21126399	95.25567163	92.40675924	89.66012054
230526A00028	5/26/2023	4.38	5/26/2028	5/26/2023	119.13284	114.4463902	109.9760996	105.7108368	101.6401013	97.75398447	94.04313356	90.49871736	87.1123945
230526A00031	5/26/2023	4.54	5/24/2030	5/26/2023	127.73753	120.7317809	114.1710894	108.0246474	102.2639376	96.86255104	91.79602069	87.04166909	82.57846892
230526A00029	5/26/2023	4.53	5/25/2029	5/26/2023	124.13939	118.2851323	112.7521427	107.5210233	102.5736434	97.89305338	93.46340239	89.2698613	85.29855192
230526A00034	5/26/2023	4.66	5/26/2032	5/26/2023	136.01378	126.6041	117.9497048	109.9852333	102.6513209	95.89402102	89.66428416	83.91749007	78.61302634
230526A00016	5/26/2023	4.46	5/26/2027	5/26/2023	114.65669	111.09535	107.6661725	104.3635413	101.1821111	98.11679107	95.16273163	92.31531154	89.57012591
230526A00013	5/26/2023	4.39	5/26/2026	5/26/2023	110.08057	107.6017853	105.192282	102.8497336	100.571905	98.35664898	96.20190251	94.10568267	92.06608312
230821A00004	8/21/2023	5.38	2/21/2025	8/21/2023	105.13181	103.9650265	102.8243182	101.7088166	100.6176908	99.55014611	98.50542213	97.48279086	96.48155502
230821A00087	8/21/2023	5.37	3/3/2025	8/21/2023	105.27214	104.0769659	102.9091174	101.7676599	100.6517039	99.5603998	98.49293531	97.4485335	96.42645093
230821A00074	8/21/2023	5.18	8/21/2025	8/21/2023	107.51854	105.8451355	104.206229	102.6008187	101.0279405	99.4866669	97.97610593	96.49539898	95.04371942
230906A00020	9/6/2023	5.19	9/8/2025	9/6/2023	107.79624	106.071524	104.3830669	102.7297927	101.1106642	99.52468515	97.97089821	96.44838305	94.95625453
230907A00051	9/7/2023	4.79	9/8/2026	9/7/2023	112.53346	109.7303511	107.0127133	104.3773845	101.8213417	99.3416954	96.93568231	94.60065912	92.33409612
230907A00050	9/7/2023	5.05	9/5/2025	9/7/2023	107.77564	106.0547476	104.3699858	102.7202835	101.1046095	99.52197323	97.97142278	96.45204288	94.96295317
230907A00012	9/7/2023	5.17	9/8/2025	9/7/2023	107.76215	106.037729	104.3495664	102.6965815	101.0777371	99.49203713	97.93852446	96.41627884	94.92441524
230907A00047	9/7/2023	5.08	9/5/2025	9/7/2023	107.56603	105.8514784	104.1728603	102.5291093	100.9192014	99.34215283	97.79701832	96.28288875	94.79888966
230911A00001	9/11/2023	4.49	9/11/2028	9/11/2023	121.66031	116.5881273	111.7631205	107.1718254	102.8015898	98.64051942	94.67742757	90.90178899	87.30369683

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230911A00010	9/11/2023	4.9	9/11/2026	9/11/2023	112.5028	109.6998962	106.9825007	104.3474457	101.7917045	99.31238397	96.90671788	94.57206002	92.30587811
230911A00014	9/11/2023	4.61	9/11/2028	9/11/2023	121.55096	116.5017823	111.698125	107.1266406	102.7747836	98.63075833	94.68346976	90.92247773	87.33795439
230911A00030	9/11/2023	5.09	9/11/2025	9/11/2023	107.68607	105.9538663	104.2582184	102.5980288	100.9722478	99.3798676	97.81991979	96.29147364	94.79363414
230821A00006	8/21/2023	4.66	8/21/2028	8/21/2023	121.51922	116.5304576	111.7818012	107.2603298	102.9538912	98.85105149	94.94104874	91.21374937	87.65960792
230821A00035	8/21/2023	5.36	2/21/2025	8/21/2023	105.10866	103.9420132	102.801445	101.6860812	100.5950912	99.52768019	98.48308791	97.46058639	96.45947838
230911A00026	9/11/2023	5.08	9/11/2025	9/11/2023	107.66893	105.9368862	104.2413871	102.5813435	100.9557059	99.36346657	97.80365719	96.27534708	94.7776413
230912A00053	9/12/2023	4.74	9/7/2027	9/12/2023	117.07721	113.1798562	109.436729	105.8408152	102.3854668	99.06437762	95.87156305	92.80134184	89.8483186
230912A00026	9/12/2023	4.84	9/14/2026	9/12/2023	112.38108	109.5715725	106.8479859	104.2071329	101.6459644	99.16156648	96.75115311	94.41205969	92.14173664
230912A00036	9/12/2023	4.57	9/12/2028	9/12/2023	121.37391	116.3260367	111.5237921	106.9538177	102.603555	98.46119666	94.51563733	90.75642734	87.17373026
230913A00030	9/13/2023	5.16	9/15/2025	9/13/2023	107.84626	106.1020836	104.3948721	102.7235101	101.0869315	99.48411218	97.91406885	96.37585645	94.86856644
230913A00032	9/13/2023	4.74	9/15/2027	9/13/2023	117.18919	113.2673032	109.5013491	105.8842015	102.4091077	99.0696641	95.85979554	92.77373638	89.80601263
230913A00031	9/13/2023	4.91	9/15/2026	9/13/2023	112.5859	109.7708129	107.0418699	104.3958684	101.8297493	99.34058937	96.92559391	94.58208996	92.30752012
230913A00014	9/13/2023	5.34	3/13/2025	9/13/2023	105.38565	104.1622241	102.9674037	101.8001954	100.6596476	99.54485176	98.45494061	97.3890853	96.34649353
230913A00013	9/13/2023	4.87	9/14/2026	9/13/2023	112.46287	109.6522352	106.9275511	104.2856262	101.7234104	99.23798912	96.82657561	94.48650454	92.21522564
230823A00066	8/23/2023	4.68	8/23/2027	8/23/2023	116.64673	112.7993783	109.1029745	105.5507203	102.136164	98.85318219	95.69596082	92.65897736	89.73698447
230303A00041	4/14/2023	4.56	4/14/2028	4/14/2023	119.37973	114.808008	110.4420435	106.2714296	102.2863459	98.47752018	94.83619449	91.35409401	88.02339743
230303A00037	5/15/2023	4.81	5/15/2026	5/15/2023	110.61746	108.1697194	105.7894445	103.4743995	101.2224356	99.03148755	96.89956975	94.8247727	92.80525966
230303A00035	5/15/2023	4.65	5/15/2030	5/15/2023	128.35958	121.360295	114.8037186	108.6593278	102.8988591	97.49613065	92.42687825	87.66860605	83.20044893
230303A00036	5/15/2023	4.53	5/15/2028	5/15/2023	119.65439	114.9882557	110.5358271	106.2861735	102.2289784	98.354503	94.65355114	91.11743618	87.73795022
230303A00038	4/14/2023	4.56	4/14/2028	4/14/2023	119.37973	114.808008	110.4420435	106.2714296	102.2863459	98.47752018	94.83619449	91.35409401	88.02339743
230306A00019	3/6/2023	5.26	3/6/2025	3/6/2023	105.18582	103.9829319	102.8077366	101.6592854	100.5366706	99.4390254	98.36552135	97.31536637	96.28780273
230717A00088	7/17/2023	4.43	7/19/2027	7/17/2023	115.26411	111.5405422	107.9602769	104.5169897	101.2046747	98.01762384	94.9504109	91.99787545	89.15510839
230718A00023	7/18/2023	4.54	7/20/2026	7/18/2023	110.83257	108.198819	105.6423309	103.1603673	100.7503075	98.40964017	96.13595816	93.92695355	91.78041275
230718A00093	7/18/2023	4.06	7/18/2028	7/18/2023	118.97136	114.1188567	109.4973013	105.094423	100.8986729	96.89917504	93.0856828	89.44853947	85.97864087
230809A00026	8/9/2023	4.59	8/7/2026	8/9/2023	111.20101	108.512099	105.9031252	103.3712145	100.9136149	98.52769187	96.21092219	93.96088849	91.77527404
230809A00034	8/9/2023	4.59	8/10/2026	8/9/2023	111.24041	108.5427219	105.9254137	103.3855893	100.9204748	98.52741473	96.20386637	93.94739395	91.7556634
230810A00046	8/10/2023	4.88	11/18/2025	8/10/2023	108.26691	106.3424318	104.4621561	102.6247997	100.8291288	99.07395302	97.35812377	95.68053231	94.04010818
230810A00053	8/10/2023	4.82	1/20/2026	8/10/2023	109.03679	106.9305493	104.8762718	102.872326	100.9171478	99.00923341	97.14713632	95.32946502	93.55488021
230810A00010	8/10/2023	4.62	8/10/2026	8/10/2023	111.31931	108.6205682	106.0022366	103.4614122	100.99532	98.60130419	96.27682119	94.01943464	91.82680987
230810A00057	8/10/2023	4.62	8/10/2026	8/10/2023	111.31931	108.6205682	106.0022366	103.4614122	100.99532	98.60130419	96.27682119	94.01943464	91.82680987
230718A00038	7/18/2023	4.46	11/13/2026	7/18/2023	112.11479	109.1415675	106.2640472	103.4786319	100.7818807	98.17050027	95.64133774	93.19137385	90.81771656
230718A00013	7/18/2023	4.54	7/17/2026	7/18/2023	110.79243	108.1677263	105.6198443	103.1460742	100.7438165	98.4105796	96.14397541	93.94171366	91.80159746
230718A00014	7/18/2023	4.37	7/19/2027	7/18/2023	115.04956	111.3298204	107.7532716	104.3135958	101.0047907	97.82115224	94.75725747	91.80794937	88.96832203

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230718A00015	7/18/2023	4.19	7/18/2028	7/18/2023	118.91916	114.0870792	109.4844689	105.0991583	100.9196927	96.93528355	93.13576563	89.51155778	86.05362613
230718A00070	7/18/2023	4.06	7/18/2028	7/18/2023	118.97136	114.1188567	109.4973013	105.094423	100.8986729	96.89917504	93.0856828	89.44853947	85.97864087
230718A00016	7/18/2023	4.54	7/17/2026	7/18/2023	110.79243	108.1677263	105.6198443	103.1460742	100.7438165	98.4105796	96.14397541	93.94171366	91.80159746
230718A00012	7/18/2023	5.2	12/16/2024	7/18/2023	103.96526	102.9888643	102.0309098	101.0908735	100.1682549	99.26257212	98.37336071	97.50017324	96.64257836
230719A00006	7/19/2023	4.54	7/20/2026	7/19/2023	110.83257	108.198819	105.6423309	103.1603673	100.7503075	98.40964017	96.13595816	93.92695355	91.78041275
230719A00035	7/19/2023	4.92	7/18/2025	7/19/2023	106.61836	105.0458	103.5045518	101.9937522	100.5125663	99.06018912	97.63584475	96.23878464	94.86828658
230810A00001	8/10/2023	4.22	8/10/2028	8/10/2023	119.99192	115.049758	110.3451768	105.8654221	101.5984965	97.53310921	93.65863103	89.96505125	86.44293845
230810A00013	8/10/2023	4.34	8/10/2028	8/10/2023	119.88943	114.9693607	110.2853023	105.8246068	101.5753765	97.52641387	93.66717574	89.98773171	86.4787249
230810A00026	8/10/2023	4.4	1/10/2028	8/10/2023	117.44942	113.1905273	109.1139371	105.2108398	101.4728973	97.89221802	94.46133073	91.1731598	88.02100194
230810A00024	8/10/2023	4.34	8/7/2028	8/10/2023	119.85336	114.9425887	110.2670493	105.8141515	101.5720533	97.52960784	93.67631894	90.00229948	86.49823251
230810A00025	8/10/2023	4.37	5/8/2028	8/10/2023	118.86035	114.2316985	109.8143814	105.5976233	101.5712564	97.72568023	94.05182725	90.54113031	87.18549269
230811A00018	8/11/2023	5.1	8/11/2025	8/11/2023	107.24382	105.5999119	103.9895437	102.4117508	100.8656082	99.35022545	97.86474571	96.40834367	94.98022424
230811A00017	8/11/2023	4.78	8/11/2026	8/11/2023	111.75373	109.046466	106.4198857	103.8710773	101.3972548	98.99575148	96.66401384	94.39959593	92.20015397
230719A00027	7/19/2023	4.92	7/18/2025	7/19/2023	106.61836	105.0458	103.5045518	101.9937522	100.5125663	99.06018912	97.63584475	96.23878464	94.86828658
230719A00011	7/19/2023	4.92	7/18/2025	7/19/2023	106.61836	105.0458	103.5045518	101.9937522	100.5125663	99.06018912	97.63584475	96.23878464	94.86828658
230719A00013	7/19/2023	4.54	7/17/2026	7/19/2023	110.79243	108.1677263	105.6198443	103.1460742	100.7438165	98.4105796	96.14397541	93.94171366	91.80159746
230719A00010	7/19/2023	4.92	7/18/2025	7/19/2023	106.61836	105.0458	103.5045518	101.9937522	100.5125663	99.06018912	97.63584475	96.23878464	94.86828658
230719A00012	7/19/2023	4.92	7/18/2025	7/19/2023	106.61836	105.0458	103.5045518	101.9937522	100.5125663	99.06018912	97.63584475	96.23878464	94.86828658
230719A00015	7/19/2023	4.37	7/19/2027	7/19/2023	115.04956	111.3298204	107.7532716	104.3135958	101.0047907	97.82115224	94.75725747	91.80794937	88.96832203
230719A00061	7/19/2023	5.18	1/21/2025	7/19/2023	104.44689	103.3694067	102.3142864	101.2808328	100.2683821	99.27629725	98.30396676	97.35080347	96.41624331
230719A00034	7/19/2023	4.19	7/19/2028	7/19/2023	118.9313	114.0960402	109.4905085	105.1025175	100.9205944	96.93393386	93.1323553	89.50626333	86.0466109
230720A00038	7/20/2023	4.55	7/20/2026	7/20/2023	111.20789	108.5618428	105.9935333	103.500202	101.0792081	98.72802123	96.44421647	94.22546879	92.06954842
230720A00037	7/20/2023	4.55	7/20/2026	7/20/2023	111.20789	108.5618428	105.9935333	103.500202	101.0792081	98.72802123	96.44421647	94.22546879	92.06954842
230720A00039	7/20/2023	4.68	7/20/2026	7/20/2023	111.19264	108.5542111	105.9931495	103.5067149	101.0922831	98.74733982	96.46947519	94.25637843	92.10583326
230720A00025	7/20/2023	5.18	1/21/2025	7/20/2023	104.61855	103.5375733	102.4790659	101.4423278	100.4266907	99.43151385	98.45618205	97.50010458	96.56271404
230814A00029	8/14/2023	4.71	2/12/2027	8/14/2023	114.07315	110.8156245	107.6703002	104.6326497	101.6983532	98.86329183	96.12353698	93.47534016	90.91512351
230814A00028	8/14/2023	4.86	8/14/2026	8/14/2023	112.00597	109.2870677	106.6493647	104.0899197	101.6059227	99.19468403	96.85362882	94.5802908	92.37230709
230815A00038	8/15/2023	4.57	8/16/2027	8/15/2023	116.6586	112.8174806	109.1267448	105.5796378	102.169747	98.89098501	95.73757082	92.70401269	89.78509171
230815A00037	8/15/2023	4.53	8/15/2028	8/15/2023	120.83555	115.8795799	111.1616441	106.6689623	102.3895148	98.31199053	94.42574101	90.72073792	87.18753339
230720A00100	7/20/2023	5.05	7/21/2025	7/20/2023	106.86444	105.2814651	103.7300958	102.2094568	100.7187016	99.25701443	97.82360875	96.41772619	95.03863512
230815A00031	8/15/2023	5.14	8/13/2025	8/15/2023	107.33761	105.6874776	104.0710801	102.4874468	100.9356444	99.41477522	97.92397519	96.46241227	95.02928497
230815A00084	8/15/2023	5.14	8/15/2025	8/15/2023	107.36629	105.7104805	104.0885936	102.4996505	100.9427104	99.41686839	97.92125335	96.45502676	95.01738093
230721A00043	7/21/2023	4.98	7/21/2025	7/21/2023	106.75454	105.1724551	103.6219651	102.1021902	100.6122841	99.15143154	97.71884634	96.31377048	94.93547272

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230721A00038	7/21/2023	4.67	7/21/2026	7/21/2023	111.18066	108.5395393	105.9759274	103.4870731	101.0703456	98.72322418	96.44329273	94.22823478	92.07582867
230721A00006	7/21/2023	4.32	7/21/2028	7/21/2023	119.55279	114.697616	110.0731586	105.6671753	101.4681377	97.46518867	93.64809921	90.00722882	86.53348836
230721A00003	7/21/2023	4.67	7/21/2026	7/21/2023	111.18066	108.5395393	105.9759274	103.4870731	101.0703456	98.72322418	96.44329273	94.22823478	92.07582867
230721A00029	7/21/2023	4.67	7/21/2026	7/21/2023	111.18066	108.5395393	105.9759274	103.4870731	101.0703456	98.72322418	96.44329273	94.22823478	92.07582867
230721A00028	7/21/2023	5.03	7/21/2025	7/21/2023	106.83304	105.2503194	103.6992013	102.1788092	100.6882966	99.22684789	97.79367663	96.38802456	95.00916015
230721A00031	7/21/2023	5.03	7/21/2025	7/21/2023	106.83304	105.2503194	103.6992013	102.1788092	100.6882966	99.22684789	97.79367663	96.38802456	95.00916015
230721A00032	7/21/2023	5.03	7/21/2025	7/21/2023	106.83304	105.2503194	103.6992013	102.1788092	100.6882966	99.22684789	97.79367663	96.38802456	95.00916015
230724A00105	7/24/2023	5.56	7/18/2024	7/24/2023	102.31378	101.7551754	101.2026913	100.6562301	100.1156936	99.58098548	99.05201167	98.52868002	98.01090036
230724A00063	7/24/2023	5.08	7/24/2025	7/24/2023	106.93875	105.347012	103.7871491	102.2582667	100.7595075	99.29004565	97.84908514	96.43585849	95.04962546
230724A00066	7/24/2023	4.71	8/18/2026	7/24/2023	111.6637	108.9383468	106.2946624	103.7296849	101.240578	98.82462754	96.47923556	94.20191421	91.99028037
230724A00064	7/24/2023	4.53	7/19/2027	7/24/2023	115.62169	111.8917452	108.3052857	104.8559797	101.5378146	98.34507649	95.27233328	92.31441892	89.46641897
230724A00065	7/24/2023	4.37	7/18/2028	7/24/2023	119.74456	114.8937857	110.2731227	105.8703808	101.6740788	97.67340271	93.85816332	90.21875664	86.74612707
230817A00036	8/17/2023	4.91	8/17/2026	8/17/2023	112.18005	109.4505483	106.8027288	104.2336323	101.7404249	99.32039491	96.97094643	94.68959348	92.4739546
230818A00024	8/18/2023	4.81	8/18/2026	8/18/2023	111.92889	109.1999809	106.5528297	103.9844645	101.4920465	99.07285932	96.72430258	94.44388633	92.22922533
230818A00025	8/18/2023	4.68	8/18/2027	8/18/2023	116.57744	112.7453584	109.0631932	105.5242085	102.1220153	98.85054826	95.70404747	92.67704097	89.76432857
230818A00065	8/18/2023	4.82	8/18/2026	8/18/2023	111.9554	109.2261443	106.5786465	104.0099425	101.5171934	99.0976825	96.74880928	94.46808354	92.25311983
230818A00064	8/18/2023	5.09	8/18/2025	8/18/2023	107.32696	105.6633354	104.0339049	102.4376767	100.8736988	99.3410554	97.83886549	96.36628094	94.92248501
230818A00007	8/18/2023	4.73	8/18/2026	8/18/2023	112.07871	109.3400006	106.6834817	104.1061645	101.6051907	99.17782521	96.82145028	94.53355929	92.31175128
230818A00005	8/18/2023	5.01	8/18/2025	8/18/2023	107.44776	105.7787919	104.144192	102.5429633	100.9741473	99.43682227	97.93010147	96.45313131	95.00508985
230724A00037	7/24/2023	4.29	7/24/2028	7/24/2023	119.45224	114.5906045	109.96037	105.5492317	101.3456113	97.33860536	93.51794246	89.87394297	86.3974817
230725A00004	7/25/2023	5.06	7/25/2025	7/25/2023	106.92153	105.3271296	103.7646874	102.2333066	100.7321263	99.26031724	97.81708037	96.40164519	95.01326863
230725A00071	7/25/2023	4.4	7/25/2028	7/25/2023	119.9712	115.094856	110.4505676	106.0260021	101.8095462	97.79026406	93.9578539	90.30260754	86.81537308
230725A00016	7/25/2023	4.75	7/31/2026	7/25/2023	111.52543	108.8515352	106.2566694	103.7380101	101.292853	98.91860793	96.61279361	94.37303203	92.19704346
230725A00018	7/25/2023	4.4	7/25/2028	7/25/2023	119.9712	115.094856	110.4505676	106.0260021	101.8095462	97.79026406	93.9578539	90.30260754	86.81537308
230725A00028	7/25/2023	4.46	7/25/2030	7/25/2023	127.78693	120.6025727	113.8854227	107.6023885	101.7228941	96.21867735	91.0636028	86.23349084	81.70596156
230725A00014	7/25/2023	5.32	1/27/2025	7/25/2023	104.68487	103.5895928	102.5173686	101.4674753	100.4392192	99.4319349	98.44498429	97.47775481	96.52965834
230725A00023	7/25/2023	4.57	4/9/2027	7/25/2023	114.40079	110.9759436	107.6738886	104.4894981	101.4178956	98.45443741	95.59469992	92.8344679	90.16972309
230725A00015	7/25/2023	4.4	7/25/2028	7/25/2023	119.9712	115.094856	110.4505676	106.0260021	101.8095462	97.79026406	93.9578539	90.30260754	86.81537308
230726A00011	7/26/2023	4.24	7/26/2028	7/26/2023	119.901	115.0038836	110.3404819	105.8983394	101.6657334	97.63162632	93.78562213	90.11792531	86.61930287
230823A00019	8/23/2023	5.44	8/23/2024	8/23/2023	102.65811	102.0006976	101.3517317	100.7110533	100.0785039	99.45392932	98.83717915	98.22810676	97.62656914
230823A00036	8/23/2023	4.87	8/24/2026	8/23/2023	112.17143	109.4227198	106.7567183	104.1704057	101.6608967	99.22543082	96.86136666	94.56617531	92.33743491
230823A00010	8/23/2023	5.44	8/23/2024	8/23/2023	102.65811	102.0006976	101.3517317	100.7110533	100.0785039	99.45392932	98.83717915	98.22810676	97.62656914
230824A00061	8/24/2023	4.61	8/24/2028	8/24/2023	121.32355	116.3307933	111.5787475	107.0544355	102.7456568	98.64093333	94.72946245	91.00107335	87.44618645

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230824A00031	8/24/2023	4.49	8/24/2028	8/24/2023	121.4312	116.415866	111.6428542	107.0990763	102.7722287	98.65073774	94.72371208	90.98089839	87.41264042
230824A00043	8/24/2023	4.89	8/24/2026	8/24/2023	112.22479	109.4753686	106.8086654	104.2216672	101.7114881	99.27536726	96.91066277	94.61484528	92.38549251
230825A00019	8/25/2023	5.41	2/25/2025	8/25/2023	105.22809	104.0497044	102.8978907	101.7717553	100.6704446	99.5931422	98.53906743	97.50747308	96.49764372
230825A00044	8/25/2023	5.2	8/25/2025	8/25/2023	107.60967	105.9246152	104.2744488	102.6581484	101.0747339	99.52326293	98.00282939	96.51256125	95.05161918
230825A00045	8/25/2023	5.57	8/26/2024	8/25/2023	102.78057	102.1145617	101.4572159	100.8083613	100.1678341	99.53547434	98.91112638	98.29463844	97.68586254
230825A00043	8/25/2023	4.89	8/25/2026	8/25/2023	112.23876	109.4863822	106.8168833	104.2272325	101.7145364	99.27602692	96.90905555	94.61108664	92.37969198
230825A00037	8/25/2023	4.91	8/25/2026	8/25/2023	112.29218	109.5390847	106.8688827	104.2785449	101.7651774	99.32601171	96.95839878	94.65980254	92.42779436
230825A00009	8/25/2023	4.91	8/25/2026	8/25/2023	112.29218	109.5390847	106.8688827	104.2785449	101.7651774	99.32601171	96.95839878	94.65980254	92.42779436
230825A00010	8/25/2023	4.62	8/25/2028	8/25/2023	121.38323	116.386255	111.6302934	107.1023465	102.7901932	98.68233674	94.7679571	91.03686738	87.47947314
230825A00062	8/25/2023	5.21	8/25/2025	8/25/2023	107.62633	105.9411345	104.2908272	102.6743884	101.0908379	99.53923342	98.01866862	96.52827148	95.06720258
230828A00056	8/28/2023	4.92	8/28/2026	8/28/2023	112.36102	109.5987187	106.919773	104.32113	101.7998726	99.3532108	96.97847513	94.67311038	92.43466988
230828A00055	8/28/2023	5.24	8/28/2025	8/28/2023	107.72016	106.0260106	104.3670415	102.7422235	101.1505645	99.59111062	98.06294494	96.56518517	95.0969822
230808A00029	8/8/2023	4.6	8/7/2026	8/8/2023	111.22723	108.5379673	105.9286544	103.3964124	100.9384889	98.55224919	96.23516981	93.9848332	91.79892242
230807A00025	8/7/2023	4.69	8/7/2026	8/7/2023	111.46316	108.7707817	106.1584177	103.6231936	101.162355	98.77326507	96.45339844	94.20033562	92.01175786
200312A00009	3/12/2020	1.46	3/12/2027	3/12/2020	104.00431	100.8277847	97.76431168	94.80919397	91.95796506	89.20637231	86.55036505	83.98608349	81.5098484
200316A00055	3/16/2020	1.06	3/14/2025	3/16/2020	100.38936	99.1923513	98.02367447	96.88233289	95.7673771	94.67790115	93.61304015	92.57196792	91.55389489
200312A00006	3/12/2020	1.23	3/12/2025	3/12/2020	100.39773	99.20896793	98.04817071	96.91435773	95.80659716	94.72399969	93.66571602	92.63093471	91.61888006
200331A00011	3/31/2020	1.09	3/31/2025	3/31/2020	100.29052	99.05204106	97.84321285	96.66297614	95.51032374	94.38429534	93.28397478	92.20848758	91.15699857
230630A00046	6/30/2023	4.6	6/30/2026	6/30/2023	111.05772	108.4708157	105.9587882	103.5190259	101.1490275	98.84639439	96.60882542	94.43411239	92.32013565
230609A00027	6/9/2023	3.99	6/9/2028	6/9/2023	118.1899	113.4665043	108.9634979	104.6694077	100.5734199	96.6653374	92.93554056	89.37495205	85.97500325
230609A00026	6/9/2023	4.11	6/9/2027	6/9/2023	114.10512	110.5024721	107.0352887	103.6977435	100.4842905	97.38965172	94.40880249	91.53695769	88.76955916
230630A00043	6/30/2023	4.6	6/30/2026	6/30/2023	111.05772	108.4708157	105.9587882	103.5190259	101.1490275	98.84639439	96.60882542	94.43411239	92.32013565
230828A00036	8/28/2023	4.8	8/28/2026	8/28/2023	112.40575	109.6349164	106.9478472	104.3414738	101.81286	99.35919764	96.97780016	94.66609614	92.42162359
230828A00047	8/28/2023	4.92	8/28/2026	8/28/2023	112.36102	109.5987187	106.919773	104.32113	101.7998726	99.3532108	96.97847513	94.67311038	92.43466988
230829A00006	8/29/2023	5.21	8/29/2025	8/29/2023	107.68446	105.9879008	104.3266145	102.6995636	101.1057523	99.54422319	98.01405598	96.51436521	95.0442988
230830A00028	8/30/2023	4.45	8/30/2027	8/30/2023	116.41007	112.5340773	108.8111632	105.2343881	101.7971707	98.49326678	95.31674947	92.26199121	89.32364664
230830A00034	8/30/2023	4.44	8/30/2028	8/30/2023	120.60019	115.6072154	110.8558814	106.33312	102.0266446	97.92489906	94.01700927	90.29273933	86.74245029
230830A00030	8/30/2023	5.03	8/29/2025	8/30/2023	107.38255	105.6886079	104.029889	102.4053599	100.8140257	99.25493049	97.72715499	96.22981488	94.76205917
230830A00029	8/30/2023	4.45	8/30/2027	8/30/2023	116.41007	112.5340773	108.8111632	105.2343881	101.7971707	98.49326678	95.31674947	92.26199121	89.32364664
230830A00051	8/30/2023	4.45	8/30/2027	8/30/2023	116.41007	112.5340773	108.8111632	105.2343881	101.7971707	98.49326678	95.31674947	92.26199121	89.32364664
230831A00041	8/31/2023	4.48	8/31/2028	8/31/2023	120.8006	115.8001312	111.0417266	106.512289	102.1995063	98.09179843	94.17826922	90.44866229	86.89331963
230831A00016	8/31/2023	4.65	8/31/2026	8/31/2023	112.04415	109.2698929	106.5797432	103.9706048	101.4395219	98.98366813	96.60033964	94.28694904	92.04101929
230831A00006	8/31/2023	4.61	8/31/2027	8/31/2023	116.49893	112.6318835	108.917319	105.3483322	101.9183752	98.62123501	95.45101426	92.40211298	89.46921172

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230831A00001	8/31/2023	4.77	8/31/2026	8/31/2023	111.99993	109.2342367	106.5522315	103.9508423	101.4271328	98.97829471	96.60164161	94.29460235	92.05471531
230831A00007	8/31/2023	4.48	8/31/2028	8/31/2023	120.8006	115.8001312	111.0417266	106.512289	102.1995063	98.09179843	94.17826922	90.44866229	86.89331963
230831A00070	8/31/2023	4.48	8/31/2028	8/31/2023	120.8006	115.8001312	111.0417266	106.512289	102.1995063	98.09179843	94.17826922	90.44866229	86.89331963
230831A00066	8/31/2023	4.77	8/31/2026	8/31/2023	111.99993	109.2342367	106.5522315	103.9508423	101.4271328	98.97829471	96.60164161	94.29460235	92.05471531
230831A00069	8/31/2023	4.61	8/31/2027	8/31/2023	116.49893	112.6318835	108.917319	105.3483322	101.9183752	98.62123501	95.45101426	92.40211298	89.46921172
230901A00037	9/1/2023	4.3	9/1/2028	9/1/2023	120.63584	115.6161679	110.8402182	106.2947706	101.9673996	97.84641972	93.92083769	90.18030704	86.6150864
230705A00042	7/5/2023	4.42	7/5/2028	7/5/2023	119.8077	114.9934702	110.4061404	106.0337676	101.8650979	97.88952677	94.0970583	90.47826685	87.02426148
141117A00011	11/17/2014	3.81	11/17/2034	11/17/2014	135.29526	123.3826561	112.6752887	103.0431339	94.37087617	86.55617819	79.50815878	73.14605597	67.39805215
150731A00016	7/31/2015	3.04	7/31/2025	7/31/2015	103.79632	102.2108573	100.6574329	99.13513926	97.6431058	96.18049394	94.74649589	93.34033318	91.96125529
160303A00020	3/3/2016	2.97	3/3/2031	3/3/2016	120.13989	112.555572	105.5112879	98.96558387	92.88040464	87.22079513	81.95463202	77.05238005	72.48687055
160212A00037	2/12/2016	3.03	2/12/2031	2/12/2016	119.44191	111.9766598	105.0385433	98.58741676	92.58640156	87.00159955	81.80183718	76.95843299	72.44498603
160222A00019	2/22/2016	3.09	2/21/2031	2/22/2016	119.92787	112.4206556	105.4448175	98.95978235	92.92828646	87.31608614	82.09169764	77.22616085	72.69282448
160225A00024	2/25/2016	2.22	2/26/2024	2/25/2016	100.1187	99.95566162	99.79315468	99.6311795	99.46973348	99.30881403	99.14841859	98.9885446	98.82918953
160222A00005	2/22/2016	2.79	2/22/2028	2/22/2016	111.27874	107.0268873	102.9627348	99.07695891	95.36075368	91.80579855	88.40422852	85.14860641	82.03189708
160524A00015	11/25/2016	2.71	11/25/2026	11/25/2016	107.14793	104.2149247	101.3778722	98.63311671	95.97716609	93.40667985	90.91846162	88.50945205	86.17672219
160712A00019	7/12/2017	2.32	7/12/2027	7/12/2017	107.66528	104.0966822	100.6661851	97.36769135	94.19541069	91.14383943	88.20774475	85.38214976	82.66231945
160729A00017	7/31/2017	2.47	7/31/2029	7/31/2017	113.22885	107.4837646	102.0680721	96.96114199	92.14374127	87.59793429	83.3069884	79.25528702	75.42824943
160714A00018	9/6/2016	2.28	9/4/2026	9/6/2016	105.33464	102.6486022	100.044747	97.5200315	95.07155234	92.69653382	90.39232127	88.15637472	85.98626311
160714A00024	9/20/2016	2.5	9/20/2028	9/20/2016	111.61455	106.7733368	102.1716212	97.79623488	93.63481268	89.67573503	85.90807868	82.32157078	78.90654634
161118A00026	12/20/2016	3.03	12/21/2026	12/20/2016	108.31498	105.2933072	102.3726541	99.54908397	96.81883893	94.17832817	91.62411964	89.15293207	86.76162743
170609A00052	6/11/2018	2.9	6/9/2027	6/11/2018	109.43351	105.9236957	102.5463627	99.29581008	96.16660899	93.15359251	90.25184159	87.45667177	84.76362067
170614A00019	6/14/2017	2.48	6/13/2025	6/14/2017	102.55262	101.1075592	99.690054	98.29938458	96.93485579	95.59579597	94.28155601	92.99150841	91.72504635
170327A00080	3/27/2019	3.43	3/27/2029	3/27/2019	117.69816	112.180728	106.9602277	102.0190159	97.34059532	92.90953536	88.71139689	84.73266285	80.96067411
170822A00023	8/23/2017	3.95	8/23/2028	8/23/2017	118.21847	113.3003779	108.6202042	104.1651032	99.92299828	95.88252846	92.03300184	88.36435232	84.86709938
171228A00024	12/28/2017	2.71	6/28/2024	12/28/2017	100.66188	100.16232	99.66771085	99.17797721	98.69304725	98.21285059	97.73731822	97.26638245	96.79997692
180615A00039	6/15/2018	3.49	6/15/2028	6/15/2018	115.37881	110.7196751	106.2789763	102.0453013	98.00789813	94.1566293	90.48193343	86.97478947	83.6266834
180618A00036	6/18/2018	3.89	6/18/2048	6/18/2018	168.93596	141.4751989	119.3990751	101.5785236	87.13031947	75.36210389	65.72997106	57.80569034	51.25133271
181029A00051	2/5/2019	3.69	2/5/2029	2/5/2019	118.60853	113.2132772	108.1013078	103.2561823	98.66250615	94.30585583	90.17271193	86.25039772	82.52702203
181031A00070	3/1/2019	3.77	3/1/2029	3/1/2019	119.24711	113.7665553	108.5767204	103.6605608	99.0021241	94.58647484	90.39962454	86.4284661	82.66071345
200131A00029	1/31/2020	1.78	10/31/2024	1/31/2020	100.46894	99.63408974	98.81305809	98.00550524	97.21110151	96.42952789	95.66047562	94.90364576	94.15874883
190329A00012	3/29/2019	2.61	3/29/2024	3/29/2019	100.27759	100.0265956	99.77684804	99.52834274	99.2810705	99.0350222	98.79018882	98.5465614	98.30413109
160307A00029	3/7/2016	3.21	3/7/2031	3/7/2016	120.88481	113.3044029	106.2624761	99.71774883	93.63232058	87.97137594	82.70291753	77.79752371	73.22812819
190815A00041	8/15/2019	1.86	8/15/2024	8/15/2019	100.28743	99.66021842	99.04084256	98.42915267	97.8250062	97.22826413	96.63879084	96.05645399	95.48112446

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
181220A00041	12/20/2018	3.36	12/18/2026	12/20/2018	109.27424	106.2464562	103.3195086	100.4894783	97.75262583	95.10537755	92.54431739	90.06617887	87.66783764
190621A00037	6/21/2019	2.21	5/15/2024	6/21/2019	100.29098	99.91176016	99.53541255	99.16190713	98.79121167	98.42329445	98.05812421	97.69567014	97.33590193
221017A00050	9/18/2023	4.59	9/30/2024	9/18/2023	102.51074	101.7505056	101.0015668	100.2636743	99.536585	98.82006264	98.11387792	97.41780808	96.73163676
221212A00131	12/12/2023	3.77	12/11/2026	12/12/2023	110.42253	107.3970535	104.4715651	101.6422083	98.90529965	96.25731801	93.69489633	91.21481403	88.8139897
230628A00063	6/28/2023	4.47	6/29/2026	6/28/2023	110.37565	107.8074323	105.3134138	102.8910112	100.5377514	98.25126235	96.02926835	93.86958519	91.77011606
230802A00023	10/16/2023	4.37	10/16/2028	10/16/2023	120.83161	115.6989363	110.8205403	106.1824206	101.7714217	97.57517926	93.58206772	89.7811525	86.16214505
230807A00087	11/7/2023	4.75	11/7/2025	11/7/2023	107.87355	105.9825725	104.134434	102.3279114	100.5618248	98.83503541	97.14644358	95.49498742	93.87964111
230913A00049	9/13/2023	4.74	9/13/2027	9/13/2023	117.16119	113.2454412	109.4851926	105.8733515	102.4031913	99.06833298	95.86272399	92.78061988	89.81656638
230913A00046	9/13/2023	4.91	9/14/2026	9/13/2023	112.57192	109.7597854	107.0336381	104.3902838	101.8266717	99.33988598	96.92713896	94.58576434	92.31321096
230913A00050	9/13/2023	4.6	9/13/2028	9/13/2023	121.52869	116.4743502	111.6660329	107.0903476	102.7347116	98.58729488	94.63697115	90.87327131	87.28634097
230914A00027	9/14/2023	4.76	1/8/2027	9/14/2023	113.74529	110.5914258	107.5437262	104.5980105	101.7502868	98.99674339	96.33373957	93.75779684	91.26559065
230914A00050	9/14/2023	4.67	9/14/2027	9/14/2023	116.91386	112.9999	109.2415127	105.6315946	102.1634111	98.83057569	95.62702939	92.54702161	89.58509251
230914A00051	9/14/2023	4.84	9/14/2026	9/14/2023	112.38108	109.5715725	106.8479859	104.2071329	101.6459644	99.16156648	96.75115311	94.41205969	92.14173664
230914A00021	9/14/2023	5.49	9/13/2024	9/14/2023	102.9664	102.2505699	101.5447423	100.848705	100.1622547	99.48519385	98.81733026	98.15847693	97.50845194
230914A00031	9/14/2023	5.08	9/15/2025	9/14/2023	107.70834	105.9653906	104.2593831	102.5892035	100.9537862	99.35210766	97.78318517	96.2460742	94.73986671
230915A00023	9/15/2023	4.7	9/15/2027	9/15/2023	117.03975	113.1206412	109.3573847	105.7428559	102.2703049	98.93333095	95.72586155	92.64213367	89.67667576
230915A00026	9/15/2023	4.57	9/15/2028	9/15/2023	121.41133	116.3540584	111.5432334	106.9654237	102.6080127	98.45913934	94.50764881	90.74304598	87.15545256
230915A00018	9/15/2023	4.88	9/15/2026	9/15/2023	112.50403	109.6900698	106.9622264	104.3172989	101.7522291	99.2640945	96.85010107	94.50757663	92.23396443
230915A00054	9/15/2023	4.88	9/15/2026	9/15/2023	112.50403	109.6900698	106.9622264	104.3172989	101.7522291	99.2640945	96.85010107	94.50757663	92.23396443
230915A00055	9/15/2023	4.7	9/15/2027	9/15/2023	117.03975	113.1206412	109.3573847	105.7428559	102.2703049	98.93333095	95.72586155	92.64213367	89.67667576
230915A00028	9/15/2023	4.57	9/15/2028	9/15/2023	121.41133	116.3540584	111.5432334	106.9654237	102.6080127	98.45913934	94.50764881	90.74304598	87.15545256
230915A00030	9/15/2023	4.7	9/8/2027	9/15/2023	116.94254	113.0448704	109.3015598	105.7055835	102.2502832	98.92934348	95.73677107	92.66687676	89.71425777
230918A00062	9/18/2023	5.52	9/18/2024	9/18/2023	103.05142	102.3216727	101.6023079	100.8931053	100.1938503	99.50433406	98.82435372	98.15371193	97.4922168
230918A00008	9/18/2023	4.91	9/18/2026	9/18/2023	112.62784	109.8038959	107.0665672	104.4126258	101.8389886	99.34270964	96.92097303	94.57108585	92.2904719
230918A00088	9/18/2023	5.53	9/18/2024	9/18/2023	103.05871	102.3289336	101.6095395	100.9003081	100.2010245	99.51147996	98.8314716	98.16080206	97.49927945
230918A00018	9/18/2023	5.01	3/18/2026	9/18/2023	110.26311	107.9814492	105.7590863	103.5940392	101.4844136	99.42839377	97.42423908	95.47027986	93.56491397
230918A00011	9/18/2023	4.91	9/18/2026	9/18/2023	112.62784	109.8038959	107.0665672	104.4126258	101.8389886	99.34270964	96.92097303	94.57108585	92.2904719
230918A00027	9/18/2023	5.11	9/30/2025	9/18/2023	107.99314	106.2065545	104.4584751	102.7477295	101.0731906	99.43377728	97.82845163	96.25621693	94.71611548
230918A00023	9/18/2023	4.91	9/18/2026	9/18/2023	112.62784	109.8038959	107.0665672	104.4126258	101.8389886	99.34270964	96.92097303	94.57108585	92.2904719
230921A00021	9/21/2023	4.62	9/21/2028	9/21/2023	122.40854	117.2901232	112.4221369	107.7908764	103.3834704	99.18782233	95.19255878	91.3869821	87.76102606
230922A00032	9/22/2023	5.18	9/22/2025	9/22/2023	108.00013	106.2352749	104.5081122	102.8175002	101.1623421	99.54158506	97.95421853	96.39927166	94.8758115
230922A00022	9/22/2023	4.99	9/22/2026	9/22/2023	112.90362	110.064824	107.3133448	104.6459188	102.0594282	99.55089488	97.1174723	94.75643887	92.46519141
230922A00025	9/22/2023	5.18	9/22/2025	9/22/2023	108.00013	106.2352749	104.5081122	102.8175002	101.1623421	99.54158506	97.95421853	96.39927166	94.8758115

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230925A00057	9/25/2023	5.19	9/30/2025	9/25/2023	108.13437	106.3465017	104.5971624	102.8851798	101.2094261	99.56881965	97.96232196	96.3889357	94.84770266
230925A00080	9/25/2023	5.07	9/30/2025	9/25/2023	108.17598	106.3832631	104.6292591	102.9127807	101.2326935	99.58790932	97.97738354	96.40011314	94.85513441
230925A00056	9/25/2023	5.19	9/25/2025	9/25/2023	108.06125	106.2877043	104.5521609	102.8534654	101.1905078	99.56222328	97.96758948	96.40562464	94.87538545
230925A00121	9/25/2023	5.2	9/25/2025	9/25/2023	108.07877	106.3050626	104.5693641	102.8705162	101.207409	99.57897753	97.98419936	96.42209267	94.89171407
230925A00003	9/25/2023	4.99	9/25/2026	9/25/2023	112.94622	110.0985519	107.3386743	104.663299	102.0692841	99.55362847	97.11346414	94.74604935	92.44876194
230925A00004	9/25/2023	4.74	9/25/2028	9/25/2023	122.34807	117.240375	112.3825145	107.7608188	103.3624464	99.17532895	95.18811988	91.39014692	87.77136794
230926A00021	9/26/2023	4.73	9/26/2028	9/26/2023	122.31322	117.2034981	112.3438465	107.7205719	103.320815	99.13249092	95.14423786	91.34536968	87.72583149
230926A00020	9/26/2023	5.2	9/26/2025	9/26/2023	108.09336	106.3168072	104.5783663	102.8768745	101.2112175	99.58032611	97.98317423	96.41877633	94.88618558
230926A00076	9/26/2023	4.73	9/26/2028	9/26/2023	122.31322	117.2034981	112.3438465	107.7205719	103.320815	99.13249092	95.14423786	91.34536968	87.72583149
230926A00010	9/26/2023	4.74	9/26/2028	9/26/2023	122.36101	117.2501659	112.3894278	107.7651055	103.3643377	99.1750381	95.18584337	91.38606589	87.76564936
230926A00048	9/26/2023	5.2	9/26/2025	9/26/2023	108.09336	106.3168072	104.5783663	102.8768745	101.2112175	99.58032611	97.98317423	96.41877633	94.88618558
230927A00020	9/27/2023	5.01	10/16/2026	9/27/2023	113.30485	110.3926315	107.5717888	104.8389177	102.1907604	99.62420085	97.13625713	94.72407502	92.38492161
230927A00021	9/27/2023	4.96	1/29/2027	9/27/2023	114.65392	111.4275306	108.3111094	105.3002657	102.3908089	99.57874103	96.8602463	94.23168181	91.68956855
230927A00031	9/27/2023	5.4	3/28/2025	9/27/2023	105.6845	104.4178674	103.181812	101.9752383	100.7970981	99.64639249	98.52216893	97.42351857	96.34957376
230927A00032	9/27/2023	5.02	9/23/2026	9/27/2023	113.00035	110.1574532	107.4020575	104.7308906	102.1408261	99.6288771	97.19218937	94.82803385	92.5338003
230927A00033	9/27/2023	4.78	9/25/2028	9/27/2023	122.53914	117.4269406	112.564739	107.9388566	103.5364452	99.34542991	95.35445808	91.5528516	87.93056282
230927A00034	9/27/2023	4.82	9/27/2028	9/27/2023	122.75653	117.6335112	112.7611939	108.1258536	103.7145955	99.51530217	95.51658123	91.70771801	88.07863097
230927A00006	9/27/2023	5.36	3/27/2025	9/27/2023	105.61938	104.355926	103.1229122	101.9192494	100.7438964	99.59586043	98.47419487	97.37799637	96.3064025
230927A00007	9/27/2023	5.19	9/29/2025	9/27/2023	108.1195	106.3345743	104.5880655	102.878799	101.2056474	99.56752959	97.96340771	96.39228541	94.85320552
230927A00008	9/27/2023	4.98	9/28/2026	9/27/2023	112.96118	110.1050175	107.3371192	104.6541648	102.0529884	99.53056597	97.08400834	94.71055374	92.4075612
230928A00001	9/28/2023	4.91	9/28/2026	9/28/2023	113.14679	110.2797005	107.5013659	104.8084415	102.1977386	99.66621226	97.21095322	94.82918079	92.51823611
230928A00047	9/28/2023	5.21	9/29/2025	9/28/2023	108.15475	106.3695071	104.6226843	102.9131095	101.2396552	99.60123996	97.99682596	96.42541664	94.88605471
230928A00014	9/28/2023	4.9	9/28/2027	9/28/2023	117.97467	114.001599	110.1875854	106.52531	103.0078356	99.6285866	96.38132792	93.26014462	90.25942345
230919A00029	9/19/2023	4.63	9/19/2028	9/19/2023	121.74681	116.6703194	111.841589	107.247099	102.8741445	98.71078317	94.74578506	90.96858557	87.3692422
230928A00016	9/28/2023	4.83	9/28/2028	9/28/2023	122.81755	117.6902345	112.8139414	108.1749159	103.7602418	99.55778166	95.55612494	91.74454006	88.1129299
230928A00033	9/28/2023	5.03	9/28/2026	9/28/2023	113.09942	110.2413322	107.4715546	104.786765	102.1837961	99.65962249	97.21135377	94.83622691	92.53159976
230928A00064	9/28/2023	4.78	9/30/2027	9/28/2023	118.08194	114.0871896	110.2528851	106.5716251	103.0363955	99.64054871	96.37778159	93.2421154	90.22787681
230928A00017	9/28/2023	4.83	9/28/2028	9/28/2023	122.81755	117.6902345	112.8139414	108.1749159	103.7602418	99.55778166	95.55612494	91.74454006	88.1129299
230929A00031	9/29/2023	5.14	9/29/2025	9/29/2023	108.03137	106.2472422	104.5015185	102.7930228	101.1206281	99.48325368	97.8798621	96.30945733	94.77108254
230929A00033	9/29/2023	4.92	9/29/2026	9/29/2023	112.8093	109.952496	107.1840606	104.5006665	101.8991412	99.37645463	96.92971202	94.5561463	92.25311157
230919A00055	9/19/2023	4.65	9/19/2028	9/19/2023	121.84201	116.7632852	111.9323987	107.3358291	102.9608681	98.79557032	94.82870262	91.04969757	87.44860996
230919A00082	9/19/2023	5.17	9/19/2025	9/19/2023	107.93918	106.1830083	104.4642254	102.7816974	101.1343404	99.52111377	97.94101845	96.39309453	94.87641937
230919A00047	9/19/2023	4.98	8/19/2026	9/19/2023	112.3939	109.6560137	107.0001657	104.4233806	101.922808	99.49572042	97.139507	94.85166782	92.62980822

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230919A00010	9/19/2023	4.76	9/20/2027	9/19/2023	117.33417	113.3955567	109.6139834	105.9822567	102.4935564	99.1414161	95.9197023	92.82259494	89.84456933
230929A00061	9/29/2023	4.92	9/29/2026	9/29/2023	112.8093	109.952496	107.1840606	104.5006665	101.8991412	99.37645463	96.92971202	94.5561463	92.25311157
230929A00059	9/29/2023	5.14	9/29/2025	9/29/2023	108.03137	106.2472422	104.5015185	102.7930228	101.1206281	99.48325368	97.8798621	96.30945733	94.77108254
230929A00062	9/29/2023	4.78	9/29/2027	9/29/2023	117.53615	113.5684994	109.7598773	106.1029519	102.590782	99.21678828	95.97473242	92.85869671	89.86306553
230929A00046	9/29/2023	4.66	9/29/2027	9/29/2023	117.61308	113.6300742	109.8070308	106.1365665	102.6116871	99.2257641	95.97251289	92.84597252	89.84048682
230929A00018	9/29/2023	5.14	9/29/2025	9/29/2023	108.03137	106.2472422	104.5015185	102.7930228	101.1206281	99.48325368	97.8798621	96.30945733	94.77108254
230719A00091	11/13/2023	4.56	11/14/2025	11/13/2023	107.60774	105.7004572	103.8367801	102.0154544	100.2352685	98.49505349	96.79368099	95.13006171	93.50314375
230719A00101	10/16/2023	4.65	10/17/2025	10/16/2023	107.40865	105.5798603	103.7914	102.042099	100.3308274	98.65649695	97.01805913	95.4145035	93.84485586
230719A00096	12/18/2023	4.46	12/19/2025	12/18/2023	107.88209	105.8757925	103.9175195	102.0058193	100.1392972	98.31660954	96.53646193	94.79760695	93.09884205
230920A00002	9/20/2023	4.47	10/2/2028	9/20/2023	121.83043	116.6939444	111.8103354	107.1657007	102.7469827	98.54191248	94.53895752	90.72727297	87.09665663
230920A00025	9/20/2023	5.14	9/16/2025	9/20/2023	107.82617	106.0794641	104.369813	102.6961031	101.0572638	99.45226741	97.88012691	96.33989381	94.83065629
230920A00026	9/20/2023	4.9	9/16/2026	9/20/2023	112.57256	109.7548993	107.0235282	104.3752383	101.8069632	99.31577207	96.89886352	94.55355815	92.27729254
231101A00016	11/1/2023	4.99	11/3/2025	11/1/2023	108.53408	106.6427756	104.7941511	102.9869951	101.2201361	99.49244304	97.80282384	96.15022364	94.53362337
231102A00032	11/2/2023	4.91	11/2/2026	11/2/2023	113.2637	110.3040338	107.4386174	104.6639401	101.9766456	99.37352012	96.85148541	94.40759248	92.03901535
231102A00033	11/2/2023	4.83	11/2/2027	11/2/2023	118.21529	114.1367153	110.2251409	106.4728414	102.87249	99.41713502	96.10017856	92.91535658	89.85672037
231102A00031	11/2/2023	5.1	11/3/2025	11/2/2023	108.47094	106.5850635	104.7416671	102.9395459	101.1775358	99.45451302	97.76939213	96.12112481	94.50869818
231102A00024	11/2/2023	4.78	11/2/2028	11/2/2023	123.03422	117.7995946	112.8258883	108.0986818	103.6044279	99.33039269	95.26460246	91.39579465	87.71337206
231102A00022	11/2/2023	4.91	11/10/2026	11/2/2023	113.37446	110.3911761	107.5035319	104.7079433	102.0009823	99.37936726	96.83995618	94.37973978	91.9958352
231102A00039	11/2/2023	4.91	10/28/2026	11/2/2023	113.19409	110.2492883	107.3978625	104.6363501	101.9614355	99.36994374	96.85883358	94.42519116	92.06622397
231103A00034	11/3/2023	4.49	11/3/2028	11/3/2023	122.33109	117.0890068	112.1091867	107.3770925	102.8790703	98.60228816	94.53468199	90.6649062	86.98228716
231103A00008	11/3/2023	4.97	11/3/2025	11/3/2023	108.22929	106.3457157	104.504582	102.7046815	100.9448512	99.22396839	97.54094881	95.89474516	94.28434555
231103A00029	11/3/2023	4.75	11/3/2026	11/3/2023	112.8193	109.8632859	107.0015308	104.2305241	101.5469056	98.94745765	96.42909887	93.98887711	91.62396356
231103A00002	11/3/2023	4.67	11/29/2027	11/3/2023	117.96438	113.8152126	109.8389382	106.0274191	102.372946	98.86821082	95.50628419	92.28059342	89.18490245
231023A00048	10/23/2023	5.04	10/25/2027	10/23/2023	118.90889	114.8398386	110.9363928	107.1909223	103.5961853	100.1453106	96.83177637	93.64939092	90.59227386
231023A00029	10/23/2023	5.19	10/23/2025	10/23/2023	108.47644	106.6208693	104.8065085	103.0321757	101.296733	99.59908328	97.93816802	96.31296579	94.72249068
231023A00028	10/23/2023	5.33	4/23/2025	10/23/2023	105.99385	104.6604521	103.3521215	102.0681758	100.8079593	99.57083975	98.35620751	97.16347442	95.99207289
231006A00032	10/6/2023	5.08	10/6/2026	10/6/2023	113.35494	110.4705418	107.6758526	104.9675161	102.3423217	99.79720112	97.32922096	94.93557566	92.61358098
231006A00033	10/6/2023	4.98	10/6/2027	10/6/2023	118.39529	114.391159	110.5480909	106.8586624	103.3158427	99.91296567	96.64370883	93.50207311	90.48236434
231006A00015	10/6/2023	5.38	4/7/2025	10/6/2023	105.81328	104.5207286	103.2568435	102.0206727	100.8113022	99.62785826	98.46950493	97.33544237	96.22490469
231024A00039	10/24/2023	5.06	10/26/2026	10/24/2023	113.59194	110.6471349	107.7955049	105.0335901	102.3580806	99.76580745	97.25373572	94.81895803	92.45868848
231024A00046	10/24/2023	4.96	10/24/2028	10/24/2023	123.79291	118.5661016	113.598373	108.8754582	104.3839527	100.1112557	96.04551737	92.17559073	88.49098599
231024A00082	10/24/2023	5.05	10/23/2026	10/24/2023	113.51969	110.5844683	107.7418829	104.9884925	102.321003	99.7362612	97.23124818	94.8030725	92.44896417
231024A00079	10/24/2023	5.18	10/24/2025	10/24/2023	108.473	106.6146577	104.7976415	103.020768	101.282899	99.58293639	97.91982087	96.29252988	94.70007622

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
231024A00010	12/18/2023	5.43	12/18/2024	12/18/2023	104.21725	103.2340791	102.2695702	101.3231931	100.3944388	99.48281698	98.58785568	97.70910001	96.84611155
231024A00007	10/30/2023	5.5	10/30/2024	10/30/2023	103.60743	102.7608251	101.9281145	101.10896	100.303032	99.5100116	98.72958999	97.96146816	97.20535651
231024A00076	10/24/2023	5.31	4/24/2025	10/24/2023	105.98258	104.646785	103.3358337	102.0490581	100.7858193	99.54550033	98.32750625	97.13126252	95.95621434
231024A00008	10/30/2023	5.5	10/30/2024	10/30/2023	103.60743	102.7608251	101.9281145	101.10896	100.303032	99.5100116	98.72958999	97.96146816	97.20535651
231024A00011	12/18/2023	5.43	12/18/2024	12/18/2023	104.21725	103.2340791	102.2695702	101.3231931	100.3944388	99.48281698	98.58785568	97.70910001	96.84611155
231024A00030	10/24/2023	4.96	10/24/2028	10/24/2023	123.79291	118.5661016	113.598373	108.8754582	104.3839527	100.1112557	96.04551737	92.17559073	88.49098599
231024A00029	10/24/2023	4.97	10/25/2027	10/24/2023	118.63963	114.5757263	110.6772758	106.9366511	103.3466162	99.90030504	96.5912013	93.41311808	90.36017977
231006A00010	10/6/2023	4.93	10/16/2028	10/6/2023	123.53914	118.3419068	113.4012934	108.7031921	104.2343481	99.98230249	95.93534046	92.08244251	88.41323952
231006A00009	10/6/2023	4.98	10/15/2027	10/6/2023	118.52925	114.4964557	110.6268071	106.9127847	103.3472609	99.92347545	96.63501432	93.47578986	90.44002228
231010A00075	10/10/2023	4.78	10/10/2028	10/10/2023	122.73536	117.5748685	112.6686354	108.0026917	103.5639161	99.33997649	95.31927849	91.49091658	87.84462956
231002A00042	10/2/2023	4.73	10/2/2028	10/2/2023	123.08135	117.9151985	113.0029975	108.3307936	103.8854837	99.65475602	95.62703714	91.79144358	88.13773642
231002A00018	10/2/2023	4.87	10/1/2027	10/2/2023	117.90503	113.9246554	110.1039502	106.4355619	102.9125212	99.52822182	96.27639913	93.15111014	90.1467148
231003A00011	10/3/2023	4.89	10/15/2027	10/3/2023	118.18554	114.1592781	110.2959633	106.5880862	103.0285263	99.61053033	96.32769062	93.17392581	90.14346206
231003A00005	10/3/2023	4.84	10/3/2028	10/3/2023	122.93165	117.7870398	112.8949158	108.2414276	103.8135671	99.59911028	95.58656483	91.76512215	88.12461264
231003A00036	10/3/2023	4.84	10/3/2028	10/3/2023	122.93165	117.7870398	112.8949158	108.2414276	103.8135671	99.59911028	95.58656483	91.76512215	88.12461264
231004A00012	10/5/2023	5.51	10/4/2024	10/5/2023	103.26455	102.4902608	101.7276288	100.9763964	100.2363088	99.50711891	98.78858682	98.08047963	97.3825712
231004A00006	10/4/2023	4.88	10/4/2028	10/4/2023	123.13697	117.9845636	113.0850922	108.4246829	103.9903032	99.76970571	95.75137592	91.92448426	88.27884124
231004A00016	10/4/2023	5.36	4/4/2025	10/4/2023	105.74154	104.4569	103.2016067	101.9746531	100.7750782	99.60196405	98.45443371	97.33164889	96.2328078
231004A00011	10/5/2023	5.51	10/4/2024	10/5/2023	103.26455	102.4902608	101.7276288	100.9763964	100.2363088	99.50711891	98.78858682	98.08047963	97.3825712
231005A00037	10/5/2023	4.88	10/5/2027	10/5/2023	118.00127	114.0074794	110.1743045	106.4943438	102.9605849	99.56637958	96.30542241	93.17173086	90.15962668
231005A00039	10/5/2023	5.16	10/6/2025	10/5/2023	108.17015	106.3651063	104.5992753	102.8714817	101.180596	99.52553331	97.90525065	96.31874526	94.76505248
231005A00035	10/5/2023	4.98	10/5/2026	10/5/2023	113.06184	110.1844062	107.396416	104.6945212	102.0755188	99.53634817	97.07408347	94.68592669	92.36920096
231005A00040	10/5/2023	4.98	10/5/2026	10/5/2023	113.06184	110.1844062	107.396416	104.6945212	102.0755188	99.53634817	97.07408347	94.68592669	92.36920096
231005A00054	10/5/2023	4.98	10/5/2026	10/5/2023	113.06184	110.1844062	107.396416	104.6945212	102.0755188	99.53634817	97.07408347	94.68592669	92.36920096
231106A00020	11/6/2023	5.02	11/6/2025	11/6/2023	108.36437	106.4713881	104.6212173	102.8126371	101.0444698	99.31557865	97.62486622	95.97127247	94.3537734
231106A00007	11/6/2023	4.78	11/5/2027	11/6/2023	118.06366	113.9796068	110.0631281	106.3064599	102.7022363	99.24346897	95.92352596	92.7361117	89.67524813
231024A00017	10/24/2023	4.97	10/25/2027	10/24/2023	118.63963	114.5757263	110.6772758	106.9366511	103.3466162	99.90030504	96.5912013	93.41311808	90.36017977
231025A00004	10/25/2023	5.07	10/24/2025	10/25/2023	108.53518	106.6715327	104.8494042	103.0676055	101.3249911	99.62045612	97.95293451	96.32139751	94.72485197
231025A00003	10/25/2023	5.07	10/24/2025	10/25/2023	108.53518	106.6715327	104.8494042	103.0676055	101.3249911	99.62045613	97.95293451	96.32139751	94.72485197
231025A00013	10/25/2023	5.08	10/26/2026	10/25/2023	113.64878	110.7031614	107.8507384	105.0880495	102.4117843	99.81877316	97.30598069	94.87049893	92.50954145
231025A00018	10/25/2023	5.19	10/27/2025	10/25/2023	108.53593	106.6685889	104.8429314	103.0577742	101.3119771	99.60443966	97.93409915	96.2999294	94.70093903
231025A00036	10/25/2023	5.08	10/21/2026	10/25/2023	113.57532	110.6450042	107.8070067	105.0578926	102.394377	99.8133162	97.31170079	94.88664893	92.53540025
231025A00024	10/25/2023	5	10/25/2028	10/25/2023	124.00089	118.766162	113.7909735	109.0610341	104.5629141	100.2839883	96.21238438	92.33693354	88.64712558

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
231025A00068	10/25/2023	5.33	4/25/2025	10/25/2023	106.02443	104.6858733	103.3719373	102.0819744	100.8153617	99.57149797	98.34980262	97.14971463	95.9706919
231107A00011	11/7/2023	4.84	11/9/2026	11/7/2023	113.15898	110.1815658	107.2995489	104.5093539	101.8075639	99.19090791	96.65625403	94.20060249	91.82107948
231107A00009	11/7/2023	5.03	11/7/2025	11/7/2023	108.39711	106.5011127	104.6480441	102.8366831	101.0658476	99.33439609	97.64122668	95.98527516	94.36551354
231108A00026	11/8/2023	5.04	11/7/2025	11/8/2023	108.41581	106.519632	104.6663873	102.8548536	101.0838484	99.3522304	97.65889751	96.00278544	94.38286613
231108A00028	11/8/2023	4.83	11/9/2026	11/8/2023	113.13017	110.1531776	107.2715678	104.4817701	101.7803678	99.1640904	96.62980617	94.17451564	91.79534527
231108A00015	11/8/2023	4.83	11/9/2026	11/8/2023	113.13017	110.1531776	107.2715678	104.4817701	101.7803678	99.1640904	96.62980617	94.17451564	91.79534527
231113A00034	11/13/2023	5.16	11/13/2025	11/13/2023	108.72679	106.8113636	104.939637	103.1103484	101.3222857	99.57427891	97.86519898	96.19395575	94.55949647
231027A00043	10/27/2023	4.99	10/27/2026	10/27/2023	113.40744	110.4624326	107.6107004	104.8487874	102.1733807	99.58130808	97.06953144	94.63513998	92.27534436
231027A00019	10/27/2023	4.99	10/27/2026	10/27/2023	113.40744	110.4624326	107.6107004	104.8487874	102.1733807	99.58130808	97.06953144	94.63513998	92.27534436
231027A00021	10/27/2023	5.13	10/30/2025	10/27/2023	108.46931	106.594293	104.76129	102.9691184	101.2166325	99.50272622	97.82633099	96.18641452	94.58197925
231027A00036	10/27/2023	5.13	11/3/2025	10/27/2023	108.52671	106.6402976	104.796379	102.9937454	101.2312323	99.50771563	97.82210982	96.17336627	94.56047186
231027A00035	10/27/2023	4.99	10/30/2026	10/27/2023	113.4504	110.4963228	107.6360513	104.8661039	102.1831485	99.58399419	97.06558424	94.6249899	92.25940426
231027A00028	10/27/2023	4.92	10/23/2028	10/27/2023	123.58515	118.3662525	113.4059743	108.6900751	104.2051759	99.93869977	95.87881983	92.01441059	88.33500269
231030A00007	10/30/2023	5.32	4/30/2025	10/30/2023	106.08651	104.7348623	103.4070286	102.1024353	100.8205227	99.56074917	98.32258947	97.10553477	95.90909182
231113A00038	11/13/2023	4.97	11/13/2026	11/13/2023	113.58949	110.5948275	107.6963905	104.8905647	102.1738929	99.54306594	96.99491595	94.52640917	92.13463965
231113A00036	11/13/2023	5.3	5/15/2025	11/13/2023	106.27401	104.8794358	103.5101028	102.1653794	100.8446575	99.54734883	98.27288371	97.02071066	95.79029555
231030A00061	10/30/2023	5.32	4/30/2025	10/30/2023	106.08651	104.7348623	103.4070286	102.1024353	100.8205227	99.56074917	98.32258947	97.10553477	95.90909182
231030A00035	10/30/2023	4.85	10/30/2028	10/30/2023	124.04261	118.7707071	113.7614602	109.0003626	104.4737794	100.1688941	96.07365519	92.1767271	88.46744376
231114A00074	11/14/2023	4.6	11/14/2028	11/14/2023	122.29983	117.0489968	112.0617384	107.3233929	102.8201914	98.53919701	94.46824996	90.59591736	86.91144595
231114A00072	11/14/2023	4.67	11/15/2027	11/14/2023	117.77352	113.6671232	109.7303649	105.9553282	102.3345105	98.86079669	95.52743657	92.32802467	89.25648064
231114A00046	11/14/2023	4.62	11/14/2028	11/14/2023	122.39813	117.1449189	112.1553666	107.4148107	102.9094786	98.62642983	94.55350128	90.67925682	86.99294017
231114A00032	11/14/2023	5.35	11/14/2024	11/14/2023	103.67874	102.7909363	101.918416	101.0607878	100.2176721	99.38870166	98.57352188	97.77178981	96.9831738
231010A00007	10/10/2023	4.83	10/12/2027	10/10/2023	117.91299	113.9005914	110.0503131	106.3546853	102.8066245	99.39941329	96.12667919	92.98237446	89.96075784
231010A00101	10/10/2023	4.78	10/10/2028	10/10/2023	122.73536	117.5748685	112.6686354	108.0026917	103.5639161	99.33997649	95.31927849	91.49091658	87.84462956
231010A00057	10/10/2023	4.66	10/10/2028	10/10/2023	122.85018	117.6658757	112.7375561	108.0511346	103.5933778	99.3518495	95.31485857	91.4714099	87.81115904
231010A00076	10/10/2023	4.66	10/10/2028	10/10/2023	122.85018	117.6658757	112.7375561	108.0511346	103.5933778	99.3518495	95.31485857	91.4714099	87.81115904
231010A00031	10/10/2023	5.08	10/10/2025	10/10/2023	108.08588	106.2703901	104.4945526	102.7571911	101.0571753	99.39341837	97.76487462	96.17053784	94.60943929
231010A00067	10/10/2023	4.93	10/9/2026	10/10/2023	112.97975	110.0920674	107.2944723	104.5835974	101.9562217	99.40926636	96.939787	94.54496689	92.22211048
231010A00068	10/10/2023	4.83	10/8/2027	10/10/2023	117.85511	113.8553899	110.0168663	106.332113	102.7940893	99.39611975	96.13187212	92.99533802	89.98081414
231010A00030	10/10/2023	4.88	10/15/2026	10/10/2023	112.92484	110.0208477	107.2079359	104.482707	101.8419121	99.28244373	96.80132869	94.39572125	92.06289682
231011A00016	10/11/2023	4.75	10/11/2028	10/11/2023	122.60382	117.4435265	112.5376549	107.8722242	103.4341005	99.21093992	95.19113679	91.3637749	87.71858298
231011A00004	10/11/2023	4.81	10/8/2027	10/11/2023	117.77912	113.7808342	109.9437043	106.2603033	102.7235923	99.32689706	96.06388695	92.92855491	89.9151989
231011A00029	10/11/2023	4.81	10/8/2027	10/11/2023	117.77912	113.7808342	109.9437043	106.2603033	102.7235923	99.32689706	96.06388695	92.92855491	89.9151989

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
231011A00030	10/11/2023	4.75	10/11/2028	10/11/2023	122.60382	117.4435265	112.5376549	107.8722242	103.4341005	99.21093992	95.19113679	91.3637749	87.71858298
231011A00028	10/11/2023	4.92	10/9/2026	10/11/2023	112.9518	110.0645097	107.2672986	104.5567985	101.929789	99.38319122	96.91406122	94.51958248	92.1970597
231012A00027	10/12/2023	4.78	10/16/2028	10/12/2023	122.81391	117.6339682	112.7100203	108.0279855	103.5746357	99.33753734	95.30499955	91.46602554	87.81026779
231013A00017	10/13/2023	5.13	10/14/2025	10/13/2023	108.23435	106.4062754	104.6183301	102.8693404	101.1581736	99.48373979	97.84498946	96.24091183	94.67053295
231013A00020	10/13/2023	4.98	10/13/2026	10/13/2023	113.17717	110.2753068	107.4642704	104.740672	102.1012697	99.54296316	97.06278664	94.65790197	92.32559221
231016A00016	10/16/2023	5.01	10/16/2026	10/16/2023	113.30485	110.3926315	107.5717888	104.8389177	102.1907604	99.62420085	97.13625713	94.72407502	92.38492161
231017A00017	10/17/2023	5.11	10/16/2026	10/17/2023	113.58629	110.6700844	107.8453502	105.1086801	102.4568133	99.88663087	97.39514814	94.97950834	92.63697602
231017A00008	10/17/2023	5.26	10/17/2025	10/17/2023	108.51405	106.6749589	104.8763894	103.1171649	101.3961505	99.71225272	98.06441851	96.45163276	94.87291686
231017A00046	10/17/2023	5.26	10/17/2025	10/17/2023	108.51405	106.6749589	104.8763894	103.1171649	101.3961505	99.71225272	98.06441851	96.45163276	94.87291686
231018A00026	10/18/2023	5.28	1/7/2026	10/18/2023	109.79573	107.7172133	105.6893899	103.7106922	101.7796151	99.89471057	98.05458508	96.25789682	94.50335362
231019A00036	10/19/2023	5.27	10/20/2025	10/19/2023	108.57745	106.7293478	104.9221243	103.1546007	101.4256401	99.73414703	98.0790653	96.45937638	94.87409772
231019A00041	10/19/2023	5.08	10/19/2028	10/19/2023	124.30614	119.0817725	114.1155293	109.3932165	104.9014986	100.6278401	96.56045346	92.68825039	89.00079656
231019A00043	10/19/2023	5.19	10/19/2026	10/19/2023	113.85643	110.9278242	108.0912934	105.3434093	102.6808936	100.1006098	97.5995558	95.17485718	92.8237611
231019A00006	10/19/2023	5.29	10/20/2025	10/19/2023	108.61386	106.7654147	104.9578569	103.190005	101.4607222	99.76891276	98.11352031	96.49352617	94.90794766
231019A00007	10/19/2023	5.19	10/19/2026	10/19/2023	113.85643	110.9278242	108.0912934	105.3434093	102.6808936	100.1006098	97.5995558	95.17485718	92.8237611
231019A00009	10/19/2023	5.14	10/19/2027	10/19/2023	119.20159	115.1443858	111.2516054	107.5156756	103.9294126	100.4860014	97.17897517	94.00219542	90.94983321
231019A00044	10/19/2023	5.14	10/19/2027	10/19/2023	119.20159	115.1443858	111.2516054	107.5156756	103.9294126	100.4860014	97.17897517	94.00219542	90.94983321
231020A00061	10/20/2023	5.32	4/21/2025	10/20/2023	105.95007	104.6219236	103.3192891	102.0414507	100.7877198	99.55743343	98.34995325	97.16466406	96.00097298
231114A00028	11/14/2023	4.68	11/15/2027	11/14/2023	117.81256	113.7054122	109.7679192	105.99217	102.3706613	98.89627699	95.56226618	92.36222264	89.29006532
231114A00026	11/14/2023	4.97	11/14/2025	11/14/2023	108.38228	106.4674921	104.5964507	102.7678986	100.9806205	99.23344356	97.52523598	95.85490504	94.22139552
231114A00027	11/14/2023	4.76	11/13/2026	11/14/2023	112.98226	109.9964263	107.1066021	104.3091806	101.6007114	98.97789184	96.43756022	93.97668874	91.5923772
231115A00039	11/15/2023	4.85	11/16/2026	11/15/2023	113.28354	110.2850822	107.3832505	104.5744076	101.8550727	99.2219148	96.67174533	94.20151109	91.80828784
231117A00002	11/17/2023	4.76	11/12/2026	11/17/2023	112.96883	109.9859347	107.0988762	104.3040554	101.5980307	98.97750833	96.43933443	93.98048884	91.59807848
231117A00003	11/17/2023	4.59	11/17/2028	11/17/2023	122.28668	117.0277108	112.0331273	107.2882053	102.7791138	98.49285853	94.41722732	90.54073889	86.85259556
231117A00001	11/17/2023	4.99	11/12/2025	11/17/2023	108.39214	106.4826586	104.6166959	102.7929995	101.0103637	99.26762449	97.56365877	95.89738193	94.26774655
231207A00010	12/7/2023	4.38	12/7/2027	12/7/2023	116.92529	112.7735693	108.796003	104.9843449	101.3307843	97.82791996	94.46873605	91.24658023	88.15514284
231207A00034	12/7/2023	4.7	12/5/2025	12/7/2023	108.15027	106.1805622	104.2571072	102.3785325	100.5435194	98.75079649	96.99913829	95.28736273	93.61432951
231207A00035	12/7/2023	4.47	12/7/2026	12/7/2023	112.44904	109.4046316	106.4602261	103.61199	100.856256	98.18951747	95.60842055	93.1097567	90.69045542
231207A00016	12/7/2023	4.47	12/7/2026	12/7/2023	112.44904	109.4046316	106.4602261	103.61199	100.856256	98.18951747	95.60842055	93.1097567	90.69045542
231207A00014	12/7/2023	4.7	12/8/2025	12/7/2023	108.19054	106.2120862	104.280271	102.393712	100.551074	98.75106983	96.9924591	95.27404552	93.59467524
231207A00011	12/7/2023	4.28	12/7/2028	12/7/2023	120.98371	115.6996795	110.6845004	105.9230269	101.4010473	97.10521918	93.02301191	89.14265301	85.4530785
231207A00018	12/7/2023	4.7	12/8/2025	12/7/2023	108.19054	106.2120862	104.280271	102.393712	100.551074	98.75106983	96.9924591	95.27404552	93.59467524
231121A00015	11/21/2023	4.75	11/30/2026	11/21/2023	113.18149	110.1460169	107.2095442	104.3682989	101.6186742	98.95722023	96.38063649	93.8857644	91.46958038

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
231122A00029	11/22/2023	5.05	11/24/2025	11/22/2023	108.6747	106.7300298	104.8303447	102.9743327	101.1607289	99.38831348	97.65590961	95.96238176	94.30663389
231127A00026	11/27/2023	4.61	11/27/2028	11/27/2023	122.50573	117.213244	112.1881114	107.4153685	102.8809655	98.57170668	94.47519461	90.57977739	86.87450029
231127A00024	11/27/2023	4.78	11/27/2026	11/27/2023	113.22891	110.201057	107.2716941	104.4370791	101.6936327	99.03793108	96.46669796	93.9767977	91.56522832
231127A00025	11/27/2023	4.68	11/29/2027	11/27/2023	118.00381	113.853874	109.8768508	106.0646058	102.4094287	98.90401069	95.54142153	92.31508779	89.21877266
231127A00065	11/27/2023	5.03	11/26/2025	11/27/2023	108.66451	106.7145412	104.8097888	102.9489353	101.1307063	99.35387272	97.61724902	95.9196913	94.26009554
231128A00003	11/28/2023	4.41	11/30/2028	11/28/2023	122.26118	116.9440372	111.8966263	107.1037912	102.5513089	98.22582421	94.11479252	90.20642626	86.48964556
231128A00002	11/28/2023	4.41	11/30/2028	11/28/2023	122.26118	116.9440372	111.8966263	107.1037912	102.5513089	98.22582421	94.11479252	90.20642626	86.48964556
231128A00009	11/28/2023	4.73	12/14/2026	11/28/2023	113.31338	110.2363162	107.2608593	104.3830895	101.5992594	98.90578709	96.29924781	93.77636595	91.33400781
231129A00073	11/29/2023	4.81	5/29/2025	11/29/2023	106.00739	104.5723563	103.1639816	101.7815879	100.4245173	99.09213383	97.7838225	96.49898822	95.23705517
231129A00006	11/29/2023	4.25	11/29/2028	11/29/2023	121.45353	116.1590815	111.13334	106.3612072	101.8285141	97.52195653	93.4290372	89.53801308	85.83784591
231211A00071	12/11/2023	5.22	12/16/2024	12/11/2023	103.98473	103.0082367	102.0501814	101.1100457	100.187329	99.28154935	98.39224233	97.51896048	96.6612724
231211A00057	12/11/2023	4.58	12/11/2029	12/11/2023	126.41924	119.9285694	113.8248914	108.0829479	102.6792575	97.59198366	92.8008115	88.28683379	84.03244668
231212A00016	12/12/2023	4.59	12/7/2026	12/12/2023	112.80397	109.7542852	106.8047375	103.9514857	101.1908583	98.51934475	95.93358736	93.43037393	91.00663045
231212A00018	12/12/2023	4.5	12/6/2027	12/12/2023	117.38776	113.2297968	109.2460334	105.4282288	101.7685773	98.25968209	94.89453141	91.6664763	88.56921004
231212A00067	12/12/2023	4.82	12/12/2025	12/12/2023	108.50039	106.5073142	104.5614688	102.6614457	100.8058855	98.99347829	97.22296164	95.49311847	93.80277514
231212A00008	12/12/2023	5.26	12/12/2024	12/12/2023	103.96948	103.0039664	102.0564866	101.1265343	100.2136252	99.3172928	98.43708744	97.57257565	96.72333938
231212A00009	12/12/2023	5.01	6/12/2025	12/12/2023	106.24713	104.7765169	103.3338511	101.9183998	100.5294585	99.16634678	97.82840696	96.51500322	95.22552076
231212A00007	12/12/2023	5.16	2/5/2025	12/12/2023	104.64191	103.5221213	102.4264427	101.3540973	100.3043437	99.27647195	98.26980137	97.28367935	96.31747987
231213A00019	12/13/2023	4.97	6/13/2025	12/13/2023	106.2018	104.7288575	103.2839554	101.8663574	100.4753556	99.1102662	97.77042836	96.45520325	95.16397315
231213A00018	12/13/2023	4.99	6/16/2025	12/13/2023	106.27082	104.7893245	103.336177	101.9106296	100.5119631	99.13948311	97.79251852	96.47042073	95.17256269
231213A00049	12/13/2023	4.14	12/13/2028	12/13/2023	120.35152	115.0657623	110.0500128	105.2890104	100.7684333	96.4748389	92.39560554	88.51887778	84.83351621
231214A00029	12/14/2023	4.49	12/15/2025	12/14/2023	107.86991	105.8752139	103.928007	102.0268595	100.1703995	98.35730519	96.58630275	94.85616442	93.1657064
231214A00058	12/14/2023	4.69	6/13/2025	12/14/2023	105.79145	104.3216432	102.8798219	101.465252	100.0772271	98.71506473	97.37810537	96.06571146	94.77726652
231214A00074	12/14/2023	4.69	6/13/2025	12/14/2023	105.79145	104.3216432	102.8798219	101.465252	100.0772271	98.71506473	97.37810537	96.06571146	94.77726652
231214A00075	12/14/2023	4.49	12/15/2025	12/14/2023	107.86991	105.8752139	103.928007	102.0268595	100.1703995	98.35730519	96.58630275	94.85616442	93.1657064
231214A00036	12/14/2023	4.19	12/14/2026	12/14/2023	111.70579	108.6527599	105.7007376	102.8458235	100.084289	97.41257055	94.82726079	92.32510093	89.90297337
231214A00003	12/14/2023	4.7	6/16/2025	12/14/2023	105.84342	104.3652118	102.9152896	101.4929123	100.0973623	98.72794643	97.38399507	96.06486095	94.7699183
231215A00018	12/15/2023	4.19	12/15/2027	12/15/2023	116.27213	112.110463	108.1244442	104.3057103	100.6463403	97.1388303	93.77606993	90.55131915	87.45818712
231218A00052	12/18/2023	4.54	12/18/2025	12/18/2023	108.02792	106.0229196	104.0658415	102.1552399	100.2897246	98.46795673	96.6886461	94.95054936	93.25246787
231218A00027	12/18/2023	4.96	2/19/2025	12/18/2023	104.61724	103.4591128	102.3267662	101.2193479	100.1360397	99.07605853	98.03865519	97.02311219	96.02874223
231218A00023	12/18/2023	4.76	6/18/2025	12/18/2023	105.95706	104.4726348	103.0167146	101.5885458	100.187403	98.81258572	97.46341729	96.13924367	94.83943262
231218A00070	12/18/2023	4.6	6/18/2025	12/18/2023	105.96034	104.4719701	103.0122405	101.5803925	100.1756959	98.7974458	97.44496123	96.11758411	94.81467837
231219A00060	12/19/2023	4.22	6/21/2027	12/19/2023	114.15562	110.5311571	107.0439041	103.687913	100.4575286	97.34737074	94.35231939	91.46750051	88.68827294

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
231129A00039	11/29/2023	4.97	5/30/2025	11/29/2023	106.01726	104.5831896	103.1757587	101.7942839	100.4381082	99.10659624	97.79913338	96.51512514	95.25399615
231130A00073	11/30/2023	4.61	11/30/2026	11/30/2023	112.77011	109.7407101	106.8101601	103.9746926	101.2307053	98.57475305	96.00353966	93.51391071	91.10284666
231130A00074	11/30/2023	4.45	11/30/2028	11/30/2023	121.74844	116.4659172	111.4509073	106.6884086	102.164336	97.86546259	93.77936288	89.89436005	86.19947719
231130A00072	11/30/2023	4.83	12/1/2025	11/30/2023	108.34823	106.3876999	104.4729476	102.6026228	100.7754272	98.99010918	97.24546171	95.5403204	93.87356177
231219A00012	12/19/2023	4.54	12/19/2025	12/19/2023	108.04093	106.0330257	104.0731705	102.1599186	100.2918743	98.46769313	96.68607995	94.94578655	93.24560967
231219A00008	12/19/2023	5.05	12/19/2024	12/19/2023	103.85812	102.8741213	101.9088593	100.9618027	100.0324389	99.12027422	98.22483351	97.34565882	96.48230885
231219A00009	12/19/2023	4.75	6/19/2025	12/19/2023	105.95484	104.467767	103.0092942	101.5786685	100.1751611	98.79806785	97.44670869	96.12042639	94.81858567
231219A00015	12/19/2023	4.17	12/20/2027	12/19/2023	116.25479	112.0792136	108.0804694	104.250103	100.5801147	97.06292795	93.69136447	90.45862135	87.35824931
231219A00007	12/19/2023	5.05	12/19/2024	12/19/2023	103.85812	102.8741213	101.9088593	100.9618027	100.0324389	99.12027422	98.22483351	97.34565882	96.48230885
231219A00011	12/19/2023	4.75	6/19/2025	12/19/2023	105.95484	104.467767	103.0092942	101.5786685	100.1751611	98.79806785	97.44670869	96.12042639	94.81858567
231219A00013	12/19/2023	4.27	12/18/2026	12/19/2023	111.99336	108.9247823	105.9580593	103.0892388	100.3145492	97.63038574	95.03330252	92.52000444	90.08733969
231219A00016	12/19/2023	4.27	12/18/2026	12/19/2023	111.99336	108.9247823	105.9580593	103.0892388	100.3145492	97.63038574	95.03330252	92.52000444	90.08733969
231219A00025	12/19/2023	4.06	12/15/2028	12/19/2023	119.97306	114.6908802	109.6789435	104.9219533	100.405558	96.11628798	92.04149703	88.16930779	84.48856106
231219A00019	12/19/2023	4.17	12/15/2027	12/19/2023	116.19238	112.0322894	108.0478011	104.2305506	100.5726187	97.06650326	93.7050956	90.48165726	87.38979892
231201A00034	12/1/2023	4.62	3/2/2026	12/1/2023	109.17243	106.9496747	104.7838338	102.6730409	100.6155076	98.60951838	96.65342694	94.74565289	92.88467845
231205A00025	12/5/2023	4.61	12/15/2025	12/5/2023	108.39092	106.3856907	104.4282672	102.5172102	100.6511362	98.82871253	97.0486552	95.30972649	93.61073318
231206A00012	12/6/2023	4.31	12/6/2028	12/6/2023	121.12179	115.8372633	110.8214178	106.0591326	101.5362129	97.23933184	93.15597264	89.27437559	85.58348825
231220A00028	12/20/2023	4.13	12/20/2027	12/20/2023	116.09473	111.9223348	107.9266721	104.0992921	100.4321988	96.91781912	93.54897827	90.31887651	87.22106765
231220A00036	12/20/2023	4.87	2/27/2025	12/20/2023	104.62476	103.4446265	102.2912485	101.1637228	100.0611861	98.98281268	97.92781313	96.89543205	95.8849463
231220A00015	12/20/2023	4.48	12/19/2025	12/20/2023	107.9218	105.9151008	103.9564322	102.0443442	100.1774415	98.35438044	96.57386644	94.83465185	93.13553396
231220A00014	12/20/2023	4.99	12/20/2024	12/20/2023	103.81201	102.825535	101.8578946	100.9085547	99.97699869	99.0627292	98.16526726	97.2841515	96.41893731
231220A00032	12/20/2023	4.57	12/19/2025	12/20/2023	108.1005	106.0919882	104.1315397	102.2177059	100.3490907	98.52434948	96.74218671	95.0013539	93.30064753
231220A00008	12/20/2023	4.99	12/18/2024	12/20/2023	103.78639	102.8054947	101.8432255	100.8990585	99.97248524	99.06301624	98.17018002	97.29352231	96.43260527
231220A00030	12/20/2023	4.48	12/22/2025	12/20/2023	107.96035	105.9449342	103.977945	102.0579175	100.1834393	98.35315082	96.56574195	94.81995051	93.11455993
231220A00031	12/20/2023	4.23	12/21/2026	12/20/2023	111.91056	108.8347994	105.8614145	102.9864216	100.2060197	97.51657665	94.91462078	92.39683275	89.96003796
231220A00027	12/20/2023	4.99	12/16/2024	12/20/2023	103.76078	102.7854549	101.8285581	100.8895656	99.96797717	99.06331121	98.17510364	97.30290727	96.44629101
231221A00086	12/21/2023	4.48	6/23/2025	12/21/2023	105.84406	104.3432002	102.8714703	101.4280908	100.0123136	98.62341634	97.26070131	95.92349465	94.61114512
231221A00014	12/21/2023	4.14	6/21/2027	12/21/2023	113.87574	110.2561668	106.7736632	103.4222893	100.1963948	97.09060389	94.09980097	91.21911615	88.44391224
231221A00104	12/21/2023	4.3	12/30/2025	12/21/2023	107.96913	105.926431	103.9333951	101.9885034	100.0902907	98.23734719	96.42831515	94.66188709	92.93680339
231221A00008	12/21/2023	3.99	12/21/2028	12/21/2023	119.68535	114.3930947	109.3725551	104.6083028	100.085862	95.79164945	91.71291531	87.8376873	84.1547195
231221A00039	12/21/2023	3.99	12/21/2028	12/21/2023	119.68535	114.3930947	109.3725551	104.6083028	100.085862	95.79164945	91.71291531	87.8376873	84.1547195
231221A00003	12/21/2023	4.39	12/22/2025	12/21/2023	107.78091	105.7673187	103.8021237	101.8838556	100.0111035	98.18250836	96.39676113	94.65260046	92.94881062
231221A00006	12/21/2023	4.14	12/21/2026	12/21/2023	111.64089	108.5691874	105.5997574	102.7286213	99.95198113	97.26620801	94.66783319	92.1535402	89.72015717

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
231222A00027	12/22/2023	4.84	2/21/2025	12/22/2023	104.50661	103.3436676	102.2067404	101.0949613	100.0075011	98.94356638	97.90239824	96.88327001	95.88548571
231222A00019	12/22/2023	4.92	12/23/2024	12/22/2023	103.78093	102.7864608	101.8111313	100.8543959	99.91572571	98.99461153	98.09056324	97.20310883	96.33179357
231222A00032	12/22/2023	4.94	12/16/2024	12/22/2023	103.71209	102.7370241	101.7803791	100.8416351	99.92029199	99.01586814	98.12789957	97.25593918	96.39955592
231222A00004	12/22/2023	4	12/22/2028	12/22/2023	119.74595	114.4493346	109.4247837	104.6568394	100.1310007	95.83366149	91.75205044	87.87417579	84.18877361
231222A00039	12/22/2023	4.44	12/22/2025	12/22/2023	107.8806	105.865994	103.8998022	101.9805566	100.1068456	98.27730972	96.49063936	94.74557271	93.04089357
231222A00014	12/22/2023	4.92	12/20/2024	12/22/2023	103.74308	102.7569703	101.78969	100.8407054	99.9095	98.99557653	98.09845614	97.21767755	96.35279623
231226A00098	12/26/2023	4.67	6/26/2025	12/26/2023	105.92278	104.4172841	102.9410874	101.4934098	100.0734964	98.6806184	97.31407209	95.97317768	94.65727831
231226A00024	12/26/2023	4.03	12/26/2028	12/26/2023	119.93858	114.6257546	109.5863357	104.8047588	100.266424	95.95763452	91.8655356	87.97805874	84.28386945
231226A00027	12/26/2023	4.22	12/28/2026	12/26/2023	111.96608	108.8698417	105.8772852	102.9843573	100.1871853	97.48206985	94.86547583	92.33402439	89.88448492
231226A00095	12/26/2023	4.22	12/28/2026	12/26/2023	111.96608	108.8698417	105.8772852	102.9843573	100.1871853	97.48206985	94.86547583	92.33402439	89.88448492
231226A00043	12/26/2023	4.46	12/26/2025	12/26/2023	107.97166	105.9450271	103.9673497	102.037136	100.1529515	98.31341481	96.51719559	94.76301225	93.04962979
231227A00023	12/27/2023	3.98	12/27/2028	12/27/2023	119.69738	114.3876666	109.3514334	104.5730949	100.0380385	95.73255538	91.6437807	87.75963663	84.06878046
231227A00030	12/27/2023	4.44	6/27/2025	12/27/2023	105.83298	104.3215097	102.8395685	101.386366	99.96113867	98.56314998	97.19168858	95.84606747	94.52562291
231227A00027	12/27/2023	4.42	12/26/2025	12/27/2023	107.89147	105.8656554	103.8887837	101.9593603	100.0759509	98.23717463	96.44170153	94.68825042	92.97558664
231227A00026	12/27/2023	4.6	6/27/2025	12/27/2023	105.82986	104.3224229	102.8443758	101.3949326	99.97333491	98.57885074	97.21077322	95.86841961	94.5511302
231227A00005	12/27/2023	4.17	12/28/2026	12/27/2023	111.8153	108.7213429	105.7310108	102.8402519	100.0451952	97.34214313	94.7275623	92.19807547	89.75045357
231227A00028	12/27/2023	4.85	2/4/2025	12/27/2023	104.28278	103.1678665	102.0769138	101.0091499	99.96383981	98.94027919	97.937793	96.95573392	95.99348088
231227A00013	12/27/2023	4.44	6/27/2025	12/27/2023	105.83298	104.3215097	102.8395685	101.386366	99.96113867	98.56314998	97.19168858	95.84606747	94.52562291
231228A00026	12/28/2023	3.96	12/28/2028	12/28/2023	119.607	114.2966771	109.2600352	104.4814744	99.94636277	95.64097433	91.55242817	87.66863212	83.97823028
231228A00025	12/28/2023	4.05	12/28/2027	12/28/2023	115.8718	111.6811061	107.6689055	103.8266242	100.146144	96.61977902	93.24024944	90.00065833	86.89446923
231005A00003	10/5/2023	5.14	10/6/2025	10/5/2023	108.13451	106.3297955	104.5642853	102.8368066	101.1462302	99.49147121	97.87148689	96.2852746	94.73186982
231020A00049	10/20/2023	5.03	10/20/2027	10/20/2023	118.79531	114.7429418	110.8549896	107.1238781	103.5424211	100.1038017	96.80155072	93.62952732	90.58190027
231020A00048	10/20/2023	5.08	10/20/2026	10/20/2023	113.56063	110.6333729	107.7982611	105.0518631	102.3908989	99.81222992	97.312852	94.88988846	92.54058408
231020A00051	10/20/2023	5.02	10/20/2028	10/20/2023	124.0293	118.8086062	113.8460709	109.1274985	104.6395459	100.3696709	96.30607916	92.43767617	88.75402174
231020A00067	10/20/2023	5.32	4/15/2025	10/20/2023	105.8585	104.5458246	103.2600109	102.0002359	100.7657133	99.55568907	98.36943915	97.20626835	96.06550875
231020A00069	10/20/2023	5.08	10/15/2026	10/20/2023	113.48717	110.5752175	107.7545376	105.021725	102.3735249	99.80682411	97.31864405	94.90613376	92.56656367
231020A00070	10/20/2023	5.19	10/15/2025	10/20/2023	108.35746	106.5254332	104.7336759	102.9810088	101.2662983	99.58845326	97.94642283	96.33919467	94.76579319
231020A00041	10/20/2023	5.19	10/20/2025	10/20/2023	108.43182	106.5850803	104.7791942	103.0129834	101.2853116	99.59508409	97.94124527	96.32277722	94.73869798
231206A00046	12/6/2023	4.39	12/6/2027	12/6/2023	116.95185	112.8024742	108.8270268	105.0172833	101.3654481	97.86413384	94.50633762	91.28541912	88.19507984
231206A00047	12/6/2023	4.31	12/6/2028	12/6/2023	121.12179	115.8372633	110.8214178	106.0591326	101.5362129	97.23933184	93.15597264	89.27437559	85.58348825
231206A00016	12/6/2023	4.74	6/6/2025	12/6/2023	106.01162	104.5550518	103.1259333	101.723553	100.3472247	98.99628498	97.67009275	96.36802803	95.08949113
231206A00065	12/6/2023	4.58	12/8/2025	12/6/2023	108.23696	106.2528512	104.3156012	102.4238196	100.5761623	98.77133432	97.00808733	95.28521766	93.60156442
231206A00070	12/6/2023	4.58	12/8/2025	12/6/2023	108.23696	106.2528512	104.3156012	102.4238196	100.5761623	98.77133431	97.00808733	95.28521766	93.60156442

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
231031A00021	10/31/2023	5.18	10/30/2025	10/31/2023	108.56171	106.6858102	104.8519471	103.0589312	101.3056167	99.5908968	97.91370262	96.27300148	94.66779543
231031A00022	10/31/2023	5.04	10/30/2026	10/31/2023	113.59305	110.636925	107.774656	105.002759	102.3179004	99.71688779	97.19666297	94.75429586	92.38697825
231031A00033	10/31/2023	5.05	10/30/2026	10/31/2023	113.62158	110.6650454	107.8023769	105.03009	102.3448508	99.74346651	97.22287872	94.78015705	92.41249305
200605A00016	6/5/2020	1.02	6/5/2025	6/5/2020	100.44419	98.9956635	97.57564085	96.18334583	94.8180336	93.47898559	92.16550829	90.87693221	89.61261079
200605A00017	6/5/2020	1.02	6/5/2025	6/5/2020	100.44419	98.9956635	97.57564085	96.18334583	94.8180336	93.47898559	92.16550829	90.87693221	89.61261079
200605A00014	6/5/2020	1.02	6/5/2025	6/5/2020	100.44419	98.9956635	97.57564085	96.18334583	94.8180336	93.47898559	92.16550829	90.87693221	89.61261079
200813A00019	8/13/2020	1.44	8/13/2030	8/13/2020	107.05156	101.0959595	95.53046511	90.32712066	85.46012972	80.90567522	76.64175687	72.64804289	68.9057346
200813A00020	8/13/2020	1.44	8/13/2030	8/13/2020	107.05156	101.0959595	95.53046511	90.32712066	85.46012972	80.90567522	76.64175687	72.64804289	68.9057346
200813A00023	8/13/2020	0.86	10/14/2025	8/13/2020	100.57676	98.79679238	97.05753012	95.3578017	93.69647617	92.07246223	90.4847066	88.93219241	87.41393771
201007A00008	10/7/2020	1.22	10/7/2030	10/7/2020	105.55643	99.74795408	94.32287685	89.25345884	84.5141138	80.0812329	75.93302214	72.04935374	68.41163058
201007A00010	10/7/2020	1.22	10/7/2030	10/7/2020	105.55643	99.74795408	94.32287685	89.25345884	84.5141138	80.0812329	75.93302214	72.04935374	68.41163058
201007A00014	10/7/2020	0.8	10/7/2025	10/7/2020	100.4418	98.69496971	96.98767953	95.31879691	93.68723307	92.09193706	90.53189416	89.00612445	87.51368136
201015A00020	10/15/2020	0.94	10/15/2027	10/15/2020	102.9273	99.35341223	95.92707856	92.64141956	89.48991092	86.46636502	83.56491181	80.77998081	78.10628428
200709A00025	7/9/2020	1.37	7/9/2030	7/9/2020	106.59992	100.7370612	95.25383789	90.12335495	85.32077195	80.82313176	76.60920793	72.65936526	68.95543226
200709A00021	7/9/2020	0.83	7/9/2025	7/9/2020	100.24888	98.71368257	97.20976336	95.73622336	94.29220209	92.87687145	91.48943416	90.12912234	88.79519612
200911A00013	9/11/2020	0.69	9/11/2025	9/11/2020	100.1913	98.50051953	96.84676033	95.22892371	93.64595665	92.0968464	90.58061851	89.09633503	87.64309275
200911A00011	9/11/2020	1.18	9/11/2030	9/11/2020	105.47413	99.53193784	93.98320799	88.79949172	83.95455156	79.42417711	75.18601787	71.21943069	67.50534064
200911A00012	9/11/2020	1.18	9/11/2030	9/11/2020	105.47413	99.53193784	93.98320799	88.79949172	83.95455156	79.42417711	75.18601787	71.21943069	67.50534064
201109A00012	11/9/2020	1.39	11/8/2030	11/9/2020	106.8198	100.6954068	94.98450876	89.65666354	84.68383159	80.04017328	75.70186534	71.64693355	67.85510007
201211A00001	12/11/2020	0.95	12/11/2030	12/11/2020	104.49914	98.91568207	93.7014735	88.82948443	84.27481865	80.01453554	76.02748601	72.29416302	68.79656539
210107A00007	1/7/2021	0.84	1/7/2026	1/7/2021	100.78049	98.78692494	96.84336485	94.94820706	93.09991726	91.29702175	89.5381046	87.82180481	86.14681377
210809A00010	8/9/2021	1.06	8/7/2026	8/9/2021	101.89431	99.38847885	96.95872315	94.60223362	92.31632845	90.09844378	87.9461275	85.85703351	83.82891629
210915A00027	9/15/2021	1.1	9/15/2026	9/15/2021	102.11948	99.51938301	97.0006666	94.56030043	92.19538396	89.90314288	87.68092269	85.52618269	83.43649028
210921A00006	9/21/2021	1.43	9/21/2028	9/21/2021	106.07106	101.6161594	97.38162281	93.35532454	89.5258741	85.88256413	82.41532588	79.11468772	75.97173661
210921A00009	9/21/2021	1.28	9/21/2028	9/21/2021	105.98336	101.5188235	97.27555736	93.24136866	89.40480099	85.75508629	82.28209982	78.97631829	75.82878101
210201A00002	2/1/2021	1.19	2/1/2036	2/1/2021	104.89336	98.82572709	93.2505817	88.12150674	83.39689879	79.03943357	75.01559248	71.29524479	67.85127853
211007A00006	10/7/2021	1.28	10/7/2026	10/7/2021	102.68571	100.0193274	97.43801329	94.9385918	92.51802388	90.17340008	87.90193429	85.70095774	83.56791349
211014A00012	10/14/2021	1.46	10/14/2031	10/14/2021	105.39118	101.3813636	97.59287864	94.01122617	90.62297389	87.41567033	84.37776642	81.4985437	78.76804879
211208A00012	12/8/2021	1.62	12/8/2026	12/8/2021	103.8946	101.0563008	98.31319509	95.66153503	93.09774739	90.61842015	88.2202942	85.90025551	83.65532771
220111A00005	1/11/2022	1.54	1/10/2025	1/11/2022	100.61361	99.52785378	98.46575507	97.42654103	96.40947596	95.41385541	94.43900456	93.48427671	92.54905176
211110A00012	11/10/2021	1.44	11/10/2026	11/10/2021	103.25369	100.4981234	97.83292294	95.2546223	92.75990495	90.34560005	88.00867522	85.74622964	83.55548757
211110A00014	11/10/2021	1.44	11/10/2026	11/10/2021	103.25369	100.4981234	97.83292294	95.2546223	92.75990495	90.34560005	88.00867522	85.74622964	83.55548757
211110A00013	11/10/2021	1.44	11/10/2026	11/10/2021	103.25369	100.4981234	97.83292294	95.2546223	92.75990495	90.34560005	88.00867522	85.74622964	83.55548757

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220411A00008	4/11/2022	3.02	4/12/2027	4/11/2022	109.47437	106.2017048	103.0483859	100.0094103	97.0800095	94.25563942	91.53196896	88.90486878	86.37040074
220520A00006	5/20/2022	3.02	5/20/2027	5/20/2022	109.57551	106.2743548	103.0962218	100.0358141	97.08809632	94.24827692	91.51179537	88.87430948	86.33168374
220916A00018	9/16/2022	4.07	9/16/2027	9/16/2022	113.29504	109.7686719	106.3808673	103.1253345	99.99610562	96.98751764	94.09419473	91.31103206	88.6331805
220919A00036	9/19/2022	4.11	9/19/2029	9/19/2022	121.80821	115.929738	110.3892047	105.1651591	100.2376291	95.58801007	91.19896421	87.05432752	83.13902439
221017A00055	10/17/2022	4.88	11/18/2024	10/17/2022	101.6619	101.1932443	100.7304758	100.2734699	99.82210744	99.37627237	98.93585215	98.5007374	98.07082187
220617A00030	6/17/2022	3.43	6/17/2025	6/17/2022	101.82791	101.0661787	100.3176983	99.58211016	98.85906626	98.14823138	97.44928274	96.76190927	96.08581114
220617A00061	6/17/2022	3.26	6/17/2024	6/17/2022	100.45863	100.2064755	99.95608367	99.70743893	99.46052107	99.21531023	98.97178689	98.72993181	98.4897261
221201A00068	12/1/2022	4.21	12/1/2027	12/1/2022	114.58044	110.8475974	107.2684007	103.8355833	100.5422661	97.38193315	94.34841005	91.43584416	88.63868604
221123A00016	11/23/2022	4.58	11/23/2029	11/23/2022	125.07795	118.9154713	113.1161063	107.6562412	102.5139257	97.66874685	93.10171333	88.79514908	84.73259552
230110A00035	1/10/2023	4.08	1/10/2028	1/10/2023	115.57857	111.4881862	107.5732123	103.825094	100.2357411	96.79750291	93.50314169	90.34580798	87.31901742
230113A00057	1/13/2023	3.99	1/13/2028	1/13/2023	114.17054	110.3560015	106.7019141	103.2005256	99.84450176	96.62690517	93.54117088	90.58108428	87.74076026
221222A00053	12/22/2022	4.18	12/22/2027	12/22/2022	115.37037	111.41966	107.6354821	104.0098241	100.5351045	97.2041484	94.01016309	90.94671547	88.00771091
230328A00047	3/28/2023	4.21	3/28/2028	3/28/2023	116.98111	112.6565909	108.5253888	104.5777768	100.8045692	97.19708788	93.74713179	90.44694837	87.28920664
230328A00051	3/28/2023	4.53	3/28/2033	3/28/2023	133.77586	124.6224673	116.2393721	108.5556171	101.5072066	95.03638653	89.09100318	83.6239305	78.59255925
230328A00037	3/28/2023	4.21	3/28/2028	3/28/2023	116.98111	112.6565909	108.5253888	104.5777768	100.8045692	97.19708788	93.74713179	90.44694837	87.28920664
230328A00052	3/28/2023	4.53	3/28/2033	3/28/2023	133.77586	124.6224673	116.2393721	108.5556171	101.5072066	95.03638653	89.09100318	83.6239305	78.59255925
230328A00045	3/28/2023	4.21	3/28/2028	3/28/2023	116.98111	112.6565909	108.5253888	104.5777768	100.8045692	97.19708788	93.74713179	90.44694837	87.28920664
230125A00031	1/25/2023	3.74	1/25/2028	1/25/2023	113.83476	109.9949713	106.3180082	102.7959322	99.4212451	96.1868578	93.08606512	90.11252268	87.26022525
230607A00020	6/7/2023	4.28	6/7/2028	6/7/2023	118.05512	113.5248157	109.2048367	105.0841887	101.1525127	97.40004515	93.81758077	90.39643716	87.12842244
230629A00094	6/29/2023	4.41	6/29/2028	6/29/2023	119.20629	114.5198302	110.0541482	105.7975563	101.7390518	97.86827276	94.17545659	90.65140245	87.28743561
230629A00071	6/29/2023	4.41	6/29/2028	6/29/2023	119.20629	114.5198302	110.0541482	105.7975563	101.7390518	97.86827276	94.17545659	90.65140245	87.28743561
230629A00097	6/29/2023	4.41	6/29/2028	6/29/2023	119.20629	114.5198302	110.0541482	105.7975563	101.7390518	97.86827276	94.17545659	90.65140245	87.28743561
230302A00047	3/2/2023	4.76	3/2/2028	3/2/2023	117.68667	113.6605139	109.8078597	106.1201156	102.589169	99.20735693	95.96743843	92.86256839	89.88627343
161222A00036	12/22/2016	2.69	12/22/2026	12/22/2016	103.23746	101.7302149	100.2607375	98.82777678	97.43012914	96.06663992	94.73620125	93.43774971	92.17026422
161222A00037	12/22/2016	3.08	12/22/2031	12/22/2016	111.36757	107.2117504	103.2850769	99.57246292	96.05994277	92.73457777	89.58437331	86.59820322	83.76574079
150601A00440	6/1/2015	3.27	3/16/2029	6/1/2015	107.85701	105.1596615	102.5665239	100.0726436	97.67333766	95.3641794	93.14098239	90.9997859	88.93684112
150601A00450	6/1/2015	3.28	4/27/2029	6/1/2015	108.02319	105.2802945	102.644789	100.1115035	97.67555813	95.33234289	93.0775006	90.90691136	88.81667801
150601A00460	6/1/2015	3.05	5/16/2029	6/1/2015	107.54079	104.7651803	102.0996964	99.53897739	97.07796469	94.71188205	92.43621775	90.24670818	88.13932247
150601A00506	6/1/2015	3.14	7/6/2029	6/1/2015	108.04256	105.1742902	102.4226658	99.78188275	97.2464694	94.81126546	92.47140218	90.22228385	88.05957064
150601A00528	6/1/2015	3.08	7/27/2029	6/1/2015	107.87815	105.0120777	102.262641	99.62403365	97.09078058	94.65771845	92.31997587	90.07295491	87.91231383
150601A00559	6/1/2015	3.06	8/31/2029	6/1/2015	107.94845	105.038982	102.2494029	99.57367707	97.00611622	94.54135948	92.17435219	89.90032636	87.71478238
150601A00342	6/1/2015	3.97	8/26/2033	6/1/2015	117.52288	112.3468205	107.5047736	102.9711863	98.72269266	94.73790718	90.99724167	87.4827409	84.17793411
210603A00008	6/3/2021	1.74	6/3/2036	6/3/2021	109.09026	102.8341905	97.0885237	91.80465933	86.93910227	82.45288596	78.31106467	74.48226619	70.93829738

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220722A00036	7/22/2022	3.34	7/22/2025	7/22/2022	101.91537	101.0989569	100.2969138	99.50885027	98.73438704	97.97315903	97.22481457	96.48901486	95.76543327
220916A00021	9/16/2022	4.17	9/16/2027	9/16/2022	107.09091	105.1614449	103.2884007	101.4696603	99.70320148	97.98709264	96.31948809	94.69862359	93.12281217
230428A00055	4/28/2023	4.61	4/28/2026	4/28/2023	104.73313	103.5086219	102.3100311	101.1365871	99.98754818	98.86220082	97.75985868	96.67986113	95.62157214
230622A00019	6/22/2023	4.33	6/22/2028	6/22/2023	117.69339	113.2937213	109.0972931	105.0934666	101.2722247	97.6241283	94.14028011	90.81229013	87.63224397
161222A00030	12/22/2016	3.09	12/22/2026	12/22/2016	108.90697	105.8642679	102.9234997	100.0806882	97.33203262	94.67390196	92.10282608	89.61548765	87.20871454
150512A00029	5/12/2015	3.03	5/12/2025	5/12/2015	103.10397	101.7405722	100.4017453	99.08687705	97.79537963	96.52668386	95.28023862	94.05551018	92.85198142
150519A00013	5/19/2015	2.98	5/19/2025	5/19/2015	103.09051	101.7081194	100.350952	99.01837204	97.70976906	96.42455219	95.16214956	93.92200753	92.70358996
160630A00012	6/30/2016	2.11	6/30/2025	6/30/2016	102.10179	100.6155289	99.15843226	97.72971654	96.32862587	94.95443073	93.60642678	92.28393379	90.98629459
160801A00001	8/1/2016	1.97	8/1/2024	8/1/2016	100.32345	99.73374006	99.15094236	98.57493727	98.00560658	97.44283482	96.88650916	96.33651935	95.79275765
150319A00012	3/19/2015	3.13	3/19/2029	3/19/2015	116.05124	110.5999474	105.4415346	100.558648	95.93505511	91.55556939	87.40597706	83.47296916	79.74407881
150319A00013	3/19/2015	3.25	3/19/2030	3/19/2015	119.03735	112.4882013	106.3488458	100.5913604	95.18987571	90.12041239	85.36073291	80.8902057	76.68968065
160726A00005	7/26/2016	2.28	7/27/2026	7/26/2016	105.07006	102.4918505	99.99018386	97.56232654	95.20565946	92.91767408	90.69596687	88.53823414	86.44226723
150317A00012	3/17/2015	2.46	3/18/2024	3/17/2015	100.24119	100.0200452	99.799893	99.58072258	99.36252732	99.14530066	98.92903607	98.71372709	98.49936732
150317A00013	3/17/2015	2.58	3/17/2025	3/17/2015	102.26215	101.0449298	99.85662011	98.69620139	97.56270012	96.45518763	95.37277756	94.31462344	93.27991652
121116A00006	11/16/2012	2.64	11/13/2025	11/16/2012	103.97312	102.103705	100.2771142	98.49211694	96.7475243	95.04218908	93.37500389	91.74489956	90.15084355
121116A00021	11/16/2012	2.35	11/17/2025	11/16/2012	103.71942	101.8370102	99.99803661	98.20124243	96.44541375	94.72937944	93.05200939	91.41221277	89.80893641
121116A00022	11/16/2012	2.78	11/16/2029	11/16/2012	116.33225	110.1764154	104.3893189	98.94694005	93.82694359	89.00855125	84.47242551	80.20056289	76.17619546
130405A00006	4/5/2013	2.41	4/7/2025	4/5/2013	102.21121	100.9397815	99.69673706	98.48112438	97.29203527	96.12860159	94.98999311	93.87541539	92.78410786
130405A00007	4/5/2013	2.91	4/17/2028	4/5/2013	112.86802	108.4102708	104.155607	100.0936938	96.21477712	92.50964892	88.96961371	85.58645716	82.35241679
140521A00019	5/21/2014	3.43	5/22/2028	5/21/2014	115.49169	110.8785217	106.4791024	102.2823995	98.27801094	94.4561214	90.80746658	87.32329928	83.99535797
140626A00036	6/26/2014	3.55	6/26/2029	6/26/2014	119.82407	113.970359	108.4453157	103.2286942	98.30160056	93.6463955	89.24660446	85.08683497	81.15270005
150826A00038	8/26/2015	2.94	8/26/2026	8/26/2015	107.39533	104.6977286	102.082033	99.54523307	97.08445512	94.69695074	92.38009035	90.13135711	87.94834123
150826A00039	8/26/2015	3.22	8/27/2029	8/26/2015	118.42483	112.4341119	106.7891718	101.4681457	96.45067198	91.71777775	87.25177632	83.03617324	79.05557951
150827A00029	8/27/2015	2.74	8/27/2024	8/27/2015	101.0385	100.3745295	99.71927664	99.07256807	98.43423746	97.80412277	97.18206609	96.56791357	95.96151521
160122A00029	1/22/2016	2.48	1/22/2025	1/22/2016	101.72715	100.6600465	99.61528354	98.59216039	97.59000984	96.60819186	95.64609225	94.70312132	93.77871269
160330A00054	3/30/2016	2.9	3/31/2031	3/30/2016	119.81226	112.1589038	105.0561162	98.46122639	92.33509374	86.64179644	81.34835012	76.42445264	71.8422524
160330A00056	3/30/2016	2.26	3/31/2025	3/30/2016	101.96772	100.7149805	99.49220198	98.29831877	97.1323129	95.99321377	94.88009546	93.79207416	92.72830583
160613A00047	6/15/2016	2.18	6/16/2025	6/15/2016	102.12951	100.6798185	99.25792349	97.86309357	96.49462413	95.15183455	93.83406717	92.54068632	91.27107741
160615A00031	6/15/2016	2.51	6/17/2030	6/15/2016	115.63551	108.9126637	102.6288852	96.7531831	91.25690463	86.11355008	81.29860077	76.78936138	72.56481557
160701A00039	7/1/2016	1.92	7/1/2026	7/1/2016	104.30784	101.8042238	99.37369599	97.0137038	94.72179582	92.49562129	90.33292528	88.23154417	86.18940131
060808A00022	8/8/2006	5.57	6/15/2026	8/8/2006	112.92269	110.3605143	107.8710958	105.4519461	103.1006762	100.8149932	98.5926957	96.43166962	94.32988413
160701A00020	7/1/2016	2.13	7/1/2026	7/1/2016	104.50615	102.0070284	99.58071101	97.22465823	94.93643239	92.71369577	90.55420582	88.45581057	86.41644443
160815A00005	8/15/2016	2.23	8/17/2026	8/15/2016	105.08054	102.4459436	99.89084838	97.4123618	95.00771567	92.67426125	90.40946318	88.21089373	86.07622745

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160815A00006	8/15/2016	2.23	8/17/2026	8/15/2016	105.08054	102.4459436	99.89084838	97.4123618	95.00771567	92.67426125	90.40946318	88.21089373	86.07622745
160815A00007	8/15/2016	2.23	8/17/2026	8/15/2016	105.08054	102.4459436	99.89084838	97.4123618	95.00771567	92.67426125	90.40946318	88.21089373	86.07622745
051003A00009	10/3/2005	5.15	10/15/2025	10/3/2005	108.28519	106.4538395	104.6627412	102.910721	101.1966457	99.51942442	97.87800661	96.27138025	94.69857003
091112A00011	11/12/2009	4.77	11/15/2024	11/12/2009	103.31757	102.426842	101.5515359	100.6912516	99.84560385	99.01422066	98.19674252	97.39282193	96.60212293
160211A00035	2/11/2016	2.25	2/11/2025	2/11/2016	101.44092	100.3238657	99.23134038	98.16254333	97.11670767	96.09309932	95.0910152	94.10978163	93.14875278
160211A00036	2/11/2016	2.41	2/11/2026	2/11/2016	104.19932	102.0843803	100.0229097	98.01318924	96.05356837	94.14246216	92.27834818	90.45976347	88.68530171
160520A00018	9/20/2017	2.34	9/20/2024	9/20/2017	100.74104	100.0152611	99.29992213	98.59479979	97.8996762	97.2143397	96.53858453	95.87221071	95.21502377
160830A00035	8/30/2016	2.06	8/30/2024	8/30/2016	100.45502	99.78693773	99.12771056	98.47716573	97.83513266	97.20144525	96.57594167	95.95846426	95.34885936
160830A00037	8/30/2016	2.16	8/29/2025	8/30/2016	102.5688	100.9165483	99.29876658	97.71444465	96.16260778	94.64231918	93.15267806	91.69281797	90.26190507
160830A00038	8/30/2016	2.24	8/28/2026	8/30/2016	105.18029	102.5150146	99.93084465	97.42479952	94.99403013	92.63581174	90.34753754	88.1267126	85.97094822
160520A00017	9/20/2017	2.34	9/20/2024	9/20/2017	100.74104	100.0152611	99.29992213	98.59479979	97.8996762	97.2143397	96.53858453	95.87221071	95.21502377
140827A00038	8/27/2014	3.07	8/30/2024	8/27/2014	101.13852	100.4678565	99.80607451	99.15299879	98.50845839	97.87228683	97.24432192	96.62440566	96.01238405
150721A00027	7/21/2015	3.74	7/22/2030	7/21/2015	123.00085	115.9796719	109.4173373	103.2812781	97.54140435	92.16990519	87.14106455	82.43109291	78.01797338
151229A00079	12/29/2015	3	12/30/2025	12/29/2015	105.07966	103.0717592	101.1127373	99.20109202	97.33538299	95.51422349	93.73627835	92.00026158	90.30493418
151229A00080	12/29/2015	3.49	12/30/2030	12/29/2015	122.42465	114.9769232	108.0455056	101.5916987	95.5799045	89.97735845	84.75388977	79.88170363	75.33518252
151229A00081	12/29/2015	3.76	12/31/2035	12/29/2015	136.80028	123.7052978	112.0532315	101.6748671	92.42175102	84.16354168	76.78571259	70.18755724	64.28045457
130821A00019	8/21/2013	3.81	8/29/2025	8/21/2013	105.59103	103.9081994	102.2604769	100.6468279	99.06625886	97.51781523	96.0005791	94.5136676	93.05623115
150105A00026	1/5/2015	2.54	1/5/2024	1/5/2015	100.02342	100.0039812	99.98455925	99.96515766	99.94577638	99.92641538	99.90707463	99.88775407	99.86845368
130424A00004	4/24/2013	2.46	4/24/2025	4/24/2013	102.40873	101.094533	99.80486109	98.53906102	97.29650096	96.07657139	94.87868414	93.70227142	92.54678494
130424A00005	4/24/2013	3.07	4/24/2030	4/24/2013	118.99487	112.3140372	106.0583365	100.1984441	94.70720036	89.55944388	84.73185478	80.20281094	75.9522563
160802A00003	8/2/2016	2.53	8/1/2031	8/2/2016	117.71098	109.7997391	102.4831288	95.71322552	89.44620633	83.64197934	78.2638478	73.27820611	68.65426458
160328A00045	3/28/2016	2.49	3/27/2026	3/28/2016	105.01085	102.757173	100.5630244	98.42638851	96.34533796	94.31802668	92.34268591	90.41762016	88.54120345
160329A00045	3/29/2016	2.12	3/29/2024	3/29/2016	100.18856	99.93733242	99.68736644	99.43864827	99.19116859	98.94491818	98.69988791	98.45606873	98.2134517
141208A00008	12/8/2014	3.02	12/16/2024	12/8/2014	101.84255	100.8772808	99.93030614	99.0011053	98.08918093	97.19405411	96.31526352	95.45236456	94.60492868
141215A00062	12/15/2014	2.65	12/16/2024	12/15/2014	101.63552	100.669168	99.72116247	98.79098864	97.87814662	96.98215508	96.10255038	95.23888575	94.39073054
140922A00026	9/22/2014	3.02	9/30/2024	9/22/2014	101.44119	100.6837571	99.93762702	99.20254441	98.47826521	97.76455252	97.06117631	96.3679132	95.6845462
150401A00008	4/1/2015	2.62	4/1/2025	4/1/2015	102.2295	100.9757039	99.75154016	98.5559668	97.38798637	96.24664744	95.13104201	94.04030302	92.97360211
091210A00005	12/10/2009	5.08	12/16/2024	12/10/2009	103.84841	102.8726304	101.9152803	100.9758404	100.0538105	99.14870874	98.26007095	97.38744983	96.53041416
050902A00032	9/2/2005	4.69	8/22/2025	9/2/2005	106.97418	105.2983772	103.6572385	102.0497562	100.4749584	98.9319107	97.41971422	95.93750405	94.48444753
060308A00014	3/8/2006	5.44	3/16/2026	3/8/2006	111.1901	108.9037969	106.6767324	104.5069382	102.3925263	100.3316869	98.32268502	96.36385591	94.45360214
151211A00055	12/11/2015	2.62	12/11/2024	12/11/2015	101.57255	100.6200321	99.68535669	98.76802239	97.86754964	96.98347646	96.11535762	95.26276387	94.42528127
111006A00023	10/6/2011	3.81	10/15/2026	10/6/2011	109.91638	107.0549688	104.2836163	101.5989603	98.99778354	96.47700868	94.03369155	91.6650143	89.36827916
151223A00072	12/23/2015	2.81	12/23/2025	12/23/2015	104.90109	102.9092107	100.9654873	99.06845661	97.21670908	95.40888769	93.6436854	91.91984293	90.23614667

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
151223A00074	12/23/2015	3.01	12/23/2027	12/23/2015	112.18977	108.0714612	104.1291942	100.3545036	96.73937609	93.27622485	89.95786396	86.77748524	83.72863633
151223A00077	12/23/2015	3.57	12/24/2035	12/23/2015	136.2801	123.1296425	111.4325961	101.018245	91.73684013	83.45692101	76.06299478	69.45352042	63.53915641
160628A00038	6/28/2016	1.88	6/27/2025	6/28/2016	101.97794	100.4966769	99.04441866	97.62038679	96.22383185	94.85403047	93.51028421	92.19191846	90.89828143
160628A00039	6/28/2016	2.01	6/29/2026	6/28/2016	104.52141	102.0206067	99.59268917	97.2351082	94.94542397	92.7212966	90.56048139	88.46082432	86.42025776
140423A00036	4/23/2014	4.03	4/23/2029	4/23/2014	121.11975	115.4375153	110.0635733	104.979527	100.1681685	95.61339899	91.30015201	87.21432186	83.34269757
131217A00023	12/17/2013	3.74	1/2/2024	12/17/2013	100.02543	100.0143158	100.0032166	99.9921279	99.9810498	99.96998224	99.95892521	99.94787869	99.93684265
131217A00024	12/17/2013	4.34	1/2/2029	12/17/2013	121.57669	116.2032619	111.1067125	106.2712429	101.6820373	97.32519883	93.18768756	89.25726311	85.52243158
150603A00017	6/3/2015	2.84	6/3/2025	6/3/2015	103.23702	101.8093749	100.4085198	99.03376882	97.68445581	96.35993695	95.05958968	93.78281189	92.52902104
160504A00004	5/4/2016	2.3	5/4/2026	5/4/2016	104.85225	102.4980807	100.2085774	97.98161079	95.815137	93.70719062	91.65588133	89.65939056	87.71596831
130904A00039	9/4/2013	4.19	9/15/2028	9/4/2013	120.28186	115.2306114	110.4264263	105.8558075	101.5060749	97.36530963	93.42230414	89.66651507	86.08802016
130926A00009	9/26/2013	4	10/2/2028	9/26/2013	119.56916	114.4862928	109.6543691	105.0595711	100.6889231	96.53023377	92.57204436	88.80357994	85.2147047
160930A00005	9/30/2016	2.03	9/30/2024	9/30/2016	100.55979	99.80773542	99.06689508	98.33701644	97.61785773	96.9091842	96.21076793	95.52238756	94.84382805
150220A00021	2/20/2015	2.72	2/20/2024	2/20/2015	100.18078	100.0341726	99.88800312	99.74227309	99.59698048	99.4521233	99.30769956	99.16370729	99.02014453
150220A00022	2/20/2015	2.8	2/20/2025	2/20/2015	102.13653	100.99086	99.87085981	98.77567179	97.7044779	96.6564957	95.63097644	94.6272033	93.64448969
160606A00004	6/6/2016	2.43	6/8/2026	6/6/2016	105.10081	102.6551412	100.2790358	97.97012095	95.72612125	93.54485227	91.42421617	89.36219778	87.35686079
160606A00005	6/6/2016	2.92	6/6/2031	6/6/2016	119.30499	111.5317173	104.3293369	97.65279632	91.46081687	85.71556333	80.38234047	75.42931766	70.82727883
160628A00049	6/28/2016	1.88	6/27/2025	6/28/2016	101.97794	100.4966769	99.04441866	97.62038679	96.22383185	94.85403047	93.51028421	92.19191846	90.89828143
090226A00006	2/26/2009	4.55	3/1/2024	2/26/2009	100.55514	100.380303	100.2060757	100.0324543	99.85943549	99.68701623	99.51519337	99.34396381	99.17332448
140313A00030	3/13/2014	3.27	3/15/2024	3/13/2014	100.40505	100.1918909	99.97965504	99.76833224	99.55791652	99.34840196	99.1397827	98.93205291	98.72520684
150720A00012	7/20/2015	2.99	7/21/2025	7/20/2015	103.86649	102.3039524	100.7727368	99.27196914	97.80080898	96.3584466	94.94410142	93.55702081	92.19647871
130107A00002	1/7/2013	3.22	1/18/2028	1/7/2013	112.73716	108.5511905	104.5462422	100.7135006	97.04462965	93.53174277	90.16737614	86.94446362	83.85631329
130531A00021	5/31/2013	3.22	5/30/2028	5/31/2013	114.6379	110.0208534	105.6189652	101.4210794	97.41667391	93.59582327	89.94916191	86.46784969	83.14353964
150821A00018	8/21/2015	2.6	8/21/2024	8/21/2015	100.91655	100.2692299	99.63021398	98.99933959	98.37645164	97.76139903	97.15403442	96.55421417	95.9617982
111216A00001	12/16/2011	3.95	12/30/2031	12/16/2011	128.75908	120.0611921	112.0373407	104.6312695	97.79170491	91.47189255	85.62917694	80.22462229	75.22267025
120113A00012	1/13/2012	3.62	1/15/2027	1/13/2012	110.34687	107.2257719	104.2106498	101.2973017	98.4817166	95.76006608	93.12869451	90.58411024	88.1229772
120113A00013	1/13/2012	3.87	1/15/2032	1/13/2012	128.24956	119.5271447	111.484216	104.0637947	97.21397143	90.8874326	85.04103153	79.63540096	74.6346037
120127A00018	1/27/2012	3.64	2/1/2027	1/27/2012	110.58983	107.4181881	104.3554176	101.3971452	98.53920387	95.77761915	93.10859836	90.52852137	88.03393151
120127A00019	1/27/2012	3.87	1/30/2032	1/27/2012	128.37436	119.6054779	111.5225485	104.0678169	97.18868946	90.83724821	84.96981172	79.54653997	74.53107776
160616A00034	6/16/2016	1.97	6/17/2024	6/16/2016	100.2658	99.79714397	99.33287567	98.8729289	98.41724339	97.96575999	97.51842065	97.07516838	96.63594723
160706A00010	7/6/2016	1.99	7/7/2025	7/6/2016	101.96168	100.4573054	98.98264865	97.53690567	96.11929728	94.72907184	93.36550404	92.02789376	90.71556492
100809A00029	8/9/2010	4.23	8/15/2025	8/9/2010	105.875	104.2318311	102.6223633	101.0456198	99.50066576	97.98660193	96.50256285	95.04771531	93.62125675
100824A00009	8/24/2010	3.91	9/2/2025	8/24/2010	105.56516	103.8759011	102.2219787	100.6023487	99.01600745	97.46199045	95.93937065	94.44725648	92.98479015
100930A00008	9/30/2010	3.82	9/30/2025	9/30/2010	105.7158	103.9499052	102.2221424	100.531344	98.87639332	97.25621903	95.66979269	94.1161267	92.59427215

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
110505A00022	5/5/2011	4.59	5/15/2026	5/5/2011	110.09162	107.6502525	105.2762114	102.9672672	100.7212752	98.53617387	96.40998121	94.34079128	92.32677073
110805A00014	8/5/2011	4.06	8/17/2026	8/5/2011	109.92834	107.2289386	104.6105279	102.0701696	99.60505069	97.21247938	94.88987898	92.63478199	90.44482472
120411A00013	4/11/2012	3.59	4/15/2027	4/11/2012	111.23321	107.8442322	104.5777618	101.4286822	98.39212089	95.46343693	92.63820802	89.91221902	87.28145088
120709A00016	7/9/2012	3.2	7/15/2027	7/9/2012	110.82536	107.192232	103.6993774	100.340602	97.1100252	94.00205794	91.01138647	88.13295715	85.36196219
130211A00017	2/11/2013	3.27	2/15/2028	2/11/2013	113.21609	108.9433354	104.8580183	100.9508767	97.21315882	93.63659284	90.21335754	86.93605515	83.79768588
150610A00008	6/10/2015	3.58	6/10/2030	6/10/2015	122.58574	115.6604716	109.1821587	103.1194834	97.44348172	92.12735432	87.14629356	82.477326	78.09916783
150610A00009	6/10/2015	3.03	6/10/2025	6/10/2015	103.56866	102.1199509	100.6987696	99.30439519	97.93613548	96.59332147	95.27530664	93.98146595	92.71119493
150819A00012	8/19/2015	3.04	8/19/2025	8/19/2015	103.95911	102.32151	100.7176765	99.14663358	97.60743904	96.09918671	94.62100474	93.17205394	91.75152625
150819A00013	8/19/2015	3.51	8/19/2030	8/19/2015	121.66638	114.6107966	108.0216945	101.8656144	96.1116703	90.73133963	85.69827034	80.98810457	76.57831766
160129A00066	1/29/2016	3.04	1/29/2031	1/29/2016	120.43193	112.930404	105.9568331	99.47114361	93.43650511	87.8190542	82.58764074	77.71359702	73.17052776
160129A00067	1/29/2016	2.53	1/29/2026	1/29/2016	104.63018	102.5411699	100.5044074	98.51823151	96.5810499	94.69133271	92.84760934	91.0484657	89.2925416
160804A00014	8/4/2016	1.99	8/5/2024	8/4/2016	100.34529	99.74474408	99.15137554	98.56505321	97.98565207	97.41305005	96.84712792	96.28776925	95.73486027
150422A00019	4/22/2015	2.62	4/22/2025	4/22/2015	102.39419	101.088269	99.80721599	98.55034393	97.31699185	96.10652297	94.91832362	93.75180213	92.60638786
160714A00054	7/14/2016	2.03	7/15/2024	7/14/2016	100.33537	99.79118539	99.2529001	98.72041772	98.19364464	97.67248929	97.15686202	96.64667512	96.14184269
140815A00032	8/15/2014	3.59	10/15/2029	8/15/2014	120.08724	113.9408005	108.1548203	102.7061877	97.57338927	92.73639519	88.17654901	83.87646654	79.81994257
160210A00042	2/10/2016	2.57	2/10/2026	2/10/2016	104.53295	102.4171455	100.3547594	98.34408033	96.38346129	94.47132053	92.6061386	90.78645533	89.01086698
160222A00018	2/22/2016	2.59	2/23/2026	2/22/2016	104.6781	102.524831	100.4265869	98.38157382	96.38807186	94.44443081	92.54906649	90.70045762	88.89714269
160616A00027	6/16/2016	2.27	6/16/2026	6/16/2016	104.75994	102.2973909	99.90550391	97.58184553	95.32408518	93.12998617	90.99740137	88.92426898	86.90860861
160705A00104	7/5/2016	2.1	7/6/2026	7/5/2016	104.46385	101.9514648	99.51255511	97.1445418	94.84495416	92.61142337	90.44167757	88.33353719	86.28491062
150601A00490	6/1/2015	3.19	7/2/2024	6/1/2015	100.89431	100.3832918	99.87744539	99.3766933	98.88095887	98.39016692	97.90424379	97.42311725	96.94671652
160922A00014	9/22/2016	2.06	9/22/2026	9/22/2016	105.2137	102.4733228	99.81816291	97.24501949	94.75083196	92.33267703	89.9877614	87.71341486	85.50708387
170412A00019	4/12/2017	2.56	4/12/2024	4/12/2017	100.31336	100.0239974	99.73631752	99.45030405	99.16594242	98.88321825	98.60211731	98.32262557	98.04472912
170417A00068	4/17/2019	2.59	4/17/2024	4/17/2019	100.3389	100.0358371	99.7346159	99.43521924	99.13763051	98.84183327	98.54781128	98.25554852	97.96502914
150601A00830	6/1/2015	6.743	7/31/2025	6/1/2015	109.79412	108.1548114	106.5485642	104.9744478	103.4315627	101.9190427	100.4360536	98.98179153	97.55548138
170427A00044	4/27/2017	3.02	4/27/2027	4/27/2017	109.45251	106.06061	102.7926714	99.64351373	96.60820487	93.68204366	90.86054776	88.13944235	85.51464933
170427A00046	4/27/2017	3.1	4/27/2028	4/27/2017	113.18593	108.7112729	104.4410791	100.3649514	96.47307096	92.75616557	89.20547614	85.81272585	82.57009114
170427A00047	4/27/2017	3.18	4/27/2029	4/27/2017	116.59315	111.0191493	105.7498939	100.7671262	96.05377166	91.59385819	87.3724393	83.37552338	79.59000799
170502A00028	5/2/2017	2.84	5/3/2027	5/2/2017	109.35621	105.938128	102.6457911	99.47392593	96.41750612	93.47174109	90.63206396	87.8941199	85.25375508
170508A00010	5/8/2017	2.43	5/8/2024	5/8/2017	100.3992	100.0382494	99.67989981	99.32412598	98.97090011	98.62019475	98.27198287	97.92623782	97.58293334
170515A00010	5/15/2017	2.58	5/15/2024	5/15/2017	100.43232	100.0527708	99.67609407	99.30226141	98.93124053	98.56299968	98.1975076	97.83473346	97.47464694
150601A00404	6/1/2015	4.29	1/17/2029	6/1/2015	121.16543	115.7597293	110.6345494	105.7737734	101.1622979	96.78596252	92.63148599	88.68640706	84.93902943
150601A00405	6/1/2015	4.63	1/17/2034	6/1/2015	140.96714	129.6164085	119.3283819	109.9962944	101.524684	93.82814193	86.83020419	80.46237114	74.66323859
150601A00522	6/1/2015	4.52	7/25/2030	6/1/2015	127.7496	120.5662655	113.8500901	107.5679861	101.68938	96.18601183	91.03174829	86.20241177	81.67562422

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00523	6/1/2015	4.55	7/25/2031	6/1/2015	131.48568	123.1286288	115.3856631	108.2079556	101.5508171	95.3733259	89.63799134	84.31044876	79.35918361
150601A00664	6/1/2015	3.78	1/16/2032	6/1/2015	127.09135	118.4113577	110.4087266	103.0265901	96.2131513	89.92120319	84.10769914	78.73336622	73.76235609
150601A00665	6/1/2015	3.82	1/14/2033	6/1/2015	130.279	120.4578872	111.4841124	103.2793302	95.77284676	88.90083395	82.60562916	76.83511008	71.54213579
150601A00666	6/1/2015	3.88	1/16/2035	6/1/2015	135.77538	123.6750527	112.8147575	103.0589747	94.28771696	86.39467618	79.28559838	72.87685857	67.09421081
150601A00667	6/1/2015	3.88	1/16/2036	6/1/2015	137.64169	124.4554503	112.7252299	102.2798626	92.96923774	84.66160493	77.24123992	70.60641738	64.66764951
150601A00668	6/1/2015	3.89	1/16/2037	6/1/2015	139.54457	125.2796355	112.7007578	101.5960129	91.78128581	83.09648994	75.40231483	68.57742825	62.51606788
150817A00099	8/17/2015	3.19	8/17/2027	8/17/2015	111.11628	107.386482	103.8035152	100.3607626	97.05195005	93.87112163	90.81262169	87.87107773	85.04138444
160119A00019	1/19/2016	2.95	1/19/2027	1/19/2016	108.32803	105.2271304	102.2320611	99.33860728	96.54274836	93.84064747	91.22864166	88.7032329	86.26107963
160119A00025	1/19/2016	3.05	1/19/2028	1/19/2016	112.05255	107.8777081	103.8836587	100.0615931	96.40317798	92.90052971	89.54618767	86.33308905	83.2545454
160119A00026	1/19/2016	3.14	1/19/2029	1/19/2016	115.64737	110.3744855	105.3774145	100.6402446	96.14806229	91.8868879	87.84361261	84.00593943	80.36232863
160119A00027	1/19/2016	3.25	1/18/2030	1/19/2016	118.66887	112.3006729	106.3218572	100.7064867	95.43048745	90.47150374	85.80876639	81.42297227	77.29617341
160119A00028	1/19/2016	3.34	1/21/2031	1/19/2016	121.5136	114.0370497	107.0831397	100.6124105	94.58858097	88.97827883	83.75079278	78.87784725	74.33339732
160119A00029	1/19/2016	3.39	1/20/2032	1/19/2016	124.40784	115.8226247	107.9104329	100.6145975	93.88351563	87.67016666	81.93168358	76.62896582	71.7263302
160119A00030	1/19/2016	3.44	1/18/2033	1/19/2016	127.36985	117.6656408	108.8026035	100.702735	93.29566673	86.51787938	80.31200306	74.62619266	69.41356936
160706A00026	7/6/2016	2.19	7/6/2027	7/6/2016	107.15888	103.6159303	100.2096822	96.93412708	93.78355131	90.75252319	87.83587718	85.02869935	82.32631368
160706A00027	7/6/2016	2.29	7/6/2028	7/6/2016	110.12394	105.5246642	101.1450179	96.9733608	92.99872846	89.21079173	85.59981685	82.15662782	78.87257155
160706A00028	7/6/2016	2.39	7/6/2029	7/6/2016	112.66493	107.0046865	101.6658653	96.62852833	91.87407445	87.3851444	83.14553157	79.1400997	75.35470676
160706A00029	7/6/2016	2.49	7/8/2030	7/6/2016	114.68391	107.9695783	101.6966554	95.83377823	90.35197188	85.22445297	80.42645319	75.93505784	71.7290581
160706A00030	7/6/2016	2.59	7/7/2031	7/6/2016	116.98248	109.2118781	102.0196724	95.35967101	89.18960014	83.47075257	78.16766964	73.24785304	68.68150369
160811A00011	8/11/2016	2.25	8/11/2026	8/11/2016	105.0934	102.4746398	99.93453678	97.47024188	95.0790299	92.75829248	90.50553221	88.31835705	86.19447514
150601A00916	6/1/2015	7.27	4/5/2030	6/1/2015	143.84918	136.4860084	129.5732106	123.0804083	116.9794396	111.2441886	105.8504259	100.7756615	95.99901103
150601A00470	6/1/2015	2.98	5/31/2024	6/1/2015	100.69332	100.2689968	99.84825337	99.43103973	99.01731158	98.60702534	98.20013816	97.79660788	97.39639304
150601A00485	6/1/2015	3.09	6/21/2024	6/1/2015	100.85363	100.3717512	99.89448762	99.42176959	98.95353227	98.48971202	98.0302464	97.57507416	97.12413517
150601A00495	6/1/2015	2.99	6/27/2024	6/1/2015	100.83699	100.3388698	99.84566443	99.3573048	98.87371967	98.39483924	97.92059508	97.45092006	96.98574834
150601A00512	6/1/2015	3.79	7/16/2029	6/1/2015	120.22562	114.3301408	108.7674935	103.5170571	98.55959219	93.87714543	89.45295661	85.27137334	81.3177721
150601A00515	6/1/2015	2.95	1/16/2024	6/1/2015	100.07837	100.0283904	99.97847577	99.9286286	99.87884878	99.82913615	99.77949058	99.72991192	99.68040001
150601A00530	6/1/2015	3.08	7/24/2024	6/1/2015	101.03302	100.4610479	99.895553	99.33642495	98.78355655	98.23684301	97.69618185	97.16147287	96.63261808
150601A00531	6/1/2015	3.28	7/24/2024	6/1/2015	101.03342	100.4628392	99.89869835	99.3408911	98.78931115	98.2438546	97.70441982	97.17090746	96.6432203
150601A00677	6/1/2015	2.39	1/30/2025	6/1/2015	101.64454	100.5562249	99.49114549	98.44855983	97.4277612	96.42807225	95.44884344	94.48945164	93.5492988
150601A00688	6/1/2015	2.61	2/21/2025	6/1/2015	102.05939	100.908718	99.7839348	98.68417346	97.60860585	96.55644004	95.52691838	94.51931557	93.53293703
150601A00689	6/1/2015	2.81	2/28/2025	6/1/2015	102.16107	100.993552	99.85266598	98.73751083	97.64722342	96.58097886	95.53798837	94.51749737	93.51878357
150601A00696	6/1/2015	2.83	3/13/2025	6/1/2015	102.28699	101.0834286	99.9081479	98.76016364	97.63853262	96.54235469	95.47077031	94.42295827	93.39813356
150601A00733	6/1/2015	2.72	5/1/2025	6/1/2015	102.7549	101.4205973	100.1099167	98.82228163	97.55713667	96.31394375	95.09218157	93.89134495	92.7109442

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00734	6/1/2015	2.92	5/1/2025	6/1/2015	102.80532	101.4740513	100.1663034	98.88150217	97.61909551	96.37854852	95.15934292	93.9609764	92.78296203
150601A00737	6/1/2015	2.68	12/31/2024	6/1/2015	101.72572	100.7183295	99.73085353	98.76270248	97.81331317	96.88214418	95.96867474	95.07240376	94.1928489
150727A00013	7/27/2015	3.04	7/28/2025	7/27/2015	103.77036	102.1932251	100.6478597	99.1333692	97.64889374	96.19360522	94.76670572	93.36742612	91.99502477
151106A00011	11/6/2015	3.1	1/15/2026	11/6/2015	105.42518	103.3706176	101.366714	99.41188872	97.50462267	95.64345509	93.82698066	92.05384698	90.32275216
151116A00025	11/16/2015	3.04	11/14/2025	11/16/2015	104.73627	102.8568159	101.0204404	99.225905	97.47201246	95.7576074	94.08157467	92.44283767	90.84035672
160422A00026	4/22/2016	2.62	4/22/2026	4/22/2016	105.20473	102.885065	100.6281846	98.43202622	96.29460636	94.21401884	92.18843145	90.2160825	88.29527763
160714A00020	9/6/2016	2.28	9/4/2026	9/6/2016	105.33464	102.6486022	100.044747	97.5200315	95.07155234	92.69653382	90.39232127	88.15637472	85.98626311
160714A00023	8/10/2016	2.49	8/10/2028	8/10/2016	111.28821	106.5656372	102.0721398	97.79537171	93.72372234	89.84626653	86.15272002	82.63339826	79.27917807
160714A00029	8/10/2016	2.27	8/10/2026	8/10/2016	105.13931	102.5226081	99.98443749	97.52195494	95.13244194	92.81329643	90.56202691	88.37624693	86.25366986
160819A00015	10/12/2016	2.3	10/13/2026	10/12/2016	105.65674	102.8611133	100.1537734	97.53141388	94.99087109	92.52912006	90.14326724	87.83054389	85.58829978
161109A00018	11/9/2016	2.63	11/9/2026	11/9/2016	106.79297	103.9077765	101.1157273	98.41332843	95.79723316	93.26423778	90.81127489	88.43540676	86.13381915
170524A00011	5/24/2017	2.54	5/24/2024	5/24/2017	100.44781	100.0437519	99.642948	99.24535547	98.85093578	98.45965101	98.07146387	97.68633764	97.3042362
170531A00080	5/31/2017	2.3	5/31/2024	5/31/2017	100.42418	100.0005489	99.58048617	99.16394907	98.75089332	98.34127537	97.93505241	97.53218232	97.1326237
170602A00026	6/2/2017	2.25	6/3/2024	6/2/2017	100.41264	99.98088219	99.55283804	99.12846016	98.70770151	98.29051583	97.87685767	97.46668232	97.05994585
170608A00020	6/8/2017	2.27	6/10/2024	6/8/2017	100.44453	99.99366828	99.54686394	99.10405981	98.66520216	98.23023822	97.79911616	97.37178506	96.94819491
170609A00043	6/9/2017	3.07	6/9/2032	6/9/2017	123.8978	114.8913127	106.6239447	99.03080562	92.05302517	85.63716664	79.73469961	74.30152645	69.29755661
170612A00039	6/12/2017	2.29	6/12/2024	6/12/2017	100.46034	100.0040111	99.55183161	99.10374914	98.65970796	98.21965339	97.78353171	97.35129021	96.92287708
170613A00032	6/13/2017	2.45	6/13/2025	6/13/2017	102.7425	101.2921679	99.86954624	98.47391039	97.10455993	95.7608183	94.44203172	93.14756822	91.87681672
170613A00033	6/13/2017	2.3	6/13/2024	6/13/2017	100.46834	100.0092653	99.55439847	99.1036772	98.65704483	98.2144457	97.77582517	97.34112958	96.91030625
170615A00015	6/15/2017	2.25	6/14/2024	6/15/2017	100.44848	99.98675447	99.5292766	99.07599253	98.62684458	98.18177614	97.74073163	97.30365647	96.87049709
170622A00036	6/22/2017	3.23	6/22/2032	6/22/2017	124.12546	115.1306556	106.874365	99.2916596	92.32364443	85.91686993	80.02280273	74.59735016	69.60043299
170622A00037	6/22/2017	3.27	6/22/2033	6/22/2017	126.79802	116.6956486	107.5066207	99.14281259	91.52505485	84.582176	78.25015683	72.47137789	67.19394958
170622A00038	6/22/2017	3.32	6/22/2034	6/22/2017	129.31112	118.1049504	108.003314	98.89032126	90.66283667	83.22901687	76.50702119	70.42387501	64.91446748
170622A00039	6/22/2017	3.36	6/22/2035	6/22/2017	131.32255	119.0418169	108.0704543	98.26014381	89.48013973	81.61510762	74.56323508	68.23458241	62.54964191
170622A00040	6/22/2017	3.41	6/23/2036	6/22/2017	133.30203	119.9537322	108.1343734	97.65813574	88.36277508	80.10651828	72.76538321	66.23086159	60.40791388
170623A00028	6/23/2017	2.79	6/23/2027	6/23/2017	109.16957	105.6268066	102.2192124	98.94090227	95.78628093	92.7500261	89.82707369	87.01260374	84.30202727
170110A00020	1/10/2017	2.4	1/10/2024	1/10/2017	100.0355	100.0021802	99.96890251	99.93566431	99.90246551	99.86930602	99.83618577	99.80310469	99.77006268
170111A00009	1/11/2017	3.16	1/11/2028	1/11/2017	112.42513	108.2647223	104.2836419	100.4731905	96.82513661	93.33169118	89.98548082	86.77952356	83.70720576
170111A00011	1/11/2017	3.24	1/11/2029	1/11/2017	116.09298	110.8310219	105.843188	101.113719	96.62784342	92.37171192	88.33233433	84.49752206	80.85583443
170111A00012	1/11/2017	3.31	1/11/2030	1/11/2017	118.99247	112.63385	106.6628415	101.0537019	95.78252652	90.8271121	86.16682703	81.78249211	77.65627113
170111A00013	1/11/2017	3.4	1/10/2031	1/11/2017	121.86522	114.4065731	107.4672228	101.0080994	94.99327441	89.38968922	84.16691208	79.29691635	74.75387872
170111A00014	1/11/2017	3.47	1/12/2032	1/11/2017	124.99708	116.41055	108.4950877	101.1943444	94.45698683	88.23622936	82.48940925	77.17760328	72.26528204
170111A00016	1/11/2017	3.51	1/11/2033	1/11/2017	127.95544	118.2445448	109.3732676	101.2639138	93.8463781	87.05736517	80.83969589	75.1416869	69.91659613

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170117A00046	1/17/2017	2.55	1/17/2024	1/17/2017	100.05756	100.0048936	99.95229593	99.89977016	99.84731611	99.79493362	99.74262254	99.69038273	99.63821403
170119A00006	1/19/2017	2.85	1/21/2025	1/19/2017	101.9477	100.8845317	99.84351292	98.82395778	97.82520727	96.84662908	95.88761632	94.94758622	94.02597897
170120A00008	1/20/2017	3.63	1/20/2034	1/20/2017	131.62618	120.7211031	110.8491186	101.9057314	93.79756519	86.44112241	79.76169149	73.69238018	68.17325973
170120A00009	1/20/2017	3.67	1/22/2035	1/20/2017	134.11371	122.0858761	111.294687	101.6046782	92.89594356	85.06227315	78.00952282	71.65418561	65.92213864
170120A00010	1/20/2017	3.71	1/22/2036	1/20/2017	136.3071	123.1823946	111.5109013	101.1214487	91.86395166	83.60671285	76.23408122	69.64441951	63.7483383
170120A00011	1/20/2017	3.75	1/20/2037	1/20/2017	138.49049	124.2806722	111.7537031	100.6977689	90.92888209	82.28709441	74.63323919	67.84613032	61.82015116
180222A00025	2/22/2018	3.48	2/22/2033	2/22/2018	129.31562	119.3640571	110.2837871	101.9932054	94.41877767	87.49419849	81.15964534	75.3611131	70.04982011
180222A00026	2/22/2018	2.98	2/21/2025	2/22/2018	102.53672	101.3831197	100.255449	99.15284478	98.07447788	97.01955525	95.98731812	94.97704018	93.98802586
180222A00027	2/22/2018	3.24	2/22/2028	2/22/2018	113.73511	109.4161259	105.287611	101.3401034	97.56466527	93.95285183	90.49668086	87.18860478	84.02148427
170123A00039	1/23/2017	2.79	1/23/2026	1/23/2017	105.12544	103.0472947	101.0208401	99.04444518	97.11654448	95.23563334	93.40026499	91.6090478	89.86064278
170130A00010	1/30/2017	2.92	1/30/2025	1/30/2017	102.09568	101.0072964	99.9420858	98.89931537	97.87828146	96.87830958	95.89875291	94.93899086	93.99842777
170130A00031	1/30/2017	2.96	7/30/2025	1/30/2017	103.66016	102.0785047	100.5287715	99.01006502	97.52151863	96.06229782	94.63159855	93.22864592	91.85269285
170630A00027	6/30/2017	2.35	6/28/2024	6/30/2017	100.54448	100.0444971	99.54947838	99.05934979	98.57403916	98.09347573	97.61759009	97.1463142	96.67958132
171011A00013	10/11/2017	2.77	10/13/2026	10/11/2017	106.97562	104.1613637	101.4358382	98.79572408	96.23784398	93.75915971	91.35676505	89.02787907	86.76983987
170203A00012	2/3/2017	3.63	2/2/2035	2/3/2017	133.7287	121.6917242	110.8958226	101.2047078	92.49777813	84.6682402	77.62146158	71.2735274	65.54997488
170203A00013	2/3/2017	3.67	2/1/2036	2/3/2017	135.87402	122.7480731	111.0790461	100.6949624	91.44507308	83.19713539	75.83505156	69.25681983	63.37275474
171025A00026	10/25/2017	2.64	10/25/2024	10/25/2017	101.1649	100.3429585	99.53435289	98.73875815	97.95586207	97.18536236	96.42696628	95.68039023	94.94535944
171026A00008	10/26/2017	2.6	10/25/2024	10/26/2017	101.13166	100.3098753	99.50141876	98.70597137	97.92322098	97.15286533	96.39461171	95.64817657	94.91328514
171026A00009	10/26/2017	2.75	10/27/2025	10/26/2017	104.04724	102.222309	100.438268	98.69395746	96.9882585	95.32009111	93.68841244	92.09221532	90.53052676
171026A00010	10/26/2017	2.84	10/26/2026	10/26/2017	107.28279	104.4281921	101.66459	98.9885981	96.39697415	93.88661394	91.45454473	89.09791893	86.81400804
171026A00011	10/26/2017	2.94	10/26/2027	10/26/2017	110.84024	106.9227377	103.1664029	99.56377256	96.10776503	92.79166185	89.609087	86.55398769	83.62061628
171030A00023	10/30/2017	2.9	11/1/2027	10/30/2017	110.73989	106.807808	103.0381506	99.42337435	95.9563269	92.63022243	89.43862105	86.37540943	83.43478257
170215A00043	2/15/2017	2.7	8/28/2024	2/15/2017	100.8788	100.2144923	99.55891973	98.91190671	98.27328645	97.64289652	97.02057863	96.40617854	95.79954592
170216A00043	2/16/2017	3.17	2/16/2027	2/16/2017	109.27256	106.079412	102.9972134	100.0214533	97.14783695	94.37227018	91.69084892	89.09984902	86.59571668
170216A00044	2/16/2017	3.52	2/17/2032	2/16/2017	125.66477	116.9537062	108.929973	101.5353016	94.71666287	88.42577101	82.61863602	77.25516025	72.29877498
170216A00045	2/16/2017	3.73	2/17/2037	2/16/2017	138.37145	124.0954961	111.5190858	100.4272283	90.63331448	81.97523626	74.31205044	67.52111205	61.49560894
180313A00026	3/13/2018	3.34	3/13/2028	3/13/2018	113.78332	109.4221712	105.2551062	101.2723905	97.46483455	93.82376158	90.34097516	87.00872981	83.81970336
170224A00020	2/24/2017	3.08	2/24/2027	2/24/2017	109.06432	105.8520834	102.7521116	99.75981417	96.87082033	94.08096514	91.38627832	88.78297379	86.2674398
170224A00021	2/24/2017	3.4	2/24/2032	2/24/2017	124.73375	116.0406648	108.0356973	100.6603612	93.86144178	87.5904955	81.80339868	76.45994099	71.52345919
170224A00039	5/24/2017	3.17	5/24/2027	5/24/2017	110.2168	106.7370096	103.3868798	100.1608958	97.05380788	94.06061609	91.1765574	88.39709298	85.71789655
170224A00044	5/24/2017	3.29	5/24/2029	5/24/2017	117.37876	111.7081372	106.3512401	101.2890513	96.50379895	91.97887177	87.69873744	83.64886723	79.81566631
170228A00014	2/28/2017	2.89	3/1/2027	2/28/2017	108.93492	105.7003468	102.5794659	99.56760013	96.66029994	93.85332652	91.14264038	88.52439057	85.9949045
170228A00015	2/28/2017	2.87	5/28/2025	2/28/2017	103.00539	101.5991106	100.2188925	98.86407154	97.53400752	96.22808138	94.94569427	93.68626668	92.44923772

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180323A00013	3/23/2018	3.18	3/23/2028	3/23/2018	113.79467	109.3871635	105.1773771	101.1553167	97.31155288	93.63718616	90.12381407	86.76350004	83.54874472
170313A00032	3/13/2017	3.69	6/14/2032	3/13/2017	127.97774	118.8454687	110.4575788	102.7489493	95.66048706	89.13854072	83.13437368	77.60369045	72.50621084
170313A00033	3/13/2017	3.31	3/15/2027	3/13/2017	109.99216	106.7104295	103.5448544	100.49062	97.54314352	94.69806157	91.95121816	89.29865319	86.73659183
170313A00034	3/13/2017	3.31	3/15/2027	3/13/2017	109.99216	106.7104295	103.5448544	100.49062	97.54314352	94.69806157	91.95121816	89.29865319	86.73659183
170313A00035	3/13/2017	3.31	3/15/2027	3/13/2017	109.99216	106.7104295	103.5448544	100.49062	97.54314352	94.69806157	91.95121816	89.29865319	86.73659183
180328A00010	3/28/2018	3.1	3/28/2025	3/28/2018	102.80044	101.55286	100.3355434	99.1473961	97.98737855	96.85450023	95.74781661	94.66642653	93.60946978
170316A00018	3/16/2017	2.8	3/18/2024	3/16/2017	100.28855	100.0676381	99.84770705	99.62875328	99.41077027	99.19375153	98.97769061	98.76258113	98.54841676
170728A00033	7/28/2017	2.46	1/29/2024	7/28/2017	100.08539	99.99952391	99.91380677	99.82823504	99.74280838	99.65752643	99.57238884	99.48739527	99.40254535
170728A00040	7/28/2017	2.44	1/27/2025	7/28/2017	101.71991	100.6393012	99.58158783	98.54604811	97.5319904	96.53875156	95.5656955	94.61222118	93.67771443
170803A00020	8/3/2017	2.84	8/3/2027	8/3/2017	109.71386	106.0476079	102.5247322	99.13882354	95.88380012	92.75388581	89.74359297	86.84770624	84.06126733
170803A00021	8/3/2017	2.5	8/5/2024	8/3/2017	100.65534	100.0537252	99.45929824	98.87192652	98.29148486	97.71785104	97.15090573	96.59053235	96.03661705
170809A00005	8/9/2017	2.61	8/11/2025	8/9/2017	103.19062	101.5808638	100.0040385	98.45919692	96.94542996	95.46186291	94.00765374	92.58199154	91.18409511
180329A00003	3/29/2018	3.08	3/29/2028	3/29/2018	113.42865	109.0112333	104.7927615	100.7631435	96.91285805	93.23292128	89.71485289	86.35064466	83.13273114
171129A00020	11/29/2017	2.89	11/30/2026	11/29/2017	107.71602	104.7612264	101.9034412	99.13895712	96.46423009	93.87587054	91.37063574	88.9454226	86.59726085
180403A00006	4/3/2018	3.07	4/3/2028	4/3/2018	113.43238	109.0010823	104.7699288	100.7287543	96.86797251	93.17853717	89.651908	86.28001933	83.0552508
180403A00041	4/3/2018	2.91	4/3/2025	4/3/2018	102.81627	101.5505307	100.3141654	99.10614916	97.92550847	96.7713142	95.64267907	94.5387553	93.45873242
170322A00011	3/22/2017	2.48	3/22/2024	3/22/2017	100.25788	100.0257392	99.79467997	99.5646975	99.33578419	99.10793253	98.8811351	98.65538453	98.43067353
170322A00022	3/22/2017	3.89	9/23/2041	3/22/2017	153.33178	133.6269163	116.914861	102.7115081	90.61418532	80.28753188	71.45189227	63.87376478	57.35793256
170322A00023	3/22/2017	3.82	9/22/2039	3/22/2017	145.66904	128.4543565	113.6177548	100.8100601	89.73545852	80.14307199	71.81990575	64.58493464	58.28413975
170322A00024	3/22/2017	3.72	9/22/2036	3/22/2017	137.549	123.7086461	111.4727008	100.643456	91.04865805	82.53810369	74.98070976	68.26198546	62.28185052
170322A00025	3/22/2017	3.58	3/22/2033	3/22/2017	129.10535	119.1473606	110.065342	101.776826	94.20753833	87.2905468	80.96549908	75.1779433	69.87872227
170322A00026	3/22/2017	3.22	3/22/2028	3/22/2017	113.36687	108.9881294	104.8053838	100.8087449	96.98888483	93.33699867	89.84477217	86.50435108	83.30831286
170327A00077	3/27/2019	2.74	3/27/2024	3/27/2019	100.30359	100.0580254	99.81365863	99.57048479	99.32849514	99.08768106	98.84803402	98.60954555	98.37220729
170327A00078	3/27/2019	3.04	3/27/2026	3/27/2019	105.95409	103.6955558	101.4965023	99.35492575	97.26890366	95.23659483	93.25623494	91.3261326	89.44466564
170327A00079	3/27/2019	3.19	3/29/2027	3/27/2019	109.74684	106.4285663	103.228986	100.1431259	97.16625484	94.29387102	91.52168919	88.84562855	86.26180142
170327A00070	3/29/2017	3.05	3/29/2027	3/29/2017	109.73118	106.4023733	103.1928764	100.0976846	97.11203404	94.23139222	91.45144494	88.76808421	86.17739682
170327A00072	3/29/2017	3.09	3/29/2027	3/29/2017	109.86213	106.531175	103.3195912	100.2223679	97.23473918	94.35217066	91.57034643	88.88515682	86.29268701
170328A00015	3/28/2017	2.75	11/29/2024	3/28/2017	101.46649	100.5490021	99.6480751	98.7632629	97.89413608	97.04028039	96.20129603	95.37679706	94.56641077
180412A00034	4/12/2018	3.23	4/15/2030	4/12/2018	119.96396	113.2776101	107.0147276	101.146181	95.64499367	90.48617219	85.64655041	81.10464673	76.84053317
180412A00036	4/12/2018	3.54	4/15/2038	4/12/2018	140.07159	124.4535832	110.8424575	98.96485888	88.58619092	79.50493244	71.54781428	64.56572113	58.43020608
170815A00006	8/15/2017	2.5	8/15/2024	8/15/2017	100.69412	100.0654532	99.44463334	98.83151218	98.22594704	97.62779871	97.03693136	96.4532125	95.87651283
170818A00003	8/18/2017	2.23	8/20/2024	8/18/2017	100.67144	100.0277207	99.39222522	98.76479718	98.14528354	97.53353509	96.92940635	96.33275545	95.74344405
170821A00038	8/23/2017	2.39	8/23/2024	8/23/2017	100.7878	100.1355624	99.49175427	98.85621565	98.22878787	97.60931628	96.99765014	96.39364251	95.79715012

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170822A00019	8/22/2017	2.44	8/22/2024	8/22/2017	100.68199	100.0345439	99.39541433	98.76444051	98.14146694	97.52634211	96.91891831	96.3190515	95.72660126
170822A00020	8/22/2017	2.59	8/22/2025	8/22/2017	103.23871	101.5992676	99.99376171	98.42120148	96.88063617	95.37115164	93.89186857	92.4419407	91.02055336
170831A00022	8/31/2017	2.27	2/29/2024	8/31/2017	100.133	99.96169105	99.79096608	99.62082116	99.45125337	99.2822598	99.11383756	98.94598379	98.77869564
170908A00017	9/9/2019	2.32	9/9/2024	9/9/2019	100.67643	99.98054508	99.29426337	98.61739035	97.94973335	97.29110495	96.64132278	96.00020935	95.3675919
170915A00001	9/15/2017	2.43	9/16/2024	9/15/2017	100.79029	100.0750485	99.36995104	98.67477837	97.9893218	97.31337851	96.64675129	95.98924835	95.34068315
180727A00038	7/27/2018	3.36	7/25/2025	7/27/2018	104.23393	102.6615603	101.1207548	99.61063242	98.13034272	96.67906631	95.25601355	93.86042312	92.49156079
180727A00039	7/27/2018	3.48	7/27/2028	7/27/2018	115.75496	110.9688082	106.4118679	102.0719132	97.93743292	93.99758907	90.24217373	86.66156886	83.24670903
180727A00028	7/27/2018	3.25	7/27/2026	7/27/2018	107.93019	105.3071237	102.7618148	100.2914867	97.89347803	95.56524015	93.30433106	91.10841036	88.97523424
180730A00023	7/30/2018	3.13	7/30/2024	7/30/2018	101.1265	100.5379665	99.95627591	99.38131101	98.81295563	98.25109626	97.69562197	97.14642434	96.60339742
180730A00081	7/30/2018	3.5	7/28/2028	7/30/2018	115.85741	111.0660539	106.504248	102.159736	98.02098562	94.07713949	90.31797154	86.73384701	83.31568488
180503A00040	5/3/2018	3.3	5/5/2025	5/3/2018	103.41434	102.0678473	100.745308	99.44614002	98.16977673	96.91566937	95.68328635	94.47211261	93.28164895
180514A00035	5/14/2018	3.07	5/14/2024	5/14/2018	100.66281	100.2848914	99.90982115	99.53756851	99.16810164	98.80138919	98.43740028	98.07610449	97.71747187
171206A00048	12/6/2017	3.04	12/6/2032	12/6/2017	124.77626	115.2408651	106.5276678	98.56099068	91.27249981	84.60045724	78.48905328	72.88780954	67.75104479
171206A00038	12/6/2017	2.69	12/6/2027	12/6/2017	110.75375	106.7116051	102.8406174	99.13264038	95.57996098	92.17527156	88.91164649	85.78252006	82.78166593
171206A00041	12/6/2017	2.44	12/6/2024	12/6/2017	101.36834	100.4303904	99.50976027	98.60597478	97.71857468	96.84711726	95.99117564	95.15033808	94.32420728
171219A00063	12/19/2017	2.8	12/20/2027	12/19/2017	111.31819	107.225674	103.3079472	99.55661724	95.96373881	92.52178847	89.22363982	86.06254039	83.03208998
180521A00025	5/21/2018	3.24	5/21/2025	5/21/2018	103.69583	102.2999443	100.9296647	99.58434249	98.26335448	96.96609784	95.69198926	94.44046414	93.21097587
180529A00044	5/29/2018	3.11	5/29/2024	5/29/2018	100.70468	100.2863982	99.87158709	99.46019996	99.05219462	98.64752956	98.24616392	97.84805753	97.45317086
180529A00042	5/29/2018	3.42	5/30/2028	5/29/2018	114.91126	110.3062967	105.9153765	101.7274199	97.73198001	93.91920123	90.27978278	86.80494468	83.48639588
171228A00023	12/28/2017	2.69	3/29/2024	12/28/2017	100.29777	100.046733	99.7969518	99.54841299	99.30110737	99.05502582	98.8101593	98.56649888	98.3240357
180102A00021	1/2/2018	2.82	1/2/2026	1/2/2018	104.74148	102.7290072	100.7656576	98.84992166	96.98034657	95.15553404	93.37413796	91.634862	89.93645739
180530A00025	5/30/2018	3.49	5/30/2030	5/30/2018	121.00708	114.1966489	107.8235873	101.857417	96.26993425	91.03503098	86.12852876	81.52802695	77.21276345
180530A00024	5/30/2018	3.44	5/30/2029	5/30/2018	118.24057	112.5300622	107.1360326	102.0392537	97.22176053	92.66676414	88.35856889	84.28249576	80.42481152
180530A00026	5/30/2018	3.55	5/30/2031	5/30/2018	123.96446	116.0405282	108.6936682	101.8785869	95.55377354	89.68116539	84.22584448	79.155763	74.44149375
180530A00027	5/30/2018	3.61	6/1/2032	5/30/2018	127.20485	118.1394398	109.8108397	102.1548055	95.11301931	88.63251436	82.66515904	77.16719254	72.0988073
180530A00028	5/30/2018	3.67	5/31/2033	5/30/2018	130.43998	120.2293591	110.9323653	102.4615748	94.73837777	87.69204766	81.25891306	75.38162073	70.0084788
180530A00030	5/30/2018	3.68	5/30/2034	5/30/2018	132.94446	121.6157306	111.3925981	102.1599691	93.81532945	86.26731097	79.43442654	73.24395496	67.63095632
180530A00072	5/30/2018	3.06	5/30/2024	5/30/2018	100.68879	100.2678331	99.85039044	99.43641796	99.02587258	98.6187119	98.21489422	97.8143785	97.41712441
180104A00017	1/4/2018	2.77	1/3/2025	1/4/2018	101.72452	100.7113178	99.71827073	98.74478108	97.79027511	96.85420136	95.93602956	95.03524962	94.15137066
180104A00018	1/4/2018	2.97	1/4/2027	1/4/2018	108.25797	105.1988063	102.2430496	99.38662461	96.62564207	93.956388	91.37531473	88.87903236	86.4643008
180814A00010	8/14/2018	3.1	8/14/2025	8/14/2018	104.26129	102.6302587	101.0327432	99.46777488	97.93442342	96.43179393	94.95902522	93.51528816	92.09978419
180816A00038	8/16/2018	3.38	8/16/2028	8/16/2018	115.48228	110.646823	106.045304	101.6651173	97.49440523	93.52201091	89.73743302	86.13078331	82.6927475
180109A00028	1/9/2018	2.6	1/9/2025	1/9/2018	101.75746	100.7254518	99.71434574	98.72350676	97.75232975	96.80023352	95.86665959	94.95107111	94.05295179

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180110A00028	1/10/2018	2.85	1/10/2025	1/10/2018	101.86133	100.8284229	99.81644137	98.82475735	97.85276431	96.89987968	95.96554369	95.04921826	94.15038596
180110A00029	1/10/2018	3.13	1/10/2028	1/10/2018	112.29376	108.1387425	104.1627629	100.3571347	96.71364358	93.22451608	89.88239368	86.68030817	83.61165878
180111A00007	1/11/2018	2.66	1/14/2025	1/11/2018	101.85873	100.8125884	99.78790014	98.7840134	97.80029921	96.83615377	95.89099716	94.96427219	94.0554433
180116A00014	1/16/2018	3.01	1/19/2027	1/16/2018	108.51261	105.408859	102.4110148	99.5148562	96.71636041	94.01168826	91.39717464	88.86931946	86.42477918
180116A00015	1/16/2018	3.06	1/18/2028	1/16/2018	112.08409	107.9113441	103.9192053	100.0988715	96.4420226	92.94078709	89.58771564	86.37575588	83.29822904
180118A00004	1/18/2018	2.88	1/17/2025	1/18/2018	101.94814	100.8957954	99.86515444	98.8555384	97.86635376	96.89694007	95.94672308	95.01513637	94.10163559
180820A00055	8/20/2018	3.37	8/21/2028	8/20/2018	115.48231	110.6330367	106.0189452	101.6273294	97.44624185	93.464443	89.67135537	86.05702064	82.61205989
180827A00020	8/27/2018	3.21	8/27/2025	8/27/2018	104.31186	102.6498546	101.0224089	99.42850996	97.86718365	96.33749347	94.83853885	93.36945341	91.9294033
180828A00032	8/28/2018	3.49	8/29/2033	8/28/2018	130.74996	120.2077954	110.6334919	101.9321486	94.018668	86.81669238	80.25766365	74.27998866	68.82829785
180831A00019	8/31/2018	3.21	9/2/2025	8/31/2018	104.38328	102.7043195	101.0605136	99.45081934	97.87423796	96.32980981	94.81661237	93.33375851	91.88039471
180620A00014	6/20/2018	3.4	6/20/2028	6/20/2018	115.02185	110.35698	105.9115406	101.6740342	97.63362783	93.78010988	90.10385069	86.59576653	83.24728576
180620A00038	6/20/2018	3.4	6/20/2028	6/20/2018	115.02185	110.35698	105.9115406	101.6740342	97.63362783	93.78010988	90.10385069	86.59576653	83.24728576
180621A00017	6/21/2018	3.42	6/21/2028	6/21/2018	115.12157	110.4517437	106.0016775	101.7598512	97.71541051	93.85812377	90.17834291	86.66696707	83.31540875
180621A00068	6/21/2018	3.32	6/23/2025	6/21/2018	103.87015	102.3885998	100.9357726	99.51090474	98.11325973	96.74212654	95.3968184	94.07667178	92.78104544
180622A00005	6/22/2018	3.5	7/2/2029	6/22/2018	118.80845	112.9919555	107.5025272	102.3199921	97.4255256	92.8015549	88.43166894	84.30053589	80.39382666
180622A00004	6/22/2018	3.47	12/22/2028	6/22/2018	117.08515	111.854319	106.8930946	102.1861296	97.71903009	93.47829152	89.45123888	85.62597155	81.99131207
180622A00006	6/22/2018	3.53	12/21/2029	6/22/2018	120.18972	113.8538772	107.9004495	102.3042614	97.04192441	92.09169984	87.43337427	83.04814498	78.91851455
180126A00029	1/26/2018	2.88	1/27/2025	1/26/2018	102.02748	100.9476239	99.89059101	98.85566711	97.84216387	96.84942125	95.87680607	94.92371068	93.98955166
180130A00085	1/30/2018	2.79	1/30/2025	1/30/2018	102.12634	101.0352134	99.96735858	98.92203832	97.89854495	96.89620016	95.91435348	94.95238086	94.00968339
180130A00070	1/30/2018	3.14	1/29/2027	1/30/2018	109.00493	105.8664249	102.8356322	99.90823657	97.08012047	94.34735592	91.70619444	89.15305764	86.6845284
180131A00022	1/31/2018	2.96	1/30/2025	1/31/2018	102.13957	101.0509334	99.98547019	98.94245088	97.92117171	96.92095811	95.94116317	94.98116621	94.04037152
180904A00012	9/4/2018	3.35	9/4/2030	9/4/2018	121.64934	114.51346	107.8533365	101.6345791	95.82546787	90.39672851	85.32133096	80.5743058	76.13257651
180904A00014	9/4/2018	3.37	9/1/2028	9/4/2018	115.58445	110.7024244	106.0584138	101.6394912	97.43350576	93.42903048	89.61531534	85.98224308	82.52028832
180201A00022	2/1/2018	2.99	2/3/2025	2/1/2018	102.20744	101.1075268	100.0312631	98.97789611	97.94670068	96.93698191	95.9480737	94.97933726	94.03015971
180205A00019	2/5/2018	2.88	2/5/2025	2/5/2018	102.27855	101.1701538	100.085754	99.02457632	97.98588033	96.96895695	95.9731266	94.99773777	94.0421655
180206A00013	2/6/2018	2.72	2/6/2024	2/6/2018	100.14828	100.0401346	99.93224066	99.82459267	99.71718975	99.61003103	99.50311563	99.39644266	99.29001126
180910A00028	9/10/2018	3.56	9/9/2033	9/10/2018	131.50694	120.8988314	111.266371	102.5136956	94.55486148	87.3127721	80.71822381	74.70905919	69.22941528
180910A00032	9/10/2018	3.22	9/10/2024	9/10/2018	101.31662	100.615529	99.92414185	99.24226004	98.5696883	97.90623668	97.25172033	96.60595941	95.96877886
180910A00033	9/10/2018	3.43	9/8/2028	9/10/2018	115.93225	111.0227609	106.3533413	101.9109155	97.68319015	93.6586075	89.82629671	86.17602908	82.69817634
180912A00011	9/12/2018	3.41	9/11/2026	9/12/2018	108.45305	105.7056346	103.0424264	100.4603018	97.95627353	95.5274866	93.17121107	90.88483578	88.6658621
180913A00030	9/13/2018	3.33	9/12/2025	9/13/2018	104.68037	102.9720679	101.2999303	99.66287549	98.05986275	96.48989265	94.95200511	93.44527743	91.96882238
180914A00013	9/14/2018	3.48	9/14/2028	9/14/2018	116.22545	111.2924837	106.6013666	102.1388801	97.89260848	93.85088104	90.00272293	86.33780946	82.84642377
180914A00028	9/14/2018	3.37	9/12/2025	9/14/2018	104.74901	103.0400962	101.367362	99.7297213	98.1261331	96.55559769	95.01715471	93.5098812	92.03288966

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180914A00029	9/14/2018	3.48	9/14/2028	9/14/2018	116.22545	111.2924837	106.6013666	102.1388801	97.89260848	93.85088104	90.00272293	86.33780946	82.84642377
180918A00041	9/18/2018	3.18	9/18/2024	9/18/2018	101.48127	100.7560959	100.0412893	99.33663073	98.64190492	97.95690263	97.28142048	96.61526074	95.95823112
180207A00002	2/7/2018	3.13	2/6/2026	2/7/2018	105.68905	103.57179	101.5077228	99.49515156	97.53244413	95.61803263	93.75041053	91.92812978	90.14979796
180207A00003	2/7/2018	3.28	2/7/2028	2/7/2018	113.17934	108.9293326	104.8649747	100.977128	97.25715982	93.6969083	90.2886542	87.02509425	83.89931629
180716A00054	7/16/2018	3.59	7/16/2040	7/16/2018	147.02679	128.7646467	113.1467648	99.76687281	88.28355628	78.40958439	69.9030389	62.55993562	56.2080807
180717A00047	7/17/2018	3.3	9/17/2025	7/17/2018	104.67573	102.9540968	101.2691226	99.61969805	98.00476183	96.42329501	94.87431908	93.3568939	91.87011575
180719A00063	7/19/2018	3.21	7/19/2024	7/19/2018	101.00711	100.4499811	99.89900535	99.35407728	98.81509759	98.28196912	97.75459683	97.23288773	96.71675081
180719A00064	7/19/2018	3.3	7/21/2025	7/19/2018	104.11681	102.5562141	101.0268292	99.52779133	98.05826428	96.61744222	95.20454836	93.81883356	92.45957515
180719A00065	7/19/2018	3.36	7/20/2026	7/19/2018	107.79768	105.2033714	102.6854307	100.2411526	97.8679425	95.56331456	93.32488603	91.15037242	89.03758268
181004A00029	10/4/2018	3.7	10/4/2028	10/4/2018	117.47104	112.4528286	107.6827177	103.1470462	98.83298632	94.72848466	90.8222109	87.10351021	83.56235899
181005A00012	10/5/2018	3.33	10/4/2024	10/5/2018	101.70822	100.938837	100.1810927	99.43472726	98.69948568	97.97512038	97.26139112	96.55806471	95.86491471
170919A00073	9/19/2017	2.28	9/19/2024	9/19/2017	100.82896	100.1037312	99.38892147	98.68430726	97.98967145	97.30480299	96.62949678	95.96355342	95.30677903
191113A00016	11/15/2019	2.02	8/15/2024	11/15/2019	100.3891	99.76152712	99.14179025	98.52974255	97.92524141	97.32814777	96.73832597	96.15564362	95.57997155
191115A00015	11/18/2019	2.61	11/18/2024	11/18/2019	101.27432	100.3873308	99.51586082	98.65950221	97.81786423	96.99056952	96.1772535	95.37756388	94.59116012
191115A00014	11/18/2019	2.45	11/18/2024	11/18/2019	101.13083	100.2445413	99.37376078	98.51808329	97.6771182	96.85048832	96.03782923	95.23878879	94.45302661
191115A00016	11/18/2019	2.48	11/18/2024	11/18/2019	101.15773	100.2713143	99.40040454	98.54459933	97.70350808	96.87675354	96.06397128	95.26480912	94.47892664
191115A00030	11/15/2019	2.35	11/9/2029	11/15/2019	112.93561	106.9263258	101.2766659	95.9632667	90.96439669	86.259834	81.83075437	77.65962783	73.73012367
191115A00028	11/15/2019	2.34	9/28/2029	11/15/2019	112.72188	106.832832	101.2899589	96.07104667	91.15542612	86.52385788	82.1584254	78.04243671	74.16033405
191119A00027	11/19/2019	1.8	11/19/2024	11/19/2019	100.69205	99.80326783	98.93012135	98.07220284	97.22911648	96.40048011	95.58592458	94.78509322	93.99764134
181109A00027	11/13/2018	3.48	4/15/2024	11/13/2018	100.59548	100.2974104	100.0011211	99.70659455	99.41381479	99.12276625	98.8334335	98.54580131	98.25985462
181109A00029	11/9/2018	3.72	11/9/2026	11/9/2018	109.93277	107.0020889	104.1656664	101.4199654	98.76160441	96.18734658	93.69409266	91.27887434	88.938848
181109A00028	11/9/2018	3.72	11/9/2026	11/9/2018	109.93277	107.0020889	104.1656664	101.4199654	98.76160441	96.18734658	93.69409266	91.27887434	88.938848
181116A00015	11/19/2018	3.29	2/15/2024	11/19/2018	100.24023	100.1073205	99.97477631	99.84259865	99.71078597	99.57933671	99.44824932	99.31752228	99.18715406
140911A00027	9/11/2014	3.18	9/16/2024	9/11/2014	101.33293	100.6155173	99.90826272	99.21095444	98.52338343	97.8453465	97.17664612	96.51709016	95.86649175
190208A00008	2/8/2019	2.86	2/8/2024	2/8/2019	100.15621	100.0427004	99.9294571	99.8164839	99.70377979	99.59134377	99.47917485	99.36727205	99.25563436
190208A00009	2/8/2019	2.67	2/8/2024	2/8/2019	100.14984	100.0361786	99.9227873	99.80966822	99.6968203	99.58424253	99.47193386	99.3598933	99.24811982
181010A00023	10/10/2018	3.41	4/1/2024	10/10/2018	100.49611	100.2365269	99.97828707	99.72137942	99.46579362	99.21151947	98.95854688	98.70686585	98.45646651
190211A00017	2/11/2019	3.12	2/11/2026	2/11/2019	105.71457	103.5831509	101.5055324	99.47998624	97.50485278	95.57853819	93.69951149	91.8663015	90.07749395
190211A00016	2/11/2019	3.01	2/11/2025	2/11/2019	102.29995	101.177733	100.0801234	99.00631885	97.95555074	96.92708306	95.92021094	94.93425894	93.96857954
190701A00023	7/1/2019	1.95	7/1/2024	7/1/2019	100.35079	99.84324926	99.34083327	98.8434639	98.35106538	97.86356346	97.38088535	96.90295971	96.42971658
190213A00023	2/13/2019	2.93	2/13/2024	2/13/2019	100.18459	100.0572472	99.93024898	99.80358894	99.6772657	99.55127787	99.42562408	99.30030295	99.17531312
190214A00006	2/14/2019	2.67	2/14/2024	2/14/2019	100.17078	100.0405317	99.91064237	99.78110754	99.6519257	99.52309537	99.39461505	99.26648326	99.13869852
190215A00046	2/15/2019	2.7	2/15/2024	2/15/2019	100.17826	100.0452479	99.91260576	99.78033242	99.64842625	99.51688566	99.38570908	99.25489494	99.12444169

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190215A00005	2/15/2019	2.89	2/15/2024	2/15/2019	100.18699	100.0541407	99.92165821	99.78954206	99.65779074	99.5264027	99.39537639	99.26471028	99.13440284
190215A00006	2/15/2019	2.89	2/15/2024	2/15/2019	100.18699	100.0541407	99.92165821	99.78954206	99.65779074	99.5264027	99.39537639	99.26471028	99.13440284
190701A00009	7/3/2019	2.14	7/2/2024	7/3/2019	100.38101	99.87151659	99.36718832	98.86794334	98.37370509	97.88439855	97.39995015	96.92028781	96.44534088
190702A00002	7/2/2019	2.16	7/2/2024	7/2/2019	100.39129	99.88177421	99.3774155	98.87814032	98.38387208	97.89453576	97.4100578	96.93036611	96.45539004
190215A00017	2/15/2019	2.89	2/15/2024	2/15/2019	100.18699	100.0541407	99.92165821	99.78954206	99.65779074	99.5264027	99.39537639	99.26471028	99.13440284
191120A00024	11/20/2019	2.23	11/16/2029	11/20/2019	112.24773	106.2399178	100.5930487	95.28359538	90.2896773	85.59093889	81.16843595	77.00453101	73.08279705
191120A00006	11/20/2019	2.67	11/20/2035	11/20/2019	123.76543	111.5210228	100.6364442	90.95216864	82.32818411	74.64151442	67.78406899	61.66077309	56.18794115
191120A00005	11/20/2019	2.63	11/20/2034	11/20/2019	122.51954	111.2684835	101.1750019	92.1130427	83.97089837	76.64951276	70.06099041	64.1272882	58.77906614
191121A00010	11/21/2019	2.59	11/20/2037	11/21/2019	126.1807	111.8652659	99.37496226	88.46490612	78.92432059	70.57162726	63.2502687	56.82514652	51.17958171
191121A00034	11/21/2019	2.28	11/2/2029	11/21/2019	112.49975	106.5215643	100.9002893	95.61280005	90.63758138	85.95460868	81.54523745	77.39210166	73.47902013
191121A00009	11/21/2019	2.55	11/21/2036	11/21/2019	124.73774	111.4138492	99.68376397	89.3466698	80.22805838	72.17616385	65.05889592	58.76119973	53.18278126
191121A00004	11/21/2019	1.77	11/21/2024	11/21/2019	100.67263	99.77856816	98.90032941	98.03749723	97.1896689	96.35645564	95.53748201	94.73238532	93.94081513
191122A00021	11/26/2019	3.4	11/22/2038	11/26/2019	137.22978	121.393645	107.6649863	95.74676986	85.38548434	76.36455838	68.49880065	61.62970127	55.62145749
191122A00018	11/26/2019	3.11	11/22/2039	11/26/2019	135.22899	118.637247	104.3871746	92.12948333	81.56894194	72.45575679	64.57836172	57.75738327	51.84058496
191122A00020	11/26/2019	3.2	11/23/2037	11/26/2019	132.57641	117.9630511	105.1908361	94.01440312	84.22240415	75.63263105	68.08786109	61.45231272	55.60861971
190703A00017	7/3/2019	2.33	5/4/2026	7/3/2019	104.61242	102.2674843	99.98685869	97.76842936	95.61016679	93.51011931	91.46640966	89.47723165	87.54084712
190708A00011	7/8/2019	2.2	7/8/2024	7/8/2019	100.41928	99.89359614	99.37340756	98.85863295	98.34918802	97.8449902	97.34595863	96.8520141	96.36307902
190220A00007	2/20/2019	2.87	2/20/2024	2/20/2019	100.20283	100.0561894	99.90999328	99.76423665	99.61891751	99.47403387	99.32958373	99.18556514	99.04197612
191125A00036	11/25/2019	2.29	11/23/2029	11/25/2019	112.62585	106.5885996	100.9149456	95.58112674	90.56504748	85.84615641	81.40533101	77.22477139	73.28790256
191126A00026	11/26/2019	1.91	11/25/2026	11/26/2019	105.194	102.2808274	99.46337225	96.73798431	94.10117038	91.54958927	89.08004423	86.68947591	84.37495563
191126A00023	11/26/2019	1.81	5/27/2025	11/26/2019	101.71906	100.3213994	98.94965716	97.60317819	96.28132596	94.98348486	93.70905939	92.45747331	91.22816891
190709A00018	7/9/2019	2.24	7/9/2024	7/9/2019	100.44354	99.91507518	99.39216985	98.87473496	98.36268486	97.85593571	97.35440538	96.85801344	96.36668111
190222A00021	2/22/2019	2.95	8/21/2024	2/22/2019	101.01078	100.364817	99.72711534	99.09751442	98.4758605	97.86200369	97.25579785	96.65710047	96.06577255
190225A00026	2/25/2019	3.43	2/27/2034	2/25/2019	131.3314	120.258444	110.2480504	101.1915182	92.99183338	85.56235687	78.82566461	72.71252289	67.16098236
191129A00012	11/29/2019	1.99	11/29/2024	11/29/2019	100.76195	99.84799072	98.95054495	98.06917026	97.20343815	96.35293526	95.51726266	94.69603523	93.88888111
190710A00022	7/10/2019	2.22	7/10/2024	7/10/2019	100.43583	99.90468786	99.37916381	98.85916605	98.3446076	97.83540334	97.33146987	96.83272556	96.33909045
190227A00005	2/27/2019	2.87	2/27/2024	2/27/2019	100.22873	100.0628008	99.89742075	99.73258876	99.56830213	99.40455819	99.24135425	99.07868767	98.91655581
191202A00005	12/2/2019	2.03	12/2/2024	12/2/2019	100.81307	99.89078867	98.98532598	98.09622249	97.22303801	96.36534802	95.52274297	94.69482763	93.88122048
191203A00004	12/4/2019	1.87	12/4/2024	12/4/2019	100.6719	99.74496747	98.83503804	97.94164941	97.06435376	96.20271931	95.35632962	94.52478288	93.7076913
191204A00013	12/4/2019	1.72	12/4/2024	12/4/2019	100.67795	99.74891072	98.83694987	97.94159717	97.06240221	96.19893073	95.3507639	94.51749767	93.69874209
190712A00001	7/12/2019	2.05	7/12/2024	7/12/2019	100.43424	99.89667562	99.36486688	98.83872079	98.31814707	97.80305736	97.29336517	96.78898579	96.28983632
190715A00010	7/15/2019	2.23	7/15/2024	7/15/2019	100.4454	99.90087048	99.36223975	98.82941459	98.30230138	97.7808085	97.26484629	96.75432698	96.24916466
191206A00013	12/6/2019	3.05	12/6/2044	12/6/2019	145.89121	123.9199854	105.8236366	90.8780468	78.49919214	68.21532308	59.64479074	52.47835262	46.46503391

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191206A00009	12/6/2019	2.87	12/4/2037	12/6/2019	128.11367	113.7679843	101.2434134	90.29604753	80.71592188	72.32213494	64.95869118	58.49095635	52.80263256
191206A00008	12/6/2019	2.44	12/6/2030	12/6/2019	114.92778	107.8020012	101.1707079	94.99698539	89.24685152	83.88901313	78.89464046	74.23716154	69.89207482
191206A00021	12/6/2019	2.02	12/6/2024	12/6/2019	100.82232	99.88924659	98.97339042	98.07427574	97.19144668	96.32446379	95.4729033	94.63635644	93.81442879
191206A00044	12/10/2019	2.01	10/31/2024	12/10/2019	100.66383	99.82807837	99.00615776	98.19772622	97.40245387	96.6200215	95.85012017	95.09245076	94.3467236
191217A00012	12/20/2019	2.03	12/20/2024	12/20/2019	100.89728	99.92623035	98.97381557	98.03949896	97.12276834	96.22313069	95.34011129	94.47325284	93.6221147
191218A00014	12/18/2019	2.04	12/18/2024	12/18/2019	100.89771	99.93203077	98.98477777	98.05542839	97.14347858	96.2484431	95.36985458	94.50726277	93.66023368
191219A00036	12/20/2019	2.1	12/20/2024	12/20/2019	100.96621	99.99479499	99.04202014	98.10734825	97.19026703	96.29028336	95.40692241	94.5397268	93.68825577
191220A00002	12/20/2019	3.02	12/20/2038	12/20/2019	131.85252	116.3266923	102.8901791	91.2460733	81.14127499	72.35982276	64.71726886	58.0559309	52.24087967
191220A00001	12/20/2019	2.62	12/19/2031	12/20/2019	118.01987	109.7707614	102.1675671	95.15616919	88.68725194	82.71585077	77.20094805	72.10510805	67.39414742
190301A00012	3/1/2019	3.41	3/1/2029	3/1/2019	117.37104	111.9385634	106.794957	101.9232588	97.30759921	92.93312129	88.78591078	84.85293086	81.12196198
191223A00055	12/23/2019	2.46	12/7/2029	12/23/2019	113.68961	107.5836436	101.8471187	96.45576062	91.38700828	86.61988644	82.13488641	77.91385642	73.93990071
191223A00056	12/23/2019	2.46	12/14/2029	12/23/2019	113.7164	107.5905555	101.8364927	96.42970366	91.34741977	86.56847786	82.0731991	77.84327768	73.86167837
191226A00020	12/26/2019	2.44	12/21/2029	12/26/2019	113.62269	107.4805415	101.7123578	96.29341302	91.2007376	86.4129868	81.91031765	77.67427605	73.68769271
191226A00019	12/26/2019	2.4	12/22/2028	12/26/2019	111.71334	106.6153254	101.7819489	97.1980928	92.8495799	88.72311062	84.8062042	81.08714412	77.55492745
191230A00031	12/30/2019	1.85	12/30/2024	12/30/2019	100.92163	99.92133132	98.94077194	97.97937475	97.03658257	96.11185963	95.20469057	94.31457942	93.44104877
191230A00013	12/30/2019	1.84	12/2/2024	12/30/2019	100.78172	99.8575475	98.95025398	98.0593839	97.18449457	96.32515905	95.48096552	94.65151658	93.8364286
200103A00009	1/3/2020	1.9	1/3/2024	1/3/2020	100.00626	99.99239411	99.97854311	99.9647057	99.95088184	99.93707151	99.92327471	99.90949139	99.89572154
200106A00015	1/6/2020	1.87	2/15/2024	1/6/2020	100.05123	99.91853237	99.78620706	99.65424776	99.52265292	99.39142098	99.2605504	99.13003965	98.99988721
200108A00021	1/13/2020	1.97	1/13/2025	1/13/2020	100.96033	99.92436088	98.90957925	97.91533927	96.94102194	95.9860329	95.04980125	94.13177838	93.23143689
190717A00008	7/17/2019	2.22	7/17/2024	7/17/2019	100.44572	99.89578956	99.35188057	98.81389089	98.28172415	97.75528607	97.23448439	96.71922885	96.20943108
200110A00022	1/13/2020	2	1/6/2025	1/13/2020	100.95323	99.93616865	98.93952722	97.96269679	97.00509112	96.06614689	95.14532261	94.24209757	93.35597084
200110A00013	1/10/2020	1.76	1/10/2024	1/10/2020	100.01419	99.98088965	99.94763028	99.91441036	99.88122981	99.84808856	99.81498653	99.78192364	99.7488998
190719A00006	7/19/2019	2.17	7/19/2024	7/19/2019	100.42347	99.86822529	99.31911187	98.77603144	98.23888489	97.70757526	97.18200768	96.66208935	96.14772944
190308A00007	3/8/2019	2.8	3/8/2024	3/8/2019	100.25087	100.0574586	99.86480342	99.67289896	99.48174074	99.29132438	99.10164551	98.91269981	98.72448299
190314A00027	3/22/2019	2.92	3/21/2025	3/22/2019	102.51692	101.2901868	100.0927842	98.92366787	97.78184399	96.66636463	95.57632534	94.51086272	93.46915202
190315A00014	3/15/2019	2.74	3/15/2024	3/15/2019	100.265	100.0523492	99.8406089	99.62977643	99.41984589	99.21081146	99.00266733	98.79540778	98.58902711
190724A00023	7/24/2019	2.13	7/24/2025	7/24/2019	102.53483	100.974882	99.44631799	97.94826175	96.47986732	95.0403197	93.62883346	92.2446514	90.88704324
190724A00021	7/24/2019	2.33	7/23/2027	7/24/2019	108.26754	104.645088	101.1639271	97.81776676	94.60063655	91.50686446	88.53106027	85.6680998	82.91311014
190724A00024	7/24/2019	2.49	7/24/2029	7/24/2019	114.08182	108.3058732	102.8605641	97.72521456	92.88054381	88.30856982	83.99251494	79.91671902	76.06655924
190318A00008	3/18/2019	2.76	3/18/2024	3/18/2019	100.27969	100.0587838	99.83886652	99.61992649	99.40195718	99.18495208	98.96890476	98.75380883	98.53965796
190318A00021	3/18/2019	2.76	3/18/2024	3/18/2019	100.27969	100.0587838	99.83886652	99.61992649	99.40195718	99.18495208	98.96890476	98.75380883	98.53965796
190726A00014	7/26/2019	2.23	7/24/2024	7/26/2019	100.46059	99.89188845	99.32961016	98.77365045	98.22390323	97.68026479	97.14263372	96.61091083	96.08499912
190726A00017	7/26/2019	2.44	7/24/2026	7/26/2019	105.46188	102.8868416	100.3880496	97.96278326	95.60844078	93.32252984	91.10266211	88.94654814	86.85199261

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190729A00008	7/29/2019	2.18	1/29/2024	7/29/2019	100.06131	99.97546388	99.88976736	99.80421622	99.71881012	99.63354869	99.54843158	99.46345846	99.37862895
190730A00016	7/30/2019	2	7/30/2024	7/30/2019	100.45773	99.87143767	99.29197546	98.71922047	98.15305677	97.59337109	97.04005277	96.49299363	95.95208793
190730A00007	7/30/2019	2.19	7/30/2024	7/30/2019	100.44873	99.86397713	99.28601404	98.71472128	98.14998394	97.59168977	97.03972906	96.49399457	95.95438147
190321A00003	3/21/2019	2.67	3/21/2024	3/21/2019	100.2694	100.0402938	99.8122429	99.58523992	99.35927758	99.13434869	98.91044613	98.68756285	98.46569187
190731A00004	7/31/2019	2.18	7/31/2024	7/31/2019	100.44581	99.85837654	99.27779537	98.70394726	98.13671566	97.57598669	97.02164905	96.47359399	95.93171519
190802A00003	8/2/2019	2.01	8/2/2024	8/2/2019	100.34986	99.75736714	99.17185571	98.59320068	98.02128215	97.45598298	96.89718877	96.34478771	95.79867056
190802A00032	8/2/2019	2.01	8/2/2024	8/2/2019	100.34986	99.75736714	99.17185571	98.59320068	98.02128215	97.45598298	96.89718877	96.34478771	95.79867056
190805A00050	8/5/2019	1.91	8/5/2024	8/5/2019	100.29665	99.69627646	99.10307394	98.51691622	97.9376783	97.36523813	96.7994765	96.24027699	95.68752587
200403A00006	4/3/2020	1.05	4/3/2025	4/3/2020	100.25061	99.00519514	97.78873177	96.60021613	95.43868808	94.30323121	93.19297036	92.10706933	91.04472871
200406A00006	4/6/2020	1.13	4/7/2025	4/6/2020	100.36724	99.11142552	97.88366429	96.68301368	95.50857633	94.35949449	93.23494777	92.13415113	91.05635299
200121A00009	1/24/2020	1.94	1/24/2025	1/24/2020	100.98768	99.92192981	98.87858289	97.85693935	96.85632753	95.87610323	94.91564831	93.97436942	93.05169671
200122A00034	1/22/2020	1.87	1/22/2024	1/22/2020	100.02744	99.9609716	99.89459852	99.8283253	99.76215169	99.69607749	99.63010246	99.56422639	99.49844905
200122A00035	1/22/2020	1.94	1/22/2025	1/22/2020	100.97698	99.91667258	98.87854916	97.86191631	96.86611204	95.89050135	94.93447477	93.99744718	93.07885654
200123A00048	1/23/2020	1.7	1/23/2025	1/23/2020	100.89273	99.82772957	98.78510497	97.76415814	96.76421866	95.7846435	94.82481564	93.88414277	92.96205605
200123A00013	1/27/2020	1.89	1/27/2025	1/27/2020	100.94928	99.87567753	98.82480828	97.79595804	96.78844061	95.80159809	94.83479934	93.88743868	92.95893461
200127A00016	1/27/2020	1.81	1/27/2025	1/27/2020	100.86215	99.78905559	98.73868443	97.71032498	96.70329126	95.71692551	94.75059677	93.80369953	92.87565242
200127A00023	1/27/2020	1.8	1/27/2025	1/27/2020	100.85126	99.77822785	98.72791894	97.69962085	96.69264759	95.70634144	94.74007145	93.79323213	92.86524215
200127A00030	1/27/2020	1.8	1/27/2025	1/27/2020	100.85126	99.77822785	98.72791894	97.69962085	96.69264759	95.70634144	94.74007145	93.79323213	92.86524215
200128A00028	1/28/2020	1.81	1/28/2025	1/28/2020	100.86715	99.7913313	98.73835312	97.70749355	96.69806171	95.70939521	94.7408587	93.79184251	92.86176136
200130A00016	1/30/2020	1.58	1/30/2025	1/30/2020	100.79734	99.71398816	98.65379528	97.61602404	96.59996955	95.60495616	94.630336	93.67548752	92.73981421
200130A00005	1/30/2020	1.73	1/30/2024	1/30/2020	100.02312	99.93454918	99.84613954	99.757887	99.66979115	99.58185159	99.49406791	99.4064397	99.31896654
200130A00006	1/30/2020	1.77	1/30/2025	1/30/2020	100.83375	99.752733	98.69478463	97.65916957	96.64518682	95.65216443	94.67945801	93.72644935	92.79254506
200131A00038	1/31/2020	1.73	1/30/2025	1/31/2020	100.78985	99.70909601	98.65140024	97.61603407	96.60229657	95.6095159	94.63704776	93.68427399	92.75060131
200131A00015	2/5/2020	1.73	2/5/2025	2/5/2020	100.82151	99.72436708	98.65099244	97.60061811	96.57251112	95.56596932	94.58031985	93.61491754	92.66914359
200131A00031	1/31/2020	1.74	1/31/2024	1/31/2020	100.02454	99.93321682	99.84206028	99.75107276	99.66025382	99.56960297	99.47911974	99.38880368	99.29865431
200131A00016	1/31/2020	1.73	1/31/2025	1/31/2020	100.79513	99.71164062	98.65133105	97.61346255	96.59732891	95.60225324	94.62758651	93.67270609	92.73701446
200131A00032	1/31/2020	2.1	1/31/2030	1/31/2020	111.68808	105.4937248	99.68356944	94.23177719	89.11438223	84.30914247	79.79540674	75.55399297	71.56707633
200131A00048	1/31/2020	1.69	1/31/2024	1/31/2020	100.01997	99.92864381	99.83749142	99.74650805	99.65569325	99.56504653	99.47456743	99.38425549	99.29411023
190826A00029	8/26/2019	1.53	8/26/2024	8/26/2019	100.22725	99.56900754	98.91938422	98.27821067	97.64532286	97.020561	96.40376936	95.79479619	95.19349357
190826A00030	8/26/2019	1.72	8/26/2026	8/26/2019	104.12743	101.4739793	98.90141139	96.40674791	93.98714608	91.63988721	89.36237025	87.15210583	85.00671054
120312A00009	3/12/2012	2.72	3/15/2024	3/12/2012	100.28765	100.0746764	99.86261905	99.65147411	99.44123564	99.23189773	99.02345451	98.81590019	98.60922899
200203A00006	2/3/2020	1.76	2/3/2025	2/3/2020	100.84421	99.75232992	98.68398754	97.63842426	96.61491778	95.61277603	94.63133563	93.66996041	92.72804002
150601A01024	6/1/2015	5.33	2/27/2026	6/1/2015	110.50434	108.2753658	106.1032241	103.9860569	101.9220851	99.90960197	97.94696919	96.03261376	94.16502474

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190326A00024	3/26/2019	2.59	3/26/2024	3/26/2019	100.26363	100.0208638	99.77927549	99.53885527	99.29959468	99.06148535	98.824519	98.58868741	98.35398245
190805A00009	8/5/2019	1.91	8/5/2024	8/5/2019	100.29665	99.69627646	99.10307393	98.51691622	97.9376783	97.36523813	96.7994765	96.24027699	95.68752587
190805A00011	8/5/2019	1.91	8/5/2024	8/5/2019	100.29665	99.69627646	99.10307393	98.51691622	97.9376783	97.36523813	96.7994765	96.24027699	95.68752587
200204A00012	2/4/2020	1.98	2/4/2027	2/4/2020	105.44295	102.3433393	99.35103931	96.46172307	93.67126225	90.97571979	88.37133972	85.85453759	83.42189155
200204A00020	2/4/2020	1.6	2/4/2025	2/4/2020	100.84615	99.74897209	98.67554045	97.62509344	96.59689926	95.5902569	94.60449452	93.63896793	92.6930592
200204A00001	2/4/2020	1.79	2/4/2025	2/4/2020	100.8829	99.78809177	98.71694149	97.66868519	96.64259514	95.63797414	94.65415396	93.69049385	92.74637914
200205A00011	2/7/2020	2.31	2/7/2024	2/7/2020	100.09156	99.980866	99.87043424	99.76025931	99.65034028	99.54067622	99.43126621	99.32210933	99.21320466
190326A00032	3/26/2019	2.4	3/26/2024	3/26/2019	100.25064	100.0075328	99.76561246	99.52486601	99.28528484	99.04686048	98.80958454	98.57344873	98.3384448
190327A00032	3/27/2019	2.53	1/26/2024	3/27/2019	100.08255	100.0049832	99.92753752	99.85021679	99.77302074	99.69594908	99.61900152	99.54217776	99.46547751
190327A00013	3/27/2019	2.53	3/27/2024	3/27/2019	100.25181	100.006324	99.76204267	99.51895393	99.27704905	99.03631942	98.79675651	98.55835186	98.32109711
190327A00006	3/27/2019	2.53	3/27/2024	3/27/2019	100.25181	100.006324	99.76204267	99.51895393	99.27704905	99.03631942	98.79675651	98.55835186	98.32109711
190327A00027	3/27/2019	2.66	1/15/2025	3/27/2019	101.69993	100.6543942	99.63032745	98.62707054	97.64399358	96.68049192	95.73598488	94.80991453	93.90174465
190327A00031	3/27/2019	2.53	3/27/2024	3/27/2019	100.25181	100.006324	99.76204267	99.51895393	99.27704905	99.03631942	98.79675651	98.55835186	98.32109711
190328A00065	3/28/2019	2.56	3/28/2024	3/28/2019	100.2621	100.0138596	99.76684931	99.52105639	99.27647184	99.03308679	98.79089248	98.5498802	98.31004134
190328A00003	3/28/2019	2.64	9/30/2024	3/28/2019	101.02466	100.2706611	99.52789107	98.79610289	98.07505446	97.3645107	96.66424336	95.97403073	95.29365747
200407A00001	4/8/2020	2.41	4/7/2025	4/8/2020	102.00746	100.7405803	99.50193944	98.29059098	97.10563261	95.9462017	94.81147322	93.70065767	92.61299915
200407A00002	4/8/2020	1.82	4/8/2024	4/8/2020	100.09047	99.81247934	99.53603983	99.26114065	98.98776887	98.71591169	98.44555647	98.17669071	97.90930204
200408A00021	4/8/2020	0.99	4/4/2025	4/8/2020	100.37824	99.12644336	97.90350464	96.70843264	95.54027717	94.39813102	93.2811276	92.18843864	91.11927207
190807A00021	8/7/2019	2	8/7/2026	8/7/2019	104.41127	101.8122162	99.29104851	96.84495548	94.47124653	92.16734601	89.93078741	87.75920788	85.65034314
190807A00020	8/7/2019	1.57	2/7/2024	8/7/2019	100.02431	99.91353431	99.80302236	99.69276915	99.58277371	99.47303509	99.36355233	99.25432451	99.14535066
200207A00016	2/7/2020	1.74	2/7/2024	2/7/2020	100.02832	99.91769793	99.80733245	99.69722366	99.58737064	99.47777244	99.36842816	99.25933687	99.15049766
200207A00018	2/7/2020	2.14	2/7/2030	2/7/2020	111.95487	105.7334066	99.89873835	94.4247939	89.28738997	84.4640873	79.93405588	75.67795133	71.6778015
200207A00017	2/7/2020	1.96	2/8/2027	2/7/2020	105.40598	102.2959318	99.29387053	96.39542217	93.59642065	90.8928936	88.28105205	85.75728064	83.31812857
200207A00009	2/7/2020	1.58	2/7/2025	2/7/2020	100.83985	99.73458638	98.65342126	97.59557698	96.56030555	95.54689067	94.55464605	93.58291389	92.63106337
200210A00009	2/10/2020	1.57	2/10/2025	2/10/2020	100.84451	99.73109299	98.64213288	97.5768319	96.53442573	95.51418264	94.51540182	93.5374117	92.57956851
190328A00019	3/28/2019	2.56	3/28/2024	3/28/2019	100.2621	100.0138596	99.76684931	99.52105639	99.27647184	99.03308679	98.79089248	98.5498802	98.31004134
190328A00031	4/25/2019	2.56	4/25/2024	4/25/2019	100.35601	100.0310863	99.70826778	99.38753401	99.06886488	98.75224048	98.43764115	98.12504749	97.81444037
190328A00046	3/28/2019	2.7	3/4/2025	3/28/2019	102.11517	100.9370936	99.78615149	98.66141117	97.56198536	96.48702643	95.43572426	94.40730411	93.40102478
190328A00033	4/25/2019	2.56	4/25/2024	4/25/2019	100.35601	100.0310863	99.70826778	99.38753401	99.06886488	98.75224048	98.43764115	98.12504749	97.81444037
190328A00083	3/28/2019	2.37	3/28/2024	3/28/2019	100.24884	100.0002596	99.75290886	99.50678141	99.26186816	99.01816014	98.77564847	98.53432436	98.29417909
190328A00079	3/28/2019	2.37	3/28/2024	3/28/2019	100.24884	100.0002596	99.75290886	99.50678141	99.26186816	99.01816014	98.77564847	98.53432436	98.29417909
200414A00016	4/16/2020	1.64	4/15/2024	4/16/2020	100.04509	99.74808521	99.45285835	99.15938932	98.86766236	98.5776619	98.28937254	98.00277909	97.71786652
200415A00035	4/17/2020	2.16	4/16/2025	4/17/2020	101.7463	100.4594002	99.19864989	97.96326419	96.752486	95.56558858	94.40187399	93.26067169	92.14133715

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190808A00025	8/8/2019	1.7	8/8/2024	8/8/2019	100.30028	99.69024827	99.08762557	98.49227829	97.90407512	97.32288787	96.74859141	96.18106358	95.62018511
190808A00050	8/8/2019	1.7	8/8/2024	8/8/2019	100.30028	99.69024827	99.08762557	98.49227829	97.90407512	97.32288787	96.74859141	96.18106358	95.62018511
190808A00052	8/8/2019	1.7	8/8/2024	8/8/2019	100.30028	99.69024827	99.08762557	98.49227829	97.90407512	97.32288787	96.74859141	96.18106358	95.62018511
190808A00024	8/8/2019	1.69	2/8/2024	8/8/2019	100.03839	99.92484753	99.81157502	99.69857445	99.5858448	99.47338504	99.36119413	99.24927107	99.13761485
190808A00009	8/8/2019	1.89	8/8/2024	8/8/2019	100.29109	99.68267235	99.08162263	98.48780862	97.90110013	97.32137011	96.74849449	96.18235213	95.62282476
190809A00012	8/9/2019	1.69	8/9/2024	8/9/2019	100.29632	99.68360695	99.07836843	98.48046949	97.88977705	97.30616123	96.72949526	96.15965539	95.59652081
190809A00011	8/9/2019	1.69	8/9/2024	8/9/2019	100.29632	99.68360695	99.07836843	98.48046949	97.88977705	97.30616123	96.72949526	96.15965539	95.59652081
190809A00022	8/9/2019	1.88	8/9/2024	8/9/2019	100.2871	99.67600949	99.07235243	98.4759949	97.886805	97.30465396	96.72941609	96.16096868	95.59919192
190809A00020	8/9/2019	2.44	8/9/2034	8/9/2019	121.72664	110.6972271	100.7816316	91.86082746	83.82910173	76.59250071	70.06746711	64.17964137	58.8628065
190809A00021	8/9/2019	2.12	8/9/2029	8/9/2019	112.05918	106.2954551	100.8647664	95.74612281	90.91996186	86.36804872	82.07337911	78.02008979	74.19337605
200210A00005	2/10/2020	1.77	2/10/2027	2/10/2020	105.23675	102.1139184	99.09990832	96.1902988	93.38087801	90.66763068	88.04672758	85.51451556	83.06750832
200210A00021	2/10/2020	1.76	2/10/2025	2/10/2020	100.88171	99.7707187	98.68408397	97.62101496	96.58075156	95.56256604	94.56576133	93.58966945	92.63364999
200212A00003	2/12/2020	1.63	2/12/2025	2/12/2020	100.92313	99.80382604	98.70922183	97.63850971	96.59091425	95.56569322	94.5621359	93.57956136	92.61731696
190329A00018	3/29/2019	2.6	3/29/2024	3/29/2019	100.27507	100.0240784	99.77433507	99.52583396	99.27856589	99.03252175	98.78769251	98.54406921	98.30164302
160401A00016	4/1/2016	2.42	4/1/2025	4/1/2016	101.97652	100.724403	99.50189655	98.30795288	97.14157521	96.00181286	94.88775854	93.79854588	92.73334717
160524A00027	5/24/2016	3.06	5/27/2031	5/24/2016	120.29321	112.5106861	105.297051	98.60759238	92.4013297	86.64068797	81.29119864	76.32122816	71.70173149
171018A00011	10/18/2017	2.68	10/18/2027	10/18/2017	110.2902	106.3916109	102.6530292	99.06703312	95.62658328	92.32500419	89.15596314	86.11345063	83.19176203
190401A00010	4/1/2019	2.62	4/1/2024	4/1/2019	100.29037	100.0311415	99.77325583	99.51670087	99.26146635	99.00754209	98.754918	98.50358411	98.25353053
200417A00016	4/21/2020	2.18	4/21/2025	4/21/2020	101.80559	100.5061799	99.23179232	97.98172747	96.75530978	95.55188885	94.37083823	93.21155436	92.07345549
200417A00009	4/17/2020	1.35	4/16/2027	4/17/2020	103.81534	100.5466538	97.39734319	94.36240478	91.43707041	88.61679856	85.89726213	83.27433695	80.74409102
190809A00010	8/9/2019	1.88	8/8/2024	8/9/2019	100.28493	99.6765319	99.07550347	98.48171057	97.89502302	97.31531375	96.7424587	96.17633676	95.61682962
190812A00006	8/12/2019	1.86	8/12/2024	8/12/2019	100.28107	99.66194468	99.050448	98.44644331	97.8497934	97.26036442	96.67802574	96.10264988	95.53411239
190812A00003	8/12/2019	1.67	8/12/2024	8/12/2019	100.29039	99.66961045	99.05650666	98.45093586	97.85275967	97.26184306	96.67805429	96.10126482	95.53134914
160307A00027	3/7/2016	2.71	3/6/2026	3/7/2016	105.03049	102.8423982	100.7108028	98.63383671	96.6097138	94.63672104	92.71321512	90.83761882	89.00841784
160307A00028	3/7/2016	2.91	3/7/2028	3/7/2016	111.9068	107.6024735	103.4894981	99.55830089	95.79984131	92.20558112	88.76745349	85.47783408	82.32951399
161214A00023	12/14/2016	3.3	12/15/2031	12/14/2016	124.58056	116.036968	108.1577117	100.8873332	94.17528177	87.97545676	82.24579503	76.94789803	72.04669514
190402A00004	4/2/2019	2.9	4/2/2029	4/2/2019	115.67374	110.1678051	104.9605195	100.0340478	95.3717151	90.95792802	86.7780986	82.81857368	79.06656974
050923A00096	9/23/2005	4.86	9/22/2025	9/23/2005	107.69195	105.9254846	104.1968307	102.5048361	100.8483991	99.22646218	97.63801021	96.08206819	94.5576992
190813A00008	8/13/2019	1.88	8/13/2024	8/13/2019	100.29579	99.67392318	99.05975533	98.45314438	97.85395136	97.26204069	96.67728008	96.09954042	95.52869572
190813A00016	8/13/2019	1.88	8/13/2024	8/13/2019	100.29579	99.67392318	99.05975533	98.45314438	97.85395136	97.26204069	96.67728008	96.09954042	95.52869572
190814A00003	8/14/2019	2.01	8/14/2029	8/14/2019	111.4515	105.6912474	100.2647939	95.15104772	90.33035742	85.78440828	81.4961244	77.44957841	73.62990817
190403A00006	4/3/2019	2.48	4/3/2024	4/3/2019	100.29636	100.0312576	99.76756422	99.50526785	99.24435734	98.98482168	98.72664995	98.46983134	98.21435516
190404A00003	4/4/2019	2.47	4/4/2024	4/4/2019	100.29707	100.029233	99.76283043	99.49785502	99.23429526	98.97213971	98.71137711	98.4519963	98.19398622

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190814A00015	8/14/2019	1.84	8/14/2024	8/14/2019	100.27265	99.64818459	99.03147951	98.42239521	97.82079095	97.22652943	96.63947671	96.05950208	95.486478
190814A00008	8/14/2019	1.84	8/14/2024	8/14/2019	100.27265	99.64818459	99.03147951	98.42239521	97.82079095	97.22652943	96.63947671	96.05950208	95.486478
190814A00009	8/14/2019	1.84	8/14/2024	8/14/2019	100.27265	99.64818459	99.03147951	98.42239521	97.82079095	97.22652943	96.63947671	96.05950208	95.486478
190816A00036	8/16/2019	1.77	8/16/2024	8/16/2019	100.23211	99.6024115	98.9806147	98.36656696	97.76012399	97.16114503	96.56949282	95.98503343	95.40763618
190816A00033	8/16/2019	1.77	8/16/2024	8/16/2019	100.23211	99.6024115	98.9806147	98.36656696	97.76012399	97.16114503	96.56949282	95.98503343	95.40763618
190816A00011	8/16/2019	1.77	8/16/2024	8/16/2019	100.23211	99.6024115	98.9806147	98.36656696	97.76012399	97.16114503	96.56949282	95.98503343	95.40763618
190816A00020	8/16/2019	1.79	8/16/2024	8/16/2019	100.24487	99.61512976	98.99328747	98.37919465	97.77270699	97.17368374	96.58198762	95.9974847	95.4200443
190816A00006	8/16/2019	1.77	8/16/2024	8/16/2019	100.23211	99.6024115	98.9806147	98.36656696	97.76012399	97.16114503	96.56949282	95.98503343	95.40763618
190816A00031	8/16/2019	1.77	8/16/2024	8/16/2019	100.23211	99.6024115	98.9806147	98.36656696	97.76012399	97.16114503	96.56949282	95.98503343	95.40763618
190816A00022	8/16/2019	1.77	8/16/2024	8/16/2019	100.23211	99.6024115	98.9806147	98.36656696	97.76012399	97.16114503	96.56949282	95.98503343	95.40763618
200428A00013	4/30/2020	1.49	4/29/2024	4/30/2020	100.00766	99.67256567	99.33970557	99.00906004	98.6806071	98.35432505	98.03019247	97.70818822	97.38829146
200428A00011	4/30/2020	1.95	4/29/2025	4/30/2020	101.55002	100.2330574	98.9392759	97.66811913	96.41904517	95.19152894	93.98506158	92.79914982	91.63331538
200429A00051	5/1/2020	2.54	4/30/2025	5/1/2020	102.34844	101.0231377	99.72120412	98.44207575	97.185205	95.95006138	94.73613084	93.54291511	92.36993113
200429A00035	5/1/2020	1.41	4/30/2024	5/1/2020	99.980932	99.64317293	99.30768918	98.97445766	98.6434558	98.31466131	97.98805219	97.66360674	97.34130354
200429A00045	5/1/2020	1.54	4/30/2025	5/1/2020	101.00381	99.68798494	98.39536798	97.12539967	95.87753675	94.65125283	93.44603781	92.26139724	91.09685174
200429A00056	5/1/2020	1.54	4/30/2025	5/1/2020	101.00381	99.68798494	98.39536798	97.12539967	95.87753675	94.65125283	93.44603781	92.26139724	91.09685174
200429A00043	5/1/2020	1.56	4/30/2025	5/1/2020	101.0307	99.714688	98.4218847	97.1517332	95.90369011	94.677229	93.47183967	92.2870276	91.12231333
200429A00050	5/1/2020	2.61	4/30/2025	5/1/2020	102.44257	101.1165984	99.81401265	98.53424308	97.27674178	96.04097798	94.82643735	93.63262136	92.45904669
200429A00053	5/1/2020	2.18	4/30/2025	5/1/2020	101.86437	100.5424827	99.24390311	97.96807236	96.71444443	95.4824903	94.27169735	93.08156868	91.91162255
200429A00058	5/1/2020	1.83	4/30/2025	5/1/2020	101.39375	100.0751792	98.77986046	97.50723574	96.25676054	95.02790731	93.82016479	92.63303742	91.46604477
200429A00047	5/1/2020	2.7	4/30/2025	5/1/2020	102.56358	101.2367621	99.9333379	98.65274392	97.39443192	96.15787075	94.94254572	93.74795797	92.57362383
200429A00052	5/1/2020	1.43	4/30/2024	5/1/2020	99.987744	99.64997029	99.31447217	98.98122638	98.65021031	98.32140167	97.99477848	97.67031903	97.3480019
200429A00046	5/1/2020	2.07	4/30/2025	5/1/2020	101.71647	100.3956159	99.09806113	97.823238	96.57060092	95.33962136	94.12978711	92.94060171	91.77158382
200429A00009	4/29/2020	0.78	4/29/2025	4/29/2020	100.19108	98.88033278	97.59271602	96.32766892	95.08465043	93.86313639	92.66261883	91.48260538	90.32261866
200429A00010	4/29/2020	0.78	4/29/2025	4/29/2020	100.19108	98.88033278	97.59271602	96.32766892	95.08465043	93.86313639	92.66261883	91.48260538	90.32261866
200429A00015	4/29/2020	0.66	4/29/2024	4/29/2020	99.769864	99.43478655	99.1019527	98.7713398	98.4429257	98.11668854	97.79260675	97.47065906	97.15082445
200429A00044	5/1/2020	1.86	4/30/2025	5/1/2020	101.43409	100.1152338	98.81963554	97.54673602	96.29599059	95.06687156	93.85886758	92.67148296	91.50423715
200430A00017	4/30/2020	0.94	4/30/2025	4/30/2020	100.19703	98.8868933	97.59986629	96.33539403	95.0929358	93.87196769	92.67198199	91.49248652	90.33300411
200430A00016	4/30/2020	0.82	4/30/2024	4/30/2020	99.779984	99.442651	99.10759073	98.77478057	98.44419795	98.11582061	97.78962657	97.46559414	97.14370193
200430A00008	4/30/2020	0.94	4/30/2025	4/30/2020	100.19703	98.8868933	97.59986629	96.33539403	95.0929358	93.87196769	92.67198199	91.49248652	90.33300411
200430A00009	4/30/2020	1.16	4/30/2026	4/30/2020	101.83609	99.53516574	97.29726926	95.12033881	93.00239165	90.94152075	88.93589142	86.98373814	85.08336156
190409A00019	4/9/2019	2.91	4/9/2029	4/9/2019	115.77272	110.2449431	105.0179369	100.073711	95.39544544	90.96741085	86.77489112	82.8041129	79.04218005
190409A00031	4/9/2019	2.64	4/9/2024	4/9/2019	100.32336	100.0422109	99.76264327	99.48464851	99.20821329	98.93332443	98.65996888	98.38813374	98.11780628

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200504A00004	5/4/2020	0.75	5/5/2025	5/4/2020	100.16418	98.83742469	97.53434039	96.25435042	94.99689498	93.76143199	92.54743631	91.35439913	90.18182729
200505A00005	5/5/2020	0.77	5/5/2025	5/5/2020	100.19138	98.86442889	97.56115393	96.2809765	95.02333674	93.78769246	92.57351845	91.38030582	90.20756134
200505A00004	5/5/2020	0.77	5/5/2025	5/5/2020	100.19138	98.86442889	97.56115393	96.2809765	95.02333674	93.78769246	92.57351845	91.38030582	90.20756134
200506A00005	5/6/2020	0.97	5/6/2025	5/6/2020	100.25174	98.92506036	97.62205052	96.34212778	95.08473249	93.84932265	92.6353732	91.44237535	90.269836
200506A00002	5/8/2020	0.97	5/5/2025	5/8/2020	100.24934	98.92537472	97.62498152	96.34758714	95.09263509	93.85958639	92.64791886	91.45712648	90.28671881
200506A00010	5/6/2020	0.94	5/6/2026	5/6/2020	101.64493	99.32380937	97.06681369	94.87183043	92.73682593	90.65984487	88.63900679	86.67250278	84.7585923
180823A00035	8/23/2018	3.05	8/22/2025	8/23/2018	104.25153	102.599099	100.980919	99.39598722	97.8433428	96.32206207	94.83125654	93.37007126	91.93768318
200511A00017	5/11/2020	0.83	2/3/2025	5/11/2020	99.813464	98.72766885	97.66531578	96.62565286	95.60795997	94.61154719	93.63575318	92.67994376	91.7435105
200511A00021	5/11/2020	1.53	2/1/2029	5/11/2020	107.48247	102.3797866	97.54855154	92.97292138	88.638063	84.53008114	80.6359541	76.94347417	73.44119243
200511A00023	5/11/2020	1.7	2/3/2031	5/11/2020	109.88939	102.7815949	96.1807549	90.04812167	84.34809666	79.04796181	74.11763239	69.52943235	65.25788983
200511A00018	5/11/2020	0.98	2/2/2026	5/11/2020	101.11638	99.05940055	97.05415422	95.09899373	93.19233572	91.33265901	89.51850167	87.74845821	86.02117694
200511A00028	5/13/2020	1.02	5/13/2024	5/13/2020	99.837957	99.46521898	99.09526911	98.72807566	98.36360782	98.0018352	97.64272789	97.28625641	96.93239173
200511A00020	5/11/2020	1.4	2/1/2028	5/11/2020	105.37413	101.3001608	97.40543397	93.6811127	90.11884641	86.71073986	83.44932571	80.32753885	77.33869241
200511A00019	5/11/2020	1.18	2/1/2027	5/11/2020	102.93402	99.88180485	96.93538255	94.09048981	91.34305953	88.68921265	86.12524822	83.64763404	81.25299782
200511A00016	5/11/2020	0.71	2/1/2024	5/11/2020	99.927938	99.83394539	99.74013383	99.64650321	99.55305301	99.45978269	99.36669173	99.2737796	99.18104577
200511A00022	5/11/2020	1.6	2/1/2030	5/11/2020	108.62097	102.5160313	96.79152609	91.42180736	86.38308631	81.65328808	77.21191959	73.03994823	69.11969049
200513A00002	5/13/2020	0.56	5/13/2024	5/13/2020	99.712325	99.33933604	98.96914366	98.60171665	98.23702394	97.87503498	97.51571964	97.15904824	96.80499155
200214A00005	2/14/2020	1.59	2/14/2025	2/14/2020	100.88845	99.76393933	98.6643644	97.58890484	96.53677429	95.50722023	94.49952222	93.51299017	92.54696278
200214A00002	2/14/2020	1.58	11/15/2024	2/14/2020	100.48092	99.60390619	98.74214536	97.89524225	97.06281507	96.24449502	95.43992572	94.64876273	93.87067303
200214A00007	2/14/2020	1.59	2/14/2025	2/14/2020	100.88845	99.76393933	98.6643644	97.58890484	96.53677429	95.50722023	94.49952222	93.51299017	92.54696278
200214A00015	2/18/2020	1.76	8/6/2024	2/18/2020	100.2073	99.60454826	99.00902944	98.42061637	97.83918236	97.26460375	96.69675973	96.13553237	95.58080645
200214A00014	2/18/2020	1.8	2/18/2025	2/18/2020	100.97056	99.83743839	98.72963315	97.64630447	96.58664817	95.54989497	94.5353086	93.54218405	92.56984591
200214A00020	2/18/2020	1.78	1/15/2025	2/18/2020	100.77053	99.73024822	98.71135434	97.71319682	96.73514755	95.77660357	94.83698581	93.91573793	93.01232522
200220A00015	2/20/2020	1.57	2/20/2025	2/20/2020	100.89738	99.75657349	98.64142143	97.55106776	96.48469279	95.44151261	94.42077714	93.42176832	92.44379845
200221A00003	2/25/2020	1.69	2/25/2025	2/25/2020	100.88027	99.72882522	98.60352271	97.50348464	96.42786802	95.37586701	94.34671084	93.33966196	92.35401428
200221A00013	2/21/2020	1.69	2/21/2025	2/21/2020	100.85961	99.71907414	98.60420319	97.51413901	96.44806107	95.40518462	94.38475885	93.38606501	92.40841475
200221A00031	2/21/2020	1.69	2/21/2025	2/21/2020	100.85961	99.71907414	98.60420319	97.51413901	96.44806107	95.40518462	94.38475885	93.38606501	92.40841475
200221A00016	2/21/2020	1.69	2/21/2025	2/21/2020	100.85961	99.71907414	98.60420319	97.51413901	96.44806107	95.40518462	94.38475886	93.38606501	92.40841475
200221A00004	2/21/2020	1.69	2/21/2025	2/21/2020	100.85961	99.71907414	98.60420319	97.51413901	96.44806107	95.40518462	94.38475885	93.38606501	92.40841475
200224A00025	2/24/2020	1.59	1/23/2025	2/24/2020	100.60499	99.54413453	98.50553778	97.488507	96.49237612	95.51650625	94.5602843	93.62312171	92.7044532
200224A00046	2/24/2020	1.59	2/24/2025	2/24/2020	100.75851	99.61050626	98.4885209	97.39167433	96.31912946	95.27008603	94.24377854	93.23947442	92.25647225
200224A00007	2/24/2020	1.59	2/24/2025	2/24/2020	100.75851	99.61050626	98.4885209	97.39167433	96.31912946	95.27008603	94.24377854	93.23947442	92.25647225
200224A00001	2/24/2020	1.59	2/24/2025	2/24/2020	100.75851	99.61050626	98.4885209	97.39167433	96.31912946	95.27008603	94.24377854	93.23947442	92.25647225

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200224A00024	2/24/2020	1.59	2/24/2025	2/24/2020	100.75851	99.61050626	98.4885209	97.39167433	96.31912946	95.27008603	94.24377854	93.23947442	92.25647225
200224A00019	2/24/2020	1.59	2/18/2025	2/24/2020	100.72916	99.59750959	98.49115512	97.4092549	96.35100534	95.31563769	94.30241622	93.31063643	92.33962342
200225A00050	2/25/2020	1.57	2/25/2025	2/25/2020	100.74002	99.58944202	98.46499471	97.36579849	96.29101071	95.23982587	94.21147353	93.20521644	92.22034881
200225A00018	2/25/2020	1.94	2/25/2030	2/25/2020	110.76849	104.5339862	98.69047328	93.21138925	88.07211478	83.24981945	78.72332246	74.47296496	70.48049288
200225A00017	2/25/2020	1.94	2/25/2030	2/25/2020	110.76849	104.5339862	98.69047328	93.21138925	88.07211478	83.24981945	78.72332246	74.47296496	70.48049288
200225A00015	2/25/2020	1.54	2/26/2024	2/25/2020	100.00747	99.84456714	99.68220035	99.52036493	99.35905829	99.19827784	99.03802101	98.87828527	98.71906806
200225A00012	2/25/2020	1.57	2/25/2025	2/25/2020	100.74002	99.58944202	98.46499471	97.36579849	96.29101071	95.23982587	94.21147353	93.20521644	92.22034881
200226A00025	2/26/2020	1.38	2/26/2025	2/26/2020	100.7063	99.55044239	98.42094694	97.31691819	96.23750319	95.18188669	94.14928908	93.13896443	92.15019874
200226A00016	2/26/2020	1.57	2/26/2025	2/26/2020	100.74486	99.59155406	98.46450308	97.36281782	96.28565001	95.23218884	94.20165886	93.19331812	92.20645633
200226A00006	2/26/2020	1.57	2/26/2025	2/26/2020	100.74486	99.59155406	98.46450308	97.36281782	96.28565001	95.23218884	94.20165886	93.19331812	92.20645633
200226A00015	2/26/2020	1.53	2/26/2024	2/26/2020	100.00583	99.8429334	99.68056867	99.51873531	99.35743071	99.1966523	99.03639752	98.87666381	98.71744863
200226A00008	2/26/2020	1.38	2/26/2025	2/26/2020	100.7063	99.55044239	98.42094694	97.31691819	96.23750319	95.18188669	94.14928908	93.13896443	92.15019874
200226A00009	2/26/2020	1.75	2/26/2030	2/26/2020	110.42875	104.1704968	98.30607793	92.80866755	87.653406	82.81724434	78.27880303	74.01824238	70.01714378
200227A00006	2/27/2020	1.47	2/27/2025	2/27/2020	100.63227	99.47697038	98.34803481	97.24456845	96.1657177	95.11066668	94.07863522	93.06887689	92.0806772
200227A00005	2/27/2020	1.43	2/27/2024	2/27/2020	99.989186	99.82355906	99.65848254	99.49395327	99.32996854	99.16652566	99.00362195	98.84125478	98.67942149
200227A00016	2/27/2020	1.47	2/27/2025	2/27/2020	100.63227	99.47697038	98.34803481	97.24456845	96.1657177	95.11066668	94.07863522	93.06887689	92.0806772
200227A00009	2/27/2020	1.47	2/27/2025	2/27/2020	100.63227	99.47697038	98.34803481	97.24456845	96.1657177	95.11066668	94.07863522	93.06887689	92.0806772
200227A00027	2/27/2020	1.47	2/27/2025	2/27/2020	100.63227	99.47697038	98.34803481	97.24456845	96.1657177	95.11066668	94.07863522	93.06887689	92.0806772
200227A00004	2/27/2020	1.65	2/27/2030	2/27/2020	109.80743	103.565377	97.7166325	92.23438665	87.09379369	82.27181879	77.74709661	73.49980168	69.51152953
200227A00013	2/27/2020	1.43	2/27/2024	2/27/2020	99.989186	99.82355906	99.65848254	99.49395327	99.32996854	99.16652566	99.00362195	98.84125478	98.67942149
200228A00005	2/28/2020	1.35	2/28/2024	2/28/2020	99.975367	99.80701014	99.63921894	99.47199102	99.30532355	99.13921374	98.97365882	98.80865604	98.64420264
200228A00019	2/28/2020	1.21	2/20/2025	2/28/2020	100.48117	99.34291509	98.23027953	97.14240341	96.07846806	95.03769054	94.0193217	93.02264438	92.04697175
200228A00031	2/28/2020	1.35	2/28/2024	2/28/2020	99.975367	99.80701014	99.63921894	99.47199102	99.30532355	99.13921374	98.97365882	98.80865604	98.64420264
200228A00016	2/28/2020	1.35	2/22/2024	2/28/2020	99.97843	99.82656375	99.67516875	99.52424279	99.37378367	99.22378921	99.07425725	98.92518561	98.77657217
200228A00014	2/28/2020	1.4	2/28/2025	2/28/2020	100.55444	99.39693615	98.26590854	97.16045688	96.07972212	95.02288326	93.98915531	92.97778729	91.98806043
200228A00026	2/28/2020	2.14	2/28/2035	2/28/2020	117.32032	106.0927376	96.05442397	87.07254702	79.02976298	71.82233644	65.35849956	59.55701653	54.34592666
200228A00025	2/28/2020	1.57	3/2/2027	2/28/2020	104.30172	101.1486469	98.10691936	95.17194968	92.33937204	89.60502769	86.96495363	84.41537194	81.95267988
200228A00059	2/28/2020	1.79	2/28/2030	2/28/2020	109.84386	103.6293489	97.8055303	92.34582078	87.22557825	82.42195398	77.91375283	73.681305	69.70634845
200228A00012	3/3/2020	1.4	3/3/2025	3/3/2020	100.56668	99.40103831	98.26224186	97.14937698	96.06156646	94.99797226	93.95779331	92.94026353	91.94464991
200302A00045	3/4/2020	1.31	3/4/2025	3/4/2020	100.46385	99.29615821	98.15543416	97.04074997	95.95122265	94.8860087	93.84430195	92.8253315	91.82835983
200302A00011	3/2/2020	1.31	2/27/2025	3/2/2020	100.44439	99.29025715	98.16247182	97.06013766	95.98240154	94.92844804	93.89749744	92.8888037	91.90165278
200302A00033	3/2/2020	1.31	3/3/2025	3/2/2020	100.46001	99.29503491	98.15689708	97.04468039	95.95750793	94.89454191	93.85498152	92.83806093	91.84304737
200302A00034	3/2/2020	1.25	3/1/2024	3/2/2020	99.956958	99.78313428	99.60991368	99.43729326	99.26526993	99.09384061	98.92300225	98.75275181	98.58308627

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200302A00036	3/2/2020	1.45	3/2/2026	3/2/2020	102.2414	100.0957602	98.005457	95.96867365	93.98366584	92.04876049	90.16235218	88.32289984	86.52892354
200302A00053	3/2/2020	1.31	3/3/2025	3/2/2020	100.46001	99.29503491	98.15689708	97.04468039	95.95750793	94.89454191	93.85498152	92.83806093	91.84304737
200302A00054	3/2/2020	1.31	3/3/2025	3/2/2020	100.46001	99.29503491	98.15689708	97.04468039	95.95750793	94.89454191	93.85498152	92.83806093	91.84304737
200302A00028	3/2/2020	1.25	2/26/2024	3/2/2020	99.960029	99.79718862	99.63488159	99.47310578	99.31185857	99.1511374	98.99093969	98.8312629	98.6721045
200303A00010	3/3/2020	1.34	3/3/2025	3/3/2020	100.49557	99.33036938	98.19201201	97.07957926	95.99219411	94.92901869	93.88925212	92.87212846	91.87691488
200303A00018	3/3/2020	1.27	3/3/2025	3/3/2020	100.4126	99.24792229	98.11007717	96.99814858	95.9112597	94.84857287	93.8092874	92.79263756	91.79789068
200303A00034	3/3/2020	1.21	3/3/2025	3/3/2020	100.34149	99.17725336	98.03984731	96.92835085	95.84188734	94.7796193	93.74074621	92.72450249	91.73015565
200303A00001	3/3/2020	1.15	3/3/2025	3/3/2020	100.45642	99.28863264	98.14779646	97.03298826	95.94332618	94.87796777	93.83610782	92.81697635	91.81983665
200303A00007	3/3/2020	1.11	3/4/2024	3/3/2020	99.952022	99.76973774	99.58812376	99.40717678	99.22689308	99.04726899	98.86830084	98.68998501	98.51231791
200303A00012	3/3/2020	1.71	3/1/2030	3/3/2020	109.34888	103.1466223	97.33472667	91.88660392	86.77761584	81.98491856	77.48732245	73.26516384	69.30018724
200304A00054	3/6/2020	2.35	3/8/2027	3/6/2020	106.83852	103.627748	100.5304886	97.54205208	94.65797442	91.87400444	89.18609188	86.59037649	84.08317777
200304A00010	3/4/2020	1.2	3/4/2027	3/4/2020	103.54872	100.3918416	97.34694276	94.40939213	91.57478312	88.83891891	86.19780098	83.64761825	81.18473704
200304A00021	3/4/2020	0.94	3/4/2024	3/4/2020	99.920914	99.73867127	99.55709951	99.37619462	99.19595288	99.01637062	98.83744419	98.65916995	98.48154431
200304A00052	3/6/2020	2.11	3/8/2027	3/6/2020	106.06844	102.870042	99.78482816	96.80812293	93.93547318	91.16263796	88.4855769	85.90043918	83.40355338
200304A00053	3/6/2020	2.33	3/6/2025	3/6/2020	101.68888	100.5080803	99.35461849	98.22755479	97.1259908	96.04906849	94.99596795	93.9659053	92.9581307
200304A00040	3/4/2020	1.12	3/1/2024	3/4/2020	99.934252	99.7604581	99.58726702	99.41467605	99.24268209	99.07128206	98.9004729	98.73025158	98.56061507
200304A00034	3/4/2020	1.12	3/4/2024	3/4/2020	99.931044	99.74903019	99.56768357	99.38700024	99.20697653	99.02760882	98.84889352	98.67082704	98.49340586
200305A00029	3/5/2020	1.14	3/5/2025	3/5/2020	100.26525	99.09613033	97.95407559	96.83815963	95.74749388	94.68122964	93.63855583	92.61869697	91.62091122
200305A00007	3/5/2020	1.14	3/5/2025	3/5/2020	100.26525	99.09613033	97.95407559	96.83815963	95.74749388	94.68122964	93.63855583	92.61869697	91.62091122
200305A00012	3/5/2020	1.14	3/5/2025	3/5/2020	100.26525	99.09613033	97.95407559	96.83815963	95.74749388	94.68122964	93.63855583	92.61869697	91.62091122
200305A00002	3/5/2020	1.14	3/5/2025	3/5/2020	100.26525	99.09613033	97.95407559	96.83815963	95.74749388	94.68122964	93.63855583	92.61869697	91.62091122
200305A00035	3/5/2020	1.25	3/5/2026	3/5/2020	101.81768	99.66832228	97.57459282	95.5346565	93.54675371	91.60919701	89.72036751	87.87871144	86.082737
200305A00036	3/5/2020	1.36	3/5/2027	3/5/2020	103.64666	100.4956155	97.45618192	94.5237545	91.69394524	88.96257485	86.32566134	83.77940924	81.32019957
200306A00001	3/6/2020	1.11	3/6/2026	3/6/2020	101.51456	99.36578018	97.27268956	95.23344727	93.24628962	91.30952536	89.42153207	87.58075269	85.7856923
200306A00046	3/6/2020	1.01	3/3/2025	3/6/2020	100.10444	98.94169026	97.80574779	96.69569176	95.61064616	94.54977409	93.51227558	92.49738562	91.50437223
200306A00012	3/6/2020	0.95	3/6/2024	3/6/2020	99.895051	99.70762619	99.52091077	99.33490103	99.14959295	98.96498253	98.78106581	98.59783884	98.41529772
200306A00065	3/6/2020	1.38	3/6/2030	3/6/2020	107.3035	101.1496634	95.38506637	89.98310298	84.91912587	80.17028806	75.71540203	71.53481059	67.61026853
200306A00014	3/6/2020	1.38	3/6/2030	3/6/2020	107.3035	101.1496634	95.38506637	89.98310298	84.91912587	80.17028806	75.71540203	71.53481059	67.61026853
200309A00004	3/9/2020	0.71	3/8/2024	3/9/2020	99.87148	99.67833261	99.48594261	99.29430583	99.10341779	98.91327403	98.72387014	98.53520174	98.34726448
200309A00027	3/9/2020	0.97	3/10/2025	3/9/2020	100.07733	98.89598381	97.74231381	96.61535735	95.51419582	94.43795229	93.38578915	92.35690596	91.3505374
200309A00019	3/9/2020	0.89	3/11/2024	3/9/2020	99.875076	99.67398646	99.47371755	99.27426383	99.07562028	98.87778192	98.6807438	98.48450102	98.28904872
200309A00020	3/9/2020	0.96	3/10/2025	3/9/2020	100.06529	98.88401571	97.73042121	96.60353904	95.50245063	94.42627905	93.37418676	92.34537333	91.33907346
190411A00017	4/15/2019	2.65	4/15/2024	4/15/2019	100.3472	100.049617	99.75380694	99.45975741	99.16745255	98.87687678	98.5880147	98.30085107	98.01537086

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190422A00030	4/22/2019	2.93	12/22/2025	4/22/2019	104.86991	102.8860008	100.9499099	99.06018592	97.21543339	95.41430847	93.65551671	91.9378108	90.25998853
200513A00003	5/13/2020	0.68	5/13/2025	5/13/2020	100.08532	98.73753896	97.4141594	96.11457585	94.83820326	93.58447532	92.35284371	91.14277744	89.9537621
200309A00005	3/9/2020	0.77	3/7/2025	3/9/2020	100.01683	98.84104149	97.6926661	96.57075103	95.4743911	94.40272202	93.35491804	92.33018985	91.32778261
200309A00046	3/9/2020	0.78	3/11/2025	3/9/2020	100.04016	98.85346807	97.69469159	96.56285515	95.45702888	94.37632526	93.31989672	92.28693343	91.2766612
200309A00033	3/9/2020	1.06	3/9/2026	3/9/2020	101.41668	99.26058753	97.16054398	95.11469492	93.12125918	91.17852907	89.28486668	87.43870036	85.63852144
200309A00021	3/9/2020	1.05	3/9/2026	3/9/2020	101.39463	99.2387779	97.13897679	95.09336523	93.1001622	91.15766016	89.26422132	87.41827417	85.61831014
200310A00025	3/10/2020	0.87	3/11/2024	3/10/2020	99.898352	99.69693803	99.49634857	99.29657891	99.09762394	98.89947861	98.7021379	98.50559683	98.30985048
200310A00073	3/12/2020	2.12	3/11/2027	3/12/2020	106.12211	102.9143	99.82025537	96.83526132	93.95483225	91.17469689	88.4907865	85.89922374	83.39631236
200310A00042	3/10/2020	1.41	3/11/2030	3/10/2020	107.49701	101.323504	95.54116607	90.12321189	85.04482945	80.28302275	75.81646935	71.62538988	67.69142841
200310A00065	3/13/2020	1.1	3/13/2025	3/13/2020	100.24369	99.05323107	97.8908466	96.75555005	95.64640387	94.56251331	93.50302404	92.46711985	91.45402057
190424A00007	4/24/2019	2.66	4/24/2024	4/24/2019	100.38197	100.0597584	99.73961525	99.4215235	99.10546345	98.79141566	98.47936094	98.16928032	97.86115509
200311A00006	3/13/2020	1.12	3/10/2025	3/13/2020	100.258	99.07550538	97.92070282	96.79263198	95.69037378	94.6130508	93.55982498	92.52989547	91.5224965
200311A00056	3/13/2020	1.27	4/10/2024	3/13/2020	99.938746	99.65554936	99.37396733	99.09398649	98.8155931	98.53877359	98.26351456	97.98980275	97.71762503
200311A00040	3/12/2020	1.3	3/11/2025	3/12/2020	100.47862	99.29202787	98.13328176	97.00140878	95.89548307	94.81462087	93.75797815	92.72474838	91.7141605
200312A00004	3/13/2020	1.23	1/24/2025	3/13/2020	100.22028	99.15894817	98.11995999	97.10261196	96.10623396	95.13018326	94.17384315	93.23662167	92.3179503
190819A00030	8/19/2019	2.01	8/20/2029	8/19/2019	111.47165	105.69473	100.2533911	95.12637741	90.29388885	85.73747572	81.43993932	77.38524054	73.55841556
190426A00023	4/26/2019	2.91	6/24/2026	4/26/2019	106.41227	103.9077268	101.4755006	99.11308728	96.81808386	94.58818516	92.42117901	90.31494196	88.26743508
200529A00004	5/29/2020	0.56	5/29/2024	5/29/2020	99.685212	99.26887355	98.85599969	98.44654701	98.04047316	97.63773649	97.23829605	96.84211152	96.44914327
200313A00032	3/18/2020	1.46	3/18/2025	3/18/2020	100.7015	99.49466909	98.31658673	97.1662384	96.04265416	94.94490884	93.87211948	92.82344293	91.79807362
190819A00004	8/20/2019	1.81	5/24/2024	8/20/2019	100.1508	99.74747756	99.347398	98.95052552	98.55682164	98.1662485	97.77876885	97.394346	97.01294387
180823A00055	8/23/2018	3.44	8/23/2033	8/23/2018	130.22369	119.7226482	110.184893	101.5160799	93.63159178	86.45549192	79.91959114	73.96261988	68.52949254
190819A00026	8/19/2019	1.62	8/19/2024	8/19/2019	100.27311	99.63353543	99.00210777	98.37866881	97.76306753	97.15515667	96.55479267	95.96183552	95.37614866
200601A00009	6/1/2020	0.84	6/2/2025	6/1/2020	100.12897	98.7309686	97.35913869	96.01280958	94.6913335	93.39408416	92.12045586	90.86986262	89.64173741
200604A00004	6/4/2020	0.76	6/4/2024	6/4/2020	99.708943	99.27694943	98.84869245	98.42412402	98.00319658	97.58586339	97.17207852	96.76179679	96.35497383
200604A00005	6/4/2020	0.89	6/4/2025	6/4/2020	100.20468	98.80091704	97.42352906	96.07183649	94.74518429	93.44293922	92.16448892	90.90924108	89.67662259
200604A00012	6/4/2020	1.59	6/4/2030	6/4/2020	108.73189	102.2963209	96.2818269	90.65875616	85.39968459	80.47924063	75.87394187	71.56204548	67.52341114
200604A00013	6/4/2020	2.21	6/4/2035	6/4/2020	118.20523	106.6899233	96.41884153	87.25028738	79.05938874	71.73602313	65.18300929	59.31452825	54.05474391
200604A00014	6/4/2020	2.42	6/4/2040	6/4/2020	125.612	109.2847893	95.35792616	83.46064196	73.28140643	64.55819407	57.07039014	50.63205415	45.08630783
200604A00010	6/4/2020	0.89	6/4/2025	6/4/2020	100.20468	98.80091704	97.42352906	96.07183649	94.74518429	93.44293922	92.16448892	90.90924108	89.67662259
200604A00009	6/4/2020	0.7	6/4/2025	6/4/2020	100.15778	98.75067449	97.37006221	96.0152593	94.68560665	93.38046715	92.09922476	90.84128366	89.60606742
200317A00026	3/17/2020	1.22	3/15/2024	3/17/2020	99.940632	99.72847246	99.51722463	99.30688296	99.09744158	98.88889464	98.68123638	98.47446106	98.268563
200317A00065	3/19/2020	2.05	3/19/2025	3/19/2020	101.43099	100.2167277	99.03142628	97.87405533	96.74363661	95.63923708	94.55996631	93.50497411	92.47344825
200611A00010	6/11/2020	1.08	6/11/2027	6/11/2020	103.13392	99.72789155	96.45170107	93.29973037	90.26663121	87.3473144	84.53693577	81.83088302	79.22476332

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200611A00011	6/11/2020	1.2	6/9/2028	6/11/2020	105.0666	100.6522623	96.44706035	92.44003436	88.62085587	84.97978687	81.50764305	78.19575941	75.03595832
200615A00019	6/17/2020	1.34	6/16/2025	6/17/2020	100.89154	99.451354	98.03880143	96.65315399	95.29371142	93.95979726	92.65075787	91.36596144	90.10479711
180823A00053	8/23/2018	3.2	8/23/2028	8/23/2018	115.35566	110.4840427	105.8495033	101.4391935	97.24103621	93.24367191	89.43641216	85.80919597	82.35254935
200626A00014	6/26/2020	0.62	6/26/2025	6/26/2020	100.07888	98.61509764	97.17996374	95.77270795	94.39259143	93.03890095	91.71094781	90.40806675	89.12961496
200630A00004	6/30/2020	0.66	7/1/2024	6/30/2020	99.625919	99.12131031	98.6217916	98.12728645	97.63771973	97.15301781	96.6731085	96.19792106	95.7273861
200325A00030	3/25/2020	1.5	3/25/2025	3/25/2020	100.97776	99.74725023	98.54654243	97.37456167	96.23028739	95.11274685	94.02101237	92.95419872	91.91146073
200326A00026	3/26/2020	1.32	3/26/2024	3/26/2020	99.953954	99.71169916	99.47061866	99.23070434	98.99194775	98.75434055	98.51787444	98.28254125	98.04833283
200326A00028	3/26/2020	1.54	3/26/2025	3/26/2020	100.83535	99.6061397	98.40671112	97.23599627	96.09297439	94.97667255	93.88616291	92.82056014	91.77901899
200326A00029	3/26/2020	1.82	3/26/2027	3/26/2020	105.25251	102.0161795	98.89602511	95.88717588	92.98499826	90.18508323	87.48323362	84.8754524	82.35793157
200327A00075	3/31/2020	1.75	3/29/2024	3/31/2020	100.06075	99.81011849	99.56073257	99.31258753	99.06567416	98.81998336	98.57550611	98.33223346	98.09015657
200709A00003	7/10/2020	1.63	7/10/2026	7/10/2020	103.29461	100.7862319	98.35153478	95.98792468	93.69291396	91.46411805	89.2992504	87.19611784	85.15261607
200709A00004	7/10/2020	1.4	7/10/2025	7/10/2020	101.0862	99.58033328	98.10432678	96.6573619	95.23865204	93.84743861	92.48298975	91.14459912	89.83158483
200709A00008	7/10/2020	1.88	7/10/2026	7/10/2020	103.93071	101.4141483	98.97145314	96.60002262	94.29736368	92.06108653	89.88889964	87.77860501	85.72809374
200709A00005	7/10/2020	2.23	7/10/2030	7/10/2020	112.98249	106.3172993	100.0916202	94.27417218	88.83605339	83.7505511	78.99296528	74.54044708	70.37185115
200709A00006	7/10/2020	2.58	7/10/2030	7/10/2020	115.28382	108.5447216	102.2486177	96.36402364	90.86185368	85.71522298	80.89927028	76.39099564	72.16911202
200709A00007	7/10/2020	1.67	7/9/2027	7/10/2020	105.33586	101.8168436	98.43418295	95.18186516	92.05417472	89.04567879	86.15121156	83.36585951	80.68494766
200709A00002	7/10/2020	1.66	7/10/2025	7/10/2020	101.48656	99.97748984	98.49833694	97.04828018	95.62653152	94.23233093	92.86494518	91.52366662	90.20781208
190426A00009	4/26/2019	2.63	4/26/2024	4/26/2019	100.38236	100.0546544	99.7290884	99.40564057	99.08429032	98.76501729	98.44780138	98.13262277	97.81946186
190429A00004	4/29/2019	2.65	4/15/2024	4/29/2019	100.3472	100.049617	99.75380694	99.45975741	99.16745255	98.87687678	98.5880147	98.30085107	98.01537086
190430A00001	4/30/2019	2.47	5/2/2024	4/30/2019	100.39223	100.0476602	99.70545309	99.36558825	99.02804166	98.69278961	98.35980872	98.02907591	97.70056844
180604A00050	6/4/2018	3.15	6/4/2024	6/4/2018	100.75387	100.3191535	99.88819191	99.46093595	99.03733783	98.61735063	98.20092825	97.78802536	97.37859738
190501A00017	5/1/2019	2.61	5/1/2024	5/1/2019	100.39325	100.0518906	99.71285209	99.37610831	99.04163606	98.70941243	98.37941479	98.05162084	97.72600857
190501A00028	5/1/2019	2.42	5/1/2024	5/1/2019	100.37148	100.0296814	99.69020801	99.35303826	99.01814874	98.68551635	98.35511829	98.02693208	97.70093554
190501A00014	5/1/2019	2.62	5/1/2024	5/1/2019	100.39668	100.0553168	99.71627097	99.37951993	99.04504047	98.71280965	98.38280487	98.05500381	97.72938446
190507A00027	5/7/2019	2.59	5/7/2024	5/7/2019	100.4077	100.0499758	99.69480115	99.34215328	98.99200523	98.6443304	98.29910258	97.95629591	97.6158849
181227A00027	12/27/2018	3.24	12/26/2025	12/27/2018	105.52576	103.5241893	101.5710885	99.66497697	97.80443345	95.98808941	94.2146269	92.48277621	90.79131381
181227A00028	12/27/2018	3.46	12/27/2028	12/27/2018	117.07958	111.8347638	106.8609915	102.1427933	97.66566287	93.41599208	89.38101125	85.5487329	81.90789993
181227A00019	12/28/2020	3.1	12/29/2025	12/28/2020	105.27224	103.2650572	101.3066786	99.39561331	97.53042457	95.70972913	93.93219505	92.19653938	90.50152599
190102A00050	1/2/2019	3.38	1/3/2034	1/2/2019	130.48241	119.6033923	109.7558846	100.8356168	92.74939496	85.41387312	78.75446619	72.70438722	67.20379513
190102A00058	1/2/2019	2.91	1/2/2024	1/2/2019	100.01621	100.005113	99.99402165	99.98294089	99.97187068	99.96081101	99.94976186	99.9387232	99.92769503
190103A00010	1/3/2019	2.7	1/3/2024	1/3/2019	100.01895	100.0050594	99.99118246	99.97731933	99.96346995	99.9496343	99.93581234	99.92200407	99.90820944
190104A00033	1/4/2019	3.37	1/31/2029	1/4/2019	116.92041	111.582155	106.5241508	101.7301553	97.18495496	92.87429371	88.78480777	84.90396494	81.2200084
190107A00024	1/7/2019	2.91	1/5/2024	1/7/2019	100.02838	100.0089526	99.98954749	99.97016253	99.95079763	99.93145276	99.91212788	99.89282297	99.87353799

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200716A00015	7/20/2020	1.54	7/19/2024	7/20/2020	100.06993	99.51581551	98.96783024	98.42586906	97.88983297	97.35962513	96.83515079	96.31631725	95.80303381
190513A00013	5/13/2019	2.52	5/13/2024	5/13/2019	100.40268	100.0286352	99.65738547	99.28889935	98.92314593	98.56009478	98.1997159	97.84197976	97.48685726
190108A00039	1/8/2019	3.04	4/30/2024	1/8/2019	100.53609	100.1971573	99.86050354	99.52610794	99.19394783	98.86400086	98.536245	98.21065849	97.88721987
190110A00013	1/10/2019	2.97	1/17/2024	1/10/2019	100.0797	100.0270134	99.97439681	99.92185209	99.86937911	99.81697772	99.76464776	99.71238909	99.66020157
190110A00012	1/10/2019	2.97	1/18/2024	1/10/2019	100.0839	100.0284398	99.97305847	99.9177543	99.86252717	99.8073769	99.75230333	99.69730631	99.64238567
190110A00004	1/10/2019	3.09	1/10/2025	1/10/2019	102.11151	101.0772019	100.0638444	99.07080374	98.09747288	97.14326884	96.20763142	95.29002214	94.38992317
190110A00003	1/10/2019	2.97	1/10/2024	1/10/2019	100.05033	100.0170416	99.98379094	99.95057933	99.91740664	99.8842728	99.85117775	99.8181214	99.78510369
190110A00005	1/10/2019	3.2	1/9/2026	1/10/2019	105.57554	103.5355618	101.5456286	99.6041871	97.70974635	95.8608721	94.05618406	92.29435353	90.57410102
190110A00014	1/10/2019	2.97	1/17/2024	1/10/2019	100.0797	100.0270134	99.97439681	99.92185209	99.86937911	99.81697772	99.76464776	99.71238909	99.66020157
190110A00009	1/10/2019	2.97	1/16/2024	1/10/2019	100.07551	100.0255875	99.97573607	99.92595141	99.87623334	99.82658173	99.77699644	99.72747733	99.67802427
200720A00039	7/22/2020	2.48	7/21/2025	7/22/2020	102.82935	101.2792394	99.76015574	98.27123951	96.81165934	95.3806141	93.97733149	92.60106672	91.25110134
200720A00042	7/22/2020	2.04	7/21/2026	7/22/2020	104.40922	101.8561836	99.3786642	96.97397579	94.63954649	92.37291223	90.17171144	88.03368009	85.95664692
200720A00044	7/22/2020	2.22	7/21/2026	7/22/2020	104.87266	102.3135996	99.83018792	97.4197391	95.07967723	92.80753434	90.60094514	88.45764201	86.37545024
200720A00034	7/20/2020	0.77	7/21/2025	7/20/2020	100.14453	98.61627984	97.11867814	95.65086925	94.21203199	92.80137497	91.41813533	90.06157735	88.73099131
200720A00035	7/20/2020	1.81	7/20/2035	7/20/2020	113.65906	102.2827995	92.15568941	83.13362002	75.08979425	67.91256695	61.50356659	55.77605792	50.65351383
200720A00037	7/22/2020	2.1	7/21/2025	7/22/2020	102.23273	100.6874706	99.17316072	97.68893501	96.23396438	94.80744985	93.40862123	92.03673575	90.69107688
190514A00020	5/14/2019	2.66	5/14/2025	5/14/2019	102.60833	101.2430663	99.90249666	98.58600574	97.29300074	96.02290791	94.77517173	93.54925423	92.3446343
190514A00073	5/14/2019	2.53	5/14/2024	5/14/2019	100.40983	100.0330531	99.65910757	99.28796571	98.91959592	98.55396711	98.19104866	97.83081041	97.47322262
190514A00021	5/14/2019	2.72	11/14/2025	5/14/2019	104.13175	102.2581545	100.4275267	98.63863144	96.89027434	95.18130295	93.51060492	91.87710629	90.27976998
190514A00024	5/14/2019	2.34	5/14/2024	5/14/2019	100.38588	100.0086076	99.63417936	99.26256512	98.8937331	98.527652	98.16429096	97.8036196	97.445608
190820A00020	8/20/2019	1.76	8/20/2024	8/20/2019	100.23309	99.59266327	98.96039764	98.33614175	97.71974407	97.11105683	96.50993597	95.91624102	95.32983492
190820A00021	8/20/2019	2.13	8/20/2029	8/20/2019	111.38064	105.6333384	100.2191194	95.11691926	90.30712089	85.77144284	81.49284099	77.45541835	73.64434184
190820A00029	8/20/2019	1.76	8/20/2024	8/20/2019	100.23309	99.59266327	98.96039764	98.33614175	97.71974407	97.11105683	96.50993597	95.91624102	95.32983492
190820A00038	8/20/2019	1.76	8/20/2024	8/20/2019	100.23309	99.59266327	98.96039764	98.33614175	97.71974407	97.11105683	96.50993597	95.91624102	95.32983492
190820A00008	8/20/2019	1.76	8/20/2024	8/20/2019	100.23309	99.59266327	98.96039764	98.33614175	97.71974407	97.11105683	96.50993597	95.91624102	95.32983492
190515A00032	5/15/2019	2.49	5/15/2024	5/15/2019	100.39794	100.0184709	99.64187424	99.26812117	98.89717945	98.52901733	98.16360353	97.80090725	97.44089815
200730A00001	7/30/2020	0.46	7/30/2024	7/30/2020	99.546297	98.96307094	98.38664566	97.81690239	97.25372557	96.69700228	96.14662219	95.60247743	95.06446262
200730A00002	7/30/2020	0.67	11/6/2024	7/30/2020	99.530438	98.68391857	97.85171063	97.03345422	96.22880097	95.43741404	94.65896762	93.89314651	93.13964564
200731A00005	7/31/2020	0.45	7/31/2024	7/31/2020	99.539167	98.95327934	98.37425596	97.80197732	97.23632615	96.67718791	96.12445067	95.57800507	95.03774422
200803A00011	8/3/2020	0.72	8/4/2025	8/3/2020	100.09875	98.53339938	96.99989262	95.49732548	94.02482695	92.58155848	91.16671251	89.77951096	88.41920393
200806A00002	8/6/2020	0.43	8/6/2024	8/6/2020	99.519683	98.91774693	98.32306631	97.73551003	97.15495057	96.58126345	96.01432714	95.45402294	94.90023494
190821A00017	8/21/2019	1.8	8/21/2024	8/21/2019	100.26102	99.61780002	98.98281784	98.35591181	97.73692854	97.12571849	96.52213588	95.92603854	95.33728783
190821A00030	8/21/2019	1.8	8/21/2024	8/21/2019	100.26102	99.61780002	98.98281784	98.35591181	97.73692854	97.12571849	96.52213588	95.92603854	95.33728783

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190517A00005	5/17/2019	2.31	5/17/2024	5/17/2019	100.38392	99.99847833	99.61600705	99.23647083	98.85983583	98.48606874	98.11513675	97.74700755	97.38164931
190520A00048	5/20/2019	2.53	5/20/2024	5/20/2019	100.43017	100.0370324	99.6469728	99.25995979	98.87595767	98.49493131	98.11684615	97.74166812	97.36936373
190520A00007	5/20/2019	2.52	5/20/2024	5/20/2019	100.42622	100.0330838	99.64303369	99.25603009	98.87203733	98.49102028	98.11294436	97.73777554	97.36548029
190823A00005	8/23/2019	1.62	8/23/2024	8/23/2019	100.28117	99.63079653	98.98884263	98.35514128	97.72953405	97.11186656	96.50198831	95.8997526	95.30501639
190826A00018	8/26/2019	1.9	8/27/2029	8/26/2019	110.86519	105.0865035	99.64474474	94.51850381	89.68784178	85.1341838	80.84021854	76.78980544	72.96788938
190826A00057	8/26/2019	1.87	8/26/2025	8/26/2019	102.06634	100.4263685	98.8205165	97.24778463	95.70721167	94.19787368	92.71888213	91.26938214	89.84855091
190826A00056	8/26/2019	1.72	8/26/2024	8/26/2019	100.21752	99.56105963	98.9131661	98.27367664	97.64242862	97.01926356	96.40402703	95.79656853	95.19674131
190826A00058	8/26/2019	1.91	8/26/2026	8/26/2019	104.28459	101.6367316	99.06940757	96.57966624	94.1646816	91.82175075	89.54828759	87.34181682	85.19996834
190826A00065	8/26/2019	2.09	8/28/2029	8/26/2019	111.17886	105.4159432	99.98819152	94.87434777	90.05461078	85.51053204	81.22491596	77.18172812	73.3660107
190826A00060	8/26/2019	2.02	8/26/2027	8/26/2019	106.89745	103.2204401	99.68976575	96.29878233	93.04118744	89.91100109	86.90254709	84.01043564	81.22954706
190826A00063	8/26/2019	2.05	8/28/2028	8/26/2019	109.34477	104.6185507	100.1242071	95.84912227	91.7814326	87.90998171	84.22427443	80.71443371	77.37116069
190522A00003	5/22/2019	2.55	5/22/2024	5/22/2019	100.44498	100.0463692	99.65092218	99.25860396	98.86937741	98.48320604	98.1000539	97.71988564	97.34266642
190522A00019	5/23/2019	2.55	5/15/2024	5/23/2019	100.42086	100.0413375	99.66468746	99.29088133	98.91988684	98.55167223	98.18620624	97.82345806	97.46339734
190523A00020	5/23/2019	2.5	2/9/2024	5/23/2019	100.11793	100.0016966	99.88575146	99.77008959	99.65470993	99.53961139	99.42479292	99.31025344	99.19599191
190523A00015	5/23/2019	2.51	4/1/2024	5/23/2019	100.26172	100.0025436	99.74470718	99.48820132	99.23301572	98.97914018	98.72656461	98.47527905	98.22527362
200810A00004	8/10/2020	0.43	8/9/2024	8/10/2020	99.515887	98.90591018	98.30338569	97.70817727	97.12015217	96.53918085	95.96513687	95.39789681	94.83734014
200811A00003	8/11/2020	0.57	8/11/2025	8/11/2020	100.11031	98.5223769	96.96706308	95.44342698	93.95056624	92.48761265	91.05373053	89.64811519	88.26999146
200812A00004	8/12/2020	0.59	8/12/2025	8/12/2020	100.14514	98.55428783	96.99614308	95.46976684	93.97425286	92.50872929	91.07235697	89.66432791	88.28386384
200814A00011	8/18/2020	1.58	8/16/2030	8/18/2020	108.76177	102.1350015	95.95363619	90.18547057	84.80078827	79.77215745	75.07424368	70.68363912	66.57870651
200814A00009	8/18/2020	1.36	8/16/2028	8/18/2020	106.05711	101.4388128	97.04680721	92.86881945	88.89330915	85.10942071	81.50693875	78.07624679	74.80828872
190523A00017	5/23/2019	2.51	3/15/2024	5/23/2019	100.21592	100.0033415	99.79167575	99.58091755	99.37106103	99.16210036	98.95402976	98.74684347	98.54053583
190523A00018	5/23/2019	2.51	3/15/2024	5/23/2019	100.21592	100.0033415	99.79167575	99.58091755	99.37106103	99.16210036	98.95402976	98.74684347	98.54053583
190827A00001	8/27/2019	1.74	8/27/2024	8/27/2019	100.23263	99.57342544	98.92286346	98.28077233	97.64698752	97.02134875	96.40369983	95.79388853	95.19176649
190827A00002	8/27/2019	1.74	8/27/2024	8/27/2019	100.23263	99.57342544	98.92286346	98.28077233	97.64698752	97.02134875	96.40369983	95.79388853	95.19176649
190828A00019	8/28/2019	2	3/28/2028	8/28/2019	108.2119	103.9247905	99.83156397	95.92236847	92.18791562	88.61944121	85.20867218	81.94779595	78.82943186
190828A00020	8/28/2019	1.95	5/28/2027	8/28/2019	106.06848	102.6486529	99.35732726	96.1890056	93.13845776	90.20070384	87.3710008	84.64482988	82.01788482
190828A00015	8/28/2019	2.04	8/28/2029	8/28/2019	110.89344	105.1385122	99.71841698	94.61191373	89.79921721	85.26189387	80.98276221	76.94580112	73.13606534
190828A00009	8/28/2019	1.71	8/28/2024	8/28/2019	100.21428	99.5524652	98.899359	98.25478939	97.61858999	96.99059871	96.37065759	95.75861273	95.15431411
190828A00031	8/28/2019	1.71	8/28/2024	8/28/2019	100.21428	99.5524652	98.899359	98.25478939	97.61858999	96.99059871	96.37065759	95.75861273	95.15431411
190829A00050	8/29/2019	1.73	8/29/2024	8/29/2019	100.22946	99.56491367	98.90913923	98.26196843	97.62323298	96.99276894	96.37041661	95.75602036	95.14942851
200327A00074	3/31/2020	1.76	3/29/2024	3/31/2020	100.06328	99.81263567	99.56324554	99.31509631	99.06817877	98.82248381	98.57800242	98.33472564	98.09264464
200330A00045	3/30/2020	1.47	3/30/2027	3/30/2020	104.13302	100.9038494	97.79110678	94.7898985	91.89556815	89.10368534	86.41003299	83.81059544	81.30154735
200330A00041	4/1/2020	1.09	4/1/2025	4/1/2020	100.29416	99.05325144	97.84176657	96.65866029	95.50294099	94.37366292	93.26992349	92.19086089	91.13565178

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190524A00040	5/24/2019	2.47	5/24/2024	5/24/2019	100.41933	100.015342	99.61460759	99.21708411	98.82273305	98.43151652	98.04339722	97.65833844	97.27630406
190528A00009	5/28/2019	2.45	5/15/2024	5/28/2019	100.38266	100.0032265	99.62666543	99.25294774	98.8820412	98.51391406	98.14853505	97.78587338	97.42589869
200331A00060	3/31/2020	1.09	3/31/2025	3/31/2020	100.29052	99.05204106	97.84321285	96.66297614	95.51032374	94.38429534	93.28397478	92.20848758	91.15699857
190829A00045	8/29/2019	1.9	8/28/2026	8/29/2019	104.2693	101.6163357	99.04418955	96.54989192	94.13060235	91.78360439	89.50629919	87.29619945	85.15092383
190829A00031	8/29/2019	1.54	8/29/2024	8/29/2019	100.2393	99.57293921	98.91540771	98.26652658	97.6261261	96.99404099	96.37011018	95.75417679	95.14608791
190830A00012	8/30/2019	1.76	8/30/2024	8/30/2019	100.252	99.58468464	98.92621632	98.27642323	97.63513492	97.00218538	96.37741288	95.76065988	95.15177282
190830A00002	8/30/2019	1.93	8/28/2026	8/30/2019	104.34968	101.6956309	99.12242383	96.62708965	94.20678716	91.85879916	89.5805261	87.36948002	85.22327892
200402A00021	4/2/2020	0.77	10/2/2024	4/2/2020	99.726494	98.97091198	98.22671721	97.49365359	96.771473	96.05993464	95.35880479	94.66785649	93.98686936
200922A00033	9/24/2020	2.37	9/23/2024	9/24/2020	100.77523	100.0412575	99.3179564	98.60509498	97.90244839	97.20979818	96.5269321	95.85364387	95.18973296
200922A00034	9/24/2020	2.24	9/23/2026	9/24/2020	105.35253	102.6156248	99.96372294	97.39362976	94.90229527	92.4868062	90.14437873	87.87235161	85.66817978
200922A00035	9/24/2020	2.94	9/23/2024	9/24/2020	101.19861	100.4629041	99.73788253	99.02331826	98.3189861	97.6246673	96.94014934	96.26522564	95.59969542
200922A00041	9/24/2020	2.68	9/23/2024	9/24/2020	101.00549	100.2705741	99.54633728	98.83254975	98.12898644	97.43542876	96.75166428	96.07748658	95.412695
200922A00036	9/24/2020	1.55	9/23/2025	9/24/2020	101.67618	99.96550903	98.29159189	96.65331047	95.04959151	93.4794052	91.94176296	90.4357153	88.96034989
200922A00027	9/24/2020	1.65	9/23/2025	9/24/2020	101.85079	100.1385519	98.4630924	96.82329653	95.21809025	93.64644302	92.10736553	90.59990762	89.1231563
200922A00037	9/24/2020	2.76	9/23/2025	9/24/2020	103.78901	102.0593277	100.3667481	98.71014176	97.08842627	95.5005628	93.94555412	92.42244243	90.9303074
200922A00039	9/24/2020	3	9/23/2025	9/24/2020	104.20808	102.4746306	100.7783493	99.1181083	97.49282325	95.90145356	94.3430003	92.81650401	91.32104277
200922A00040	9/24/2020	2	9/23/2024	9/24/2020	100.5004	99.76755711	99.04537277	98.33361672	97.63206427	96.94049718	96.25870337	95.58647675	94.92361698
200925A00008	9/25/2020	0.74	9/25/2025	9/25/2020	100.26646	98.56324901	96.89675175	95.26585147	93.66947282	92.10658413	90.57619515	89.07735495	87.60914992
200925A00002	9/25/2020	0.74	9/25/2025	9/25/2020	100.26646	98.56324901	96.89675175	95.26585147	93.66947282	92.10658413	90.57619515	89.07735495	87.60914992
200925A00003	9/25/2020	0.59	9/25/2024	9/25/2020	99.458641	98.72464416	98.00141829	97.28872786	96.58634414	95.89404502	95.21161468	94.53884345	93.87552755
200928A00003	9/28/2020	0.55	9/26/2025	9/28/2020	100.17721	98.46789144	96.7955376	95.15901556	93.55723988	91.98916934	90.45380471	88.95018652	87.4773931
190110A00010	1/10/2019	2.97	1/16/2024	1/10/2019	100.07551	100.0255875	99.97573607	99.92595141	99.87623334	99.82658173	99.77699644	99.72747733	99.67802427
190111A00026	1/11/2019	3.48	1/11/2034	1/11/2019	131.53983	120.5874607	110.674137	101.6947138	93.55523008	86.17166677	79.46884738	73.37946509	67.84322135
190114A00040	1/14/2019	2.89	1/14/2025	1/14/2019	102.10123	101.0537138	100.0276766	99.02246007	98.03743478	97.07199649	96.12556486	95.19758229	94.28751282
190114A00061	1/14/2019	2.98	1/31/2024	1/14/2019	100.13806	100.0466277	99.95536801	99.8642776	99.77335593	99.68260255	99.59201698	99.50159875	99.4113474
190115A00063	1/15/2019	2.96	1/16/2024	1/15/2019	100.07501	100.0250885	99.97523756	99.92545332	99.87573568	99.82608449	99.77649963	99.72698095	99.67752832
190122A00046	1/22/2019	3.29	1/22/2029	1/22/2019	117.15134	111.8095016	106.7475639	101.9493427	97.39967226	93.08433919	88.99001758	85.10420885	81.41518605
190122A00007	1/22/2019	3.03	1/22/2024	1/22/2019	100.10468	100.0381417	99.97170241	99.90536309	99.8391235	99.7729834	99.70694257	99.64100081	99.57515787
190122A00043	1/22/2019	2.96	1/22/2025	1/22/2019	102.24379	101.1737171	100.1260273	99.10001961	98.09502587	97.11040504	96.14554195	95.19984599	94.2727499
190122A00045	1/22/2019	3.17	1/22/2027	1/22/2019	109.44844	106.3122819	103.2834298	100.3575938	97.53068511	94.7988023	92.15822151	89.6053872	87.13690347
190529A00028	5/29/2019	2.38	5/29/2024	5/29/2019	100.3976	99.9800882	99.56604302	99.15541721	98.74816859	98.34425569	97.94363771	97.54627452	97.15212663
190529A00023	5/29/2019	2.38	5/29/2024	5/29/2019	100.3976	99.9800882	99.56604302	99.15541721	98.74816859	98.34425569	97.94363771	97.54627452	97.15212663
190529A00089	5/29/2019	2.38	5/29/2024	5/29/2019	100.3976	99.9800882	99.56604302	99.15541721	98.74816859	98.34425569	97.94363771	97.54627452	97.15212663

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190529A00013	5/29/2019	2.38	5/29/2024	5/29/2019	100.3976	99.9800882	99.56604302	99.15541721	98.74816859	98.34425569	97.94363771	97.54627452	97.15212663
190904A00019	9/4/2019	1.69	9/4/2024	9/4/2019	100.22199	99.54128448	98.8698012	98.20735028	97.5537504	96.90882503	96.27240234	95.644315	95.02440004
190904A00001	9/4/2019	1.5	9/4/2024	9/4/2019	100.22529	99.54284211	98.86965928	98.20555516	97.55034698	96.90385683	96.26591152	95.63634244	95.01498539
190529A00032	5/29/2019	2.38	5/29/2024	5/29/2019	100.3976	99.9800882	99.56604302	99.15541721	98.74816859	98.34425569	97.94363771	97.54627452	97.15212663
190530A00008	5/30/2019	2.38	5/30/2025	5/30/2019	102.5487	101.1367854	99.75118534	98.39122878	97.05626607	95.74566914	94.45883051	93.19516251	91.9540964
190530A00006	5/30/2019	2.25	5/30/2024	5/30/2019	100.39961	99.97875736	99.5614281	99.1475774	98.7371619	98.33013895	97.92646661	97.52610363	97.12900944
190530A00029	5/30/2019	2.25	5/30/2024	5/30/2019	100.39961	99.97875736	99.5614281	99.1475774	98.7371619	98.33013895	97.92646661	97.52610363	97.12900944
190530A00024	5/30/2019	2.25	5/30/2024	5/30/2019	100.39961	99.97875736	99.5614281	99.1475774	98.7371619	98.33013895	97.92646661	97.52610363	97.12900944
190906A00012	9/6/2019	1.76	9/6/2024	9/6/2019	100.27501	99.58874309	98.91184116	98.24411684	97.58538437	96.93546296	96.29417667	95.66135418	95.03682873
200818A00004	8/18/2020	0.92	8/18/2026	8/18/2020	101.61328	99.02241213	96.51012032	94.07353733	91.70991984	89.41664318	87.19119525	85.03117084	82.93426624
200818A00006	8/18/2020	1.18	8/18/2028	8/18/2020	105.22379	100.6194325	96.24117256	92.07672427	88.11454046	84.34376006	80.75416348	77.33613104	74.08060446
200818A00007	8/18/2020	1.31	8/20/2029	8/18/2020	106.71783	101.1005661	95.81098217	90.82829135	86.13313352	81.70746926	77.53448268	73.5984921	69.88486755
200818A00005	8/18/2020	1.05	8/18/2027	8/18/2020	103.29646	99.70649002	96.2594	92.94872144	89.76831517	86.71235474	83.77530853	80.95192285	78.23720636
200818A00010	8/18/2020	1.88	8/20/2035	8/18/2020	114.46391	102.9684077	92.74169588	83.63659503	75.52370174	68.28916303	61.83273745	56.06610655	50.91140311
200818A00008	8/18/2020	1.5	8/18/2031	8/18/2020	108.82738	101.2483864	94.24752754	87.77776972	81.79613708	76.26333914	71.14343685	66.40354074	62.01353756
200818A00009	8/18/2020	1.7	8/18/2033	8/18/2020	112.0214	102.4537537	93.78124878	85.91539426	78.77687403	72.29454912	66.4045769	61.0496292	56.17819778
190530A00045	5/30/2019	2.44	5/30/2024	5/30/2019	100.42627	100.0059777	99.58919399	99.17587644	98.76598201	98.35946835	97.95629377	97.55641731	97.15979865
190531A00037	5/31/2019	2.61	5/31/2029	5/31/2019	114.46821	108.8306338	103.5079686	98.48098272	93.7317163	89.24338964	85.00031991	80.98784405	77.19224747
190531A00038	5/31/2019	2.82	5/31/2034	5/31/2019	125.50281	114.4653247	104.5191726	95.54986622	87.45549671	80.14529689	73.53837179	67.56257935	62.15354299
190909A00025	9/9/2019	1.88	9/9/2024	9/9/2019	100.36656	99.67188826	98.98680929	98.31112731	97.64464984	96.98718964	96.33856452	95.69859718	95.06711502
190910A00030	9/10/2019	1.86	9/10/2024	9/10/2019	100.3551	99.65778722	98.97014524	98.29197207	97.62307299	96.96325863	96.31234473	95.67015199	95.03650589
190910A00017	9/16/2019	1.86	9/16/2024	9/16/2019	100.37787	99.66429215	98.96083417	98.26728456	97.58343497	96.90908284	96.24403121	95.58808858	94.94106862
190910A00004	9/11/2019	1.86	9/11/2024	9/11/2019	100.35772	99.6577163	98.967457	98.28673897	97.61536528	96.95314437	96.2998899	95.65542058	95.01955995
200825A00007	8/27/2020	4.79	8/27/2026	8/27/2020	111.99901	109.2443607	106.5728005	103.9812939	101.466935	99.02694386	96.65866086	94.35954001	92.12714339
200827A00007	8/27/2020	0.77	8/27/2025	8/27/2020	100.23275	98.60596562	97.01310916	95.45318362	93.9252316	92.42833283	90.96160235	89.52418883	88.11527288
200828A00002	8/28/2020	0.73	8/28/2026	8/28/2020	101.48132	98.85836135	96.31573795	93.85048562	91.45977204	89.14088887	86.89124531	84.70836213	82.5898659
190603A00005	6/3/2019	2.25	6/3/2024	6/3/2019	100.35747	99.9264988	99.49922711	99.07560748	98.65559316	98.23913822	97.8261975	97.41672661	97.01068188
190603A00003	6/3/2019	2.05	6/3/2024	6/3/2019	100.32572	99.8941891	99.46636889	99.04221356	98.62167606	98.20471016	97.79127041	97.38131213	96.97479139
190603A00033	6/3/2019	2.05	6/3/2024	6/3/2019	100.32572	99.8941891	99.46636889	99.04221356	98.62167606	98.20471016	97.79127041	97.38131213	96.97479139
190913A00014	9/13/2019	2.08	9/13/2024	9/13/2019	100.52729	99.82115981	99.12493215	98.43839995	97.76136157	97.09362095	96.43498737	95.78527533	95.14430433
190605A00020	6/5/2019	2.19	2/5/2024	6/5/2019	100.07467	99.9695097	99.8645821	99.75988551	99.65541912	99.55118216	99.44717383	99.34339335	99.23983995
190606A00027	6/6/2019	2.51	6/5/2026	6/6/2019	105.27578	102.8358787	100.4651443	98.16122472	95.92186485	93.74489928	91.6282482	89.56991346	87.56797483
190606A00028	6/6/2019	2.74	6/6/2029	6/6/2019	114.45452	108.8267177	103.5134052	98.49535983	93.75463123	89.27445003	85.0391442	81.03406184	77.24549975

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190606A00029	6/6/2019	2.96	6/6/2034	6/6/2019	125.49286	114.5204857	104.6307894	95.71030184	87.65802034	80.38397768	73.80798527	67.85852491	62.47177114
190606A00023	6/6/2019	2.23	6/6/2024	6/6/2019	100.35735	99.91824741	99.48298591	99.05151805	98.62379429	98.19976595	97.77938519	97.36260498	96.94937913
190607A00018	6/7/2019	2.19	6/7/2024	6/7/2019	100.34239	99.90061444	99.46272992	99.02868626	98.59843298	98.17192046	97.74909996	97.32992358	96.91434427
190919A00007	9/19/2019	2.04	9/19/2024	9/19/2019	100.51754	99.79534946	99.08351624	98.38181692	97.69003614	97.00796461	96.33539888	95.67214118	95.01799917
190919A00025	9/19/2019	1.8	9/19/2024	9/19/2019	100.47744	99.75363853	99.04024251	98.33702775	97.64377733	96.96028046	96.28633225	95.62173353	94.96629063
201022A00012	10/26/2020	2.25	10/24/2030	10/26/2020	113.45971	106.4965475	100.0100268	93.96505311	88.32928753	83.07291548	78.16843794	73.59048066	69.31562001
201028A00006	10/30/2020	1.56	2/15/2024	10/30/2020	100.00996	99.87731806	99.74504053	99.61312891	99.48158162	99.35039712	99.21957387	99.08911034	98.95900501
201028A00003	10/30/2020	1.42	2/27/2026	10/30/2020	102.16116	100.0247667	97.94331263	95.91500152	93.93810712	92.01097336	90.13201088	88.29969377	86.5125564
201028A00005	10/30/2020	1.85	10/31/2025	10/30/2020	102.41361	100.5934131	98.81427229	97.07502619	95.3745537	93.71177212	92.08563569	90.49513404	88.93929078
190830A00021	8/30/2019	1.76	8/30/2024	8/30/2019	100.252	99.58468464	98.92621632	98.27642323	97.63513492	97.00218538	96.37741288	95.76065988	95.15177282
190613A00011	6/13/2019	2.26	6/13/2024	6/13/2019	100.39122	99.93305182	99.47907151	99.02922059	98.58344273	98.14168266	97.70388609	97.26999972	96.83997118
190923A00017	9/23/2019	1.74	9/23/2024	9/23/2019	100.4448	99.71037284	98.98665826	98.27342	97.5704318	96.87747385	96.19433258	95.52080049	94.85667584
190923A00012	9/23/2019	2.43	9/25/2034	9/23/2019	121.74035	110.5891346	100.575872	91.57771457	83.4856957	76.20309218	69.64399068	63.73202873	58.39928811
201030A00005	11/2/2020	2.49	10/29/2040	11/2/2020	127.55992	110.7406191	96.43939927	84.25986668	73.87016896	64.99218903	57.39259567	50.87542236	45.27590726
201030A00001	11/2/2020	2.54	10/29/2040	11/2/2020	128.37183	111.4887352	97.13061406	84.90021664	74.46495087	65.546059	57.90965405	51.35928664	45.72977472
201030A00002	11/2/2020	2.8	10/29/2040	11/2/2020	132.59375	115.378939	100.724931	88.23003644	77.55781681	68.42618286	60.59835765	53.8753809	48.08988555
201030A00003	11/2/2020	2.58	10/29/2040	11/2/2020	129.02135	112.0872281	97.68358589	85.41249661	74.9407764	65.98915498	58.32330076	51.74637807	46.0928687
201030A00004	11/2/2020	2.56	10/29/2040	11/2/2020	128.69659	111.7879817	97.40709997	85.15635662	74.70286364	65.76760699	58.11647741	51.55283235	45.91132171
190923A00081	9/23/2019	1.96	9/20/2024	9/23/2019	100.46192	99.73727486	99.02305975	98.31904986	97.62502754	96.94078132	96.26610563	95.60080066	94.94467212
190923A00078	9/23/2019	1.96	6/28/2024	9/23/2019	100.28432	99.78587033	99.2923565	98.8037103	98.31986005	97.84073547	97.36626762	96.89638892	96.43103308
190923A00020	9/23/2019	2.05	9/24/2029	9/23/2019	111.81707	105.9364699	100.4022771	95.19223532	90.28564159	85.66322592	81.30704396	77.20037859	73.32764928
190924A00035	9/24/2019	1.88	9/13/2024	9/24/2019	100.38423	99.67867242	98.9830078	98.29703309	97.62054673	96.95335274	96.29526052	95.64608462	95.00564465
201116A00011	11/16/2020	0.71	11/15/2024	11/16/2020	99.569048	98.69835348	97.84279598	97.00198389	96.17553868	95.36309471	94.56429864	93.77880895	93.00629541
190211A00002	2/11/2019	2.88	2/12/2024	2/11/2019	100.17329	100.0487294	99.92449756	99.80058989	99.67700503	99.55374168	99.43079854	99.30817432	99.18586775
190925A00004	9/25/2019	1.7	9/24/2024	9/25/2019	100.41778	99.68077634	98.95456062	98.23889452	97.53354941	96.83830322	96.15294023	95.47725083	94.81103127
190925A00011	9/25/2019	1.89	9/25/2024	9/25/2019	100.43145	99.6934296	98.96622659	98.24959993	97.54332021	96.84716461	96.16091665	95.48436601	94.81730826
190926A00016	9/26/2019	2.28	5/24/2030	9/26/2019	113.16772	106.6209333	100.497982	94.76924487	89.40731087	84.38680745	79.68423936	75.2778408	71.14744003
190926A00017	9/26/2019	2.23	9/26/2029	9/26/2019	112.0777	106.2122685	100.6916452	95.49371062	90.59788374	85.98500643	81.63723707	77.5379529	73.67166006
190926A00015	9/26/2019	2.32	11/26/2030	9/26/2019	114.05352	106.9840471	100.4039236	94.27672694	88.56892276	83.24962126	78.29035619	73.66488332	69.34899666
190927A00036	9/27/2019	1.94	9/6/2024	9/27/2019	100.40029	99.71353805	99.03615507	98.36795433	97.70874999	97.05836121	96.41661194	95.78333083	95.15835102
190927A00012	10/1/2019	1.96	10/1/2024	10/1/2019	100.5024	99.74800624	99.00489792	98.27282511	97.55154347	96.84081582	96.14041191	95.4501081	94.76968721
190930A00012	9/30/2019	1.93	9/30/2024	9/30/2019	100.48358	99.73184596	98.99132197	98.26175637	97.54290744	96.83454051	96.1364277	95.4483477	94.77008552
190930A00071	9/30/2019	2.05	9/29/2025	9/30/2019	102.58483	100.8501231	99.15291407	97.49205176	95.86643371	94.27500247	92.71674327	91.19068184	89.69588232

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190930A00070	9/30/2019	1.93	9/27/2024	9/30/2019	100.46711	99.72359099	98.99103635	98.26920838	97.5578729	96.8568025	96.1657763	95.48457969	94.81300416
190930A00077	9/30/2019	2.23	9/28/2029	9/30/2019	112.08456	106.2136122	100.6880733	95.48577106	90.58607307	85.96977465	81.61899188	77.5170636	73.64846104
190930A00075	9/30/2019	2.19	9/29/2027	9/30/2019	107.75958	103.9755713	100.3451277	96.86112516	93.51682039	90.30582321	87.22207575	84.25983282	81.41364369
190930A00035	9/30/2019	1.93	9/30/2024	9/30/2019	100.48358	99.73184596	98.99132197	98.26175637	97.54290744	96.83454051	96.1364277	95.4483477	94.77008552
191001A00023	10/1/2019	1.85	9/27/2024	10/1/2019	100.40681	99.66353669	98.93123004	98.20964749	97.49855492	96.79772494	96.10693671	95.42597569	94.7546334
201208A00031	12/10/2020	1.43	12/9/2024	12/10/2020	100.27312	99.33481886	98.41399629	97.51016676	96.62286331	95.75163596	94.89605092	94.0556899	93.23014939
201208A00029	12/10/2020	1.52	12/9/2025	12/10/2020	101.97792	100.0589493	98.18554919	96.35636424	94.5700862	92.82545431	91.12125322	89.45631106	87.82949754
191002A00006	10/2/2019	1.84	10/2/2024	10/2/2019	100.41368	99.65697752	98.91163889	98.17741104	97.45404703	96.74130716	96.03895875	95.34677588	94.66453911
191002A00017	10/2/2019	1.84	10/2/2024	10/2/2019	100.41368	99.65697752	98.91163889	98.17741104	97.45404703	96.74130716	96.03895875	95.34677588	94.66453911
191003A00019	10/3/2019	1.71	9/27/2024	10/3/2019	100.30128	99.55844166	98.82656899	98.10541594	97.39474845	96.6943392	96.00396745	95.3234187	94.65248455
191003A00014	10/3/2019	1.71	9/20/2024	10/3/2019	100.27829	99.5543892	98.84091345	98.13763543	97.44433764	96.7608087	96.0868432	95.42224142	94.76680919
191004A00001	10/4/2019	2.47	10/4/2034	10/4/2019	120.68737	109.6511337	99.74101614	90.83543732	82.82654985	75.6186243	69.12663068	63.27499254	57.99649182
191004A00012	10/4/2019	1.78	10/4/2024	10/4/2019	100.38094	99.61891369	98.86841735	98.12919188	97.40098485	96.68355133	95.9766536	95.28006087	94.59354907
191004A00032	10/4/2019	2.01	1/3/2028	10/4/2019	107.70218	103.6584912	99.78946952	96.08664567	92.54201081	89.14798495	85.89739162	82.78343422	79.79967377
190618A00002	6/18/2019	2.11	6/18/2025	6/18/2019	102.27243	100.8125307	99.38077979	97.97642998	96.59876428	95.24709024	93.92073893	92.61906391	91.34144031
191004A00003	10/4/2019	1.89	10/5/2026	10/4/2019	104.45903	101.7021916	99.03193565	96.44499957	93.93826865	91.50876693	89.15364993	86.87019775	84.65580864
191004A00004	10/4/2019	1.54	10/4/2024	10/4/2019	100.32341	99.55992802	98.80802228	98.06743341	97.33790741	96.6191978	95.9110654	95.21327802	94.52561025
191004A00005	10/4/2019	1.54	10/4/2024	10/4/2019	100.32341	99.55992802	98.80802228	98.06743341	97.33790741	96.6191978	95.9110654	95.21327802	94.52561025
191004A00002	10/4/2019	2.08	10/4/2029	10/4/2019	111.23396	105.3708769	99.85404405	94.6611861	89.77157542	85.16591945	80.82625353	76.73584238	72.8790894
191007A00029	10/7/2019	1.88	10/9/2029	10/7/2019	110.8736	104.9790143	99.4343569	94.21703245	89.30602326	84.6817695	80.32606031	76.22193373	72.3535845
191008A00031	10/8/2019	1.52	10/8/2024	10/8/2019	100.31863	99.54442057	98.7821171	98.03145049	97.29215575	96.56397588	95.84666159	95.13997101	94.44366938
191008A00033	10/8/2019	1.71	10/8/2024	10/8/2019	100.33773	99.56517007	98.80446602	98.0553498	97.3175581	96.59083555	95.8749344	95.16961426	94.47464181
191009A00028	10/9/2019	1.76	10/9/2024	10/9/2019	100.3798	99.60437757	98.84089716	98.08908654	97.34867965	96.61941842	95.90105254	95.19333916	94.49604259
191009A00017	10/9/2019	1.76	10/4/2024	10/9/2019	100.36548	99.60351773	98.85308646	98.11392537	97.38578204	96.66841156	95.96157621	95.26504522	94.57859453
191015A00029	10/15/2019	1.91	10/15/2024	10/15/2019	100.51749	99.72538423	98.94573025	98.17823559	97.42261736	96.67860138	95.94592186	95.22432106	94.51354905
191015A00013	10/15/2019	1.72	10/15/2024	10/15/2019	100.49813	99.70432477	98.92302053	98.15392699	97.39675946	96.65124203	95.91710728	95.19409589	94.4819564
190619A00009	6/19/2019	2.26	6/19/2024	6/19/2019	100.40887	99.93440127	99.46442159	98.99886417	98.5376667	98.08076802	97.62810813	97.17962811	96.73527018
190620A00045	6/20/2019	2.14	6/20/2024	6/20/2019	100.35405	99.87703011	99.40454736	98.93653506	98.47292987	98.01366965	97.55869344	97.1079414	96.66135481
190620A00027	6/20/2019	2.14	6/20/2024	6/20/2019	100.35405	99.87703011	99.40454736	98.93653506	98.47292987	98.01366965	97.55869344	97.1079414	96.66135481
190621A00015	6/21/2019	2.2	6/21/2024	6/21/2019	100.3857	99.90589068	99.43066293	98.95995559	98.49370431	98.03184593	97.57431851	97.12106124	96.67201447
190621A00039	6/21/2019	2.21	6/17/2024	6/21/2019	100.37933	99.91036274	99.44578009	98.98552108	98.52952544	98.07773399	97.63008865	97.18653242	96.74700933
190625A00012	6/25/2019	2.12	6/25/2024	6/25/2019	100.3572	99.86664595	99.3808799	98.89983249	98.4234352	97.95162084	97.48432349	97.02147849	96.56302243
190625A00024	6/25/2019	2.26	6/25/2025	6/25/2019	102.29903	100.8244504	99.37857797	97.96065013	96.5699286	95.20570063	93.86727787	92.55399532	91.26521036

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190625A00023	6/25/2019	2.47	6/25/2027	6/25/2019	108.06328	104.5345327	101.1408159	97.87623478	94.7351885	91.71234982	88.80265044	86.00126689	83.30360728
190626A00004	6/26/2019	2.15	6/26/2024	6/26/2019	100.37469	99.88138345	99.39291353	98.90921265	98.43021121	97.955841	97.48603508	97.02072783	96.55985485
190626A00015	6/26/2019	2.15	6/26/2024	6/26/2019	100.37469	99.88138345	99.39291353	98.90921265	98.43021121	97.955841	97.48603508	97.02072783	96.55985485
190627A00010	6/27/2019	1.97	6/27/2024	6/27/2019	100.35063	99.85392133	99.36212321	98.87516075	98.39296289	97.91545994	97.44258357	96.97426678	96.51044385
210621A00008	6/21/2021	1.04	6/23/2025	6/21/2021	100.46609	99.01099206	97.58415629	96.18483316	94.81229833	93.46585237	92.14481972	90.84854764	89.57640525
190131A00019	1/31/2019	3.44	1/30/2034	1/31/2019	131.25608	120.2653336	110.3222683	101.3203946	93.16460085	85.76988202	79.06021719	72.96757689	67.43104482
180920A00014	9/20/2018	3.59	9/20/2028	9/20/2018	116.80607	111.8428513	107.1234971	102.6346485	98.36375615	94.29902629	90.42937016	86.74435781	83.23417506
210323A00007	3/23/2021	0.51	3/25/2024	3/23/2021	99.792066	99.55245634	99.31400201	99.07669422	98.84052467	98.60548516	98.37156756	98.13876383	97.90706598
210624A00022	6/24/2021	0.87	6/24/2025	6/24/2021	100.44996	98.98849296	97.55552028	96.15028327	94.77204922	93.42011074	92.09378468	90.79241105	89.51535212
210624A00020	6/24/2021	0.78	6/24/2024	6/24/2021	99.694867	99.20892195	98.72770074	98.25113502	97.77915749	97.31170211	96.84870412	96.39009999	95.93582739
191017A00022	10/17/2019	2.25	7/17/2028	10/17/2019	110.01631	105.3887496	100.983402	96.78842671	92.79267363	88.98564282	85.35744295	81.89875279	78.60078525
191017A00026	10/17/2019	2.3	7/17/2029	10/17/2019	112.21198	106.5335857	101.1793259	96.12899752	91.36376011	86.86603697	82.6194241	78.60860595	74.81927766
191021A00021	10/21/2019	2.22	12/21/2027	10/21/2019	108.45898	104.4355709	100.5844008	96.89719043	93.36610575	89.98372827	86.74303108	83.63735594	80.66039202
191023A00006	10/23/2019	1.95	10/23/2024	10/23/2019	100.57672	99.76291708	98.96224222	98.17438091	97.39902744	96.63588573	95.88466901	95.1450994	94.41690761
191025A00013	10/25/2019	1.98	10/25/2024	10/25/2019	100.61654	99.7970863	98.99093982	98.19777629	97.41728405	96.64916135	95.89311594	95.14886472	94.41613337
191025A00010	10/25/2019	2.24	7/25/2028	10/25/2019	110.02442	105.3743576	100.948468	96.73475722	92.72193635	88.89937739	85.25707098	81.78558701	78.4760379
191025A00005	10/28/2019	1.98	10/28/2024	10/28/2019	100.62703	99.79949545	98.98552177	98.18477877	97.39694603	96.62171341	95.85878061	95.10785681	94.3686603
191025A00009	10/25/2019	2.26	5/25/2029	10/25/2019	111.7763	106.2527143	101.0371592	96.11088474	91.45637099	87.05724502	82.89820042	78.96492259	75.24401968
191031A00033	10/31/2019	2.2	5/31/2028	10/31/2019	109.48856	105.0002868	100.722255	96.6435406	92.75384128	89.04343958	85.50316655	82.12436804	78.89887315
191104A00023	11/4/2019	2.24	8/4/2028	11/4/2019	110.08864	105.4097774	100.9575722	96.71983261	92.68509321	88.8425636	85.18208467	81.69408822	78.36955929
191104A00025	11/4/2019	2.33	8/2/2030	11/4/2019	113.72236	106.9708729	100.667808	94.78101294	89.28080117	84.13975215	79.33252704	74.8357003	70.62760582
191104A00022	11/4/2019	2.17	8/4/2027	11/4/2019	107.29724	103.6718771	100.1888256	96.84171184	93.62448648	90.53140485	87.55700966	84.69611479	81.9437902
191104A00024	11/4/2019	2.26	8/3/2029	11/4/2019	112.05733	106.336581	100.9447611	95.86122515	91.06673098	86.54333667	82.27430583	78.24402034	74.43789986
191104A00018	11/5/2019	1.96	11/5/2024	11/5/2019	100.64089	99.79182915	98.95705292	98.1362012	97.32892775	96.53489772	95.7537872	94.98528276	94.22908105
210414A00001	4/14/2021	0.7	5/16/2024	4/14/2021	99.712494	99.33191546	98.95424548	98.5794503	98.20749709	97.83835351	97.47198774	97.10836839	96.7474646
210428A00015	4/28/2021	2.02	4/28/2031	4/28/2021	112.45364	105.0319395	98.1530728	91.77455956	85.85744369	80.36598618	75.26738464	70.53151852	66.13071766
210428A00007	4/28/2021	1.74	10/27/2028	4/28/2021	108.16729	103.3064923	98.69194908	94.30996011	90.14765085	86.19292269	82.43440227	78.86139449	75.46383873
210428A00008	4/28/2021	1.93	4/26/2030	4/28/2021	110.84939	104.4502054	98.46199202	92.85628056	87.60671327	82.68887481	78.08013997	73.75953391	69.70760412
210428A00006	4/28/2021	1.23	4/28/2026	4/28/2021	101.99278	99.69530479	97.4606241	95.28668003	93.17149773	91.11317789	89.10989338	87.15988614	85.2614641
210429A00005	4/29/2021	2.08	4/29/2031	4/29/2021	112.89894	105.458681	98.5624547	92.16769233	86.23535429	80.72962465	75.61763016	70.86918507	66.45655916
210507A00008	5/7/2021	1.94	5/7/2031	5/7/2021	111.89115	104.4659696	97.58601215	91.2084599	85.29406323	79.806824	74.71371117	69.9844027	65.59105105
210507A00009	5/7/2021	2.02	5/7/2032	5/7/2021	113.69043	105.2443751	97.49193899	90.37253096	83.83113786	77.81778692	72.28706115	67.19766336	62.51202389
210514A00033	5/18/2021	2.8	5/18/2028	5/18/2021	112.0529	107.5442157	103.2444133	99.14273999	95.22904885	91.49376377	87.92784459	84.52275437	81.27042882

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190530A00034	5/30/2019	2.44	5/30/2024	5/30/2019	100.42627	100.0059777	99.58919399	99.17587644	98.76598201	98.35946835	97.95629377	97.55641731	97.15979865
190807A00005	8/7/2019	1.77	8/7/2024	8/7/2019	100.21528	99.60981031	99.01164315	98.42064566	97.83668941	97.25964904	96.68940214	96.12582921	95.5688135
200227A00030	2/27/2020	1.59	2/27/2026	2/27/2020	102.53146	100.3909534	98.30547787	96.27322651	94.29247071	92.36155215	90.47887932	88.64292419	86.85221916
210709A00002	7/9/2021	1.36	7/9/2029	7/9/2021	107.68537	102.1270046	96.8876495	91.94738307	87.28762702	82.89104995	78.74147735	74.82380851	71.12393991
200227A00031	2/27/2020	1.43	2/27/2024	2/27/2020	99.989186	99.82355906	99.65848254	99.49395327	99.32996854	99.16652566	99.00362195	98.84125478	98.67942149
210720A00035	7/22/2021	2.27	7/21/2031	7/22/2021	114.62304	106.9014147	99.75894557	93.14910655	87.02933983	81.36069703	76.10751565	71.23712619	66.71958667
210802A00002	8/2/2021	0.7	8/1/2025	8/2/2021	100.29676	98.73359843	97.20219314	95.70164273	94.23108103	92.78967408	91.37661863	89.99114065	88.63249407
210804A00008	8/6/2021	2.28	8/4/2028	8/6/2021	110.27394	105.5908448	101.134548	96.89285871	92.85430555	89.00809225	85.34405418	81.85261788	78.52476342
210816A00003	8/16/2021	0.71	8/16/2024	8/16/2021	99.555605	98.92834391	98.30895797	97.69729967	97.09322504	96.49659366	95.90726853	95.32511605	94.75000582
210817A00013	8/19/2021	2	8/19/2026	8/19/2021	104.48325	101.85132	99.29899075	96.82336075	94.42165288	92.09121018	89.82948965	87.63405648	85.50257865
210818A00007	8/18/2021	0.81	8/18/2025	8/18/2021	100.52139	98.91153692	97.33499092	95.79078613	94.27799227	92.7957147	91.34309268	89.91929777	88.52353227
210818A00005	8/18/2021	0.6	8/19/2024	8/18/2021	99.613219	98.97605224	98.34700685	97.72592868	97.11266703	96.50707497	95.90900924	95.31833013	94.73490139
210916A00007	9/16/2021	0.75	9/16/2024	9/16/2021	99.574754	98.86439831	98.16413288	97.47374398	96.79302377	96.12177021	95.45978686	94.8068827	94.16287191
210917A00008	9/17/2021	1.55	9/15/2028	9/17/2021	107.06929	102.3481461	97.86143018	93.59625124	89.54049672	85.68278404	82.01241231	78.51931741	75.19403043
210924A00005	9/24/2021	2.37	9/24/2036	9/24/2021	120.58925	107.7735305	96.47637789	86.50839441	77.70475379	69.92189938	63.03470147	56.93400707	51.52452645
210924A00011	9/24/2021	2.19	9/25/2034	9/24/2021	117.67259	106.8152256	97.06800117	88.31102736	80.43795173	73.35436901	66.97642298	61.22957864	56.04754269
210924A00004	9/24/2021	2.37	9/24/2036	9/24/2021	120.58925	107.7735305	96.47637789	86.50839441	77.70475379	69.92189938	63.03470147	56.93400707	51.52452645
210924A00003	9/24/2021	2.37	9/24/2036	9/24/2021	120.58925	107.7735305	96.47637789	86.50839441	77.70475379	69.92189938	63.03470147	56.93400707	51.52452645
210114A00009	1/19/2021	2.66	1/17/2030	1/19/2021	115.0646	108.8067224	102.9331714	97.41829476	92.23828315	87.37102841	82.79599331	78.49409204	74.44758041
191105A00008	11/5/2019	1.83	11/5/2024	11/5/2019	100.66365	99.81264076	98.97597364	98.15328856	97.34423722	96.54848279	95.76569945	94.99557198	94.23779528
191105A00007	11/5/2019	1.98	11/5/2026	11/5/2019	105.27631	102.4150272	99.64615077	96.9662193	94.3719152	91.86006267	89.42762076	87.07167693	84.78944089
191106A00012	11/6/2019	2.02	10/11/2024	11/6/2019	100.59154	99.80983173	99.04024704	98.28250252	97.53632638	96.80145508	96.07763306	95.3646124	94.66215256
191106A00022	11/6/2019	2.34	1/2/2030	11/6/2019	113.06183	106.9038087	101.122894	95.69401387	90.59389117	85.80090398	81.29495976	77.05737961	73.07079189
191108A00014	11/8/2019	2.25	11/8/2029	11/8/2019	113.1502	107.1083489	101.4287259	96.08776311	91.06354227	86.33566978	81.8851634	77.69434781	73.74675847
210125A00007	1/27/2021	2.98	1/27/2031	1/27/2021	118.98936	111.5840724	104.6991723	98.29522777	92.33599426	86.78814143	81.62100451	76.80635796	72.31820955
210125A00006	1/27/2021	2.16	1/26/2027	1/27/2021	105.94355	102.8606987	99.88385713	97.00877756	94.23140854	91.54788482	88.95451753	86.44778497	84.02432394
191108A00011	11/8/2019	2.08	10/18/2024	11/8/2019	100.66529	99.86448686	99.07639626	98.30071548	97.53715301	96.78542643	96.04526201	95.31639444	94.59856646
191108A00013	11/8/2019	2.25	11/8/2029	11/8/2019	113.1502	107.1083489	101.4287259	96.08776311	91.06354227	86.33566978	81.8851634	77.69434781	73.74675847
200228A00066	2/28/2020	1.35	2/28/2024	2/28/2020	99.975367	99.80701014	99.63921894	99.47199102	99.30532355	99.13921374	98.97365882	98.80865604	98.64420264
210201A00012	2/3/2021	0.75	11/17/2025	2/3/2021	100.41709	98.57169981	96.76894369	95.00758784	93.28644229	91.60435891	89.96022965	88.35298484	86.78159167
210201A00004	2/3/2021	1.15	2/3/2025	2/3/2021	100.16813	99.0802404	98.01582649	96.97413334	95.95444008	94.95605603	93.97831918	93.02059465	92.08227335
210209A00029	2/12/2021	0.8	12/15/2025	2/12/2021	100.58445	98.66336202	96.78833734	94.95799023	93.1709873	91.42604401	89.72192251	88.05742958	86.43141473
210210A00005	2/10/2021	0.52	2/13/2024	2/10/2021	99.877159	99.75017078	99.62352124	99.49720908	99.37123292	99.24559137	99.12028305	98.99530661	98.87066067

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200228A00067	2/28/2020	1.4	2/28/2025	2/28/2020	100.55444	99.39693615	98.26590854	97.16045688	96.07972212	95.02288326	93.98915531	92.97778729	91.98806043
200224A00020	2/24/2020	1.59	2/24/2025	2/24/2020	100.75851	99.61050626	98.4885209	97.39167433	96.31912946	95.27008603	94.24377854	93.23947442	92.25647225
200224A00021	2/24/2020	1.58	9/24/2024	2/24/2020	100.19756	99.46319099	98.73954442	98.02639022	97.3235015	96.63065786	95.94764518	95.27425541	94.61028628
210212A00016	2/17/2021	1.32	2/18/2025	2/17/2021	100.41878	99.2890297	98.18454051	97.1044769	96.04803599	95.01444976	94.00298316	93.01293235	92.04362307
210212A00014	2/17/2021	1.38	2/17/2026	2/17/2021	102.02848	99.92079267	97.86681881	95.86481389	93.91310781	92.01009746	90.15424351	88.34406724	86.57814766
210212A00008	2/12/2021	0.95	10/13/2026	2/12/2021	101.86847	99.12635163	96.47124697	93.8998846	91.40914046	88.99602746	86.65768844	84.39138963	82.19451441
210216A00009	2/16/2021	0.92	2/16/2027	2/16/2021	102.58801	99.49053684	96.501827	93.61744051	90.833143	88.14489894	85.5488609	83.04135948	80.61889384
210216A00006	2/16/2021	1.44	2/15/2030	2/16/2021	108.47985	102.3106626	96.52910144	91.10883819	86.02546641	81.25635127	76.78049186	72.57839486	68.63195874
210216A00007	2/16/2021	1.3	2/16/2029	2/16/2021	107.03113	101.876259	96.99834561	92.3810815	88.00920343	83.8684223	79.94535557	76.22746488	72.7029982
210216A00008	2/16/2021	0.71	2/17/2026	2/16/2021	100.8643	98.76394002	96.71726989	94.72254374	92.77808873	90.88229929	89.03363383	87.2306116	85.47180976
210226A00012	2/26/2021	2.31	2/26/2036	2/26/2021	119.61663	107.3706139	96.51918662	86.89508565	78.35193499	70.76154381	64.01156384	58.00345894	52.65074388
210304A00004	3/4/2021	0.58	3/4/2024	3/4/2021	99.832244	99.65036507	99.46915235	99.28860251	99.10871191	98.92947691	98.75089392	98.57295938	98.39566973
210305A00013	3/5/2021	2.41	3/5/2036	3/5/2021	120.83226	108.4953949	97.56341224	87.86769762	79.26071284	71.61326734	64.81215189	58.75808799	53.3639495
210312A00010	3/12/2021	0.63	3/12/2024	3/12/2021	99.820018	99.61627259	99.41337003	99.21130476	99.01007154	98.80966519	98.61008056	98.41131253	98.21335607
210312A00005	3/12/2021	0.53	3/12/2024	3/12/2021	99.827213	99.62316189	99.41995813	99.21759626	99.01607097	98.815377	98.61550913	98.41646218	98.21823102
211206A00010	12/6/2021	1.54	12/4/2026	12/6/2021	103.76845	100.8611078	98.05004623	95.33156053	92.70211339	90.15832251	87.69695285	85.31490934	83.00923007
220217A00021	2/17/2022	1.85	2/13/2024	2/17/2022	100.04682	99.91963619	99.79279422	99.66629008	99.54012238	99.41428973	99.28879076	99.16362409	99.03878837
220225A00013	2/25/2022	1.92	2/23/2024	2/25/2022	100.06642	99.91169721	99.75745896	99.60370537	99.45043415	99.29764302	99.14532971	98.99349196	98.84212755
200720A00012	7/20/2020	0.77	7/15/2025	7/20/2020	100.11374	98.60230983	97.12101161	95.66901142	94.24550939	92.84973435	91.48094257	90.13841652	88.8214637
210722A00001	7/22/2021	1.1	7/22/2026	7/22/2021	101.99291	99.46858385	97.01919916	94.64208786	92.33469227	90.09456214	87.91934932	85.80680279	83.75476395
200722A00010	7/22/2020	0.66	7/22/2024	7/22/2020	99.566383	99.00590709	98.45171805	97.90371061	97.36178181	96.82583093	96.29575948	95.77147113	95.25287162
210527A00009	5/27/2021	0.5	5/28/2024	5/27/2021	99.661824	99.24825572	98.83810887	98.43134079	98.02790989	97.62777525	97.23089662	96.83723441	96.44674964
210527A00019	5/27/2021	1	5/27/2026	5/27/2021	101.86576	99.48516039	97.17180047	94.92340942	92.73780866	90.61290556	88.54668956	86.53722841	84.58266463
210527A00026	6/1/2021	2.78	6/1/2028	6/1/2021	112.0789	107.5308732	103.1952762	99.06107878	95.11788296	91.35588077	87.7658177	84.33895855	81.06705574
210528A00003	5/28/2021	0.63	5/28/2024	5/28/2021	99.663298	99.25033957	98.84078981	98.43460639	98.031748	97.632174	97.23584441	96.8427199	96.45276175
210601A00002	6/1/2021	0.9	6/2/2025	6/1/2021	100.21509	98.81644219	97.44397835	96.09702608	94.77493734	93.47708555	92.20286473	90.95168866	89.72299004
210603A00015	6/7/2021	2.71	6/7/2028	6/7/2021	111.81258	107.2542478	102.9096424	98.76762455	94.81769644	91.04995822	87.45507075	84.02422089	80.74908925
220310A00005	3/10/2022	2.06	3/8/2024	3/10/2022	100.10729	99.91408218	99.72163099	99.52992983	99.33897428	99.14875995	98.95928248	98.77053757	98.58252091
220323A00008	3/23/2022	2.47	3/25/2024	3/23/2022	100.23173	99.99175111	99.75292781	99.515248	99.27870346	99.04328608	98.8089878	98.57580065	98.34371674
220401A00009	4/1/2022	2.98	4/1/2027	4/1/2022	109.08752	105.7719123	102.57526	99.492582	96.51913617	93.65040941	90.88210497	88.21013052	85.6305869
211217A00021	12/21/2021	2.44	12/18/2026	12/21/2021	106.52523	103.5386979	100.6519629	97.86114901	95.16254944	92.55262201	90.02798078	87.58538819	85.22174767
211222A00021	12/22/2021	1.06	1/16/2024	12/22/2021	99.980125	99.93028911	99.8805195	99.8308165	99.78118	99.73160984	99.6821059	99.63266803	99.5832961
211222A00023	12/22/2021	1.13	4/15/2024	12/22/2021	99.892531	99.59582661	99.30089421	99.00771831	98.71628315	98.42657319	98.13857303	97.85226749	97.56764155

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
211222A00026	12/22/2021	1.2	7/15/2024	12/22/2021	99.878731	99.33599222	98.79914057	98.2680807	97.74271917	97.22296454	96.70872731	96.1999199	95.69645654
211222A00004	12/22/2021	1.26	10/15/2024	12/22/2021	99.995329	99.20552522	98.42814678	97.66290265	96.90951039	96.16769628	95.43719495	94.7177491	94.0091092
211222A00010	12/22/2021	1.06	1/16/2024	12/22/2021	99.980125	99.93028911	99.8805195	99.8308165	99.78118	99.73160984	99.6821059	99.63266803	99.5832961
211222A00025	12/22/2021	1.2	7/15/2024	12/22/2021	99.878731	99.33599222	98.79914057	98.2680807	97.74271917	97.22296454	96.70872731	96.1999199	95.69645654
211222A00027	12/22/2021	1.26	10/15/2024	12/22/2021	99.995329	99.20552522	98.42814678	97.66290265	96.90951039	96.16769628	95.43719495	94.7177491	94.0091092
211222A00029	12/22/2021	1.26	10/15/2024	12/22/2021	99.995329	99.20552522	98.42814678	97.66290265	96.90951039	96.16769628	95.43719495	94.7177491	94.0091092
211222A00003	12/22/2021	1.33	1/15/2025	12/22/2021	100.29527	99.25767359	98.24142491	97.24587503	96.27039674	95.31438793	94.37727037	93.45848853	92.55750847
211222A00005	12/22/2021	1.2	7/15/2024	12/22/2021	99.878731	99.33599222	98.79914057	98.2680807	97.74271917	97.22296454	96.70872731	96.1999199	95.69645654
211222A00008	12/22/2021	1.13	4/15/2024	12/22/2021	99.892531	99.59582661	99.30089421	99.00771831	98.71628315	98.42657319	98.13857303	97.85226749	97.56764155
211222A00022	12/22/2021	1.06	1/16/2024	12/22/2021	99.980125	99.93028911	99.8805195	99.8308165	99.78118	99.73160984	99.6821059	99.63266803	99.5832961
211222A00024	12/22/2021	1.13	4/15/2024	12/22/2021	99.892531	99.59582661	99.30089421	99.00771831	98.71628315	98.42657319	98.13857303	97.85226749	97.56764155
211222A00030	12/22/2021	1.33	1/15/2025	12/22/2021	100.29527	99.25767359	98.24142491	97.24587503	96.27039674	95.31438793	94.37727037	93.45848853	92.55750847
211222A00031	12/22/2021	1.33	1/15/2025	12/22/2021	100.29527	99.25767359	98.24142491	97.24587503	96.27039674	95.31438793	94.37727037	93.45848853	92.55750847
170918A00007	9/18/2017	2.8	9/20/2027	9/18/2017	109.98444	106.1830187	102.5345805	99.03208198	95.66884973	92.43855718	89.33520449	86.35309936	83.48683925
171227A00018	12/27/2017	2.83	12/27/2024	12/27/2017	101.73317	100.738851	99.76393513	98.80786245	97.87009052	96.95009755	96.04738143	95.1614588	94.29186418
220106A00019	1/10/2022	3.17	1/7/2033	1/10/2022	124.85473	115.2906161	106.5558446	98.57358401	91.27451188	84.5960425	78.48164032	72.88020629	67.74552941
220106A00018	1/10/2022	3.11	1/8/2032	1/10/2022	122.06722	113.6063791	105.8085294	98.61794613	91.98386912	85.86003611	80.20426237	74.97806183	70.14630518
220112A00004	1/12/2022	1.55	1/12/2026	1/12/2022	102.48431	100.4635571	98.49274414	96.57031619	94.69477669	92.86468626	91.07866012	89.33536548	87.6335193
220112A00005	1/12/2022	1.55	1/12/2026	1/12/2022	102.48431	100.4635571	98.49274414	96.57031619	94.69477669	92.86468626	91.07866011	89.33536548	87.6335193
220118A00008	1/18/2022	1.36	1/18/2024	1/18/2022	99.994566	99.93918423	99.88387945	99.82865176	99.773501	99.71842699	99.66342959	99.60850862	99.55366392
220118A00009	1/18/2022	1.65	1/17/2025	1/18/2022	100.64235	99.59740673	98.57406732	97.57166411	96.58955972	95.62714242	94.68382487	93.75904287	92.85225424
220125A00010	1/25/2022	1.89	1/25/2027	1/25/2022	105.10195	102.0348265	99.07321673	96.21289517	93.44982994	90.78017438	88.20025726	85.70657365	83.29577627
171005A00006	10/5/2017	2.32	10/7/2024	10/5/2017	100.94148	100.1672689	99.40491711	98.65415045	97.91470615	97.18632935	96.46877282	95.76179664	95.06516795
180829A00008	8/29/2018	3.23	8/30/2027	8/29/2018	111.89508	108.102269	104.4601032	100.9617307	97.6006576	94.37072287	91.26607935	88.2811756	85.41073906
190814A00005	8/14/2019	1.65	8/14/2024	8/14/2019	100.28203	99.65589229	99.0375629	98.42689596	97.82374949	97.22798502	96.63946748	96.05806507	95.48364915
180619A00021	6/19/2018	3.24	6/19/2028	6/19/2018	114.91647	110.238198	105.7803898	101.5314754	97.48055681	93.61736161	89.9322037	86.41594676	83.05997015
160113A00030	1/13/2016	2.52	1/13/2025	1/13/2016	101.70374	100.6611872	99.63996337	98.6394233	97.65894308	96.6979237	95.75578976	94.83198841	93.92598817
180619A00020	6/19/2018	3.1	6/19/2025	6/19/2018	103.74719	102.2732616	100.8277714	99.40997044	98.01913276	96.65455738	95.31556719	94.00150788	92.71174701
210608A00005	6/8/2021	0.51	6/7/2024	6/8/2021	99.650274	99.20967049	98.77296188	98.34009632	97.91102312	97.48569246	97.06405542	96.64606393	96.23167072
210608A00017	6/10/2021	2.67	6/8/2029	6/10/2021	114.08086	108.4577583	103.1493308	98.13632558	93.40076141	88.92584133	84.69586872	80.69616986	76.91302217
210609A00013	6/11/2021	1.64	6/11/2025	6/11/2021	101.31351	99.88313372	98.47995611	97.10326735	95.75238376	94.42664467	93.12541152	91.84806691	90.59401372
210609A00011	6/11/2021	1.32	6/11/2024	6/11/2021	99.956213	99.50464278	99.05715275	98.613688	98.17419425	97.73861822	97.30690757	96.87901089	96.45487769
210609A00007	6/11/2021	2.6	6/11/2029	6/11/2021	113.7112	108.0900268	102.7840253	97.77387444	93.04153687	88.57016517	84.34401736	80.34837888	76.56949051

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
211022A00008	10/22/2021	1.12	10/22/2024	10/22/2021	99.898608	99.09042471	98.29525465	97.51278562	96.74271527	95.98475083	95.23860865	94.50401389	93.78070018
220711A00020	7/11/2022	3.25	1/11/2024	7/11/2022	100.06912	100.0329975	99.99692315	99.96089263	99.92490581	99.8889626	99.85306292	99.81720667	99.78139377
210128A00008	1/28/2021	0.54	4/9/2024	1/28/2021	99.730025	99.44997217	99.17150085	98.89459769	98.61924941	98.34544283	98.07316496	97.80240293	97.53314402
210129A00008	1/29/2021	0.62	10/8/2024	1/29/2021	99.483084	98.7142052	97.95714557	97.21163459	96.47740968	95.75421614	95.0418069	94.33994221	93.64838938
210129A00013	1/29/2021	0.65	1/9/2025	1/29/2021	99.566257	98.5488264	97.55203507	96.57526044	95.6179048	94.679394	93.75917634	92.85672145	91.9715193
200224A00015	2/24/2020	1.57	1/10/2024	2/24/2020	100.00372	99.97047345	99.93726281	99.90409113	99.87095833	99.83786434	99.80480908	99.77179248	99.73881448
210128A00010	1/28/2021	0.57	7/9/2024	1/28/2021	99.55231	99.02659391	98.50641478	97.99168553	97.48232078	96.97823693	96.47935211	95.98558615	95.49686049
220909A00052	9/9/2022	3.95	3/8/2024	9/9/2022	100.474	100.2802732	100.0873011	99.89508072	99.70360755	99.51287721	99.32288534	99.13362761	98.94509973
220729A00035	8/3/2022	3.14	8/3/2027	8/3/2022	110.79902	107.1132108	103.5713332	100.1669651	96.89400483	93.7466572	90.71941642	87.80704975	85.00458227
220406A00007	4/6/2022	2.87	4/8/2024	4/6/2022	100.38424	100.1057064	99.82872837	99.553293	99.27938732	99.0069985	98.73611388	98.46672096	98.19880733
220421A00015	4/21/2022	3.12	9/16/2024	4/21/2022	101.28952	100.5722798	99.86519779	99.16806036	98.4806585	97.80278906	97.13425453	96.47486281	95.82442706
220421A00013	4/21/2022	3.33	9/15/2026	4/21/2022	108.27412	105.5183417	102.8473124	100.2578777	97.74702097	95.31185964	92.94963808	90.65772096	88.433587
220518A00008	5/18/2022	3.01	5/20/2024	5/18/2022	100.62016	100.2265638	99.83604992	99.44858519	99.06413394	98.68266101	98.30413182	97.92851229	97.55576888
220531A00020	5/31/2022	2.86	5/31/2024	5/31/2022	100.6087	100.1852281	99.76531619	99.34891987	98.9359951	98.52649862	98.12038785	97.71762095	97.31815673
220601A00038	6/3/2022	3.69	5/28/2032	6/3/2022	127.85048	118.7694864	110.4250938	102.7531798	95.69552872	89.19925912	83.21630975	77.70297739	72.61950107
220602A00039	6/2/2022	3.11	6/2/2027	6/2/2022	110.56432	107.0420571	103.6521393	100.3888885	97.24690322	94.22104167	91.30640766	88.49833754	85.79238787
220429A00006	4/29/2022	3.06	4/29/2024	4/29/2022	100.53805	100.2018413	99.86787231	99.53612344	99.20657263	98.87919815	98.55397854	98.23089262	97.90991949
220429A00007	4/29/2022	3.14	10/29/2024	4/29/2022	101.60707	100.7723601	99.9513519	99.14370799	98.34910404	97.56722615	96.79777039	96.04044248	95.29495733
220429A00002	4/29/2022	3.63	4/29/2032	4/29/2022	127.12239	118.1518793	109.9032912	102.314292	95.32824562	88.89366227	82.96370694	77.49575673	72.4510024
220916A00043	9/16/2022	4.07	9/16/2031	9/16/2022	129.93714	121.4405787	113.5817128	106.3088652	99.57481781	93.33640718	87.55415591	82.19193878	77.21668121
220916A00042	9/16/2022	4.07	9/16/2030	9/16/2022	126.61736	119.2839346	112.4384451	106.0455933	100.0728251	94.49010163	89.26969183	84.3859827	79.81530665
220815A00004	8/15/2022	3.54	2/15/2024	8/15/2022	100.27351	100.1405578	100.0079751	99.87575902	99.74390798	99.61242046	99.48129491	99.35052979	99.22012358
220815A00006	8/15/2022	3.52	8/15/2024	8/15/2022	101.34228	100.7112962	100.0881749	99.47277267	98.86494652	98.26455693	97.67146782	97.08554638	96.50666305
220920A00050	9/20/2022	4.37	9/20/2024	9/20/2022	102.23214	101.5002926	100.7789501	100.067885	99.36687826	98.67571735	97.9941955	97.32211177	96.65927074
221018A00046	10/18/2022	4.9	4/30/2024	10/18/2022	101.16959	100.8293111	100.4913224	100.1555984	99.82211664	99.49085458	99.16179017	98.83490159	98.51016734
221018A00049	10/18/2022	4.59	10/18/2027	10/18/2022	117.08127	113.0673384	109.216395	105.520921	101.9737874	98.56823185	95.29783811	92.15651589	89.13848255
221018A00048	10/18/2022	4.71	10/19/2026	10/18/2022	112.50155	109.5921916	106.774446	104.0448999	101.4002896	98.83749216	96.35351863	93.94550731	91.61071751
221018A00047	10/18/2022	4.78	10/20/2025	10/18/2022	107.68547	105.8457092	104.0466773	102.2871944	100.566128	98.88238652	97.23491763	95.62270654	94.0447743
221018A00006	10/18/2022	4.55	10/18/2027	10/18/2022	116.92818	112.9171623	109.0690458	105.3763144	101.8318422	98.42887022	95.1609849	92.02209877	89.00643188
220922A00042	9/22/2022	4.6	3/22/2024	9/22/2022	100.7196	100.4870558	100.2555934	100.025205	99.79588294	99.56761995	99.34040864	99.1142417	98.88911193
220819A00037	8/19/2022	3.61	2/20/2024	8/19/2022	100.31158	100.1648058	100.0184781	99.87259024	99.72714022	99.58212603	99.43754568	99.2933972	99.14967862
220819A00038	8/19/2022	3.59	8/19/2024	8/19/2022	101.41428	100.7722371	100.1383324	99.51241025	98.89432048	98.28391647	97.68105534	97.08559769	96.49740756
170914A00039	9/14/2017	2.23	9/16/2024	9/14/2017	100.77982	100.0628759	99.35611815	98.65933277	97.97230956	97.2948442	96.62673808	95.96779803	95.3178362

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220622A00010	6/22/2022	3.43	7/12/2024	6/22/2022	101.09749	100.558888	100.0260295	99.49882532	98.97718577	98.46102286	97.9502505	97.44478439	96.94454198
220624A00016	6/24/2022	3.34	6/24/2026	6/24/2022	107.82152	105.2921301	102.8357952	100.4499792	98.1322523	95.88028371	93.69183689	91.56476511	89.49700721
220923A00035	9/23/2022	4.7	3/22/2024	9/23/2022	100.74288	100.5102954	100.2787957	100.0483702	99.81901122	99.59071141	99.3634634	99.13725991	98.9120937
220927A00071	9/27/2022	4.7	9/26/2024	9/27/2022	102.53728	101.7879615	101.0496156	100.3220068	99.60490185	98.89807428	98.20130401	97.51437726	96.83708626
220927A00073	9/27/2022	4.72	9/26/2025	9/27/2022	107.25125	105.4823105	103.7513395	102.0571821	100.3987279	98.77491118	97.18470938	95.6271403	94.10126031
220927A00024	9/27/2022	4.7	9/27/2024	9/27/2022	102.55517	101.8029712	101.0618298	100.331504	99.61175811	98.90236315	98.2030968	97.51374304	96.83409196
220823A00056	8/23/2022	3.5	8/23/2024	8/23/2022	101.51815	100.863212	100.2167308	99.57854365	98.94849143	98.32641913	97.71217565	97.10561369	96.50658964
220823A00060	8/23/2022	3.5	8/23/2024	8/23/2022	101.51815	100.863212	100.2167308	99.57854365	98.94849143	98.32641913	97.71217565	97.10561369	96.50658964
220826A00033	8/26/2022	3.73	8/26/2025	8/26/2022	105.17072	103.5039766	101.8718393	100.2732898	98.70735417	97.17309621	95.66961551	94.19604578	92.75155319
221028A00056	10/28/2022	4.77	10/28/2024	10/28/2022	102.96811	102.1298641	101.3053074	100.4941025	99.69592666	98.91046739	98.13742226	97.3764983	96.62741173
220830A00055	8/30/2022	3.7	8/30/2029	8/30/2022	120.38452	114.3583737	108.6787298	103.3237312	98.27301405	93.5076012	89.00980036	84.76311008	80.75213317
221031A00003	10/31/2022	4.89	11/12/2024	10/31/2022	103.2474	102.3670989	101.5018735	100.6513367	99.81511592	98.99285113	98.18419432	97.38880894	96.6063695
221031A00004	10/31/2022	4.79	10/28/2025	10/31/2022	107.81385	105.9505405	104.1289011	102.3477537	100.6059612	98.90242541	97.236086	95.60591863	94.01093356
221031A00045	10/31/2022	4.79	10/31/2025	10/31/2022	107.85445	105.9825579	104.152691	102.3636599	100.6143173	98.90355548	97.23030441	95.59353046	93.99223479
221031A00044	10/31/2022	4.89	10/31/2024	10/31/2022	103.10417	102.2571534	101.4241015	100.6046672	99.79851816	99.00533277	98.22479973	97.45661762	96.70049456
221103A00050	11/3/2022	5.14	11/4/2024	11/3/2022	103.36649	102.5073785	101.6626063	100.8318181	100.0146683	99.21082218	98.41995627	97.64175735	96.87592223
221103A00036	10/13/2023	4.87	10/31/2024	10/13/2023	103.08722	102.2402848	101.4073102	100.5879523	99.78187883	98.98876811	98.2083089	97.44019979	96.68414893
220902A00043	9/2/2022	3.91	3/4/2024	9/2/2022	100.44151	100.2588	100.0767616	99.89538848	99.71467708	99.5346237	99.35522476	99.17647666	98.99837584
221107A00056	11/7/2022	4.73	11/8/2027	11/7/2022	117.91121	113.8217008	109.9003499	106.1393451	102.531281	99.06913277	95.74623444	92.55625876	89.49319825
221006A00033	10/6/2022	4.56	10/7/2024	10/6/2022	102.56181	101.7823653	101.0148047	100.2588533	99.51424876	98.78073647	98.05806954	97.34600828	96.64432009
221007A00003	10/7/2022	4.67	10/7/2025	10/7/2022	107.31047	105.5105156	103.7497413	102.0269759	100.3410935	98.69101239	97.07569254	95.49413374	93.94537359
221130A00081	11/30/2022	4.15	11/30/2027	11/30/2022	116.47736	112.3395582	108.374979	104.5754443	100.9332046	97.440915	94.09161239	90.87869314	87.79589282
221130A00069	11/30/2022	4.15	11/30/2027	11/30/2022	116.47736	112.3395582	108.374979	104.5754443	100.9332046	97.440915	94.09161239	90.87869314	87.79589282
221130A00075	11/30/2022	4.15	11/30/2027	11/30/2022	116.47736	112.3395582	108.374979	104.5754443	100.9332046	97.44091501	94.09161239	90.87869314	87.79589282
221130A00078	11/30/2022	4.15	11/30/2027	11/30/2022	116.47736	112.3395582	108.374979	104.5754443	100.9332046	97.44091501	94.09161239	90.87869314	87.79589282
221201A00048	12/1/2022	4.22	12/1/2027	12/1/2022	116.21509	112.0944812	108.1461809	104.3620591	100.7344148	97.25594866	93.91974018	90.71922595	87.64817932
221201A00011	12/1/2022	3.95	12/1/2027	12/1/2022	115.69837	111.5730097	107.6206339	103.8330688	100.2025667	96.72178512	93.38376346	90.18190085	87.1099358
221201A00009	12/1/2022	4.22	12/1/2025	12/1/2022	107.44444	105.4877746	103.5769168	101.7105183	99.88727744	98.10593928	96.36529381	94.66417387	93.00145336
221201A00037	12/1/2022	4.26	12/1/2026	12/1/2022	111.75398	108.7367707	105.8182178	102.9945599	100.2621968	97.61768506	95.05773073	92.57918153	90.17902011
221205A00034	12/5/2022	4.89	6/5/2024	12/5/2022	101.5248	101.0853511	100.6497133	100.2178411	99.78968566	99.36519899	98.94433398	98.5270443	98.11328438
221205A00088	12/5/2022	4.13	12/3/2027	12/5/2022	115.88443	111.7646055	107.8173626	104.0345434	100.4084231	96.93168056	93.59737541	90.39892575	87.33008798
200305A00020	3/5/2020	0.95	3/5/2025	3/5/2020	100.22575	99.05402605	97.9094813	96.79117957	95.69822738	94.62977142	93.58499625	92.56312225	91.56340369
200124A00008	1/24/2020	1.92	1/22/2027	1/24/2020	105.5849	102.5086129	99.53809963	96.66912114	93.89763824	91.21979705	88.63191931	86.13049323	83.7121649

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180814A00033	8/14/2018	3.25	8/13/2027	8/14/2018	111.79391	108.0497936	104.4528896	100.9965797	97.6745792	94.48092216	91.40994282	88.4562588	85.61475508
180814A00032	8/14/2018	3.1	8/14/2025	8/14/2018	104.26129	102.6302587	101.0327432	99.46777488	97.93442342	96.43179393	94.95902522	93.51528816	92.09978419
221011A00036	10/11/2022	4.59	10/6/2026	10/11/2022	111.98939	109.1241527	106.3481696	103.6580978	101.0507409	98.52304413	96.07208689	93.69507612	91.38933951
221011A00037	10/11/2022	4.68	10/7/2024	10/11/2022	102.65557	101.8757224	101.1077633	100.3514177	99.60642302	98.8725248	98.14947596	97.43703678	96.73497457
221012A00051	10/12/2022	4.7	10/11/2024	10/12/2022	102.71498	101.9240286	101.1453026	100.3785159	99.62339504	98.87967468	98.14709754	97.42541404	96.71438201
221207A00101	12/7/2022	4.87	6/7/2024	12/7/2022	101.53628	101.0913427	100.6503151	100.2131486	99.7797923	99.35019652	98.92431227	98.50209144	98.08348676
221208A00062	12/8/2022	4.24	12/8/2028	12/8/2022	120.79564	115.5133441	110.5000162	105.7404958	101.220556	96.92684085	92.84680743	88.96867227	85.28136146
221208A00061	12/8/2022	4.11	12/8/2027	12/8/2022	115.86691	111.7331936	107.77322	103.9787544	100.3419947	96.85554803	93.51240698	90.3059276	87.22980853
221208A00006	12/8/2022	4.88	12/8/2037	12/8/2022	155.59672	139.4258993	125.2448837	112.7916803	101.8403684	92.19595346	83.68997603	76.17676443	69.53023397
221208A00005	12/8/2022	4.88	12/8/2037	12/8/2022	155.59672	139.4258993	125.2448837	112.7916803	101.8403684	92.19595346	83.68997603	76.17676443	69.53023397
221208A00001	12/8/2022	4.6	12/8/2033	12/8/2022	140.98061	129.7433011	119.5478306	110.2905284	101.878596	94.22891529	87.26699146	80.92601661	75.14603914
221208A00050	12/8/2022	4.11	12/8/2027	12/8/2022	115.86691	111.7331936	107.77322	103.9787544	100.3419947	96.85554803	93.51240698	90.3059276	87.22980853
221014A00043	10/14/2022	4.49	10/14/2027	10/14/2022	117.17919	113.160775	109.3054343	105.6056299	102.0542201	98.6444324	95.36984222	92.22435282	89.20217661
221014A00050	10/14/2022	4.49	10/14/2027	10/14/2022	117.17919	113.160775	109.3054343	105.6056299	102.0542201	98.6444324	95.36984222	92.22435282	89.20217661
221209A00035	12/9/2022	3.91	12/9/2027	12/9/2022	115.6375	111.4904251	107.5182034	103.7125195	100.0655016	96.56969202	93.21802299	90.00379424	86.92065185
221209A00037	12/9/2022	3.91	12/9/2027	12/9/2022	115.6375	111.4904251	107.5182034	103.7125195	100.0655016	96.56969202	93.21802299	90.00379424	86.92065185
221014A00026	10/14/2022	4.63	10/14/2027	10/14/2022	117.17869	113.1744412	109.3323421	105.6449163	102.1050747	98.70609421	95.44159618	92.30552707	89.29213976
180118A00039	1/18/2018	3.09	1/19/2027	1/18/2018	108.75871	105.6511637	102.6496197	99.74985476	96.94784314	94.23974264	91.62188528	89.09076822	86.64304525
190128A00035	1/28/2019	3.04	1/26/2024	1/28/2019	100.12217	100.0445658	99.9670862	99.88973159	99.81250171	99.73539628	99.658415	99.58155757	99.50482372
200115A00018	1/15/2020	1.9	1/16/2024	1/15/2020	100.02207	99.97220043	99.92239485	99.87265594	99.82298356	99.77337758	99.72383786	99.67436427	99.62495666
220630A00045	6/30/2022	3.39	6/30/2026	6/30/2022	107.67064	105.1340045	102.6709382	100.2788764	97.95536187	95.69803788	93.50464341	91.37300867	89.30105077
230103A00070	1/3/2023	4.53	10/15/2025	1/3/2023	107.16508	105.3441367	103.5632534	101.8212607	100.1170307	98.44947742	96.81755523	95.2202567	93.65661098
230103A00066	1/3/2023	4.19	7/15/2026	1/3/2023	110.21633	107.5974186	105.0552448	102.5870958	100.1903745	97.86259179	95.60136157	93.40439567	91.26949916
230103A00068	1/3/2023	4.69	3/13/2025	1/3/2023	104.59738	103.3790058	102.1891579	101.0268418	99.89110785	98.78104988	97.69580245	96.63453871	95.59646819
221110A00086	11/10/2022	4.34	11/8/2027	11/10/2022	116.39593	112.3356914	108.4427188	104.7092362	101.1278713	97.69163029	94.39387724	91.22831341	88.1889586
221110A00084	11/10/2022	4.56	11/6/2025	11/10/2022	107.50549	105.6207417	103.7786473	101.9779929	100.2176053	98.49635164	96.81313832	95.16690905	93.55664343
221110A00039	11/10/2022	4.34	11/10/2027	11/10/2022	116.42137	112.3550896	108.456533	104.7178936	101.13177	97.69114152	94.38934698	91.22006424	88.17729124
230105A00028	1/5/2023	4.93	10/18/2024	1/5/2023	102.97826	102.1671754	101.3689154	100.583178	99.80966974	99.04810607	98.2982113	97.55971817	96.83236754
180118A00037	1/18/2018	2.88	1/21/2025	1/18/2018	101.97988	100.9165258	99.87532545	98.85559137	97.85666446	96.87791236	95.91872813	94.97852893	94.0567549
221213A00051	12/13/2022	4.02	12/13/2027	12/13/2022	115.5701	111.428016	107.4606792	103.6597732	100.0174244	96.52617356	93.17895207	89.96905912	86.89014065
221213A00070	12/13/2022	4.07	12/13/2027	12/13/2022	115.7692	111.623184	107.6520313	103.8474267	100.2014921	96.70676381	93.35616919	90.14300339	87.06090858
221213A00056	12/13/2022	4.02	5/13/2026	12/13/2022	109.02641	106.5969673	104.2345876	101.9370464	99.70220713	97.52801659	95.41250062	93.35376074	91.34997082
221214A00077	12/14/2022	3.84	12/14/2027	12/14/2022	115.41875	111.2617175	107.2805865	103.4669691	99.81291975	96.31091218	92.95381508	89.73486924	86.64766611

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
221214A00079	12/14/2022	3.84	12/14/2027	12/14/2022	115.41875	111.2617175	107.2805865	103.4669691	99.81291975	96.31091218	92.95381508	89.73486924	86.64766611
221214A00046	12/14/2022	4.02	12/14/2027	12/14/2022	115.58216	111.4370018	107.4668285	103.6633128	100.018565	96.52511123	93.17586897	89.96412462	86.88351221
221214A00002	12/14/2022	4.62	12/13/2024	12/14/2022	103.36512	102.4000271	101.4530247	100.5236068	99.61128609	98.71559298	97.83607502	96.97229605	96.12383549
221116A00028	11/16/2022	4.21	11/16/2027	11/16/2022	115.98972	111.9151827	108.009443	104.2646154	100.6732221	97.22817186	93.92273781	90.75053688	87.70551043
221116A00026	11/16/2022	4.78	11/15/2024	11/16/2022	103.18547	102.2973203	101.4245243	100.5666819	99.72341042	98.89434014	98.07911374	97.27738582	96.48882242
221116A00027	11/16/2022	4.46	11/14/2025	11/16/2022	107.41883	105.5133756	103.6514946	101.8319314	100.0534754	98.31495836	96.61525294	94.95327065	93.3279604
230126A00009	1/26/2023	4.84	7/26/2024	1/26/2023	101.97557	101.3965412	100.8241019	100.2581358	99.69853352	99.14518811	98.59799493	98.05685173	97.52165849
230126A00011	1/26/2023	4.84	7/26/2024	1/26/2023	101.97557	101.3965412	100.8241019	100.2581358	99.69853352	99.14518811	98.59799493	98.05685173	97.52165849
230127A00075	1/27/2023	4.23	7/28/2025	1/27/2023	105.90351	104.3047364	102.7381829	101.2029464	99.6981537	98.2229637	96.77656609	95.35817989	93.96705205
230127A00079	1/27/2023	4.23	7/28/2025	1/27/2023	105.90351	104.3047364	102.7381829	101.2029464	99.6981537	98.2229637	96.77656609	95.35817989	93.96705205
230127A00056	1/27/2023	3.78	1/27/2028	1/27/2023	115.69617	111.4092905	107.3083635	103.3842962	99.62848798	96.03280442	92.58954987	89.29144099	86.13158231
230127A00059	1/27/2023	4.41	1/27/2025	1/27/2023	103.86739	102.7743024	101.7042906	100.6566324	99.63063176	98.62562138	97.64096103	96.67603633	95.73025744
230307A00026	3/7/2023	4.98	3/6/2026	3/7/2023	110.01871	107.7748501	105.5886259	103.4581392	101.3815719	99.35717992	97.38329044	95.45829764	93.5806597
230307A00020	3/7/2023	4.98	3/9/2026	3/7/2023	110.06308	107.8099602	105.6148845	103.4759349	101.3912745	99.35914172	97.37784689	95.44576848	93.56134979
230127A00028	1/27/2023	4.7	7/26/2024	1/27/2023	102.01446	101.4338205	100.8598069	100.2923032	99.7311991	99.17638655	98.62776005	98.08521642	97.54865476
230127A00029	1/27/2023	4.7	7/26/2024	1/27/2023	102.01446	101.4338205	100.8598069	100.2923032	99.7311991	99.17638655	98.62776005	98.08521642	97.54865476
230127A00045	1/27/2023	4.12	1/27/2027	1/27/2023	112.02281	108.8428596	105.7715008	102.8043948	99.93740281	97.16657628	94.48814652	91.89851545	89.39424671
230127A00046	1/27/2023	4	1/27/2028	1/27/2023	116.02812	111.7503517	107.6576671	103.7410272	99.99188843	96.40216981	92.96422532	89.67081779	86.51509477
230127A00044	1/27/2023	4.25	1/27/2026	1/27/2023	107.93995	105.8262634	103.7650834	101.7547482	99.79366537	97.88030454	96.01319428	94.19091947	92.41211866
230127A00048	1/27/2023	4	1/27/2028	1/27/2023	116.02812	111.7503517	107.6576671	103.7410272	99.99188843	96.40216981	92.96422532	89.67081779	86.51509477
230127A00053	1/27/2023	4	1/27/2028	1/27/2023	116.02812	111.7503517	107.6576671	103.7410272	99.99188843	96.40216981	92.96422532	89.67081779	86.51509477
230127A00073	1/27/2023	4.24	2/17/2026	1/27/2023	108.17938	106.004313	103.8843138	101.8176069	99.80248432	97.83730643	95.92049868	94.05054849	92.22600223
230127A00060	1/30/2023	4.25	2/3/2026	1/30/2023	108.02654	105.8924338	103.8116745	101.78256	99.80346027	97.87280936	95.98910233	94.15089237	92.35678802
230127A00012	1/27/2023	4	1/27/2028	1/27/2023	116.02812	111.7503517	107.6576671	103.7410272	99.99188843	96.40216981	92.96422532	89.67081779	86.51509477
221216A00023	12/16/2022	4.04	12/13/2027	12/16/2022	115.64974	111.5060832	107.5372201	103.7348346	100.0910515	96.59840966	93.24983891	90.03863682	86.95844783
221216A00013	12/16/2022	4.04	12/16/2027	12/16/2022	115.6861	111.5332004	107.5558221	103.7456025	100.0946182	96.59536374	93.24072742	90.02396829	86.93869498
221219A00009	12/19/2022	4.83	6/19/2024	12/19/2022	101.63882	101.1608916	100.6874753	100.2185047	99.75391726	99.2936516	98.83764743	98.38584558	97.938188
230307A00092	3/23/2023	5.6	9/6/2024	3/23/2023	102.94767	102.2510355	101.5638712	100.8859833	100.2171844	99.55729218	98.90612916	98.26352256	97.62930414
230307A00038	3/7/2023	5.56	3/7/2024	3/7/2023	100.7752	100.5837929	100.3931237	100.2031857	100.0139745	99.82548603	99.63771606	99.45066045	99.26431509
230308A00030	3/8/2023	5.22	9/8/2025	3/8/2023	107.84739	106.1222166	104.4333177	102.7796096	101.1600549	99.57365717	98.01945883	96.49653938	95.00401346
230308A00029	3/8/2023	5.57	9/9/2024	3/8/2023	102.96526	102.2603966	101.565231	100.8795605	100.2031911	99.535934	98.87760541	98.22802656	97.58702341
230308A00019	3/8/2023	5.05	3/9/2026	3/8/2023	110.21748	107.9626276	105.7658548	103.6252428	101.5389533	99.50522409	97.5223644	95.58875184	93.70282886
221122A00011	11/22/2022	5.14	5/22/2024	11/22/2022	101.48443	101.0832918	100.6853341	100.2905198	99.89881167	99.51017306	99.1245679	98.74196068	98.36231644

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
221122A00015	11/22/2022	4.97	11/22/2024	11/22/2022	103.43938	102.5310074	101.6386516	100.7618956	99.90033204	99.05356783	98.22122324	97.40293151	96.59833821
221122A00041	11/22/2022	4.97	11/22/2024	11/22/2022	103.43938	102.5310074	101.6386516	100.7618956	99.90033204	99.05356783	98.22122324	97.40293151	96.59833821
230309A00002	3/9/2023	5.41	3/10/2025	3/9/2023	105.42525	104.2098221	103.0226284	101.8626865	100.7290633	99.62086809	98.5372499	97.47739541	96.44052692
230309A00004	3/9/2023	4.86	3/9/2027	3/9/2023	114.90699	111.5636385	108.337396	105.2234463	102.2172022	99.3142945	96.51056034	93.80203159	91.1849245
230309A00003	3/9/2023	5.06	3/9/2026	3/9/2023	110.23954	107.9844372	105.787422	103.6465725	101.5600503	99.526093	97.54300975	95.60917803	93.72304016
230309A00038	3/9/2023	4.85	3/9/2026	3/9/2023	110.074	107.8149271	105.6141569	103.4697605	101.37989	99.34277332	97.35671091	95.42007187	93.53129061
230309A00041	3/9/2023	4.85	3/9/2026	3/9/2023	110.074	107.8149271	105.6141569	103.4697605	101.37989	99.34277332	97.35671091	95.42007187	93.53129061
230309A00057	3/9/2023	4.86	3/9/2027	3/9/2023	114.90699	111.5636385	108.337396	105.2234463	102.2172022	99.3142945	96.51056034	93.80203159	91.1849245
230309A00036	3/9/2023	4.46	3/9/2028	3/9/2023	119.06793	114.5911333	110.312217	106.2212945	102.3090314	98.566612	94.98570755	91.55844613	88.2773848
230309A00006	3/9/2023	5.72	3/11/2024	3/9/2023	100.85233	100.6498041	100.4481039	100.2472236	100.047158	99.84790223	99.64945124	99.45180014	99.25494402
230309A00021	3/9/2023	5.41	3/10/2025	3/9/2023	105.42525	104.2098221	103.0226284	101.8626865	100.7290633	99.62086809	98.5372499	97.47739541	96.44052692
230106A00032	1/6/2023	4.28	1/6/2026	1/6/2023	108.01713	105.9547418	103.9427885	101.9797105	100.0640089	98.19424142	96.36902017	94.58700889	92.84692073
230109A00027	1/9/2023	4.64	12/17/2024	1/9/2023	103.43182	102.4555071	101.4976962	100.5578651	99.63550996	98.73014578	97.84130526	96.96853814	96.11141041
230109A00011	1/9/2023	4.61	1/6/2025	1/9/2023	103.6452	102.6132717	101.6019697	100.6106823	99.63881853	98.68581042	97.7511121	96.83419858	95.93456479
230110A00074	1/12/2023	4.65	1/10/2025	1/12/2023	103.73764	102.6942655	101.6719643	100.6701053	99.68807858	98.72529836	97.78120167	96.85524736	95.94691501
230110A00006	1/10/2023	4.06	1/10/2028	1/10/2023	116.06917	111.838081	107.7884259	103.9114227	100.1987664	96.64259703	93.23547357	89.97034912	86.84054787
230110A00037	1/11/2023	4.66	11/15/2024	1/11/2023	103.07884	102.1912082	101.3189205	100.4615802	99.61880486	98.79022479	97.97548283	97.17423368	96.38614349
230112A00054	1/12/2023	5.02	2/5/2024	1/12/2023	100.37294	100.267479	100.1622491	100.0572509	99.95248339	99.84794596	99.74363776	99.63955802	99.53570596
230112A00059	3/1/2023	4.04	3/2/2026	3/1/2023	107.90429	105.6956461	103.5436261	101.4463744	99.40211072	97.40912735	95.4657855	93.57051195	91.72179585
230118A00020	1/18/2023	3.87	1/16/2026	1/18/2023	107.29653	105.2143669	103.1835782	101.2025607	99.26977063	97.38372386	95.54299265	93.74620321	91.99203323
230118A00053	1/18/2023	3.87	1/16/2026	1/18/2023	107.29653	105.2143669	103.1835782	101.2025607	99.26977063	97.38372386	95.54299265	93.74620321	91.99203323
230118A00056	1/18/2023	3.87	1/16/2026	1/18/2023	107.29653	105.2143669	103.1835782	101.2025607	99.26977063	97.38372386	95.54299265	93.74620321	91.99203323
230130A00084	1/30/2023	4.29	1/30/2026	1/30/2023	108.06077	105.9375396	103.8671837	101.8480232	99.87844948	97.956917	96.08193997	94.25208968	92.4659918
221220A00029	12/20/2022	4.7	12/20/2024	12/20/2022	103.52645	102.5414815	101.5753328	100.6274648	99.69736126	98.78452529	97.88847833	97.0087594	96.14492428
230310A00034	3/10/2023	5.48	3/11/2024	3/10/2023	100.80377	100.6013163	100.3996872	100.1988778	99.99888285	99.79969749	99.60131671	99.40373558	99.20694922
230310A00035	3/10/2023	5.21	9/10/2024	3/10/2023	102.72356	102.0169307	101.3200634	100.6327549	99.95480924	99.28603543	98.62624787	97.97526586	97.33291357
230310A00065	3/10/2023	5	9/16/2024	3/10/2023	102.78551	102.0604898	101.3457429	100.6410483	99.94619446	99.2609758	98.58519238	97.91864982	97.26115903
230313A00115	3/13/2023	5.11	3/13/2024	3/13/2023	100.7488	100.5409259	100.3339236	100.1277858	99.92250679	99.7180813	99.51450391	99.31176929	99.10987216
230313A00117	3/13/2023	4.59	3/13/2025	3/13/2023	104.47611	103.2585107	102.0694278	100.9078643	99.77287097	98.6635419	97.57901197	96.51845461	95.48107968
230313A00119	3/13/2023	4.41	3/13/2026	3/13/2023	108.85871	106.607488	104.4145662	102.2780065	100.1959551	98.16663451	96.18834036	94.25943734	92.37835587
230313A00121	3/13/2023	4.29	3/15/2027	3/13/2023	113.15557	109.8227227	106.6073837	103.5046889	100.510011	97.61894356	94.82728968	92.13104989	89.52641162
230313A00134	3/13/2023	4.16	4/14/2028	3/13/2023	117.65072	113.1160081	108.7858268	104.6498219	100.6982212	96.92179837	93.31183931	89.86011084	86.55883136
230313A00128	3/13/2023	4.18	12/15/2027	3/13/2023	116.23225	112.0713762	108.0861226	104.2681305	100.6094795	97.10266678	93.74058276	90.5164882	87.42399302

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230313A00123	3/13/2023	4.22	9/15/2027	3/13/2023	115.24644	111.3606963	107.6298125	104.046709	100.6046716	97.29733317	94.11865376	91.06290115	88.12463337
230313A00135	3/13/2023	4.17	6/15/2028	3/13/2023	118.43487	113.7078217	109.2015281	104.9044798	100.8058308	96.89535455	93.16340473	89.60087969	86.19918865
230313A00097	3/13/2023	4.78	9/13/2024	3/13/2023	102.45855	101.7447396	101.0409109	100.3468526	99.66236199	98.98724172	98.32129992	97.66434991	97.01621006
230313A00098	3/13/2023	4.41	3/13/2026	3/13/2023	108.85871	106.607488	104.4145662	102.2780065	100.1959551	98.16663451	96.18834036	94.25943734	92.37835587
230313A00144	3/13/2023	4.59	3/13/2025	3/13/2023	104.47611	103.2585107	102.0694278	100.9078643	99.77287097	98.6635419	97.57901197	96.51845461	95.48107968
230313A00061	3/13/2023	4.06	3/13/2028	3/13/2023	116.83175	112.4066382	108.1776956	104.1350997	100.26958	96.57238249	93.03523724	89.65032877	86.41026818
230131A00087	2/3/2023	4.26	1/5/2026	2/3/2023	107.69274	105.64157	103.6404422	101.6878163	99.78220894	97.92219238	96.10639254	94.33348633	92.60219942
221221A00046	12/21/2022	4.33	12/19/2025	12/21/2022	107.62396	105.6202886	103.6645865	101.755408	99.89135942	98.0710987	96.29333265	94.55681509	92.86034468
221221A00048	12/21/2022	4.22	12/21/2026	12/21/2022	111.88059	108.8052869	105.8323415	102.9577771	100.1777932	97.48875791	94.88719993	92.36980024	89.93338454
221221A00049	12/21/2022	4.15	12/21/2027	12/21/2022	116.18718	112.010106	108.010054	104.1785606	100.5076117	96.98961768	93.61738797	90.38410834	87.28331902
230131A00041	1/31/2023	5.06	2/28/2024	1/31/2023	100.60281	100.4336515	100.2650607	100.0970354	99.92957276	99.76267003	99.59632439	99.43053308	99.26529335
221221A00038	12/21/2022	4.43	12/20/2024	12/21/2022	103.4171	102.4304828	101.4627556	100.5133757	99.58182392	98.66760075	97.7702251	96.88923359	96.02417971
230201A00003	2/1/2023	3.93	1/31/2028	2/1/2023	115.78728	111.5032672	107.4050584	103.4835599	99.73017637	96.1367791	92.69567777	89.39959436	86.24163862
230201A00047	2/1/2023	4.42	2/3/2025	2/1/2023	103.96918	102.8562477	101.7672272	100.7013499	99.65788255	98.63612287	97.6353975	96.65506075	95.69449313
230201A00048	2/1/2023	4.42	2/3/2025	2/1/2023	103.96918	102.8562477	101.7672272	100.7013499	99.65788255	98.63612287	97.6353975	96.65506075	95.69449313
230202A00065	2/2/2023	3.87	5/15/2028	2/2/2023	116.74487	112.1422055	107.7511098	103.5607444	99.56087773	95.7418523	92.09454899	88.61035457	85.28113101
230202A00064	2/2/2023	4.11	5/15/2026	2/2/2023	108.94434	106.5168702	104.1564301	101.8607969	99.62783445	97.45548948	95.34178802	93.28483181	91.28279488
230202A00033	2/2/2023	4.26	2/3/2025	2/2/2023	103.79168	102.6797992	101.591812	100.5269525	99.48448803	98.46371659	97.4639652	96.48458849	95.52496732
230202A00045	2/2/2023	3.62	2/2/2028	2/2/2023	115.10446	110.8128781	106.7081988	102.7812436	99.02333847	95.42628181	91.98231595	88.68410042	85.52468709
230313A00080	3/13/2023	4.59	3/14/2025	3/13/2023	104.48895	103.2685352	102.0767593	100.9126253	99.77517777	98.66350488	97.57673593	96.51403912	95.47461937
230313A00030	3/13/2023	4.57	9/13/2024	3/13/2023	102.30834	101.5951279	100.8918903	100.1984174	99.5145064	98.83996011	98.17458672	97.51819967	96.8706174
230313A00027	3/13/2023	4.81	3/13/2024	3/13/2023	100.68644	100.4786599	100.2717507	100.0657056	99.86051905	99.65618569	99.45270012	99.25005702	99.0482511
230313A00053	3/13/2023	4.57	9/13/2024	3/13/2023	102.30834	101.5951279	100.8918903	100.1984174	99.5145064	98.83996011	98.17458672	97.51819967	96.8706174
230314A00054	3/14/2023	4.46	3/15/2027	3/14/2023	113.70432	110.3626102	107.1386388	104.0275376	101.0246716	98.12562717	95.32620005	92.62238401	90.01035994
221222A00027	12/22/2022	4.16	12/15/2027	12/22/2022	116.1525	111.9932027	108.0094796	104.1929708	100.5357579	97.03033974	93.66960843	90.44682631	87.35560482
221222A00024	12/22/2022	4.35	12/15/2025	12/22/2022	107.59349	105.6015935	103.6571252	101.758664	99.90483918	98.09433051	96.32586556	94.59821784	92.91020482
221222A00026	12/22/2022	4.22	12/15/2026	12/22/2022	111.80732	108.7499567	105.7938289	102.9350181	100.1697849	97.49455504	94.90591117	92.40058517	89.97545061
221222A00012	12/22/2022	4.35	12/16/2025	12/22/2022	107.60596	105.6111584	103.6639236	101.7628221	99.90647753	98.09356424	96.32280481	94.59296793	92.9028665
221222A00013	12/22/2022	4.34	12/23/2025	12/22/2022	107.69368	105.6782105	103.7112464	101.7913173	99.91700683	98.0869513	96.29983697	94.5543981	92.84941478
221222A00014	12/22/2022	4.65	12/23/2024	12/22/2022	103.51284	102.5197943	101.5458753	100.5905316	99.65323449	98.7334754	97.83076453	96.94463027	96.07461824
221222A00035	12/30/2022	4.34	12/30/2025	12/30/2022	107.78088	105.7451657	103.7588652	101.8204697	99.92852377	98.08162646	96.27842882	94.51763156	92.79798289
221223A00025	12/23/2022	4.25	12/23/2027	12/23/2022	116.61301	112.4217645	108.4082813	104.5640529	100.8810237	97.35156492	93.96844966	90.72482967	87.61421334
230202A00071	2/2/2023	4.03	2/2/2027	2/2/2023	111.81562	108.6220189	105.5379537	102.5590258	99.68104266	96.90000541	94.21209824	91.61367901	89.10127009

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230202A00061	2/2/2023	4.16	2/2/2026	2/2/2023	107.82424	105.6951201	103.6191824	101.5947328	99.62014805	97.69386845	95.81439503	93.98028663	92.19015717
230202A00006	2/2/2023	3.92	2/2/2027	2/2/2023	111.47298	108.2847322	105.2058786	102.2320292	99.3589961	96.58278454	93.8995829	91.30575295	88.79782086
230202A00011	2/2/2023	3.92	2/2/2027	2/2/2023	111.47298	108.2847322	105.2058786	102.2320292	99.3589961	96.58278454	93.8995829	91.30575295	88.79782086
230202A00042	2/2/2023	3.82	2/2/2028	2/2/2023	115.35691	111.0761245	106.9813058	103.0633397	99.3136122	95.7239776	92.28673011	88.99457762	85.84061706
230202A00041	2/2/2023	3.82	2/2/2028	2/2/2023	115.35691	111.0761245	106.9813058	103.0633397	99.3136122	95.7239776	92.28673011	88.99457762	85.84061706
230203A00038	2/3/2023	4.1	2/3/2027	2/3/2023	112.04592	108.8458814	105.7556448	102.7707992	99.88713945	97.10065456	94.40751756	91.80407568	89.28684133
230203A00039	2/3/2023	3.98	2/3/2028	2/3/2023	116.02835	111.7310474	107.6203662	103.6871641	99.92279558	96.31908537	92.8682998	89.56312055	86.39661985
230203A00026	2/3/2023	3.98	2/3/2028	2/3/2023	116.02835	111.7310474	107.6203662	103.6871641	99.92279558	96.31908537	92.8682998	89.56312055	86.39661985
230203A00065	2/3/2023	3.76	2/3/2028	2/3/2023	115.69481	111.3883266	107.269355	103.3286859	99.55761559	95.94791477	92.49179952	89.18190472	86.01125909
230203A00025	2/3/2023	4.63	2/3/2025	2/3/2023	104.0251	102.914456	101.8276305	100.7638586	99.72241122	98.70258975	97.70372447	96.72517307	95.7663193
230314A00015	3/14/2023	4.55	9/14/2026	3/14/2023	111.59048	108.7918332	106.0788555	103.4483649	100.89732	98.42281424	96.02206887	93.69242613	91.43134306
230314A00070	3/14/2023	4.25	3/12/2027	3/14/2023	113.43005	110.0909664	106.8695431	103.7609194	100.7604647	97.8637695	95.06663345	92.36505377	89.75521452
230206A00009	2/6/2023	4.58	2/6/2025	2/6/2023	104.18739	103.0649049	101.9667052	100.8920081	99.84006372	98.81015368	97.80158972	96.81371195	95.8458875
230206A00008	2/6/2023	4.58	2/6/2025	2/6/2023	104.18739	103.0649049	101.9667052	100.8920081	99.84006372	98.81015368	97.80158972	96.81371195	95.8458875
221228A00075	12/28/2022	4.09	12/28/2027	12/28/2022	116.59521	112.3746588	108.3341	104.4648728	100.7587801	97.20806171	93.80536854	90.54373835	87.41657338
221228A00094	12/28/2022	4.95	6/28/2024	12/28/2022	101.7895	101.2866495	100.7887692	100.2957877	99.80763302	99.32423443	98.84552267	98.37142981	97.90188919
230207A00045	2/7/2023	5.07	8/7/2024	2/7/2023	102.23964	101.6271401	101.0220051	100.4240994	99.8332937	99.2494619	98.67248072	98.10222985	97.53859175
230315A00055	3/15/2023	4.2	3/11/2026	3/15/2023	108.36791	106.128017	103.9460428	101.820068	99.74825409	97.72883847	95.76013066	93.84050859	91.96841522
230315A00086	3/15/2023	4.28	3/11/2025	3/15/2023	104.07617	102.8666094	101.6852642	100.5311558	99.40334848	98.30094918	97.2231048	96.16900013	95.13785568
230315A00052	3/15/2023	4.07	3/14/2025	3/15/2023	104.05167	102.8310835	101.6392144	100.4750569	99.33765121	98.2260817	97.13947403	96.07699294	95.03784014
230208A00024	2/8/2023	5.08	8/8/2024	2/8/2023	102.25675	101.6414774	101.0336343	100.4330853	99.83969938	99.2533487	98.67390836	98.10125644	97.53527388
230209A00015	2/9/2023	4.8	2/5/2025	2/9/2023	104.24093	103.1235232	102.0301855	100.9601461	99.91266449	98.88703144	97.88256715	96.8986198	95.93456411
230315A00016	3/15/2023	4.08	3/16/2027	3/15/2023	112.4903	109.1652682	105.9576525	102.8625849	99.87543628	96.99179955	94.20747677	91.51846793	88.92096016
230315A00010	3/15/2023	4.2	3/13/2026	3/15/2023	108.3932	106.1472246	103.9594434	101.8279196	99.75080231	97.72631704	95.75276218	93.82850515	91.95197898
230315A00012	3/15/2023	4.24	9/15/2025	3/15/2023	106.26018	104.5301137	102.8367487	101.1789841	99.55576035	97.9660602	96.40890658	94.88336059	93.38851959
230315A00084	3/15/2023	4.08	3/24/2027	3/15/2023	112.5911	109.2409939	106.0098616	102.8927477	99.88493466	96.98193251	94.17946599	91.47346275	88.8600422
230316A00061	3/16/2023	4.31	9/16/2025	3/16/2023	106.39298	104.6590316	102.9619109	101.3005056	99.67375155	98.0806269	96.52015037	94.99137904	93.49340646
230316A00042	3/16/2023	4.42	3/14/2025	3/16/2023	104.28232	103.0632322	101.8727624	100.7099134	99.57373029	98.46330176	97.37775769	96.31626675	95.27803438
221230A00055	12/30/2022	4.59	12/30/2024	12/30/2022	103.69738	102.6819978	101.686566	100.7104997	99.75323683	98.8142373	97.89298134	96.98896882	96.10171824
221230A00059	12/30/2022	4.47	6/30/2025	12/30/2022	105.91588	104.3955946	102.905139	101.4437084	100.010528	98.60485058	97.22595438	95.87314264	94.54574227
221230A00111	12/30/2022	4.42	12/30/2026	12/30/2022	112.59474	109.4834003	106.47633	103.5694458	100.7588482	98.04081291	95.41178112	92.86835162	90.40727266
221230A00108	12/30/2022	4.8	12/30/2024	12/30/2022	103.74871	102.7353688	101.741895	100.767712	99.812261	98.87500478	97.95542641	97.05302841	96.16733184
221230A00109	12/30/2022	4.56	12/30/2025	12/30/2022	108.22437	106.1840831	104.1933041	102.2505168	100.3542633	98.50314038	96.6957968	94.93093111	93.2072894

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230316A00038	3/16/2023	4.42	3/14/2025	3/16/2023	104.28232	103.0632322	101.8727624	100.7099134	99.57373029	98.46330176	97.37775769	96.31626675	95.27803438
230316A00017	3/16/2023	3.81	3/16/2028	3/16/2023	116.40123	111.9594594	107.7154797	103.6593507	99.78169061	96.07364258	92.52684128	89.13338285	85.88579646
230316A00048	3/16/2023	4.05	6/16/2028	3/16/2023	117.90687	113.1887821	108.6913045	104.4029242	100.3127929	96.4106824	92.68694543	89.13247971	85.73869431
230316A00047	3/16/2023	4.07	9/16/2027	3/16/2023	114.69818	110.8198605	107.0963054	103.5204316	100.0855231	96.78521126	93.61345477	90.56452069	87.6329665
230316A00046	3/16/2023	4.18	6/16/2026	3/16/2023	109.49347	106.9715571	104.5216079	102.1411547	99.82782873	97.57935655	95.39355574	93.26833053	91.20166784
230317A00024	3/17/2023	4.54	3/17/2025	3/17/2023	104.46631	103.2378189	102.0383543	100.8668937	99.72246304	98.60413267	97.51101537	96.44226371	95.39706792
230317A00010	3/17/2023	4.77	9/17/2024	3/17/2023	102.494	101.7692104	101.0547077	100.3502711	99.65568848	98.97075368	98.29526628	97.62903139	96.97185945
230320A00045	3/20/2023	5.03	3/20/2024	3/20/2023	100.80246	100.5752492	100.3490733	100.1239246	99.89979602	99.67668064	99.45457152	99.23346182	99.01334476
230320A00021	3/20/2023	4.91	3/20/2024	3/20/2023	100.77519	100.5480237	100.3218909	100.0967851	99.87269921	99.64962639	99.42755968	99.20649225	98.98641731
230320A00005	3/20/2023	4.37	3/20/2025	3/20/2023	104.295	103.0594157	101.8532201	100.6753761	99.52489113	98.40081819	97.30225375	96.22833508	95.178238
230403A00031	4/3/2023	4.98	4/3/2024	4/3/2023	100.92748	100.6616306	100.3971907	100.1341461	99.87248575	99.6121988	99.35327437	99.09570173	98.83947026
230404A00002	4/4/2023	4.1	4/2/2027	4/4/2023	112.76736	109.3887123	106.130819	102.988633	99.95735155	97.03240304	94.20943462	91.48429993	88.85304789
230404A00004	4/4/2023	4.45	4/4/2025	4/4/2023	104.58295	103.3060766	102.0584213	100.838978	99.64678932	98.48094069	97.34055847	96.22480751	95.13288903
230405A00026	4/5/2023	4.75	4/5/2024	4/5/2023	100.88231	100.6110824	100.3413241	100.0730208	99.80616055	99.54073174	99.27672279	99.01412228	98.75291887
230405A00021	4/5/2023	3.96	4/6/2026	4/5/2023	108.14283	105.8317608	103.5820365	101.3916089	99.25851069	97.18085556	95.1568342	93.18471043	91.2628176
230405A00020	4/5/2023	4.17	4/4/2025	4/5/2023	104.22646	102.9519771	101.7066719	100.4895395	99.29962351	98.13601043	96.99782763	95.88424093	94.79445249
230405A00037	4/5/2023	3.71	4/6/2026	4/5/2023	107.87727	105.5631597	103.3106124	101.1175626	98.98203262	96.90212681	94.87602681	92.90198795	90.97833553
230405A00050	4/5/2023	4.38	10/7/2024	4/5/2023	102.42117	101.6423296	100.8753668	100.1200068	99.37598736	98.64305399	97.9209599	97.20946553	96.50833837
230405A00051	4/5/2023	4.17	4/7/2025	4/5/2023	104.26276	102.9806682	101.7270678	100.5010098	99.30158498	98.1279241	96.97919572	95.85460416	94.75338762
230405A00046	4/5/2023	3.82	10/5/2027	4/5/2023	113.98246	110.0644892	106.3048657	102.6962797	99.23180104	95.90485992	92.70922587	89.63898801	86.68853651
230405A00045	4/5/2023	4.15	5/5/2025	4/5/2023	104.56896	103.2142429	101.8836245	100.5765134	99.29233913	98.03054943	96.79060926	95.57200025	94.37422004
230406A00052	4/6/2023	4.02	4/6/2026	4/6/2023	108.2798	105.9671403	103.7158611	101.5239109	99.38932139	97.31020533	95.28475255	93.31122604	91.38795832
230406A00088	4/6/2023	4.23	10/7/2024	4/6/2023	102.4349	101.6542597	100.8855487	100.128491	99.38282273	98.64828783	97.9246379	97.21163187	96.50903578
230406A00091	4/6/2023	3.99	4/7/2025	4/6/2023	104.23803	102.9528989	101.6963856	100.4675296	99.26541644	98.08917199	96.93796022	95.81098113	94.70746882
230406A00006	4/6/2023	4.82	4/8/2024	4/6/2023	100.92981	100.6502708	100.3722928	100.0958617	99.82096444	99.54758828	99.2757205	99.00534855	98.73646
230410A00023	4/10/2023	4.75	4/10/2024	4/10/2023	100.96799	100.6824727	100.3985825	100.1163087	99.83563729	99.55655461	99.27904702	99.00310109	98.72870354
230411A00030	4/11/2023	4.2	4/11/2025	4/11/2023	104.55797	103.2608025	101.9913765	100.748798	99.53221549	98.34081389	97.17381218	96.03046181	94.91004498
230411A00028	4/11/2023	4.2	4/11/2025	4/11/2023	104.55797	103.2608025	101.9913765	100.748798	99.53221549	98.34081389	97.17381218	96.03046181	94.91004498
230411A00054	4/11/2023	3.74	4/11/2028	4/11/2023	116.40571	111.8886955	107.5758425	103.4567909	99.52176659	95.76154353	92.16740952	88.73113473	85.44494209
230209A00037	2/9/2023	4.12	2/9/2028	2/9/2023	116.6787	112.3512982	108.2122858	104.2524025	100.4628976	96.8354981	93.36237935	90.03613831	86.84976827
230209A00027	2/9/2023	4.12	2/7/2028	2/9/2023	116.65446	112.3331532	108.1997689	104.2450838	100.4603776	96.83740525	93.36836816	90.0458874	86.86297865
230209A00023	2/9/2023	4.79	2/10/2025	2/9/2023	104.29821	103.1667253	102.0599145	100.976974	99.91713605	98.87966556	97.8638583	96.8690394	95.89456177
230209A00025	2/9/2023	4.25	2/5/2027	2/9/2023	112.53891	109.3254716	106.2223821	103.2252048	100.3297085	97.53185807	94.82780349	92.21387039	89.68655076

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230209A00024	2/9/2023	4.4	2/5/2026	2/9/2023	108.36909	106.2256722	104.1359117	102.0980969	100.1105851	98.17179791	96.28021882	94.43438998	92.63290949
230210A00035	2/10/2023	4.52	2/10/2026	2/10/2023	108.68919	106.5282354	104.4216104	102.3675749	100.3644565	98.41064922	96.50461027	94.64485691	92.82996372
230210A00065	2/10/2023	4.02	2/10/2028	2/10/2023	116.85628	112.5062548	108.3460801	104.3664004	100.5583781	96.91365906	93.42434317	90.0829568	86.88242742
230210A00055	2/10/2023	4.02	2/10/2028	2/10/2023	116.85628	112.5062548	108.3460801	104.3664004	100.5583781	96.91365906	93.42434317	90.0829568	86.88242742
230210A00062	2/10/2023	4.13	2/10/2027	2/10/2023	112.65527	109.4155995	106.2877735	103.2672733	100.3497882	97.53120825	94.80761329	92.1752631	89.63058776
230210A00049	2/10/2023	5.07	8/12/2024	2/10/2023	102.29439	101.6681277	101.0495625	100.4385511	99.83495543	99.23864065	98.64947531	98.06733106	97.49208264
230210A00009	2/10/2023	4.93	12/11/2024	2/10/2023	103.63913	102.678057	101.73489	100.8091311	99.90030063	99.00793626	98.13159249	97.27083976	96.42526375
230213A00020	2/15/2023	4.28	1/25/2028	2/15/2023	117.15259	112.8575327	108.7478448	104.814495	101.0489406	97.44310035	93.9893276	90.68038379	87.50941461
230215A00019	2/15/2023	5.01	2/18/2025	2/15/2023	104.66057	103.5049215	102.3749402	101.2697764	100.1886171	99.13068482	98.09523498	97.08155476	96.0889612
230221A00007	2/21/2023	4.5	10/18/2027	2/21/2023	116.73682	112.7294422	108.8848593	105.1955561	101.6544108	98.25466819	94.98991838	91.85407737	88.84136853
230321A00038	3/21/2023	4.87	7/25/2024	3/21/2023	101.98854	101.4121169	100.842218	100.2787359	99.72156267	99.17059265	98.62572256	98.08685138	97.55388034
230119A00067	1/19/2023	3.84	1/20/2026	1/19/2023	107.28021	105.1873136	103.1462313	101.1553361	99.21306479	97.31791461	95.46844037	93.66325172	91.90101071
230222A00024	2/22/2023	4.74	3/2/2026	2/22/2023	109.4348	107.2091288	105.0404285	102.926834	100.8665553	98.85787515	96.89914585	94.9887855	93.12527485
230223A00012	2/23/2023	4.68	10/3/2025	2/23/2023	107.52827	105.7330268	103.9767189	102.2581691	100.5762452	98.92986018	97.31797021	95.73957214	94.19370165
230223A00010	2/23/2023	4.68	10/3/2025	2/23/2023	107.52827	105.7330268	103.9767189	102.2581691	100.5762452	98.92986018	97.31797021	95.73957214	94.19370165
230323A00027	3/23/2023	4.43	3/24/2025	3/23/2023	104.41855	103.1712165	101.9538042	100.7652456	99.60452206	98.47066238	97.36274022	96.27987141	95.22121157
230323A00033	3/23/2023	4.43	3/24/2025	3/23/2023	104.41855	103.1712165	101.9538042	100.7652456	99.60452206	98.47066238	97.36274022	96.27987141	95.22121157
230323A00031	3/23/2023	4.6	9/23/2024	3/23/2023	102.43163	101.6908572	100.9608253	100.2413018	99.53206081	98.83288263	98.14355391	97.46386729	96.79362118
230324A00001	3/24/2023	4.04	6/24/2026	3/24/2023	109.23763	106.6973569	104.2301891	101.8336012	99.50516724	97.2425597	95.04354498	92.90597897	90.8278029
230324A00036	3/24/2023	3.98	3/24/2027	3/24/2023	112.26582	108.9210085	105.6950299	102.582934	99.58000786	96.68176598	93.88393741	91.18245391	88.57343884
230324A00037	3/24/2023	3.99	3/24/2028	3/24/2023	116.6708	112.2164153	107.9607987	103.8939334	100.0063685	96.28918318	92.73395358	89.33272185	86.07796748
230324A00004	3/24/2023	4.46	9/24/2024	3/24/2023	102.34478	101.6015621	100.8691631	100.1473462	99.43588294	98.73455153	98.04313633	97.36142784	96.68922242
230327A00017	3/27/2023	4.98	3/27/2024	3/27/2023	100.85599	100.6095067	100.3642288	100.1201473	99.87725347	99.63553858	99.39499411	99.15561159	98.91738262
230412A00044	4/12/2023	3.91	4/10/2026	4/12/2023	108.38046	106.0496235	103.7810103	101.5725481	99.42224682	97.32819748	95.28856811	93.30160003	91.36560428
230412A00037	4/12/2023	4.62	10/15/2024	4/12/2023	102.6945	101.8927964	101.1036552	100.3267775	99.56187872	98.80868265	98.06692174	97.33633647	96.61667516
230412A00038	4/12/2023	3.69	4/12/2028	4/12/2023	116.20044	111.6850266	107.3738724	103.2566079	99.32345149	95.56516981	91.97304363	88.53883632	85.25476435
230412A00031	4/12/2023	3.91	4/10/2026	4/12/2023	108.38046	106.0496235	103.7810103	101.5725481	99.42224682	97.32819748	95.28856811	93.30160003	91.36560428
230413A00024	4/13/2023	4.41	4/14/2025	4/13/2023	104.65963	103.3576384	102.0825895	100.8336538	99.61003261	98.41096035	97.2357023	96.0835533	94.95383621
230328A00061	3/28/2023	4.68	9/27/2024	3/28/2023	102.54009	101.7879577	101.0468783	100.3166138	99.59692861	98.88759376	98.18838691	97.49909204	96.81949927
230329A00019	3/29/2023	4.76	10/1/2024	3/29/2023	102.64387	101.8804563	101.1284285	100.3875298	99.65751426	98.93814305	98.22918437	97.53041306	96.84161046
230329A00053	3/29/2023	4.89	3/29/2024	3/29/2023	100.88714	100.6347471	100.3836144	100.133734	99.88509653	99.63769284	99.39151372	99.1465501	98.90279299
230330A00080	3/30/2023	4.44	3/31/2025	3/30/2023	104.72219	103.4511	102.2102813	100.9986598	99.81520919	98.65895079	97.5289509	96.42431826	95.34420163
230330A00083	3/30/2023	4.1	3/30/2027	3/30/2023	113.18089	109.7928236	106.5257658	103.3746493	100.3346526	97.40118806	94.56988843	91.83659466	89.19734443

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230330A00055	3/30/2023	5.06	4/1/2024	3/30/2023	100.92582	100.6654962	100.4065169	100.1488726	99.89255312	99.63754818	99.3838477	99.13144165	98.88032013
230413A00069	4/13/2023	4.33	4/14/2025	4/13/2023	104.55558	103.2542975	101.9799484	100.7317008	99.50875637	98.31034976	97.1357466	95.984242	94.85515909
230418A00028	4/18/2023	5.13	4/18/2024	4/18/2023	101.12312	100.8157774	100.5103156	100.2067175	99.90496602	99.60504421	99.30693538	99.01062302	98.71609085
230418A00059	4/18/2023	4.09	4/17/2026	4/18/2023	108.87786	106.5221297	104.2297062	101.9984942	99.82648366	97.71174443	95.65242263	93.6467369	91.69297512
230418A00057	4/18/2023	4.36	4/18/2025	4/18/2023	104.85653	103.5400375	102.2497266	100.9848247	99.74459315	98.52832212	97.33532935	96.16495864	95.01657866
230418A00007	4/18/2023	4.61	4/18/2025	4/18/2023	104.97301	103.6590207	102.3711074	101.1085049	99.87047856	98.65632248	97.46535793	96.29693214	95.15041701
230420A00060	4/20/2023	4.72	4/20/2038	4/20/2023	154.50863	138.0422116	123.6506775	111.0545665	100.0137419	90.3216615	81.80050696	74.29704135	67.67908347
230420A00063	4/20/2023	4.65	4/20/2037	4/20/2023	150.7294	135.5077129	122.0935976	110.2576654	99.80098002	90.55085957	82.35728054	75.08979031	68.63485476
230420A00056	4/20/2023	4.38	4/20/2033	4/20/2023	136.75827	126.3753811	116.9044153	108.2593805	100.3628434	93.14503964	86.54307692	80.50022507	74.96528234
230420A00059	4/20/2023	4.72	4/20/2038	4/20/2023	154.50863	138.0422116	123.6506775	111.0545665	100.0137419	90.3216615	81.80050696	74.29704135	67.67908347
230120A00099	1/20/2023	3.92	1/20/2026	1/20/2023	107.44633	105.3516717	103.3088634	101.3162762	99.37234593	97.47556885	95.62449888	93.81774485	92.05396793
230120A00082	1/20/2023	4.53	1/16/2025	1/20/2023	103.68736	102.6278703	101.5901228	100.5734482	99.57720825	98.60079005	97.64360516	96.70508824	95.78469593
230120A00049	1/20/2023	4.53	1/16/2025	1/20/2023	103.68736	102.6278703	101.5901228	100.5734482	99.57720825	98.60079005	97.64360516	96.70508824	95.78469593
230123A00016	1/23/2023	4.64	12/2/2024	1/23/2023	103.2541	102.3195034	101.4018751	100.5007601	99.61571483	98.74631172	97.89213811	97.05279579	96.22790034
230124A00014	1/24/2023	4.23	1/26/2026	1/24/2023	107.88598	105.7755964	103.7175901	101.7103118	99.75217438	97.84165251	95.97727945	94.15764457	92.38139065
230125A00062	1/25/2023	4.84	7/25/2024	1/25/2023	101.97121	101.3948436	100.8250012	100.2615753	99.70445768	99.15354287	98.60872754	98.06991069	97.53699355
230125A00065	1/25/2023	4.84	7/25/2024	1/25/2023	101.97121	101.3948436	100.8250012	100.2615753	99.70445768	99.15354287	98.60872754	98.06991069	97.53699355
230125A00021	1/25/2023	3.95	1/26/2026	1/25/2023	107.57891	105.4664759	103.4065883	101.3975824	99.43786347	97.52589895	95.66021544	93.83939591	92.0620771
230125A00022	1/25/2023	3.8	1/25/2027	1/25/2023	111.43003	108.2548758	105.1883082	102.2259806	99.3637519	96.59767106	93.92396724	91.33904031	88.83945205
230125A00010	1/25/2023	4.01	1/25/2027	1/25/2023	111.65871	108.4899197	105.4292445	102.4723735	99.61519074	96.85376872	94.18435881	91.60338175	89.10741899
230502A00038	5/2/2023	3.86	5/2/2028	5/2/2023	116.55441	111.9929638	107.6396509	103.4838828	99.51566474	95.7255584	92.1046476	88.64450711	85.33717306
230503A00045	5/3/2023	4.96	5/3/2024	5/3/2023	101.22031	100.8717176	100.5255258	100.1817148	99.8402598	99.50113676	99.16432178	98.82979129	98.49752206
230224A00020	2/24/2023	5.38	8/26/2024	2/24/2023	102.65408	101.9885447	101.3316654	100.683273	100.0432037	99.41129771	98.7873994	98.17135706	97.56302279
230224A00029	2/24/2023	4.87	2/24/2026	2/24/2023	109.63343	107.4226579	105.2681466	103.1680626	101.1206492	99.12422107	97.17716029	95.27791312	93.4249869
221230A00088	12/30/2022	4.42	12/30/2026	12/30/2022	112.59474	109.4834003	106.47633	103.5694458	100.7588482	98.04081291	95.41178112	92.86835162	90.40727266
221230A00087	12/30/2022	4.56	1/2/2026	12/30/2022	108.26341	106.2145127	104.2154547	102.2647034	100.3607863	98.50228634	96.68783932	94.91613148	93.18589727
221230A00086	12/30/2022	4.8	1/2/2025	12/30/2022	103.78834	102.7665622	101.7649887	100.7830217	99.82008863	98.87563903	97.94914346	97.04009258	96.14799616
230503A00070	5/3/2023	4.73	5/3/2024	5/3/2023	101.18448	100.83546	100.4888536	100.1446368	99.80278493	99.4632736	99.12607875	98.79117665	98.45854389
230227A00060	2/27/2023	4.86	2/27/2026	2/27/2023	109.65413	107.4346621	105.2718328	103.1637895	101.1087586	99.10503836	97.15099571	95.24506244	93.38573228
221230A00072	12/30/2022	4.8	12/31/2024	12/30/2022	103.76192	102.7457655	101.7495912	100.7728128	99.81486696	98.87521203	97.95332695	97.04871028	96.16087933
230227A00035	2/27/2023	5.41	6/28/2024	2/27/2023	102.02107	101.5175386	101.0189865	100.5253381	100.0365212	99.55246504	99.07310037	98.59835917	98.12817474
230227A00034	2/27/2023	5.42	5/28/2024	2/27/2023	101.66503	101.2470666	100.8325456	100.4214209	100.0136508	99.60919454	99.20801175	98.81006283	98.41530879
230531A00085	5/31/2023	5.05	12/2/2024	5/31/2023	103.63756	102.7010256	101.7814863	100.8784844	99.99157595	99.12033284	98.26434194	97.42320458	96.59653588

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230504A00091	5/4/2023	4.66	9/4/2024	5/4/2023	102.27278	101.5841902	100.9048904	100.2346978	99.57342955	98.92090816	98.2769606	97.64141843	97.0141176
230504A00006	5/4/2023	3.79	12/6/2027	5/4/2023	114.5742	110.4716237	106.541536	102.7757626	99.16656194	95.70659795	92.38891693	89.20692543	86.15436965
230504A00007	5/4/2023	3.82	7/6/2027	5/4/2023	112.92889	109.2840514	105.7787991	102.4070196	99.16289875	96.04090871	93.03579194	90.14254649	87.35641205
230504A00039	5/4/2023	4.97	5/6/2024	5/4/2023	101.25418	100.8972993	100.5429436	100.1910854	99.84169845	99.4947566	99.15023417	98.80810584	98.46834661
230505A00012	5/5/2023	4.6	11/5/2024	5/5/2023	102.91413	102.0544186	101.2091125	100.3778543	99.56029548	98.75609879	97.96493805	97.18649759	96.4204719
230505A00071	5/5/2023	3.85	5/5/2028	5/5/2023	116.54438	111.9745951	107.6136924	103.4510299	99.47656026	95.68079616	92.0547763	88.59003358	85.27856542
230508A00007	5/8/2023	3.92	5/8/2028	5/8/2023	116.88531	112.2995593	107.9237044	103.747031	99.75942858	95.95135119	92.31378299	88.8382062	85.51657104
230508A00012	5/8/2023	4.43	5/8/2025	5/8/2023	104.98501	103.619062	102.2775426	100.9598475	99.66539538	98.3936236	97.14398711	95.91595798	94.70902466
230508A00016	5/8/2023	4.14	5/8/2026	5/8/2023	108.93189	106.5240993	104.1823035	101.9043315	99.68809508	97.53158644	95.43287467	93.3901023	91.40148211
230508A00018	5/8/2023	3.92	5/8/2028	5/8/2023	116.88531	112.2995593	107.9237044	103.747031	99.75942858	95.95135119	92.31378299	88.8382062	85.51657104
230508A00017	5/8/2023	4.01	5/10/2027	5/8/2023	112.92176	109.4352538	106.0768587	102.8411918	99.72312536	96.71777265	93.82047588	91.02679399	88.33249151
230508A00024	5/8/2023	4.99	5/8/2024	5/8/2023	101.28168	100.9192723	100.5594649	100.2022337	99.84755117	99.49538993	99.14572307	98.79852402	98.45376664
230508A00025	5/8/2023	4.69	11/8/2024	5/8/2023	103.02579	102.1574055	101.3037123	100.4643389	99.63892667	98.82712861	98.02860928	97.24304416	96.47011925
230510A00018	11/10/2023	3.61	11/10/2026	11/10/2023	109.62617	106.6972309	103.8626075	101.1187592	98.46229928	95.88998576	93.39871472	90.98551347	88.64753432
230510A00037	5/10/2023	3.84	5/10/2028	5/10/2023	116.5566	111.9722881	107.5981392	103.4234121	99.43797035	95.63224403	91.9971955	88.52428699	85.20545043
230511A00042	5/11/2023	3.72	5/11/2028	5/11/2023	116.04013	111.4642069	107.098323	102.9317346	98.95430226	95.15645398	91.52915047	88.06385278	84.75249213
230511A00043	5/11/2023	3.72	5/16/2028	5/11/2023	116.09449	111.5031683	107.1231943	102.9437287	98.95454114	95.14597563	91.50891502	88.03474833	84.71534004
230511A00039	5/11/2023	3.86	11/27/2026	5/11/2023	110.53317	107.5450011	104.6543474	101.8574959	99.15089817	96.53115972	93.99503272	91.53940873	89.16131187
230511A00080	5/11/2023	3.49	5/11/2028	5/11/2023	115.64089	111.0558607	106.6818679	102.5080926	98.5243266	94.72093422	91.08881693	87.61938086	84.30450623
230512A00011	5/12/2023	3.78	5/12/2028	5/12/2023	116.31501	111.7302537	107.3559961	103.181461	99.19648352	95.39146737	91.75735081	88.28557387	84.96804813
230512A00020	5/12/2023	4.6	11/12/2024	5/12/2023	102.99211	102.1130301	101.2490115	100.3996671	99.56462453	98.74352408	97.93601799	97.14176999	96.36045485
230512A00022	5/12/2023	4.33	5/12/2025	5/12/2023	104.89485	103.5185406	102.1670152	100.8396626	99.53588904	98.25511975	96.99679825	95.76038557	94.54535963
230512A00023	5/12/2023	4.6	11/13/2024	5/12/2023	103.00325	102.121404	101.2547134	100.4027869	99.5652489	98.74173628	97.93189821	97.13539543	96.35189986
230515A00031	5/15/2023	4.41	5/15/2025	5/15/2023	105.0406	103.6549766	102.2944375	100.9583596	99.64613886	98.3571908	97.09094958	95.84686728	94.62441324
230424A00036	4/24/2023	5.13	4/24/2024	4/24/2023	101.18226	100.8584036	100.5366296	100.216915	99.89923982	99.58358467	99.26993027	98.95825758	98.64854784
230424A00003	4/24/2023	4.15	4/26/2027	4/24/2023	113.22207	109.7698692	106.4431446	103.2366689	100.1454596	97.16476758	94.29006478	91.51703269	88.84155156
230605A00027	6/5/2023	5.51	6/5/2024	6/5/2023	101.79758	101.3574151	100.9210672	100.4884894	100.0596328	99.63444938	99.21289197	98.79491419	98.38047046
230515A00078	5/15/2023	3.96	5/17/2027	5/15/2023	112.83607	109.3312621	105.9559313	102.7046108	99.5720916	96.55341134	93.64384113	90.83887342	88.13421039
230515A00080	5/15/2023	3.88	5/15/2028	5/15/2023	116.78896	112.1853274	107.7933025	103.6020387	99.6013035	95.78143792	92.13332175	88.64834065	85.31835555
230515A00072	5/15/2023	4.42	5/9/2025	5/15/2023	104.98321	103.6145278	102.2703589	100.9501036	99.65317767	98.37901517	97.12706821	95.89680604	94.68771444
230515A00074	5/15/2023	4.11	5/15/2026	5/15/2023	108.94434	106.5168702	104.1564301	101.8607969	99.62783445	97.45548948	95.34178802	93.28483181	91.28279488
230515A00030	5/15/2023	5.06	5/15/2024	5/15/2023	101.37969	100.997923	100.6190405	100.2430144	99.8698123	99.4994023	99.13175303	98.76683359	98.4046135
230607A00037	6/7/2023	4.96	6/6/2025	6/7/2023	106.09506	104.6416658	103.2155998	101.816159	100.4426611	99.09444673	97.77087845	96.47133981	95.19523447

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230607A00038	6/7/2023	4.58	6/5/2026	6/7/2023	110.34313	107.8404278	105.408257	103.0442314	100.746056	98.51152713	96.33852806	94.22502512	92.16906394
230425A00011	4/25/2023	4.3	9/25/2025	4/25/2023	106.5023	104.7428132	103.0210791	101.3359426	99.68630083	98.07109545	96.48931061	94.93997071	93.42213834
230425A00024	4/25/2023	4.48	4/25/2025	4/25/2023	104.89317	103.5625177	102.2563485	100.974022	99.71491908	98.47844188	97.26401301	96.0710747	94.89908789
230425A00052	4/25/2023	4.01	4/26/2027	4/25/2023	112.75393	109.3095532	105.9904412	102.7913735	99.70737462	96.73370233	93.86583511	91.09946077	88.43046558
230425A00013	4/25/2023	4.67	10/25/2024	4/25/2023	102.85152	102.0219289	101.2057598	100.4026872	99.61239749	98.83458667	98.06896049	97.31523387	96.57313055
230425A00104	4/25/2023	3.86	7/15/2026	4/25/2023	109.3707	106.7627436	104.2312756	101.7735935	99.3871074	97.06933526	94.81789771	92.6305131	90.50499275
230426A00042	4/26/2023	4.97	4/26/2024	4/26/2023	101.15347	100.8241727	100.4970185	100.1719903	99.84906735	99.52822925	99.20945586	98.89272728	98.57802387
230426A00024	4/26/2023	4.97	4/26/2024	4/26/2023	101.15347	100.8241727	100.4970185	100.1719903	99.84906735	99.52822925	99.20945586	98.89272728	98.57802387
230427A00028	4/27/2023	4.74	10/28/2024	4/27/2023	102.94293	102.1048063	101.2803635	100.4692711	99.67120644	98.88585714	98.11292073	97.3521043	96.60312408
230427A00078	4/27/2023	4.74	10/29/2024	4/27/2023	102.95402	102.1131341	101.286021	100.4723421	99.67177198	98.88399526	98.10870681	97.34561109	96.59442181
230427A00076	4/27/2023	5.09	4/30/2024	4/27/2023	101.2343	100.893886	100.5557609	100.2199012	99.88628443	99.55488803	99.22568994	98.89866836	98.57380176
230428A00010	4/28/2023	4.31	4/28/2025	4/28/2023	104.92028	103.5786739	102.260986	100.9666269	99.69502355	98.44562161	97.21788429	96.01129189	94.82534104
230428A00032	4/28/2023	5.11	4/29/2024	4/28/2023	101.2306	100.8929337	100.5575168	100.2243272	99.89334291	99.56454201	99.23790304	98.91340474	98.59102615
230428A00022	4/28/2023	4.78	10/28/2024	4/28/2023	102.9765	102.1382166	101.3136221	100.5023797	99.70416674	98.91867081	98.14558943	97.38462963	96.63550761
230501A00012	5/1/2023	3.98	5/1/2028	5/1/2023	117.0675	112.4978118	108.1363736	103.9726013	99.99650329	96.1986434	92.57010733	89.10247115	85.78777189
230501A00033	5/1/2023	5.1	5/1/2024	5/1/2023	101.24819	100.9050073	100.564153	100.2256027	99.88933295	99.5553209	99.22354381	98.89397929	98.56660527
230614A00038	6/14/2023	4.3	6/15/2026	6/14/2023	110.11336	107.5794185	105.1177912	102.7260002	100.4016641	98.1424977	95.94630706	93.81098555	91.73450969
230615A00039	6/15/2023	4.16	6/15/2027	6/15/2023	114.35416	110.7306065	107.2438708	103.8880395	100.6574883	97.5468657	94.55107819	91.66527631	88.88484161
230615A00044	6/15/2023	4.33	6/15/2026	6/15/2023	110.18775	107.6528731	105.1903327	102.7976485	100.4724386	98.21241717	96.0153897	93.87924905	91.8019712
230615A00026	6/15/2023	4.84	6/15/2038	6/15/2023	156.6718	139.906655	125.2690791	112.4702171	101.2621977	91.43211136	82.79689917	75.19901307	68.50272668
230330A00052	3/30/2023	4.79	9/30/2024	3/30/2023	102.66316	101.9022846	101.152713	100.4141945	99.68648557	98.96935002	98.26255838	97.56588781	96.87912181
230331A00013	3/31/2023	4.75	9/30/2024	3/31/2023	102.63268	101.8719288	101.1224838	100.3840904	99.65650545	98.93949255	98.23282229	97.53627186	96.8496248
230331A00014	3/31/2023	4.34	3/31/2026	3/31/2023	108.93657	106.6326143	104.3893935	102.2048606	100.077056	98.00410241	95.98420064	94.01562551	92.09672214
230331A00048	3/31/2023	4.75	9/30/2024	3/31/2023	102.63268	101.8719288	101.1224838	100.3840904	99.65650545	98.93949255	98.23282229	97.53627186	96.8496248
230331A00033	3/31/2023	4.34	3/31/2026	3/31/2023	108.93657	106.6326143	104.3893935	102.2048606	100.077056	98.00410241	95.98420064	94.01562551	92.09672214
230627A00043	6/27/2023	5.12	2/27/2025	6/27/2023	104.91833	103.736366	102.5811906	101.451896	100.3476176	99.26752929	98.21084092	97.1767964	96.16467197
230627A00044	6/27/2023	5.08	3/27/2025	6/27/2023	105.26905	104.0079024	102.7771604	101.5757319	100.4025763	99.25670197	98.1371633	97.04305786	95.97352409
230627A00048	6/27/2023	4.99	5/27/2025	6/27/2023	106.00568	104.5798977	103.1804599	101.8066981	100.4579655	99.13363654	97.83310618	96.55578884	95.30111781
230627A00042	6/27/2023	5.16	1/27/2025	6/27/2023	104.51062	103.416349	102.3451209	101.2962092	100.2689205	99.26258974	98.27657916	97.31027651	96.36309397
230627A00039	6/27/2023	5.2	12/27/2024	6/27/2023	104.11251	103.1053725	102.1178218	101.1492853	100.1992165	99.26709006	98.35240018	97.45466001	96.57340068
230627A00046	6/27/2023	5.03	4/28/2025	6/27/2023	105.66856	104.3250861	103.0055165	101.709257	100.4357358	99.18439963	97.95471278	96.7461565	95.55822833
230627A00086	6/27/2023	5.35	9/30/2024	6/27/2023	103.08993	102.3272656	101.5759224	100.8356509	100.1062072	99.38735468	98.67886369	97.98051105	97.29207997
230627A00029	6/27/2023	5.5	6/27/2024	6/27/2023	102.0545	101.5535917	101.0576145	100.566491	100.0801502	99.59852234	99.12153917	98.64913366	98.18124007

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230627A00038	6/27/2023	5.38	6/27/2024	6/27/2023	102.05846	101.556778	101.0600382	100.5681693	100.0810998	99.59875963	99.12108	98.64799353	98.17943411
230629A00034	6/29/2023	5.59	7/1/2024	6/29/2023	102.14847	101.6363804	101.1294377	100.6275624	100.1306787	99.63871232	99.15159043	98.66924167	98.19159606
230629A00068	6/29/2023	5.34	12/30/2024	6/29/2023	104.29529	103.278981	102.2825839	101.3055174	100.3472219	99.40715918	98.48481158	97.57968074	96.69128693
230516A00032	5/16/2023	5.03	5/16/2024	5/16/2023	101.37853	100.994026	100.6124554	100.2337814	99.85797118	99.48499207	99.11481207	98.74739961	98.38272361
230516A00037	5/16/2023	3.91	5/16/2028	5/16/2023	116.93261	112.3229894	107.9253375	103.7287837	99.723073	95.89852606	92.24600347	88.75687308	85.42297921
230516A00036	5/16/2023	4	5/17/2027	5/16/2023	112.97215	109.4650227	106.0874428	102.8339345	99.69928661	96.67853465	93.7669478	90.96001658	88.25344136
230516A00044	5/16/2023	4.72	11/15/2024	5/16/2023	103.13215	102.2442642	101.3717224	100.514131	99.67110764	98.84228247	98.02729828	97.22580975	96.43748296
230517A00019	5/17/2023	4.7	1/17/2025	5/17/2023	103.8803	102.8169884	101.7755435	100.7552931	99.75559373	98.77582763	97.81540173	96.87374626	95.95031368
230518A00015	5/18/2023	4.64	5/16/2025	5/18/2023	105.37183	103.9810408	102.6154769	101.2745047	99.95751588	98.66392172	97.39315241	96.14465624	94.91789885
230519A00030	5/19/2023	4.27	5/19/2027	5/19/2023	113.91619	110.3873548	106.9889073	103.7153361	100.5613913	97.52207166	94.59261191	91.76846987	89.04531503
230519A00002	5/19/2023	4.95	11/19/2024	5/19/2023	103.38493	102.484956	101.600723	100.7318151	99.87783565	99.03840148	98.21314251	97.40170111	96.60373161
230519A00008	5/19/2023	5.22	5/20/2024	5/19/2023	101.4949	101.0991983	100.7065925	100.317048	99.93052883	99.54699983	99.16642627	98.78877395	98.41400924
230519A00012	5/19/2023	4.53	12/19/2025	5/19/2023	108.02108	106.0133716	104.0537141	102.1406562	100.2728022	98.44880769	96.6673777	94.9272641	93.22726372
230519A00010	5/19/2023	4.91	12/19/2024	5/19/2023	103.72065	102.7373727	101.7728272	100.8264775	99.8978112	98.98633508	98.09157399	97.21307024	96.35038269
230523A00049	5/23/2023	4.31	5/24/2027	5/23/2023	114.11692	110.570483	107.1555494	103.8665346	100.6981258	97.64526293	94.70312552	91.86711959	89.13286604
230523A00024	5/23/2023	4.06	5/24/2027	5/23/2023	113.73326	110.1816308	106.7620234	103.4688265	100.2966958	97.24054173	94.29551598	91.45699864	88.72058627
230524A00055	5/24/2023	4.7	11/22/2024	5/24/2023	103.33831	102.4284298	101.5346317	100.6564903	99.79359608	98.94555381	98.11198171	97.29251106	96.48678555
230706A00014	7/6/2023	4.99	7/6/2038	7/6/2023	158.98411	142.00338	127.1798619	114.2200734	102.8722778	92.92033287	84.17847275	76.48687979	69.70792232
230707A00041	7/7/2023	4.44	7/7/2028	7/7/2023	120.57311	115.716695	111.0896984	106.6800125	102.4762329	98.46761535	94.64403355	90.99594046	87.51433197
230710A00053	7/10/2023	4.98	7/10/2025	7/10/2023	106.83412	105.27837	103.7534235	102.2584338	100.7925884	99.35510356	97.94522327	96.56221808	95.2053838
230710A00008	7/10/2023	5.56	8/1/2024	7/10/2023	102.46643	101.869473	101.2794855	100.6963505	100.1199491	99.55016501	98.9868845	98.42999658	97.87939273
230712A00048	7/12/2023	4.95	7/14/2025	7/12/2023	106.59315	105.0322745	103.5023564	102.0025468	100.5320251	99.09000024	97.67570928	96.28841606	94.92741013
230616A00042	6/16/2023	5.3	12/16/2024	6/16/2023	104.06263	103.085726	102.1272678	101.1867344	100.2636253	99.35745826	98.46776883	97.59410942	96.73604853
230801A00042	8/1/2023	5.53	8/1/2024	8/1/2023	102.44853	101.8516256	101.2616982	100.6786228	100.1022805	99.53255501	98.96933262	98.41250234	97.86195567
230713A00017	7/13/2023	5.11	1/14/2025	7/13/2023	104.27338	103.2160586	102.1802958	101.1654399	100.1708612	99.19595478	98.24013978	97.30285799	96.38357281
230714A00036	7/14/2023	4.37	7/12/2030	7/14/2023	127.07184	119.948386	113.2864317	107.0534178	101.219252	95.7561091	90.63824918	85.84185077	81.34485829
230714A00042	7/14/2023	4.58	7/14/2026	7/14/2023	110.85452	108.2375304	105.6969658	103.2301305	100.8344452	98.50743752	96.24673708	94.05007051	91.91525684
230803A00029	8/3/2023	5.24	2/3/2025	8/3/2023	104.87885	103.7605463	102.6662304	101.5951365	100.5465295	99.51970503	98.51398805	97.52873106	96.56331288
230302A00028	3/2/2023	5.02	3/2/2026	3/2/2023	110.04701	107.8145219	105.6391495	103.5190179	101.4523331	99.43737427	97.47249	95.55609492	93.68666645
230303A00019	3/3/2023	5.26	3/3/2025	3/3/2023	105.14176	103.9474061	102.7803627	101.6396974	100.5245212	99.43398493	98.36727646	97.32361922	96.30227004
230303A00020	3/3/2023	4.96	3/3/2026	3/3/2023	109.93055	107.6964441	105.5195511	103.3979987	101.3299876	99.31379178	97.34775523	95.43028807	93.55986352
230621A00048	6/21/2023	4.55	6/22/2026	6/21/2023	110.48721	107.9365507	105.4590467	103.052172	100.7135052	98.44072303	96.23159584	94.08398303	91.99582898
230621A00031	6/21/2023	5.19	12/20/2024	6/21/2023	104.00895	103.0214339	102.0527648	101.1024098	100.1698521	99.25459396	98.35615618	97.47407709	96.60791181

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230623A00031	6/23/2023	4.87	6/23/2025	6/23/2023	106.18431	104.6847805	103.2142837	101.7720499	100.3573344	98.96941818	97.60760697	96.27122987	94.95963855
230905A00038	9/5/2023	5.16	3/5/2025	9/5/2023	105.24381	104.040396	102.8646753	101.7156937	100.5925445	99.49436175	98.4203178	97.3696213	96.34151517
230905A00037	9/5/2023	5.16	3/5/2025	9/5/2023	105.24381	104.040396	102.8646753	101.7156937	100.5925445	99.49436175	98.4203178	97.3696213	96.34151517
230525A00004	5/25/2023	4.87	5/27/2025	5/25/2023	105.83542	104.4109002	103.0127021	101.640159	100.2926247	98.96947416	97.67010278	96.39392556	95.14037626
230821A00085	8/21/2023	5.04	2/23/2026	8/21/2023	109.98769	107.7758316	105.6201896	103.518934	101.4703119	99.47264086	97.52430611	95.62375662	93.76950236
230912A00085	9/12/2023	5.56	9/12/2024	9/12/2023	103.00364	102.2903862	101.587054	100.8934402	100.2093437	99.53456917	98.8689265	98.2122307	97.56430181
230913A00020	9/13/2023	5.37	3/17/2025	9/13/2023	105.482	104.2469375	103.0410133	101.8631984	100.7125157	99.58803308	98.48886052	97.41414807	96.3630835
230914A00076	9/14/2023	5.48	9/16/2024	9/14/2023	102.99705	102.272955	101.5590852	100.8552277	100.1611724	99.47671501	98.80165694	98.13580504	97.47897144
230914A00060	9/14/2023	5.28	3/14/2025	9/14/2023	105.32763	104.1018239	102.9047466	101.7353971	100.5928176	99.47609398	98.3843535	97.31676225	96.27252315
230915A00057	9/15/2023	4.75	6/15/2027	9/15/2023	115.92709	112.2883028	108.7863624	105.415368	102.1697087	99.04404541	96.03329572	93.13262021	90.33740945
230918A00013	9/18/2023	4.74	9/18/2030	9/18/2023	130.18624	122.7671225	115.8385058	109.3650432	103.3141235	97.6556487	92.36182689	87.40698309	82.767387
230918A00010	9/18/2023	4.72	9/18/2029	9/18/2023	126.40821	120.1590112	114.2692573	108.7161835	103.4785941	98.53674456	93.87223482	89.46790962	85.30776769
230921A00028	9/21/2023	5.07	9/21/2026	9/21/2023	113.10906	110.2701835	107.5185375	104.8508644	102.2640525	99.75512903	97.32125266	94.95970654	92.66789193
230922A00020	9/22/2023	5.35	3/24/2025	9/22/2023	105.56207	104.3072332	103.0824474	101.8866372	100.7187805	99.57790307	98.46307539	97.3734103	96.30806055
230925A00034	9/25/2023	5.53	9/25/2024	9/25/2023	103.1553	102.4060288	101.6676898	100.9400418	100.2228532	99.51589947	98.81896218	98.13182918	97.45429425
230925A00028	12/22/2023	5.5	12/23/2024	12/22/2023	104.35685	103.3593	102.3809404	101.4212157	100.4795958	99.55557063	98.64864936	97.75835908	96.88424427
230925A00114	9/25/2023	5.09	3/25/2026	9/25/2023	110.5472	108.2418661	105.9968417	103.8100972	101.6796919	99.60376674	97.58054007	95.60830352	93.68541839
230926A00019	9/26/2023	5.52	9/26/2024	9/26/2023	103.15313	102.4012551	101.6603843	100.9302766	100.2106984	99.50142277	98.80222917	98.1129034	97.43323731
230919A00043	9/19/2023	4.62	9/19/2028	9/19/2023	121.69921	116.6238366	111.7961842	107.2027339	102.8307826	98.6683896	94.70432628	90.92802956	87.32955832
230919A00044	9/19/2023	4.93	9/21/2026	9/19/2023	112.72469	109.89113	107.1446758	104.4820733	101.9002146	99.39613059	96.96698346	94.61005978	92.32276405
230929A00039	9/29/2023	5.52	9/30/2024	9/29/2023	103.21949	102.4562776	101.7043967	100.963593	100.2336226	99.51424895	98.80524209	98.10637882	97.41744227
231101A00017	11/1/2023	5.25	5/1/2025	11/1/2023	106.00654	104.6526838	103.3227233	102.0160827	100.7321996	99.47052927	98.23054403	97.0117325	95.81359898
231102A00030	11/2/2023	4.87	5/11/2027	11/2/2023	115.84515	112.3063672	108.8972514	105.6123574	102.4464997	99.39473657	96.45235787	93.61487252	90.87799733
231102A00029	11/2/2023	4.88	4/13/2027	11/2/2023	115.47937	112.0255999	108.6958526	105.4849593	102.3879986	99.40028279	96.51734553	93.73492969	91.04897631
231102A00026	11/2/2023	4.9	1/12/2027	11/2/2023	114.2281	111.0556921	107.9902914	105.0276698	102.1637941	99.39481386	96.71705182	94.12699513	91.62128683
231102A00025	11/2/2023	4.9	12/8/2026	11/2/2023	113.73495	110.6685977	107.7029079	104.8340183	102.0582367	99.3720328	96.77203011	94.25499858	91.81784719
231102A00027	11/2/2023	4.89	2/9/2027	11/2/2023	114.59548	111.3383472	108.1931015	105.1552353	102.2204512	99.38465137	96.64392675	93.99454693	91.4329509
231102A00028	11/2/2023	4.88	3/9/2027	11/2/2023	114.97122	111.6268341	108.3995861	105.2846572	102.2774591	99.37362208	96.56898217	93.85957054	91.24160268
230816A00025	8/16/2023	4.62	4/16/2027	8/16/2023	115.11962	111.6522351	108.3099445	105.0875218	101.9799945	98.98262596	96.0909029	93.30052315	90.60738464
231103A00007	11/3/2023	5.05	8/4/2025	11/3/2023	107.06378	105.4404047	103.8499054	102.2913474	100.7638323	99.2664954	97.79850397	96.35905557	94.94737687
231103A00005	11/3/2023	5.12	5/5/2025	11/3/2023	105.88658	104.5224826	103.1826446	101.8664689	100.5733809	99.30282432	98.05426011	96.82716615	95.62103645
231003A00064	10/3/2023	5.56	10/3/2024	10/3/2023	103.28228	102.5107308	101.7507624	101.0021111	100.2645251	99.53775989	98.82157824	98.11574972	97.42005056
231106A00016	11/6/2023	5.39	11/6/2024	11/6/2023	103.60769	102.7420047	101.8908539	101.0538774	100.2307226	99.42104831	98.62452456	97.84083213	97.06966204

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
051107A00075	11/7/2005	5.29	11/17/2025	11/7/2005	109.30533	107.368464	105.4760713	103.6268623	101.8195949	100.0530712	98.32613511	96.63767083	94.9866011
230825A00005	8/25/2023	5.14	11/21/2025	8/25/2023	108.80407	106.8662406	104.973067	103.123249	101.3155356	99.54872021	97.82163857	96.13316709	94.48222113
231107A00028	11/7/2023	5.4	11/7/2024	11/7/2023	103.62967	102.7611531	101.9072685	101.0676484	100.2419365	99.42978856	98.63087151	97.84486316	97.07145173
231107A00005	11/7/2023	5.39	11/15/2024	11/7/2023	103.72748	102.8367231	101.9613435	101.1009487	100.2551553	99.42359314	98.60590421	97.80174255	97.01077364
231107A00008	11/7/2023	5.17	5/7/2025	11/7/2023	105.98237	104.6120497	103.2661874	101.9441778	100.6454396	99.36941006	98.11554414	96.88331381	95.67220744
231108A00011	11/8/2023	5.06	5/8/2025	11/8/2023	106.0677	104.6904992	103.3379675	102.009498	100.7045021	99.42241016	98.16267065	96.92474929	95.70812845
231109A00026	11/9/2023	5.19	5/9/2025	11/9/2023	106.03762	104.661373	103.3097695	101.9822049	100.6780914	99.39685987	98.13795924	96.90085572	95.68503214
231027A00024	10/27/2023	5.46	10/28/2024	10/27/2023	103.54708	102.7061918	101.8790179	101.0652256	100.2644918	99.47650333	98.70095729	97.93756017	97.18602767
231027A00015	10/27/2023	5.08	2/23/2026	10/27/2023	110.07437	107.8615622	105.7049831	103.6028093	101.5532872	99.55473409	97.60553451	95.70413702	93.84905109
231113A00007	11/13/2023	4.86	11/13/2028	11/13/2023	123.56502	118.2863805	113.2721592	108.507672	103.9791226	99.67354746	95.57876111	91.68330566	87.97640374
231030A00057	10/30/2023	5.52	10/30/2024	10/30/2023	103.62432	102.7776393	101.9448518	101.1256214	100.3196184	99.52652376	98.74602878	97.9778344	97.22165101
231010A00135	10/10/2023	5.44	10/10/2024	10/10/2023	103.2805	102.4899148	101.7114904	100.9449477	100.1900155	99.44643069	98.71393833	97.99229092	97.28124832
231010A00026	10/10/2023	4.66	10/10/2028	10/10/2023	122.85018	117.6658757	112.7375561	108.0511346	103.5933778	99.3518495	95.31485857	91.4714099	87.81115904
231010A00025	10/10/2023	4.66	10/10/2028	10/10/2023	122.85018	117.6658757	112.7375561	108.0511346	103.5933778	99.3518495	95.31485857	91.4714099	87.81115904
231010A00066	10/10/2023	5.27	4/10/2025	10/10/2023	105.7177	104.4183644	103.1470037	101.902715	100.6846323	99.4919266	98.32380408	97.17950407	96.05829742
231010A00129	10/10/2023	4.93	10/13/2026	10/10/2023	113.03687	110.1369823	107.3278806	104.6061709	101.968613	99.41210788	96.93369113	94.53052588	92.19989646
231012A00013	10/12/2023	5.07	3/16/2026	10/12/2023	110.36686	108.0898684	105.8719268	103.7110692	101.6054129	99.55315347	97.55256072	95.60197488	93.69980314
231012A00019	10/12/2023	5.39	2/18/2025	10/12/2023	105.09739	103.9390784	102.8064718	101.6987232	100.6150185	99.55457895	98.51665928	97.50054568	96.50555429
231012A00020	10/12/2023	5.08	2/9/2026	10/12/2023	109.86804	107.6971099	105.5806472	103.5169082	101.504219	99.54097188	97.62562232	95.75668587	93.93273535
231012A00017	10/12/2023	5.24	7/15/2025	10/12/2023	107.0577	105.4902691	103.953951	102.4478869	100.9712513	99.52324789	98.10310905	96.7100941	95.34348823
231012A00021	10/12/2023	4.85	12/30/2027	10/12/2023	119.11932	114.858032	110.7777233	106.8697073	103.1257598	99.53809377	96.09933424	92.80249392	89.64095077
231012A00016	10/12/2023	5.14	10/14/2025	10/12/2023	108.25239	106.4241468	104.6360373	102.8868863	101.1755612	99.50097187	97.86206883	96.25784118	94.68731491
231012A00015	10/12/2023	5.33	4/11/2025	10/12/2023	105.81037	104.5079291	103.2332468	101.9854366	100.7636483	99.56706744	98.39491403	97.24644019	96.12092877
231012A00039	10/12/2023	5.33	4/11/2025	10/12/2023	105.81037	104.5079291	103.2332468	101.9854366	100.7636483	99.56706744	98.39491403	97.24644019	96.12092877
231016A00004	10/16/2023	5.55	10/16/2024	10/16/2023	103.45487	102.6470999	101.8520108	101.0693036	100.2986899	99.53989036	98.7926341	98.05665849	97.33170884
231016A00047	10/16/2023	4.98	2/10/2027	10/16/2023	114.89224	111.6275707	108.4750832	105.4302583	102.4887851	99.64655261	96.89963955	94.24430399	91.67697401
231016A00049	10/16/2023	4.95	7/19/2027	10/16/2023	117.12352	113.3667978	109.7543228	106.2797373	102.9370021	99.72037765	96.62440725	93.64390147	90.77392343
231017A00009	10/17/2023	5.42	4/17/2025	10/17/2023	106.01991	104.7011805	103.4088738	102.1422055	100.9004215	99.68279754	98.48863758	97.31727257	96.16805908
230828A00060	8/28/2023	5.53	8/30/2024	8/28/2023	102.94383	102.2645523	101.5942709	100.9328063	100.279985	99.63563816	98.99960136	98.37171435	97.75182098
230829A00010	8/29/2023	5.21	8/25/2025	8/29/2023	107.62633	105.9411345	104.2908272	102.6743884	101.0908379	99.53923342	98.01866862	96.52827148	95.06720258
230830A00047	8/30/2023	5.5	8/30/2024	8/30/2023	102.78298	102.1061066	101.4381779	100.779013	100.1284401	99.48629181	98.8524051	98.2266211	97.60878502
231020A00060	10/20/2023	5.5	10/21/2024	10/20/2023	103.48843	102.6668109	101.858306	101.0625989	100.2793868	99.5083764	98.74928356	98.00183285	97.26575732
231114A00025	11/14/2023	5.13	5/14/2025	11/14/2023	106.02459	104.6345918	103.2697094	101.9293159	100.6128073	99.31959913	98.04912552	96.80083858	95.57420758

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230901A00016	9/1/2023	4.6	8/3/2026	9/1/2023	111.53003	108.8401914	106.2301933	103.6971685	101.2383738	98.85118208	96.53307756	94.28164948	92.09458725
230901A00029	9/1/2023	5.04	3/3/2025	9/1/2023	105.07164	103.8748381	102.705455	101.5625522	100.4452356	99.35265156	98.28398365	97.23845122	96.21530729
230901A00007	9/1/2023	4.55	9/1/2027	9/1/2023	116.29073	112.4247114	108.7112694	105.1434872	101.7148083	98.41901169	95.2501928	92.20274496	89.2713426
230901A00044	9/1/2023	4.55	9/1/2027	9/1/2023	116.29073	112.4247114	108.7112694	105.1434872	101.7148083	98.41901169	95.2501928	92.20274496	89.2713426
231122A00044	11/22/2023	5.38	11/22/2024	11/22/2023	103.81158	102.9013707	102.0072076	101.1286665	100.2653397	99.41683359	98.58276805	97.76277586	96.95650222
231122A00032	11/22/2023	5.2	5/22/2025	11/22/2023	106.23355	104.8198968	103.4321444	102.0696356	100.7317397	99.41784634	98.12736497	96.85972402	95.61437012
231122A00035	11/22/2023	5.2	5/22/2025	11/22/2023	106.23355	104.8198968	103.4321444	102.0696356	100.7317397	99.41784634	98.12736497	96.85972402	95.61437012
231129A00013	11/29/2023	5.25	11/29/2024	11/29/2023	103.78405	102.8549605	101.9425821	101.0464624	100.1661688	99.30128411	98.45140581	97.61614516	96.79512678
231207A00027	12/7/2023	4.15	12/7/2028	12/7/2023	121.0464	115.7386688	110.701609	105.9199428	101.3793368	97.06633571	92.96830459	89.07337424	85.37039109
231211A00032	12/11/2023	4.5	12/11/2028	12/11/2023	122.12628	116.8026392	111.7500534	106.953233	102.3978306	98.07037843	93.95822931	90.04950268	86.33303418
231213A00044	12/13/2023	5.07	12/13/2024	12/13/2023	103.79959	102.832233	101.8830002	100.9513812	100.0368877	99.13904972	98.25741415	97.39154424	96.54101887
231215A00004	12/15/2023	4.07	12/15/2028	12/15/2023	120.02307	114.7396584	109.7265356	104.9684033	100.4509077	96.16057727	92.08476406	88.211589	84.52989128
231218A00046	12/18/2023	4.76	6/18/2025	12/18/2023	105.95706	104.4726348	103.0167146	101.5885458	100.187403	98.81258572	97.46341729	96.13924367	94.83943262
231130A00057	11/30/2023	5.27	12/2/2024	11/30/2023	103.84332	102.9057448	101.98518	101.0811657	100.1932575	99.3210271	98.46406107	97.62196052	96.79434031
231219A00017	12/19/2023	4.26	1/15/2027	12/19/2023	112.30863	109.1573641	106.1128477	103.1708469	100.3273262	97.57843328	94.92048993	92.34998264	89.86355441
231219A00022	12/19/2023	4.13	4/14/2028	12/19/2023	117.52104	112.9891081	108.6616106	104.5282014	100.5791119	96.80511923	93.19751268	89.74806211	86.44898891
231219A00023	12/19/2023	4.12	6/15/2028	12/19/2023	118.21016	113.488105	108.9866346	104.6942461	100.6001005	96.69397769	92.96623773	89.40778482	86.01003385
231219A00021	12/19/2023	4.14	3/15/2028	12/19/2023	117.19592	112.7572112	108.5154154	104.4606608	100.5836338	96.87554027	93.32807289	89.93338131	86.68404418
231219A00018	12/19/2023	4.25	2/16/2027	12/19/2023	112.67832	109.431366	106.2967545	103.2699316	100.3465566	97.52249159	94.7937906	92.15668918	89.60759491
231219A00020	12/19/2023	4.16	2/1/2028	12/19/2023	116.74657	112.4401688	108.3204123	104.3781716	100.604813	96.99217111	93.5325215	90.21855371	87.04334693
231201A00026	12/1/2023	4.51	12/1/2026	12/1/2023	112.48928	109.4612018	106.5320532	103.698059	100.9556107	98.30125685	95.73169554	93.24376705	90.83444686
231201A00027	12/1/2023	5.19	12/2/2024	12/1/2023	103.7685	102.8313015	101.9111096	101.0074634	100.1199188	99.24804737	98.39143594	97.54968563	96.72241143
231201A00024	12/1/2023	4.36	12/1/2028	12/1/2023	121.31351	116.0387198	111.0313433	106.2763673	101.7597015	97.46811453	93.38917738	89.51121042	85.82323459
190130A00019	1/30/2019	3.01	1/30/2024	1/30/2019	100.13675	100.0480784	99.9595685	99.87121589	99.78302015	99.69498086	99.60709763	99.51937004	99.43179769
200114A00006	1/15/2020	1.99	1/15/2025	1/15/2020	100.99232	99.95078305	98.93065474	97.93128032	96.95203126	95.9923042	95.05151967	94.12912098	93.22457304
190115A00025	1/15/2019	2.96	1/12/2024	1/15/2019	100.05833	100.0195003	99.98071458	99.94197652	99.903286	99.86464294	99.82604723	99.78749879	99.74899753
231204A00006	12/4/2023	4.86	8/4/2025	12/4/2023	106.75815	105.137326	103.5493275	101.9932263	100.4681253	98.97316099	97.50750157	96.07034576	94.66092124
231205A00026	12/5/2023	5.02	12/16/2024	12/5/2023	103.94515	102.9666686	102.0066952	101.0647112	100.1402133	99.23271685	98.34175486	97.46687743	96.60765084
231220A00034	12/20/2023	4.99	12/20/2024	12/20/2023	103.81201	102.825535	101.8578946	100.9085547	99.97699869	99.0627292	98.16526726	97.2841515	96.41893731
231221A00103	12/21/2023	4.3	12/30/2025	12/21/2023	107.96913	105.926431	103.9333951	101.9885034	100.0902907	98.23734719	96.42831515	94.66188709	92.93680339
231227A00039	12/27/2023	4.6	6/27/2025	12/27/2023	105.82986	104.3224229	102.8443758	101.3949326	99.97333491	98.57885074	97.21077322	95.86841961	94.5511302
231227A00014	12/27/2023	4.29	12/26/2025	12/27/2023	107.89814	105.8672562	103.8855236	101.9514404	100.0635639	98.22050531	96.42092701	94.66354059	92.94710454
231228A00023	12/28/2023	4.4	12/26/2025	12/28/2023	107.85137	105.8259695	103.8495007	101.9204725	100.0374506	98.19905454	96.4039545	94.6508695	92.93856507

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
231228A00022	12/28/2023	4.61	6/27/2025	12/28/2023	105.8449	104.3373452	102.8591826	101.4096258	99.98791643	98.59332248	97.22513703	95.88267727	94.56528346
231228A00024	12/28/2023	4.15	12/28/2026	12/28/2023	111.75499	108.6619434	105.6725011	102.7826097	99.98839916	97.28617244	94.67239689	92.1436959	89.69684103
231229A00017	12/29/2023	4.42	12/29/2025	12/29/2023	107.92952	105.8950042	103.9098265	101.9724807	100.0815155	98.23553353	96.43318938	94.67318706	92.95427788
231229A00061	12/29/2023	4.74	4/29/2025	12/29/2023	105.29387	103.9505742	102.630905	101.3342953	100.0601915	98.80805685	97.57737165	96.36763199	95.1783494
231229A00071	12/29/2023	4.42	12/29/2025	12/29/2023	107.92952	105.8950042	103.9098265	101.9724807	100.0815155	98.23553353	96.43318938	94.67318706	92.95427788
231229A00058	12/29/2023	4.9	1/29/2025	12/29/2023	104.25442	103.1561726	102.0811706	101.0286791	99.9979954	98.98844573	97.99938384	97.03018962	96.08026776
231229A00059	12/29/2023	4.9	1/29/2025	12/29/2023	104.25442	103.1561726	102.0811706	101.0286791	99.9979954	98.98844573	97.99938384	97.03018962	96.08026776
231229A00065	12/29/2023	4.6	7/29/2025	12/29/2023	106.2628	104.6623436	103.0941104	101.5571885	100.0507052	98.57381973	97.12572196	95.70563118	94.31279462
231229A00062	12/29/2023	4.74	4/29/2025	12/29/2023	105.29387	103.9505742	102.630905	101.3342953	100.0601915	98.80805685	97.57737165	96.36763199	95.1783494
231229A00066	12/29/2023	4.6	7/29/2025	12/29/2023	106.2628	104.6623436	103.0941104	101.5571885	100.0507052	98.57381973	97.12572196	95.70563118	94.31279462
231229A00068	12/29/2023	4.42	12/29/2025	12/29/2023	107.92952	105.8950042	103.9098265	101.9724807	100.0815155	98.23553353	96.43318938	94.67318706	92.95427788
231229A00060	12/29/2023	4.9	1/29/2025	12/29/2023	104.25442	103.1561726	102.0811706	101.0286791	99.9979954	98.98844573	97.99938384	97.03018962	96.08026776
231229A00067	12/29/2023	4.6	7/29/2025	12/29/2023	106.2628	104.6623436	103.0941104	101.5571885	100.0507052	98.57381973	97.12572196	95.70563118	94.31279462
231229A00063	12/29/2023	4.74	4/29/2025	12/29/2023	105.29387	103.9505742	102.630905	101.3342953	100.0601915	98.80805685	97.57737165	96.36763199	95.1783494
231229A00070	12/29/2023	4.42	12/29/2025	12/29/2023	107.92952	105.8950042	103.9098265	101.9724807	100.0815155	98.23553353	96.43318938	94.67318706	92.95427788
231206A00044	12/8/2023	4.71	12/8/2025	12/8/2023	108.21009	106.2314418	104.2994346	102.4126874	100.5698646	98.7696792	97.01089057	95.29230236	93.61276063
231206A00003	12/6/2023	5.18	12/6/2024	12/6/2023	103.81247	102.8641348	101.9332102	101.01922	100.1217042	99.2402194	98.37433796	97.52364731	96.68774937
141119A00005	11/19/2014	2.53	11/19/2024	11/19/2019	99.980971	99.8939098	99.59842343	99.18714671	98.74989793	98.31421272	97.88359179	97.45808864	97.037603
090429A00044	4/29/2009	4.1	4/29/2024	4/29/2014	100.00423	99.99877598	99.99270833	99.93068274	99.78666942	99.63298287	99.47983515	99.32734201	99.17549871
161012A00020	10/11/2016	2.96	10/14/2031	10/11/2023	99.93296	99.62021632	98.46807794	95.99672956	92.17743562	87.53988094	82.74394443	78.15702158	73.87826694
130416A00025	4/16/2013	2.27	4/18/2028	4/16/2018	99.948708	99.68947641	98.96366994	97.71324621	96.03570497	94.1707572	92.29838863	90.47654967	88.7121244
170515A00052	5/15/2017	3.78	5/15/2042	5/15/2024	100.77286	100.2237349	99.15578078	96.81112127	92.70541177	87.28785792	81.49690537	75.99723308	71.00924337
170519A00006	5/19/2017	3	5/19/2032	5/19/2022	99.978838	99.84698329	99.20070395	97.69224597	95.22476385	92.10207229	88.79312138	85.57573709	82.52615504
171004A00022	10/4/2017	2.74	10/4/2027	10/4/2022	99.974654	99.83560236	99.24279868	97.99496266	96.06307699	93.67383178	91.14794925	88.66279403	86.26536202
170705A00037	7/5/2017	2.85	7/6/2032	7/6/2027	107.38885	104.3461831	101.2435924	98.01431065	94.62041817	91.12491896	87.66562286	84.3570384	81.23247107
171005A00047	10/5/2017	3.29	10/5/2032	10/5/2022	99.978809	99.84134409	99.10861896	97.26983165	94.12636922	90.03819348	85.63657157	81.35322592	77.34308497
180302A00003	3/2/2018	3.89	3/2/2033	3/2/2023	100.01112	99.9568137	99.58761739	98.22861114	95.48547929	91.41963364	86.62963757	81.73312773	77.1004249
180315A00030	3/15/2018	3.76	3/15/2033	3/17/2025	103.22995	101.8930599	100.274266	98.03103764	94.7681775	90.46948241	85.6151154	80.76697608	76.21664463
170809A00042	8/9/2017	2.35	8/9/2027	8/9/2022	99.960668	99.75303673	99.12756718	98.04890103	96.6079012	95.00542664	93.3942978	91.8217466	90.29275156
180504A00024	5/4/2018	3.62	5/4/2028	5/4/2023	100.00302	99.97242325	99.74158244	98.90707197	97.25927277	94.77916099	91.76466351	88.59038631	85.49142547
180105A00005	1/5/2018	3.07	1/5/2028	1/5/2023	100.00314	99.95539615	99.62181697	98.8263432	97.55338985	95.92723434	94.16725079	92.41464833	90.71062991
180105A00006	1/5/2018	3.07	1/5/2028	1/5/2023	100.00314	99.95539615	99.62181697	98.8263432	97.55338985	95.92723434	94.16725079	92.41464833	90.71062991
180130A00087	1/30/2018	2.92	1/31/2028	1/30/2023	99.995546	99.9210066	99.52889636	98.65723207	97.31450731	95.64926423	93.87995044	92.12983841	90.42989213

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180627A00005	6/27/2018	3.63	6/30/2033	6/30/2023	100.0097	99.96575113	99.66066974	98.59881718	96.50422506	93.45804568	89.91860073	86.33484671	82.92308791
140508A00011	5/8/2014	2.32	5/8/2024	5/8/2019	100.00199	99.95477211	99.79306493	99.59683727	99.39958629	99.20341111	99.0083068	98.81426398	98.6212731
140723A00038	7/23/2014	2.3	7/23/2024	7/23/2019	99.996784	99.92754184	99.70738392	99.4312736	99.15061565	98.87195329	98.59544089	98.3210515	98.04875812
191220A00029	12/20/2019	2.57	12/19/2031	12/20/2024	101.18201	100.094751	98.67094449	96.5903998	93.78960934	90.62432614	87.45748967	84.43093367	81.56179079
190301A00015	3/1/2019	3.86	3/1/2034	3/2/2026	106.5454	104.1602539	101.4427861	98.15689077	94.00992889	89.00597356	83.54564754	78.14881138	73.12454812
200108A00009	1/8/2020	2.4	1/8/2035	1/8/2025	101.01374	99.65866684	97.67376788	94.67345397	90.80810901	86.65947164	82.64382515	78.89218684	75.40666683
190807A00041	8/7/2019	2.27	8/7/2034	7/7/2024	100.20043	99.25172836	97.50942047	94.59522214	90.79037778	86.72368791	82.78826314	79.09811789	75.65354505
190807A00044	8/7/2019	2.27	8/7/2034	8/7/2024	100.30306	99.28874202	97.51469505	94.59536091	90.79037791	86.72368791	82.78826314	79.09811789	75.65354505
150202A00006	2/2/2015	1.92	2/3/2025	2/3/2020	99.961576	99.74082218	99.30671056	98.772946	98.21937361	97.67041725	97.12954397	96.59674262	96.07181507
200423A00008	4/23/2020	1.59	4/23/2030	4/23/2025	100.48544	98.54121741	95.78135786	92.06617711	87.80816477	83.5321993	79.46423474	75.63730969	72.03908739
200423A00009	4/23/2020	1.59	4/23/2030	4/23/2025	100.48544	98.54121741	95.78135786	92.06617711	87.80816477	83.5321993	79.46423474	75.63730969	72.03908739
200423A00010	4/23/2020	1.59	4/23/2030	4/23/2025	100.48544	98.54121741	95.78135786	92.06617711	87.80816477	83.5321993	79.46423474	75.63730969	72.03908739
200430A00021	4/30/2020	1.2	4/30/2030	4/30/2025	100.11587	98.53674897	96.4836818	93.97032093	91.28673962	88.65364903	86.12918321	83.71464225	81.40443737
190409A00017	4/9/2019	3.01	4/9/2029	4/9/2024	100.37086	99.98383783	99.26799817	97.81892962	95.3957793	92.20848388	88.71490723	85.25238688	81.94642329
190409A00016	4/9/2019	2.91	4/9/2029	4/9/2024	100.34104	99.95274157	99.23664323	97.82154004	95.52207805	92.57121755	89.39074248	86.25756213	83.26338922
200505A00010	5/5/2020	0.89	5/6/2030	5/5/2025	99.85554	98.17732421	95.98477859	93.36274173	90.62947303	87.97321378	85.43160633	83.00220308	80.67908023
200512A00023	5/12/2020	1.78	5/11/2035	5/12/2025	100.20278	97.64534412	93.8729585	88.89699999	83.41444733	78.07729307	73.14033394	68.62696731	64.50191638
200306A00021	3/6/2020	1.16	3/6/2030	3/6/2025	99.91712	98.4302556	96.42656122	93.93794637	91.284019	88.68345009	86.18962071	83.8031692	81.51866096
200309A00013	3/9/2020	1.1	3/8/2030	3/9/2025	99.8456	98.32843094	96.28567634	93.77232576	91.11415048	88.51718723	86.02800857	83.6460619	81.36586611
200316A00032	3/16/2020	1.35	3/15/2030	3/16/2025	100.37267	98.97383642	97.13802776	94.78342175	92.16028314	89.53850797	87.01467969	84.59907477	82.2868536
200316A00030	3/16/2020	1.35	3/15/2030	3/16/2025	100.37267	98.97383642	97.13802776	94.78342175	92.16028314	89.53850797	87.01467969	84.59907477	82.2868536
200609A00003	6/9/2020	1.66	6/8/2035	6/9/2025	99.683932	96.69090764	92.32343328	86.7515119	80.7755861	75.0535236	69.81010933	65.05153982	60.73289377
200612A00001	6/12/2020	0.75	6/12/2030	6/12/2025	99.705443	97.8958363	95.57398267	92.87109441	90.10340898	87.42881542	84.8725846	82.43048675	80.09638042
200318A00015	3/18/2020	1.69	3/18/2030	3/18/2023	99.73599	99.07280875	97.65577339	95.46724368	92.82739581	90.10573086	87.46728656	84.94267203	82.52871463
200326A00035	3/26/2020	1.68	3/26/2030	3/26/2025	100.66963	99.30853971	97.57167488	95.32539584	92.75044467	90.13133676	87.59829822	85.17260083	82.85050149
190430A00020	4/30/2019	3.41	4/28/2034	4/28/2026	106.0663	103.4015703	100.3179285	96.51511585	91.81940958	86.39180086	80.75125597	75.35543092	70.39002107
190520A00018	5/20/2019	3.7	5/20/2044	5/20/2024	100.66391	99.96850996	98.48847469	95.39833164	90.40101228	84.28015662	78.03513707	72.23991033	67.04329235
190827A00044	8/27/2019	1.9	8/27/2029	8/27/2024	100.29054	99.47665121	98.2772845	96.48307045	94.22605717	91.82651595	89.46856417	87.19869592	85.01827889
190116A00015	1/16/2019	3.61	1/17/2034	1/16/2024	100.08218	99.96510862	99.50672173	98.21426642	95.819096	92.49002099	88.74417382	85.01978437	81.49824182
190530A00044	5/30/2019	2.85	5/30/2034	5/30/2024	100.60603	99.90948073	98.73683533	96.59999107	93.38163866	89.53944881	85.61944631	81.88406315	78.38686058
201022A00008	10/22/2020	1.02	10/22/2035	10/22/2025	99.462889	96.50137549	92.61952203	88.12261701	83.59260597	79.32622862	75.37101432	71.70776219	68.31127393
201029A00008	10/29/2020	0.92	10/29/2030	10/29/2025	100.02946	97.9725813	95.48682727	92.66151885	89.77713547	86.9925876	84.33606774	81.80297929	79.38642646
201030A00025	10/30/2020	2.02	10/28/2050	10/30/2025	100.01711	95.83985012	89.84298806	82.3854931	74.62058577	67.47615375	61.25295442	55.89458673	51.26592133

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
201116A00019	11/16/2020	1.32	11/15/2030	11/16/2025	100.28446	97.62214363	94.17971637	90.02025691	85.6289803	81.38179598	77.38621771	73.64116211	70.12989875
201118A00018	11/18/2020	1.85	11/18/2036	11/18/2027	102.23258	97.05070009	91.04985015	84.43914147	77.74484901	71.46249171	65.78486509	60.69890444	56.14141873
201118A00015	11/18/2020	1.66	11/18/2036	11/18/2027	101.88909	96.6395092	90.5532194	83.87499829	77.14968876	70.86563816	65.19656919	60.12147915	55.57572365
201118A00017	11/18/2020	1.66	11/18/2036	11/18/2027	101.88909	96.6395092	90.5532194	83.87499829	77.14968876	70.86563816	65.19656919	60.12147915	55.57572365
201202A00016	12/2/2020	1.32	12/3/2035	12/2/2025	99.974672	97.06789317	93.28919367	88.8378373	84.2709362	79.93979849	75.92216931	72.20348614	68.75802983
201202A00017	12/2/2020	1.32	12/3/2035	12/2/2025	99.974672	97.06789317	93.28919367	88.8378373	84.2709362	79.93979849	75.92216931	72.20348614	68.75802983
190930A00083	9/30/2019	2.04	10/1/2029	9/30/2024	100.50694	99.65198448	98.47482826	96.73787181	94.50296958	92.08196671	89.68717517	87.38006526	85.16490101
190930A00079	9/30/2019	2.04	10/1/2029	9/30/2024	100.50694	99.65198448	98.47482825	96.73787181	94.50296958	92.08196671	89.68717517	87.38006526	85.16490101
201230A00018	12/30/2020	1.52	12/28/2035	12/28/2027	101.69572	96.46040155	90.46025651	83.94090655	77.40938967	71.30463127	65.77462214	60.79772852	56.31626228
210622A00004	6/22/2021	2.42	6/20/2036	6/22/2026	102.89628	99.43288648	95.06756382	89.66515789	83.59662465	77.53191883	71.89779229	66.79636811	62.1931279
190204A00054	2/4/2019	3.98	2/6/2034	2/2/2024	100.54256	100.1957614	99.5161484	97.91037006	94.84359164	90.4376733	85.34362337	80.21688676	75.407866
190111A00040	1/11/2019	3.74	1/11/2034	1/11/2024	100.06655	99.97187527	99.43067752	97.88077526	94.95842599	90.88676814	86.29271359	81.73401281	77.46834393
180703A00033	7/3/2018	3.4	7/3/2028	7/3/2023	99.997954	99.96017014	99.70583132	98.96711403	97.70038805	95.99087838	94.06986098	92.12788664	90.2387325
190222A00023	2/22/2019	3.66	2/22/2034	2/22/2026	106.38768	103.9186555	101.1002908	97.67829502	93.40473361	88.33251481	82.89561929	77.58745863	72.66737906
191028A00015	10/28/2019	2.49	10/27/2034	10/28/2024	100.8495	99.7289382	98.00969271	95.27634782	91.58727103	87.5031374	83.49396114	79.72424557	76.20748415
191031A00037	10/31/2019	2.59	10/30/2034	10/31/2024	100.82533	99.69207723	97.95578036	95.20327877	91.50680514	87.43160373	83.43782411	79.68373402	76.18112691
191031A00036	10/31/2019	2.9	10/31/2039	10/31/2024	100.92947	99.58544513	97.35617065	93.66739174	88.71470899	83.32036243	78.13216756	73.37403925	69.04889872
210405A00013	4/5/2021	1.82	4/7/2036	4/5/2026	101.66456	98.79106609	95.23604493	90.96291104	86.34638636	81.84013025	77.63454051	73.74576625	70.14914244
210910A00009	9/10/2021	1.77	9/10/2036	9/10/2026	102.42526	99.20912277	95.39323672	90.94500506	86.18793003	81.54785046	77.22292905	73.23315267	69.55215963
210108A00007	1/8/2021	1.65	1/8/2036	1/8/2026	100.17251	96.5818291	91.77117398	85.91101157	79.74980376	73.89940775	68.56687354	63.74759351	59.39070557
210225A00010	2/25/2021	2.02	2/25/2041	2/25/2026	101.36965	97.92433132	93.41744796	87.9233399	82.05322179	76.4396773	71.32458073	66.71200632	62.55035429
211124A00008	11/24/2021	2.62	11/22/2041	11/24/2026	104.86509	101.2880522	97.0005913	91.83896873	86.01849838	80.09944059	74.55787985	69.54466038	65.03711474
220217A00024	2/17/2022	2.43	2/17/2027	2/17/2025	101.66188	100.4691852	99.14344621	97.53429329	95.58168476	93.43644804	91.28006703	89.18291316	87.15332508
211215A00020	12/15/2021	1.85	12/15/2031	12/15/2026	103.25077	100.5798126	97.72464001	94.62519892	91.36765669	88.12783564	85.02469363	82.08283566	79.29529272
211227A00012	12/27/2021	2.39	12/29/2036	12/27/2028	107.46214	101.7916073	95.62495146	89.01761748	82.2213836	75.63436894	69.56945008	64.11752466	59.23667646
211110A00017	11/10/2021	2.01	11/10/2036	11/10/2026	103.40575	100.1612729	96.3855224	91.99968025	87.24731894	82.53460702	78.11450301	74.03591718	70.27616418
211116A00012	11/16/2021	2.22	12/18/2034	11/16/2026	103.94162	100.9709598	97.65114318	93.86888925	89.73882858	85.56450246	81.58408742	77.86613285	74.40193
211019A00005	10/19/2021	2.49	10/20/2036	10/19/2026	104.12865	100.4509401	95.97844395	90.53897575	84.42235758	78.23274201	72.44659835	67.20774539	62.49056995
170802A00074	8/2/2017	2.92	8/2/2027	8/2/2022	99.964715	99.8426186	99.28535943	98.09577327	96.24528025	93.94402568	91.50307079	89.0971933	86.77288686
220617A00069	6/17/2022	4.06	6/17/2027	6/17/2025	104.47142	103.1088835	101.7343554	100.299449	98.70210652	96.81981208	94.64199565	92.30933362	89.9929186
220831A00108	8/31/2022	4.07	8/31/2027	9/2/2025	105.37664	103.7419714	102.0971922	100.3910956	98.52333848	96.37673999	93.94290994	91.36031568	88.80407049
221212A00004	12/12/2022	4.36	12/10/2032	12/10/2027	113.47794	110.1014872	106.7736546	103.4618837	100.1172568	96.7071638	93.23451206	89.75353849	86.38041737
210924A00016	9/24/2021	1.91	9/24/2036	9/24/2026	102.91649	99.74293546	96.00547704	91.63786492	86.91372224	82.25550516	77.89553061	73.87088683	70.15763077

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191007A00013	10/7/2019	2	10/5/2029	10/7/2024	100.38456	99.47947345	98.20372301	96.34372597	94.02376874	91.56652719	89.15615861	86.83830322	84.61383252
200108A00040	1/8/2020	2.52	1/8/2030	1/8/2025	101.21335	99.97355438	98.28162541	95.76429005	92.36460983	88.51376913	84.65673938	80.97717868	77.50134269
200115A00023	1/15/2020	2.16	1/15/2030	1/15/2025	100.93395	99.83593616	98.45623827	96.57424493	94.21926676	91.68053872	89.17433534	86.76472252	84.45549986
151223A00007	12/23/2015	3.76	12/23/2030	12/23/2022	99.995258	99.93572402	99.51897536	98.19405231	95.63473982	91.93689425	87.63258501	83.25733436	79.09585159
191007A00012	10/7/2019	2	10/5/2029	10/7/2024	100.38456	99.47947345	98.20372301	96.34372597	94.02376874	91.56652719	89.15615861	86.83830322	84.61383252
200110A00012	1/10/2020	2.57	1/10/2035	1/10/2025	101.16548	99.82794004	97.90253735	95.00453335	91.20203807	87.04837101	82.99171842	79.18566578	75.63961456
200115A00025	1/15/2020	2.1	1/15/2025	1/15/2023	99.911913	99.62890542	99.02347307	98.21348725	97.3306898	96.4457868	95.57738017	94.72674168	93.89335585
201229A00003	12/29/2020	1.28	12/30/2030	12/30/2025	100.37095	97.51395897	93.91603472	89.65718875	85.20886481	80.92336131	76.89759958	73.12791315	69.59681587
221214A00057	12/14/2022	4.65	12/14/2027	12/12/2025	107.42261	105.5509445	103.6874141	101.7982771	99.8084628	97.59980729	95.09036772	92.30009305	89.42288015
221222A00137	12/22/2022	5.4	12/22/2037	12/22/2027	116.78299	113.1189746	109.4285097	105.6652334	101.7475078	97.59085906	93.17427342	88.57384484	84.04913036
230804A00039	8/4/2023	5.02	8/4/2028	8/4/2026	110.70467	108.3268038	105.9908995	103.6813622	101.3605929	98.96936601	96.4479425	93.74711447	90.92243553
160603A00014	6/3/2016	1.74	6/3/2026	6/3/2016	101.53064	100.2751906	99.04765633	97.84718062	96.67294427	95.52415968	94.40006936	93.29994453	92.22308379
151209A00024	12/9/2015	2.22	12/9/2025	12/9/2015	101.55968	100.5515123	99.5630309	98.59367342	97.64290242	96.71020049	95.79506935	94.8970289	94.01561639
140821A00030	8/21/2014	2.27	8/21/2024	8/21/2014	100.33881	100.0011503	99.66663773	99.33522352	99.00685989	98.68150009	98.3590984	98.03961006	97.72299128
120330A00013	3/30/2012	2.98	4/2/2024	3/30/2012	100.51326	100.1764667	99.84196896	99.50974071	99.17975877	98.85200033	98.52644291	98.20306429	97.88184258
160404A00019	4/4/2016	2.48	4/4/2031	4/4/2016	108.54646	104.6816634	101.0178339	97.54251262	94.24411219	91.11184939	88.13568359	85.30626048	82.61486044
140618A00019	6/18/2014	3.08	6/18/2024	6/18/2014	100.4137	100.1613031	99.91067753	99.66180505	99.41466532	99.16923836	98.92550451	98.68344442	98.44303907
151118A00037	11/18/2015	2.75	11/18/2025	11/18/2015	103.76684	102.0639001	100.4005487	98.7755975	97.18790678	95.63637881	94.11995599	92.63761904	91.18838539
160427A00004	4/27/2016	2.09	4/27/2026	4/27/2016	101.64307	100.4686992	99.31934334	98.19425472	97.09271569	96.01403609	94.95755194	93.92262421	92.90863766
150824A00033	8/24/2015	2.22	8/25/2025	8/24/2015	101.06862	100.2300484	99.40658404	98.59780925	97.80332207	97.02273559	96.25567723	95.50178804	94.76072208
150219A00016	2/19/2015	2.68	2/19/2025	2/19/2015	102.03919	100.8834557	99.75493511	98.65266873	97.5757405	96.52327654	95.49444279	94.48844276	93.50451543
150814A00029	8/14/2015	2.39	8/14/2025	8/14/2015	101.21059	100.3719945	99.54848872	98.73965334	97.9450876	97.16440572	96.39723616	95.64322099	94.9020152
150617A00030	6/17/2015	2.91	6/16/2025	6/17/2015	103.21021	101.7607941	100.3400154	98.94708726	97.58124851	96.24176559	94.92793112	93.63906273	92.37450197
161014A00019	10/14/2016	2.39	10/15/2031	10/14/2016	108.7082	104.5817358	100.6825607	96.99581343	93.50772374	90.20552509	87.07737454	84.11227944	81.30003045
160303A00035	3/3/2016	2.14	3/3/2026	3/3/2016	101.6226	100.4940688	99.38973795	98.30886859	97.25075422	96.21471625	95.20010261	94.20628643	93.23266482
140730A00037	7/30/2014	2.83	1/30/2024	7/30/2014	100.06848	100.0226463	99.97689601	99.93122643	99.88563735	99.84012856	99.79469984	99.74935098	99.70408177
140908A00080	9/8/2014	2.51	3/8/2024	9/8/2014	100.30935	100.0412875	99.77471549	99.5096172	99.24598024	98.98379238	98.72304153	98.46371574	98.20580318
140917A00030	9/17/2014	3.23	9/17/2029	9/17/2014	115.36505	110.3451446	105.6022651	101.119209	96.87994209	92.86951383	89.07397815	85.48032035	82.07638978
140924A00057	9/24/2014	3.25	9/25/2028	9/24/2014	114.57472	109.9847927	105.6185578	101.4638008	97.50903662	93.74346543	90.15692849	86.73986658	83.48328153
160713A00015	7/13/2016	1.57	7/13/2026	7/13/2016	101.38671	100.0911877	98.82512688	97.58761633	96.37777793	95.19476776	94.03777454	92.90601804	91.79874768
120517A00021	5/17/2012	1.85	5/17/2024	5/17/2012	100.10606	99.89755924	99.69028102	99.48421601	99.27935248	99.07567887	98.87318377	98.67185594	98.47168427
131018A00006	10/18/2013	3.28	10/20/2025	10/18/2013	104.98743	103.2431917	101.5386021	99.87251215	98.24381308	96.65143552	95.09434788	93.57155472	92.08209523
140318A00003	3/17/2014	3.08	3/18/2024	3/17/2014	100.52839	100.2238789	99.92123799	99.62044677	99.32148823	99.02434553	98.72900202	98.43544127	98.14364703

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150311A00003	3/11/2015	2.72	3/31/2025	3/11/2015	102.42755	101.1712347	99.93702415	98.72438223	97.5327869	96.36173263	95.21072976	94.0793039	92.96699531
160328A00038	3/28/2016	2.54	3/30/2026	3/28/2016	104.58068	102.4400298	100.356588	98.3284969	96.35397073	94.43129189	92.55880792	90.73492868	88.95812357
160329A00017	3/29/2016	2.48	3/30/2026	3/29/2016	104.44999	102.3115263	100.2302123	98.20419654	96.23169489	94.31099132	92.44043493	90.61843702	88.84346842
150729A00028	7/29/2015	2.25	7/29/2025	7/29/2015	101.13183	100.3317243	99.54582026	98.773732	98.01508368	97.2695135	96.53667301	95.8162265	95.1078504
151125A00037	11/25/2015	2.41	11/25/2025	11/25/2015	101.52148	100.5548596	99.60671837	98.67653147	97.76379834	96.86803711	95.98878373	95.12559104	94.2780281
151228A00013	12/28/2015	2.27	12/29/2025	12/28/2015	101.61645	100.6056013	99.61454559	98.64271991	97.68958224	96.75461081	95.83730316	94.93717523	94.05376052
151229A00026	12/29/2015	2.28	12/29/2025	12/29/2015	101.62703	100.6159535	99.62468268	98.65264906	97.69931034	96.76414447	95.84664875	94.94633885	94.06274803
160412A00029	4/12/2016	2.48	4/14/2031	4/12/2016	108.54683	104.6817834	101.0177405	97.5422371	94.2436827	91.11129095	88.13501843	85.30550836	82.61403884
160421A00016	4/21/2016	2.26	4/21/2026	4/21/2016	104.38265	102.1925117	100.0622698	97.98993728	95.97360252	94.01142852	92.10164972	90.24256876	88.43255338
160523A00086	5/23/2016	2.2	5/26/2026	5/23/2016	104.45353	102.1823268	99.97550336	97.83083638	95.74619809	93.71954735	91.74892545	89.8324522	87.96832231
160603A00029	6/3/2016	2.18	6/3/2031	6/3/2016	108.05299	104.1103117	100.3771311	96.84020285	93.48722324	90.30675776	87.28817375	84.4215786	81.69776312
160906A00027	9/6/2016	2.03	9/8/2031	9/6/2016	107.67857	103.6226309	99.78847196	96.16169062	92.72893631	89.4778254	86.3968644	83.4753798	80.70345378
161014A00026	10/14/2016	2.16	10/14/2031	10/14/2016	108.29688	104.1744937	100.2796495	96.59744441	93.1140691	89.81672254	86.69353141	83.73347635	80.92632454
161229A00018	12/29/2016	2.46	12/29/2026	12/29/2016	103.13793	101.6079658	100.1166134	98.66257989	97.24462958	95.86157734	94.51228621	93.19566502	91.91066618
161229A00019	12/29/2016	2.46	12/29/2026	12/29/2016	103.13793	101.6079658	100.1166134	98.66257989	97.24462958	95.86157734	94.51228621	93.19566502	91.91066618
150617A00017	6/17/2015	2.27	6/17/2025	6/17/2015	101.05559	100.2988008	99.55520588	98.82444348	98.10616653	97.40004089	96.70574475	96.02296807	95.35141199
150617A00018	6/17/2015	2.45	6/17/2025	6/17/2015	101.07331	100.3177951	99.57542509	98.84584211	98.1287009	97.42366906	96.73042641	96.04866444	95.37808576
150929A00076	9/29/2015	2.28	9/29/2025	9/29/2015	101.21669	100.334904	99.46931239	98.61945911	97.78490796	96.96523929	96.16004919	95.36894869	94.59156311
160923A00009	9/23/2016	2.24	9/23/2031	9/23/2016	108.00314	103.9458689	100.1100302	96.48126629	93.04626697	89.79268465	86.70905805	83.78474239	81.00984554
161005A00016	10/5/2016	2.32	10/6/2031	10/5/2016	108.4147	104.2998214	100.4115712	96.73513036	93.25677039	89.9637635	86.84430257	83.88742809	81.08296141
150320A00019	3/20/2015	2.25	3/20/2025	3/20/2015	101.84058	100.6710707	99.5240571	98.39889429	97.29496558	96.21167779	95.14846006	94.10476285	93.08005685
140219A00005	2/19/2014	3.13	2/20/2029	2/19/2014	108.08021	105.339488	102.704672	100.1707426	97.73295519	95.38682384	93.12810501	90.9527829	88.85705568
151120A00019	11/20/2015	2.72	11/20/2030	11/20/2015	109.46827	105.7749655	102.2646291	98.9264142	95.75020137	92.72654498	89.84662376	87.1021952	84.48555359
160210A00049	2/10/2016	1.78	2/10/2026	2/10/2016	101.26368	100.1758863	99.11028555	98.06623566	97.04311528	96.04032651	95.05729384	94.09346309	93.14830043
160210A00051	2/10/2016	2.28	2/10/2031	2/10/2016	108.10315	104.3288984	100.7474458	97.34703664	94.11672373	91.04630795	88.12628198	85.34777859	82.70252313
160210A00054	2/10/2016	1.78	2/10/2026	2/10/2016	101.26368	100.1758863	99.11028555	98.06623566	97.04311528	96.04032651	95.05729384	94.09346309	93.14830043
140428A00015	4/28/2014	2.35	4/29/2024	4/28/2014	100.17173	99.99959266	99.82831637	99.65789427	99.4883193	99.31958447	99.15168287	98.98460767	98.81835213
151013A00033	10/13/2015	2.23	10/14/2025	10/13/2015	101.25316	100.3319004	99.4278454	98.54051408	97.6694406	96.81417677	95.97429116	95.14936834	94.33900809
140717A00027	7/17/2014	3.14	7/17/2026	7/17/2014	106.57545	104.2035611	101.9009101	99.66501864	97.49351152	95.38411516	93.33465246	91.34303791	89.40727308
150604A00039	6/4/2015	2.82	6/4/2030	6/4/2015	109.25629	105.7874147	102.4813754	99.32898403	96.32164132	93.45129533	90.71040278	88.09189345	85.58913732
150427A00014	4/27/2015	2.98	4/27/2035	4/27/2015	115.67227	109.4085971	103.622477	98.27150791	93.31744016	88.72574126	84.46520659	80.50761317	76.82741187
141017A00022	10/17/2014	2.78	10/17/2024	10/17/2014	101.36145	100.5099151	99.67304824	98.8504708	98.04181669	97.24673226	96.46487579	95.69591699	94.93953652
160126A00004	1/26/2016	2.52	1/26/2026	1/26/2016	104.63146	102.5420648	100.5058733	98.52114878	96.58622628	94.69950849	92.85946231	91.06461566	89.31355457

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150812A00052	8/14/2015	2.13	8/14/2025	8/14/2015	101.11446	100.2752274	99.45112167	98.64172363	97.84663088	97.06545606	96.29782618	95.54338189	94.80177687
150929A00083	9/29/2015	2.09	9/29/2025	9/29/2015	101.16962	100.2867818	99.42018073	98.56936324	97.73389124	96.91334328	96.10731374	95.31541205	94.537262
150929A00087	9/29/2015	2.09	9/29/2025	9/29/2015	101.16962	100.2867818	99.42018073	98.56936324	97.73389124	96.91334328	96.10731374	95.31541205	94.537262
161222A00013	12/22/2016	2.93	12/22/2026	12/22/2016	107.73039	104.9253991	102.213667	99.59151578	97.05543848	94.60208756	92.22826675	89.93092313	87.70713976
161014A00029	10/14/2016	2.51	10/15/2031	10/14/2016	109.7693	105.5898813	101.6411549	97.90800929	94.37644413	91.03348129	87.86708319	84.86607801	82.02009139
150603A00012	6/3/2015	2.77	6/3/2030	6/3/2015	109.08137	105.618202	102.3175957	99.17038216	96.16797661	93.30234066	90.5659437	87.95172738	85.4530728
150615A00024	6/15/2015	2.26	6/16/2025	6/15/2015	101.04726	100.2908134	99.54755306	98.81711392	98.09914936	97.39332566	96.6993214	96.01682689	95.34554362
151223A00078	12/23/2015	2.28	12/23/2025	12/23/2015	101.6253	100.6149	99.62427214	98.65285102	97.70009571	96.76548548	95.84851885	94.9487127	94.06560142
150203A00027	2/3/2015	2.26	2/4/2030	2/3/2015	106.9299	103.7065934	100.6279178	97.68603516	94.87359593	92.18370143	89.60987293	87.1460233	84.78643059
160801A00002	8/1/2016	1.58	8/3/2026	8/1/2016	101.47187	100.1348165	98.82878765	97.55280701	96.30593731	95.0872782	93.89596448	92.73116442	91.59207819
150701A00056	7/1/2015	2.34	7/1/2025	7/1/2015	101.19467	100.3978915	99.61520706	98.84623359	98.09059993	97.34794874	96.6179358	95.90022939	95.19450973
150414A00037	4/14/2015	2.34	4/14/2025	4/14/2015	100.82249	100.1511757	99.49151438	98.84317824	98.20584774	97.57921592	96.96298776	96.35687959	95.76061852
150729A00041	7/29/2015	2.44	7/29/2025	7/29/2015	101.16656	100.3675759	99.58275093	98.81169797	98.05404296	97.30942581	96.57749965	95.85793031	95.15039563
160711A00004	7/11/2016	1.51	7/13/2026	7/11/2016	101.30699	100.0127121	98.74786974	97.51154577	96.30286314	95.12097905	93.96508328	92.83439659	91.72816937
151223A00036	12/23/2015	2.64	12/23/2025	12/23/2015	103.06494	101.5912578	100.1530616	98.74925313	97.37877299	96.04060246	94.73376155	93.45730726	92.21033183
140703A00026	7/3/2014	3.11	7/3/2024	7/3/2014	101.02713	100.4449211	99.86954421	99.30088075	98.73881315	98.18322658	97.63400888	97.09105049	96.55424432
151030A00026	10/30/2015	3.29	10/30/2030	10/30/2015	117.45214	111.3806903	105.7013453	100.3859809	95.40864971	90.7454044	86.37413267	82.27440714	78.42734813
141015A00029	10/15/2014	2.32	10/15/2024	10/15/2014	101.04202	100.2283559	99.4284687	98.64201021	97.86864001	97.10802922	96.35985995	95.62382486	94.89962671
160428A00028	4/28/2016	2	4/28/2026	4/28/2016	101.68922	100.5121855	99.36026233	98.23270348	97.12878738	96.04782016	94.98913433	93.95208751	92.93606124
130206A00009	2/6/2013	2.83	2/7/2028	2/6/2013	108.90063	105.5170097	102.2727263	99.16108202	96.17574682	93.31073351	90.56037694	87.91931455	85.3824683
150410A00021	4/10/2015	2.27	4/10/2025	4/10/2015	100.77318	100.1028005	99.44412327	98.79681567	98.16055451	97.5350294	96.91994212	96.31500599	95.71994532
150722A00033	7/22/2015	2.47	7/22/2025	7/22/2015	101.18839	100.3901769	99.60610092	98.83577127	98.07881507	97.33487331	96.6036002	95.88466253	95.1777391
150722A00035	7/22/2015	2.92	7/22/2025	7/22/2015	103.51279	101.9718196	100.4624406	98.98373706	97.53482669	96.11486116	94.72302435	93.35853084	92.0206244
160106A00042	1/6/2016	2.43	1/6/2026	1/6/2016	101.74222	100.6926046	99.66391317	98.65554344	97.66691843	96.69748274	95.74670153	94.81405956	93.89906029
160119A00072	1/19/2016	2.77	1/21/2031	1/19/2016	109.48935	105.6037064	101.9250739	98.4403784	95.1374755	92.00507677	89.03268363	86.21052655	83.52950947
161116A00006	11/16/2016	2.39	11/16/2026	11/16/2016	102.72111	101.2429212	99.80118762	98.39471154	97.02234565	95.68298908	94.37558506	93.09911888	91.85261581
170504A00049	5/4/2017	2.63	5/6/2024	5/4/2017	100.53013	100.094038	99.66175148	99.23322295	98.80840334	98.38724451	97.96969912	97.55572067	97.14526343
170511A00011	5/11/2017	2.41	5/11/2027	5/11/2017	103.62346	101.8771972	100.1793577	98.52820474	96.92207789	95.35938827	93.83861506	92.35830202	90.91705428
161207A00014	12/7/2016	2.75	12/8/2031	12/7/2016	111.00155	106.6875074	102.6159956	98.77085404	95.13713109	91.70098413	88.44958941	85.37105993	82.45437045
170524A00027	5/24/2017	2.32	5/24/2027	5/24/2017	103.46611	101.7217561	100.0258116	98.37653845	96.77227511	95.21143175	93.69248668	92.21398294	90.774525
150803A00033	8/3/2015	3.41	8/2/2030	8/3/2015	117.75449	111.8407467	106.2977341	101.0995666	96.2223218	91.64387932	87.34377514	83.30306827	79.50421898
150803A00036	8/3/2015	3.41	8/2/2030	8/3/2015	117.75449	111.8407467	106.2977341	101.0995666	96.2223218	91.64387932	87.34377514	83.30306827	79.50421898
150803A00037	8/3/2015	3.41	8/2/2030	8/3/2015	117.75449	111.8407467	106.2977341	101.0995666	96.2223218	91.64387932	87.34377514	83.30306827	79.50421898

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150803A00038	8/3/2015	3.41	8/2/2030	8/3/2015	117.75449	111.8407467	106.2977341	101.0995666	96.2223218	91.64387932	87.34377514	83.30306827	79.50421898
150803A00039	8/3/2015	3.01	8/2/2030	8/3/2015	109.69863	106.1377432	102.7473554	99.51767113	96.43953154	93.50437058	90.70417236	88.03143209	85.47912002
150803A00041	8/3/2015	3.01	8/2/2030	8/3/2015	109.69863	106.1377432	102.7473554	99.51767113	96.43953154	93.50437058	90.70417236	88.03143209	85.47912002
150803A00042	8/3/2015	3.01	8/2/2030	8/3/2015	109.69863	106.1377432	102.7473554	99.51767113	96.43953154	93.50437058	90.70417236	88.03143209	85.47912002
160413A00014	4/13/2016	2.55	4/14/2031	4/13/2016	108.82163	104.946589	101.2730719	97.78858438	94.48150563	91.34102109	88.35706113	85.5202445	82.82182654
160413A00016	4/13/2016	2.55	4/14/2031	4/13/2016	108.82163	104.946589	101.2730719	97.78858438	94.48150563	91.34102109	88.35706113	85.5202445	82.82182654
160413A00020	4/13/2016	2.48	4/13/2026	4/13/2016	104.70048	102.4620035	100.2846191	98.16631386	96.10515097	94.09926862	92.14687666	90.24625339	88.39574253
160413A00021	4/13/2016	2.48	4/13/2026	4/13/2016	104.70048	102.4620035	100.2846191	98.16631386	96.10515097	94.09926862	92.14687666	90.24625339	88.39574253
160413A00033	4/13/2016	2.32	4/13/2026	4/13/2016	103.81353	101.809297	99.85825346	97.95865841	96.10884195	94.30719883	92.55218551	90.84231736	89.17616604
160414A00042	4/13/2016	2.48	4/13/2026	4/13/2016	104.70048	102.4620035	100.2846191	98.16631386	96.10515097	94.09926862	92.14687666	90.24625339	88.39574253
160511A00015	5/11/2016	2.42	5/11/2026	5/11/2016	104.74859	102.4402612	100.1968176	98.01605618	95.8958598	93.83419599	91.82911302	89.87873617	87.98126416
160511A00016	5/11/2016	2.48	5/12/2031	5/11/2016	108.63735	104.7264396	101.0209195	97.50793972	94.17555765	91.01266588	88.00892828	85.15472106	82.44107877
160608A00019	6/8/2016	2.36	6/8/2026	6/8/2016	104.77534	102.4026935	100.0984034	97.86008379	95.68544745	93.5723015	91.51854269	89.52215317	87.58119641
160608A00020	6/8/2016	2.36	6/8/2026	6/8/2016	104.77534	102.4026935	100.0984034	97.86008379	95.68544745	93.5723015	91.51854269	89.52215317	87.58119641
160608A00023	6/8/2016	2.36	6/8/2026	6/8/2016	104.77534	102.4026935	100.0984034	97.86008379	95.68544745	93.5723015	91.51854269	89.52215317	87.58119641
160608A00024	6/8/2016	2.36	6/8/2026	6/8/2016	104.77534	102.4026935	100.0984034	97.86008379	95.68544745	93.5723015	91.51854269	89.52215317	87.58119641
160608A00025	6/8/2016	2.36	6/8/2026	6/8/2016	104.77534	102.4026935	100.0984034	97.86008379	95.68544745	93.5723015	91.51854269	89.52215317	87.58119641
160608A00027	6/8/2016	2.36	6/8/2026	6/8/2016	104.77534	102.4026935	100.0984034	97.86008379	95.68544745	93.5723015	91.51854269	89.52215317	87.58119641
160608A00028	6/8/2016	2.36	6/8/2026	6/8/2016	104.77534	102.4026935	100.0984034	97.86008379	95.68544745	93.5723015	91.51854269	89.52215317	87.58119641
160608A00029	6/8/2016	2.36	6/8/2026	6/8/2016	104.77534	102.4026935	100.0984034	97.86008379	95.68544745	93.5723015	91.51854269	89.52215317	87.58119641
160608A00030	6/8/2016	2.36	6/8/2026	6/8/2016	104.77534	102.4026935	100.0984034	97.86008379	95.68544745	93.5723015	91.51854269	89.52215317	87.58119641
160608A00033	6/8/2016	2.44	6/9/2031	6/8/2016	108.56701	104.6161642	100.8748271	97.32977624	93.96872718	90.78026184	87.75376153	84.87934544	82.14781429
160608A00034	6/8/2016	2.44	6/9/2031	6/8/2016	108.56701	104.6161642	100.8748271	97.32977624	93.96872718	90.78026184	87.75376153	84.87934544	82.14781429
160810A00025	8/10/2016	2.17	8/10/2026	8/10/2016	104.68908	102.1671431	99.72143475	97.34914391	95.04758517	92.81419136	90.64650734	88.54218421	86.49897382
160810A00027	8/10/2016	2.13	8/10/2026	8/10/2016	104.40546	101.969368	99.60624425	97.31340705	95.08829691	92.92846679	90.83157613	88.7953854	86.81775084
160810A00028	8/10/2016	2.19	8/10/2026	8/10/2016	104.84392	102.2742732	99.78267226	97.36622939	95.02218909	92.74791741	90.5408955	88.39871364	86.31906567
160810A00029	8/10/2016	2.17	8/10/2026	8/10/2016	104.68908	102.1671431	99.72143475	97.34914391	95.04758517	92.81419136	90.64650734	88.54218421	86.49897382
160810A00030	8/10/2016	2.24	8/11/2031	8/10/2016	107.92433	103.912684	100.1178938	96.52602368	93.12414658	89.90026239	86.84322515	83.94267633	81.18898366
160908A00022	9/8/2016	2.21	9/8/2026	9/8/2016	104.95531	102.3627019	99.85020077	97.41482343	95.05371597	92.76415014	90.54351694	88.38932042	86.29917192
160908A00023	9/8/2016	2.21	9/8/2026	9/8/2016	104.95531	102.3627019	99.85020077	97.41482343	95.05371597	92.76415014	90.54351694	88.38932042	86.29917192
160908A00024	9/8/2016	2.21	9/8/2026	9/8/2016	104.95531	102.3627019	99.85020077	97.41482343	95.05371597	92.76415014	90.54351694	88.38932042	86.29917192
160908A00025	9/8/2016	2.21	9/8/2026	9/8/2016	104.95531	102.3627019	99.85020077	97.41482343	95.05371597	92.76415014	90.54351694	88.38932042	86.29917192
160908A00026	9/8/2016	2.21	9/8/2026	9/8/2016	104.95531	102.3627019	99.85020077	97.41482343	95.05371597	92.76415014	90.54351694	88.38932042	86.29917192

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160908A00027	9/8/2016	2.21	9/8/2026	9/8/2016	104.95531	102.3627019	99.85020077	97.41482343	95.05371597	92.76415014	90.54351694	88.38932042	86.29917192
160908A00028	9/8/2016	2.21	9/8/2026	9/8/2016	104.95531	102.3627019	99.85020077	97.41482343	95.05371597	92.76415014	90.54351694	88.38932042	86.29917192
160908A00030	9/8/2016	2.21	9/8/2026	9/8/2016	104.95531	102.3627019	99.85020077	97.41482343	95.05371597	92.76415014	90.54351694	88.38932042	86.29917192
160908A00031	9/8/2016	2.21	9/8/2026	9/8/2016	104.95531	102.3627019	99.85020077	97.41482343	95.05371597	92.76415014	90.54351694	88.38932042	86.29917192
160908A00032	9/8/2016	2.17	9/8/2026	9/8/2016	104.65625	102.1535356	99.72742387	97.37507616	95.0937751	92.88092267	90.7340341	88.65073202	86.62874099
160908A00033	9/8/2016	2.17	9/8/2026	9/8/2016	104.65625	102.1535356	99.72742387	97.37507616	95.0937751	92.88092267	90.7340341	88.65073202	86.62874099
160908A00034	9/8/2016	2.17	9/8/2026	9/8/2016	104.65625	102.1535356	99.72742387	97.37507616	95.0937751	92.88092267	90.7340341	88.65073202	86.62874099
160908A00035	9/8/2016	2.3	9/8/2031	9/8/2016	108.25047	104.1841567	100.3397301	96.70280569	93.26004884	89.99908924	86.90844419	83.97744883	81.19619211
160908A00036	9/8/2016	2.3	9/8/2031	9/8/2016	108.25047	104.1841567	100.3397301	96.70280569	93.26004884	89.99908924	86.90844419	83.97744883	81.19619211
160609A00075	6/9/2016	1.94	6/9/2026	6/9/2016	101.62353	100.3685419	99.14142497	97.94132949	96.767438	95.61896456	94.4951533	93.39527691	92.31863544
160719A00026	7/19/2016	1.87	7/20/2026	7/19/2016	101.61512	100.3182705	99.05087891	97.81203368	96.60085759	95.41650759	94.25817318	93.12507486	92.01646272
160629A00066	6/29/2016	2.61	6/30/2036	6/29/2016	120.7767	110.5024695	101.32578	93.11813371	85.76698638	79.1736715	73.25160821	67.92475009	63.12624103
170602A00019	6/2/2017	2.42	6/3/2024	6/2/2017	100.5285	100.0205041	99.51767269	99.01992339	98.52717929	98.03936505	97.55640683	97.07823225	96.60477037
170105A00010	1/5/2017	2.61	1/5/2027	1/5/2017	103.28048	101.711041	100.1818655	98.69159704	97.23893262	95.82262275	94.44146909	93.09432194	91.7800778
170105A00012	1/5/2017	2.68	1/5/2024	1/5/2017	100.12806	100.0230475	99.918264	99.81371133	99.70938872	99.60529537	99.50143048	99.39779329	99.29438301
170106A00030	1/6/2017	2.39	1/6/2027	1/6/2017	103.13577	101.5656318	100.0358507	98.54506078	97.09195382	95.67527571	94.29382372	92.94644401	91.63202923
170615A00006	6/15/2017	2.15	6/17/2024	6/15/2017	100.18218	99.92590666	99.67148552	99.41889841	99.16812325	98.91913833	98.67192231	98.42645421	98.18271341
170619A00089	6/16/2017	2.79	6/16/2027	6/16/2017	108.57474	105.2444152	102.0400885	98.95624905	95.98766335	93.12935618	90.37659612	87.72488212	85.1699309
170619A00092	6/16/2017	2.79	6/16/2027	6/16/2017	108.57474	105.2444152	102.0400885	98.95624905	95.98766335	93.12935618	90.37659612	87.72488212	85.1699309
170619A00095	6/16/2017	2.79	6/16/2027	6/16/2017	108.57474	105.2444152	102.0400885	98.95624905	95.98766335	93.12935618	90.37659612	87.72488212	85.1699309
170619A00096	6/16/2017	2.79	6/16/2027	6/16/2017	108.57474	105.2444152	102.0400885	98.95624905	95.98766335	93.12935618	90.37659612	87.72488212	85.1699309
170619A00101	6/16/2017	2.74	6/16/2027	6/16/2017	108.03294	104.8398049	101.7659923	98.80631608	95.9558497	93.2099087	90.56403731	88.01399597	85.55574944
170112A00015	1/12/2017	2.32	1/12/2027	1/12/2017	103.02513	101.4563341	99.92787211	98.43838133	96.98655371	95.57113523	94.1909233	92.84476422	91.5315508
170124A00017	1/24/2017	2.82	1/23/2032	1/24/2017	111.41782	107.0431775	102.9167615	99.02189193	95.34314144	91.86623649	88.57796277	85.46607921	82.51923943
170707A00007	7/7/2017	2.65	7/8/2024	7/7/2017	100.78086	100.176695	99.57982419	98.99011502	98.40743882	97.83166997	97.26268584	96.70036669	96.14459558
170201A00016	2/1/2017	2.49	2/1/2024	2/1/2017	100.19456	100.0208561	99.84776203	99.67526969	99.50337592	99.33207759	99.16137161	98.99125491	98.82172443
170207A00055	2/7/2017	2.36	2/8/2027	2/7/2017	103.19878	101.5856287	100.0147518	98.48469817	96.99407713	95.54155619	94.12585813	92.74575826	91.40008188
170711A00010	7/11/2017	2.38	7/12/2027	7/11/2017	103.79827	101.9648872	100.1842439	98.45439176	96.77347062	95.13970248	93.5513872	92.00689848	90.50468014
170713A00021	7/13/2017	3.25	7/13/2037	7/13/2017	128.69069	117.1182644	106.8601052	97.75245904	89.65319152	82.43880311	76.00187403	70.24887285	65.0982752
180305A00030	3/5/2018	3.12	3/5/2025	3/5/2018	102.83772	101.5931642	100.3767409	99.18749124	98.02450235	96.88690203	95.7738567	94.68456918	93.61827676
180309A00011	3/9/2018	3.19	3/10/2025	3/9/2018	102.97128	101.7138826	100.4835377	99.27937057	98.10054399	96.94625654	95.81574073	94.7082612	93.623113
171109A00016	11/9/2017	2.94	11/9/2032	11/9/2017	121.02779	112.6454329	104.9528538	97.88816626	91.39539586	85.42388352	79.92775351	74.86543707	70.1992459
170727A00003	7/27/2017	1.97	7/29/2024	7/27/2017	100.20142	99.9044161	99.60987935	99.31777233	99.02806159	98.74071437	98.4556985	98.17298245	97.89253529

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170303A00004	3/3/2017	2.8	3/4/2024	3/3/2017	100.34985	100.0836712	99.81891712	99.55557503	99.2936336	99.0330816	98.77390794	98.51610165	98.25965186
180321A00015	3/21/2018	3.02	3/21/2025	3/21/2018	101.72314	100.8790789	100.0502528	99.23622883	98.43659554	97.65095699	96.87893219	96.12015438	95.37427033
180322A00030	3/22/2018	2.79	3/24/2025	3/22/2018	101.13872	100.5026086	99.8773066	99.26250463	98.65790933	98.06323885	97.47822224	96.90259897	96.33611834
180322A00040	3/22/2018	3.16	3/21/2031	3/22/2018	114.09204	109.2254906	104.648697	100.3416285	96.28578659	92.46407735	88.86069588	85.46102096	82.2515189
180322A00044	3/22/2018	3.18	3/22/2033	3/22/2018	114.7833	109.648089	104.8408736	100.3370268	96.11398034	92.15103762	88.42920522	84.93104029	81.64051276
170309A00014	3/9/2017	2.58	3/9/2027	3/9/2017	103.68123	102.0181999	100.399587	98.82384053	97.28947787	95.79507907	94.3392839	92.92078881	91.53834417
170309A00016	3/9/2017	2.39	3/8/2024	3/9/2017	100.11959	100.0031377	99.8870755	99.77139814	99.65610356	99.54118972	99.42665461	99.31249622	99.19871257
170313A00045	3/13/2017	3.22	3/15/2032	3/13/2017	112.84006	108.3340144	104.0876668	100.0833042	96.30456786	92.736339	89.36463623	86.17652188	83.16001675
170802A00013	8/2/2017	2.5	8/2/2024	8/2/2017	100.75625	100.0867566	99.42621818	98.7744529	98.13128648	97.49654926	96.87007603	96.25170588	95.64128205
180402A00013	4/2/2018	2.99	4/3/2028	4/2/2018	110.27507	106.7366788	103.3485793	100.1033932	96.99415054	94.01426172	91.15749439	88.41795217	85.79005473
170317A00039	3/17/2017	2.73	3/18/2024	3/17/2017	100.38226	100.0788537	99.77730149	99.47758711	99.17969371	98.88360462	98.58930339	98.29677376	98.00599967
170317A00040	3/17/2017	2.74	3/18/2024	3/17/2017	100.38617	100.0820859	99.77986642	99.47949	99.18093965	98.88419867	98.58925054	98.29607896	98.00466782
170317A00044	3/17/2017	3.11	3/17/2027	3/17/2017	108.53806	105.529261	102.6262053	99.82453598	97.12010501	94.50895937	91.98733054	89.55162478	87.19841388
180403A00014	4/3/2018	3.11	4/3/2025	4/3/2018	103.06959	101.7565403	100.466748	99.19964792	97.9546904	96.73134324	95.52909092	94.34743391	93.18588811
170322A00033	3/22/2017	3.61	3/24/2042	3/22/2017	130.60301	119.1262678	109.0221584	100.1027472	92.20804556	85.20159919	78.96680985	73.40385932	68.42713374
180410A00002	4/10/2018	3.14	4/11/2033	4/10/2018	114.70086	109.5251805	104.6826674	100.1481263	95.8984794	91.91257603	88.17101788	84.65600104	81.35117344
170406A00024	4/6/2017	2.61	4/8/2024	4/6/2017	100.41114	100.0540446	99.69951165	99.34751362	98.99802325	98.65101369	98.30645848	97.96433153	97.62460711
170406A00026	4/6/2017	2.61	4/8/2024	4/6/2017	100.41114	100.0540446	99.69951165	99.34751362	98.99802325	98.65101369	98.30645848	97.96433153	97.62460711
170406A00027	4/6/2017	2.61	4/8/2024	4/6/2017	100.41114	100.0540446	99.69951165	99.34751362	98.99802325	98.65101369	98.30645848	97.96433153	97.62460711
170406A00029	4/6/2017	3.01	4/6/2027	4/6/2017	108.74848	105.5790372	102.5238073	99.57804105	96.73721326	93.99701029	91.35331908	88.80221664	86.3399603
170406A00032	4/6/2017	3.01	4/6/2027	4/6/2017	108.74848	105.5790372	102.5238073	99.57804105	96.73721326	93.99701029	91.35331908	88.80221664	86.3399603
170406A00033	4/6/2017	3.01	4/6/2027	4/6/2017	108.74848	105.5790372	102.5238073	99.57804105	96.73721326	93.99701029	91.35331908	88.80221664	86.3399603
170406A00034	4/6/2017	3.01	4/6/2027	4/6/2017	108.74848	105.5790372	102.5238073	99.57804105	96.73721326	93.99701029	91.35331908	88.80221664	86.3399603
170406A00036	4/6/2017	3.07	4/6/2032	4/6/2017	112.27875	107.7518959	103.4882276	99.46964863	95.67945554	92.10222074	88.72368599	85.53066558	82.51095801
170407A00001	4/6/2017	2.97	4/6/2027	4/6/2017	108.25556	105.2107258	102.2743591	99.44197104	96.70928674	94.07223052	91.52691567	89.06963467	86.69684986
170829A00066	8/29/2017	2.11	8/29/2024	8/29/2017	100.73181	99.99004098	99.25926744	98.53924203	97.82972859	97.13049783	96.4413271	95.76200013	95.09230681
171204A00024	12/4/2017	2.71	12/4/2024	12/4/2017	101.64021	100.6409267	99.66147672	98.70127147	97.75974632	96.83635854	95.93058631	95.04192765	94.16989956
171207A00024	12/7/2017	2.93	12/7/2027	12/7/2017	110.69068	106.81497	103.1031817	99.54743985	96.14029611	92.87469928	89.7439719	86.7417883	83.86215411
171207A00025	12/7/2017	2.91	12/7/2027	12/7/2017	110.33163	106.552078	102.9312029	99.4614127	96.13552306	92.94673199	89.88859719	86.95501499	84.14020063
171207A00026	12/7/2017	2.93	12/7/2027	12/7/2017	110.69068	106.81497	103.1031817	99.54743985	96.14029611	92.87469928	89.7439719	86.7417883	83.86215411
171219A00067	12/19/2017	2.72	12/20/2027	12/19/2017	109.71898	106.0707063	102.5747203	99.22373041	96.01083604	92.92950533	89.97355348	87.13712217	84.41466047
180517A00018	5/17/2018	3.46	5/17/2033	5/17/2018	116.5027	111.1993561	106.2401018	101.5987217	97.25121957	93.17561672	89.35176816	85.7611961	82.3869399
180517A00024	5/17/2018	3.46	5/17/2033	5/17/2018	116.5027	111.1993561	106.2401018	101.5987217	97.25121957	93.17561672	89.35176816	85.7611961	82.3869399

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180605A00031	6/5/2018	3.37	6/5/2030	6/5/2018	110.72178	107.2144815	103.8714968	100.6835717	97.64204345	94.73879926	91.96623819	89.31723514	86.78510785
180104A00041	1/4/2018	3.08	1/4/2033	1/4/2018	121.96038	113.5629629	105.8661498	98.80618732	92.32549659	86.3720462	80.89878823	75.86315457	71.22660674
180104A00023	1/4/2018	2.91	1/4/2028	1/4/2018	109.27839	105.8521357	102.5662221	99.41397791	96.38908863	93.48557707	90.69778303	88.02034453	85.44818036
180104A00024	1/4/2018	2.98	1/4/2028	1/4/2018	110.81564	106.95871	103.2659708	99.72945221	96.34162028	93.09534823	89.98389221	87.00086837	84.14023153
180125A00027	1/25/2018	2.69	1/24/2025	1/25/2018	101.1764	100.4415481	99.72035397	99.01240686	98.31731434	97.63469997	96.96420246	96.30547489	95.65818396
180905A00017	9/5/2018	3.43	9/6/2033	9/5/2018	126.39718	117.2904829	108.9859178	101.4063577	94.48256259	88.15233055	82.35974446	77.05450304	72.19132652
180906A00032	9/6/2018	3.24	9/5/2025	9/6/2018	104.59124	102.8642165	101.1746124	99.52130036	97.9032004	96.31927525	94.76852816	93.25000083	91.7627716
180907A00013	9/7/2018	3.27	9/8/2025	9/7/2018	104.62152	102.9020502	101.2199213	99.57402011	97.96327777	96.38666692	94.84319968	93.33192576	91.85193059
180913A00012	9/13/2018	3.31	9/13/2033	9/13/2018	116.23601	110.7652556	105.6605097	100.893066	96.43671817	92.26752457	88.36359577	84.70490372	81.27310977
151001A00023	10/1/2015	2.02	10/1/2025	10/1/2015	101.1818	100.2610922	99.35757702	98.47077084	97.60020607	96.74543295	95.90601871	95.08154676	94.27161587
160616A00029	6/16/2016	1.58	6/16/2026	6/16/2016	101.32786	100.0739693	98.84799642	97.64908429	96.47641234	95.32919171	94.20666379	93.10809874	92.0327942
180913A00033	9/13/2018	3.31	9/13/2033	9/13/2018	116.23601	110.7652556	105.6605097	100.893066	96.43671817	92.26752457	88.36359577	84.70490372	81.27310977
180914A00049	9/14/2018	3.37	9/14/2033	9/14/2018	116.56315	111.0767809	105.9574704	101.176427	96.70736905	92.52628625	88.61122638	84.94210397	81.50052781
180713A00031	7/13/2018	3.06	7/14/2025	7/13/2018	101.65606	100.8551496	100.0683981	99.29542254	98.53584982	97.78932076	97.05548938	96.33402225	95.62459793
180717A00021	7/17/2018	3.34	7/17/2028	7/17/2018	113.15122	108.9619143	104.9667873	101.155601	97.51872103	94.04707467	90.73211489	87.56578677	84.5404962
180717A00026	7/17/2018	3.24	7/16/2025	7/17/2018	104.024	102.4674523	100.9426836	99.44877768	97.98485345	96.55006314	95.14359096	93.76465152	92.41248837
180718A00008	7/18/2018	3.37	7/18/2028	7/18/2018	114.4558	109.8393056	105.442137	101.252571	97.25957619	93.45277045	89.822379	86.35919533	83.05454486
180925A00116	9/25/2018	3.28	9/25/2028	9/25/2018	107.70555	105.1907911	102.7666657	100.4291306	98.17435325	95.99869903	93.89871995	91.8711436	89.91286299
181105A00015	11/5/2018	3.57	11/5/2025	11/5/2018	105.78316	103.8847713	102.0308342	100.2200295	98.45109039	96.72279603	95.0339693	93.38347497	91.77021792
180925A00013	9/25/2018	3.41	9/25/2028	9/25/2018	107.70117	105.1921147	102.7733169	100.4407606	98.19063519	96.01932655	93.92340576	91.89961821	89.94487356
190205A00020	2/5/2019	3.32	2/5/2029	2/5/2019	115.21539	110.3152808	105.6684016	101.2600905	97.0766228	93.10514271	89.33360338	85.75071126	82.34587466
190205A00017	2/5/2019	3.36	2/5/2029	2/5/2019	115.41086	110.5040328	105.8507473	101.4363272	97.24703151	93.26998946	89.49313991	85.90517593	82.49549328
190205A00019	2/5/2019	2.94	2/5/2024	2/5/2019	100.26504	100.080723	99.89709056	99.71413985	99.53186701	99.35026825	99.16933982	98.98907798	98.80947903
190205A00021	2/5/2019	3.32	2/5/2029	2/5/2019	115.21539	110.3152808	105.6684016	101.2600905	97.0766228	93.10514271	89.33360338	85.75071126	82.34587466
190205A00023	2/5/2019	3.32	2/5/2029	2/5/2019	115.21539	110.3152808	105.6684016	101.2600905	97.0766228	93.10514271	89.33360338	85.75071126	82.34587466
190205A00022	2/5/2019	3.32	2/5/2029	2/5/2019	115.21539	110.3152808	105.6684016	101.2600905	97.0766228	93.10514271	89.33360338	85.75071126	82.34587466
181003A00019	10/3/2018	3.44	10/3/2025	10/3/2018	105.23639	103.4259361	101.6561977	99.92601452	98.23427099	96.57989027	94.96183245	93.37909305	91.83070165
170921A00055	9/21/2017	2.82	9/21/2027	9/21/2017	109.40922	105.8341037	102.4021517	99.10681352	95.94187176	92.90142678	89.97987877	87.1719107	84.47247252
170921A00057	9/21/2017	2.79	9/21/2027	9/21/2017	108.8704	105.4479392	102.1607299	99.00262399	95.9677852	93.05067432	90.24603258	87.54886579	84.95442949
160824A00019	8/24/2016	1.98	8/25/2031	8/24/2016	107.40048	103.3969357	99.61030146	96.02660868	92.63290209	89.41715746	86.36820816	83.475678	80.72991976
191112A00024	11/12/2019	2.09	11/12/2024	11/12/2019	100.90127	99.9657434	99.04768674	98.14661728	97.26206566	96.39357965	95.54072347	94.70307695	93.8802349
191112A00023	11/12/2019	2.36	11/13/2029	11/12/2019	111.93634	106.3727484	101.1373247	96.20876154	91.56724657	87.19435144	83.07292787	79.18701229	75.52173805
191112A00022	11/12/2019	2.36	11/13/2029	11/12/2019	111.93634	106.3727484	101.1373247	96.20876154	91.56724657	87.19435144	83.07292787	79.18701229	75.52173805

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191113A00013	11/13/2019	2.17	11/13/2026	11/13/2019	105.39462	102.5656632	99.82979624	97.18343476	94.62315239	92.14567377	89.74786702	87.4267365	85.17941613
181010A00025	10/10/2018	3.48	10/10/2030	10/10/2018	112.1772	108.4354983	104.8772013	101.4915368	98.26845357	95.19856362	92.27309425	89.48384329	86.82313811
190702A00068	7/2/2019	2.69	7/1/2039	7/2/2019	124.57949	112.1265201	101.2526123	91.7381456	83.39579778	76.06559464	69.61074496	63.91413205	58.87535534
190702A00071	7/2/2019	2.69	7/1/2039	7/2/2019	124.57949	112.1265201	101.2526123	91.7381456	83.39579778	76.06559464	69.61074496	63.91413205	58.87535534
191122A00003	11/22/2019	2.32	11/22/2039	11/22/2019	118.89804	107.7080613	97.87956184	89.22727922	81.59290856	74.84098701	68.85543069	63.53661769	58.79892812
190708A00025	7/8/2019	2.21	7/1/2024	7/8/2019	100.50804	99.9227695	99.34434931	98.77265676	98.20757482	97.64898916	97.09678808	96.55086241	96.01110548
190708A00032	7/8/2019	2.58	7/2/2029	7/8/2019	112.67694	107.3854804	102.3895338	97.67083552	93.2123486	88.9981762	85.01347912	81.24439977	77.677992
190708A00029	7/8/2019	2.57	7/2/2029	7/8/2019	112.62369	107.3342157	102.3401542	97.6232471	93.16646295	88.95390994	84.97075361	81.20314082	77.63812959
190708A00026	7/8/2019	2.21	7/1/2024	7/8/2019	100.50804	99.9227695	99.34434931	98.77265676	98.20757482	97.64898916	97.09678808	96.55086241	96.01110548
190708A00028	7/8/2019	2.57	7/2/2029	7/8/2019	112.62369	107.3342157	102.3401542	97.6232471	93.16646295	88.95390994	84.97075361	81.20314082	77.63812959
190708A00030	7/8/2019	2.57	7/2/2029	7/8/2019	112.62369	107.3342157	102.3401542	97.6232471	93.16646295	88.95390994	84.97075361	81.20314082	77.63812959
190227A00033	2/27/2019	2.65	2/27/2026	2/27/2019	102.2377	101.1369449	100.0586958	99.00229332	97.96710598	96.95252642	95.95797	94.98287385	94.0266958
191203A00011	12/3/2019	2.21	12/3/2029	12/3/2019	111.15252	105.5721937	100.3240533	95.38633517	90.73881783	86.36270511	82.24051825	78.35599681	74.69400755
191203A00010	12/3/2019	2.21	12/3/2029	12/3/2019	111.15252	105.5721937	100.3240533	95.38633517	90.73881783	86.36270511	82.24051825	78.35599681	74.69400755
191203A00009	12/3/2019	2.21	12/3/2029	12/3/2019	111.15252	105.5721937	100.3240533	95.38633517	90.73881783	86.36270511	82.24051825	78.35599681	74.69400755
190712A00016	7/12/2019	2.39	7/12/2029	7/12/2019	106.22431	103.3263982	100.5477634	97.88242389	95.32474657	92.86942043	90.51143597	88.24606601	86.06884785
191206A00005	12/6/2019	2.18	12/7/2026	12/6/2019	105.57485	102.680711	99.88368629	97.17995371	94.56586849	92.03795021	89.59287429	87.22746408	84.93868329
191209A00005	12/9/2019	2.22	12/10/2029	12/9/2019	110.28506	105.1523315	100.3166409	95.75880351	91.46098367	87.40659258	83.58019438	79.96741987	76.55488709
190305A00017	3/5/2019	3.12	3/5/2026	3/5/2019	105.79139	103.6451191	101.5550729	99.51938235	97.53625181	95.60395944	93.72085373	91.88534991	90.09592671
190305A00015	3/5/2019	3.32	3/5/2029	3/5/2019	115.42535	110.4450446	105.7257169	101.2520698	97.00979089	92.98548382	89.16660462	85.54140247	82.09886504
191224A00002	12/24/2019	2.17	12/24/2029	12/24/2019	106.034	102.9298775	99.96159613	97.12196328	94.40422047	91.80201532	89.30937434	86.92067779	84.63063632
200103A00002	1/3/2020	2.07	1/3/2030	1/3/2020	110.25359	105.0581786	100.1666561	95.55919142	91.21736571	87.12406098	83.26336126	79.62046153	76.18158414
200109A00006	1/9/2020	1.95	1/9/2030	1/9/2020	105.83569	102.6881193	99.68016098	96.80433019	94.05360145	91.4213761	88.90145345	86.48800402	84.17554481
200109A00008	1/9/2020	1.95	1/9/2030	1/9/2020	105.83569	102.6881193	99.68016098	96.80433019	94.05360145	91.4213761	88.90145345	86.48800402	84.17554481
190308A00026	3/8/2019	3.18	3/8/2034	3/8/2019	123.51473	114.6004172	106.4880964	99.09837592	92.36024534	86.21014463	80.59114052	75.45219783	70.7475349
190308A00016	3/8/2019	3.18	3/8/2034	3/8/2019	123.51473	114.6004172	106.4880964	99.09837592	92.36024534	86.21014464	80.59114052	75.45219783	70.7475349
200110A00053	1/10/2020	1.99	1/10/2025	1/10/2020	101.11598	100.0227633	98.95337714	97.90704404	96.8830227	95.88060331	94.89910596	93.937879	92.99629766
200110A00038	1/10/2020	2.32	1/10/2030	1/10/2020	111.88651	106.1919237	100.8408788	95.8105654	91.07981383	86.62896746	82.43976624	78.49524015	74.77961121
200110A00039	1/10/2020	2.32	1/10/2030	1/10/2020	111.88651	106.1919237	100.8408788	95.8105654	91.07981383	86.62896746	82.43976624	78.49524015	74.77961121
200110A00037	1/10/2020	2.32	1/10/2030	1/10/2020	111.88651	106.1919237	100.8408788	95.8105654	91.07981383	86.62896746	82.43976624	78.49524015	74.77961121
200110A00043	1/10/2020	2.32	1/10/2030	1/10/2020	111.88651	106.1919237	100.8408788	95.8105654	91.07981383	86.62896746	82.43976624	78.49524015	74.77961121
190718A00012	7/18/2019	2.55	7/18/2029	7/18/2019	111.52873	106.6355824	102.0096361	97.63453286	93.49500771	89.5768136	85.86664793	82.35208453	79.02151104
200115A00013	1/15/2020	2.18	1/15/2030	1/15/2020	109.05904	104.4252652	100.0507039	95.91885637	92.01437764	88.32299002	84.83140268	81.52723763	78.39896177

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200116A00012	1/16/2020	2.16	1/19/2027	1/16/2020	105.77972	102.7759827	99.87591272	97.07530281	94.37014808	91.75663092	89.23111094	86.79011548	84.43033074
190315A00019	3/15/2019	2.88	3/15/2034	3/15/2019	114.55452	108.8991474	103.6392231	98.74240955	94.17929945	89.92312876	85.9495195	82.23624928	78.76304467
190315A00029	3/15/2019	2.88	3/15/2034	3/15/2019	114.55452	108.8991474	103.6392231	98.74240955	94.17929945	89.92312876	85.9495195	82.23624928	78.76304467
190315A00023	3/15/2019	2.88	3/15/2034	3/15/2019	114.55452	108.8991474	103.6392231	98.74240955	94.17929945	89.92312876	85.9495195	82.23624928	78.76304467
190315A00017	3/15/2019	2.88	3/15/2034	3/15/2019	114.55452	108.8991474	103.6392231	98.74240955	94.17929945	89.92312876	85.9495195	82.23624928	78.76304467
200406A00027	4/6/2020	1.31	4/5/2030	4/6/2020	106.36775	101.1565209	96.26124968	91.66067009	87.33506339	83.26613998	79.43692848	75.83167396	72.43574447
200406A00029	4/6/2020	1.61	4/5/2030	4/6/2020	107.94065	102.2230132	96.86253591	91.8347985	87.11717847	82.6887081	78.52994531	74.62285517	70.95070124
200406A00032	4/6/2020	1.09	4/4/2025	4/6/2020	100.3895	99.09755874	97.82855907	96.5819361	95.35714767	94.15366872	92.97099065	91.80862065	90.6660811
200406A00030	4/6/2020	1.61	4/5/2030	4/6/2020	107.94065	102.2230132	96.86253591	91.8347985	87.11717847	82.6887081	78.52994531	74.62285517	70.95070124
200406A00033	4/6/2020	1.09	4/4/2025	4/6/2020	100.3895	99.09755874	97.82855907	96.5819361	95.35714767	94.15366872	92.97099065	91.80862065	90.6660811
200406A00035	4/6/2020	1.05	4/4/2025	4/6/2020	100.30771	99.06267752	97.83971192	96.63827213	95.45783406	94.29789029	93.15794942	92.03753545	90.9361872
200406A00036	4/6/2020	1.09	4/4/2025	4/6/2020	100.3895	99.09755874	97.82855907	96.5819361	95.35714767	94.15366872	92.97099065	91.80862065	90.6660811
200406A00014	4/6/2020	1.33	4/6/2035	4/6/2020	106.37674	100.6016267	95.26784433	90.33613127	85.77107954	81.54072813	77.61620117	73.97138647	70.58264977
161214A00034	12/14/2016	2.65	12/14/2026	12/14/2016	103.22921	101.7017753	100.2127747	98.76092672	97.34500478	95.96383256	94.6162813	93.30126753	92.01775095
190826A00032	8/26/2019	1.72	8/24/2029	8/26/2019	104.72159	101.8163779	99.03252067	96.36385121	93.80456511	91.34919403	88.99258394	86.72987492	84.55648232
200206A00032	2/6/2020	2.15	2/6/2030	2/6/2020	110.97512	105.2625363	99.89797187	94.85810067	90.12129125	85.66747296	81.47801476	77.53561415	73.82419532
200206A00027	2/6/2020	2.15	2/6/2030	2/6/2020	110.97512	105.2625363	99.89797187	94.85810067	90.12129125	85.66747296	81.47801476	77.53561415	73.82419532
200206A00031	2/6/2020	2.15	2/6/2030	2/6/2020	110.97512	105.2625363	99.89797187	94.85810067	90.12129125	85.66747296	81.47801476	77.53561415	73.82419532
200206A00034	2/6/2020	1.84	2/6/2025	2/6/2020	101.07688	99.92173418	98.79319661	97.69035701	96.61234306	95.55832155	94.52749625	93.51910583	92.53242202
200206A00033	2/6/2020	2.15	2/6/2030	2/6/2020	110.97512	105.2625363	99.89797187	94.85810067	90.12129125	85.66747296	81.47801476	77.53561415	73.82419532
200206A00008	2/6/2020	1.64	2/6/2025	2/6/2020	101.00571	99.86599745	98.75245324	97.66418344	96.60033101	95.56007734	94.54264013	93.54727138	92.57325554
190329A00067	3/29/2019	2.61	3/29/2024	3/29/2019	100.37609	100.045996	99.71808932	99.39235247	99.06876399	98.74730267	98.42794759	98.1106781	97.79547382
200413A00009	4/13/2020	0.77	4/13/2027	4/13/2020	100.69598	99.04182484	97.432702	95.86701605	94.34324185	92.85991965	91.41565178	90.00909951	88.6389801
200413A00013	4/13/2020	1.19	4/12/2030	4/13/2020	103.13405	99.95352781	96.91874281	94.02164679	91.25469931	88.61083055	86.08340869	83.66620979	81.3533899
200414A00024	4/14/2020	1.37	4/14/2027	4/14/2020	103.73587	100.5734133	97.52702375	94.5918146	91.76313564	89.03655606	86.4078529	83.87300015	81.42815854
200414A00009	4/14/2020	0.82	4/14/2025	4/14/2020	99.790884	99.12723439	98.47510974	97.83418087	97.20413191	96.58465939	95.97547167	95.37628831	94.78683955
200212A00013	2/12/2020	1.98	2/12/2027	2/12/2020	105.35701	102.3094948	99.3687489	96.5303782	93.79019515	91.14421176	88.58862853	86.11982422	83.73434612
150227A00011	2/27/2015	2.33	2/27/2025	2/27/2015	101.78867	100.6683556	99.57430836	98.50560098	97.4613466	96.44069954	95.44285299	94.46703679	93.51251534
150213A00014	2/13/2015	2.41	2/13/2025	2/13/2015	100.80181	100.2120262	99.63157534	99.06021569	98.4977106	97.94383209	97.39836038	96.86108358	96.33179726
160209A00008	2/9/2016	2.45	2/10/2031	2/9/2016	108.24936	104.4802458	100.9032675	97.50673478	94.27975648	91.21218446	88.29455768	85.51805096	82.8744279
160307A00024	3/7/2016	2.17	3/6/2026	3/7/2016	101.64308	100.5120397	99.40452159	98.31983334	97.25730824	96.21630506	95.19620681	94.19641959	93.21637152
160209A00006	2/9/2016	1.91	2/9/2026	2/9/2016	101.26567	100.1797617	99.11597592	98.07366714	97.05221706	96.05103073	95.06953543	94.10717966	93.1634321
190402A00005	4/2/2019	2.77	4/2/2032	4/2/2019	113.82249	108.2077348	102.9720797	98.08607852	93.522788	89.25754219	85.26774565	81.53268668	78.03336855

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190813A00052	8/13/2019	2.24	8/13/2029	8/13/2019	111.00059	105.6784761	100.6589225	95.92290389	91.45269831	87.23179115	83.2447859	79.47732223	75.91600052
190813A00067	8/13/2019	1.9	8/13/2024	8/13/2019	100.37923	99.6821681	98.99484324	98.3170548	97.64860485	96.98930092	96.3389558	95.69738737	95.06441842
190813A00057	8/13/2019	1.9	8/13/2024	8/13/2019	100.37923	99.6821681	98.99484324	98.3170548	97.64860485	96.98930092	96.3389558	95.69738737	95.06441842
190813A00051	8/13/2019	2.19	8/13/2029	8/13/2019	110.73121	105.4194113	100.4096454	95.68291654	91.2215323	87.00900534	83.02996476	79.27007415	75.71595631
190813A00064	8/13/2019	1.9	8/13/2024	8/13/2019	100.37923	99.6821681	98.99484324	98.3170548	97.64860485	96.98930092	96.3389558	95.69738737	95.06441842
190403A00013	4/3/2019	3.05	4/3/2029	4/3/2019	114.24406	109.242624	104.5067471	100.0207466	95.76994443	91.74060251	87.91985752	84.29566091	80.85672314
190403A00014	4/3/2019	3.05	4/3/2029	4/3/2019	114.24406	109.242624	104.5067471	100.0207466	95.76994443	91.74060251	87.91985752	84.29566091	80.85672314
190403A00010	4/3/2019	3.08	4/3/2029	4/3/2019	114.84334	109.6859401	104.8049656	100.1840067	95.80771301	91.66171977	87.73257984	84.00770046	80.4752847
190404A00015	4/4/2019	2.88	4/3/2026	4/4/2019	105.68218	103.4023356	101.1843842	99.02629739	96.92612967	94.88201011	92.89213895	90.95478454	89.06828031
200421A00026	4/21/2020	1.34	4/19/2030	4/21/2020	105.83669	100.6408502	95.76107364	91.17600795	86.86586331	82.81228947	78.99826359	75.4079873	72.02679242
200424A00022	4/24/2020	1.39	4/24/2030	4/24/2020	106.107	100.8913564	95.99349315	91.39190845	87.06667267	82.99930854	79.1726778	75.57087721	72.17914314
200428A00009	4/28/2020	1.08	4/29/2030	4/28/2020	102.77393	99.60428617	96.5799182	93.69280434	90.9354258	88.30073315	85.78211377	83.37336178	81.06865032
200429A00030	4/29/2020	1.41	4/29/2030	4/29/2020	106.56913	101.0384209	95.85253402	90.98781855	86.42237092	82.13589874	78.10959416	74.32601771	70.76899198
180628A00068	6/28/2018	3.12	6/28/2028	6/28/2018	111.26389	107.544914	103.9905995	100.5925126	97.34270542	94.23368305	91.25837556	88.41011114	85.68259133
200501A00009	5/4/2020	0.67	5/1/2025	5/4/2020	99.700092	98.99842856	98.30875789	97.63075197	96.96409571	96.3084858	95.66363021	95.02924765	94.405067
200512A00017	5/12/2020	0.85	5/12/2025	5/12/2020	100.13386	98.77074928	97.43350116	96.1214438	94.83392478	93.57031381	92.3300018	91.11239996	89.91693893
200512A00010	5/12/2020	1.48	5/10/2030	5/12/2020	107.20893	101.4464482	96.04910785	90.99158683	86.25045359	81.80401511	77.63217923	73.71632852	70.03920473
200512A00021	5/12/2020	0.86	5/12/2025	5/12/2020	100.1595	98.77151763	97.40992569	96.07403069	94.76316766	93.47669412	92.21398916	90.97445252	89.75750374
200512A00011	5/12/2020	1.48	5/10/2030	5/12/2020	107.20893	101.4464482	96.04910785	90.99158683	86.25045359	81.80401511	77.63217923	73.71632852	70.03920473
200512A00013	5/12/2020	1.17	5/12/2027	5/12/2020	103.19361	99.97598659	96.87902607	93.89754153	91.02659769	88.26149747	85.59776912	83.03115419	80.55759607
200512A00014	5/12/2020	1.17	5/12/2027	5/12/2020	103.19361	99.97598659	96.87902607	93.89754153	91.02659769	88.26149747	85.59776912	83.03115419	80.55759607
200512A00018	5/12/2020	0.85	5/12/2025	5/12/2020	100.13386	98.77074928	97.43350116	96.1214438	94.83392478	93.57031381	92.3300018	91.11239996	89.91693893
200512A00020	5/12/2020	0.86	5/12/2025	5/12/2020	100.1595	98.77151763	97.40992569	96.07403069	94.76316766	93.47669412	92.21398916	90.97445252	89.75750374
200512A00001	5/12/2020	1.17	5/12/2027	5/12/2020	103.19361	99.97598659	96.87902607	93.89754153	91.02659769	88.26149747	85.59776912	83.03115419	80.55759607
181214A00030	12/14/2018	3.47	12/14/2033	12/14/2018	127.01088	117.586308	109.013843	101.2095537	94.09828608	87.6126996	81.69241373	76.28325142	71.33656858
200220A00026	2/20/2020	2.22	2/21/2040	2/20/2020	113.85673	105.0784357	97.23768414	90.21946002	83.92412527	78.2652324	73.16766282	68.56604148	64.40338516
200221A00012	2/21/2020	2.14	2/21/2040	2/21/2020	113.14819	104.4286295	96.64036797	89.66914915	83.41599556	77.79503354	72.73164363	68.16088561	64.0261556
181218A00040	12/18/2018	3.23	6/18/2030	12/18/2018	110.22995	106.7381032	103.4098883	100.236083	97.20805778	94.31773181	91.55753395	88.92036726	86.39957611
200303A00028	3/3/2020	1.54	3/4/2030	3/3/2020	106.87201	101.7130828	96.86270378	92.30031694	88.00685524	83.96462599	80.15720405	76.56933387	73.18683971
200306A00050	3/6/2020	0.87	3/6/2030	3/6/2020	102.4779	99.35111081	96.36623162	93.51549951	90.79163168	88.18779633	85.6975816	83.31496687	81.03429623
200306A00057	3/6/2020	0.92	3/8/2027	3/6/2020	102.4313	99.50130341	96.67504548	93.94822012	91.31672665	88.77666004	86.32430026	83.95610217	81.6686861
200306A00048	3/6/2020	1.04	3/6/2035	3/6/2020	104.64135	99.00148033	93.78979475	88.96843905	84.50325122	80.36337525	76.52091604	72.95063274	69.62966574
151204A00011	12/4/2015	2.28	12/4/2025	12/4/2015	101.61982	100.6115569	99.62296667	98.65348795	97.70258406	96.76973832	95.85445312	94.956249	94.07466382

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200514A00008	5/14/2020	1.23	5/14/2030	5/14/2020	105.25714	100.0377796	95.13910298	90.53922457	86.21787991	82.15629354	78.33706182	74.74404547	71.36227115
200309A00081	3/9/2020	1.18	3/8/2030	3/9/2020	105.43252	99.87964721	94.67071839	89.78237549	85.19296983	80.88243205	76.83214839	73.02484742	69.4444962
200309A00082	3/9/2020	1.18	3/8/2030	3/9/2020	105.43252	99.87964721	94.67071839	89.78237549	85.19296983	80.88243205	76.83214839	73.02484742	69.4444962
200309A00084	3/9/2020	1.06	3/9/2027	3/9/2020	102.61608	99.56253595	96.61835341	93.77896702	91.04003574	88.39742583	85.84719949	83.38560424	81.00906295
200520A00009	5/20/2020	1.63	5/20/2038	5/20/2020	111.27724	100.5354133	91.09224074	82.77631885	75.4401259	68.95655673	63.21597626	58.12371338	53.59792732
200522A00009	5/22/2020	0.96	5/22/2030	5/22/2020	102.55859	99.15106457	95.90552455	92.81275286	89.86412391	87.05156371	84.36751099	81.80488123	79.35703352
200311A00015	3/11/2020	1.26	3/11/2027	3/11/2020	103.25245	100.1794124	97.21653831	94.35923505	91.60313102	88.94406295	86.37806441	83.90135523	81.51033155
200311A00026	3/11/2020	1.34	3/11/2030	3/11/2020	106.14815	100.7301725	95.64406809	90.86742873	86.37948094	82.1609606	78.19399509	74.46199543	70.94955729
200605A00018	6/5/2020	0.91	6/5/2025	6/5/2020	100.28039	98.83373372	97.41554028	96.02504025	94.66148971	93.32417096	92.01239137	90.72548226	89.46279788
200317A00009	3/17/2020	1.61	3/16/2035	3/17/2020	107.23644	101.475345	96.15060647	91.22371913	86.65992968	82.42784218	78.49906835	74.8479164	71.45111427
200608A00001	6/8/2020	1.34	6/7/2030	6/8/2020	105.86562	100.5765495	95.61502713	90.95851683	86.58616593	82.47866687	78.61813438	74.98799323	71.57287525
200610A00006	6/10/2020	1.11	6/10/2027	6/10/2020	103.09465	99.81388011	96.65846582	93.62291406	90.70200275	87.89076727	85.18448619	82.57866792	80.06903818
200612A00004	6/12/2020	1.42	6/12/2040	6/12/2020	107.08343	98.57728977	90.99511456	84.22161714	78.15717802	72.71557829	67.82207953	63.41179276	59.42829126
200616A00005	6/16/2020	0.74	6/17/2030	6/16/2020	102.13774	98.89933813	95.81298462	92.87009916	90.06264992	87.38311642	84.82445344	82.38005773	80.0437373
200323A00090	3/23/2020	1.55	3/23/2027	3/23/2020	102.10999	100.2575415	98.45895815	96.7122465	95.01550267	93.36690651	91.76471733	90.20726985	88.69297042
200326A00032	3/26/2020	1.49	3/26/2030	3/26/2020	104.06609	100.8969848	97.87149107	94.98175515	92.22041601	89.58056794	87.05572928	84.63981343	82.32710208
200327A00094	3/27/2020	1.6	3/27/2030	3/27/2020	107.20627	101.9954525	97.09871891	92.49503546	88.16489154	84.09018438	80.25411018	76.64106417	73.23654894
190501A00015	5/1/2019	2.78	5/1/2029	5/1/2019	107.13079	104.2934738	101.5699435	98.95463062	96.44227841	94.02792437	91.70688192	89.47472316	87.32726282
190502A00016	5/2/2019	2.87	5/1/2026	5/2/2019	105.88991	103.5331066	101.2422188	99.01502914	96.84940425	94.74329525	92.69473374	90.70182821	88.7627605
190506A00026	5/6/2019	3.03	5/4/2029	5/6/2019	114.76557	109.5352951	104.5895123	99.91108292	95.48399	91.29326072	87.32489294	83.56578738	80.00368477
190510A00049	5/10/2019	2.58	5/8/2026	5/10/2019	102.34144	101.1167508	99.91873063	98.74657203	97.59950123	96.47677415	95.37767506	94.30151518	93.24763149
181226A00030	12/26/2018	2.91	12/26/2028	12/26/2018	107.19411	104.5623287	102.0295137	99.59108848	97.24271908	94.98030264	92.79995341	90.69798981	88.6709223
190103A00020	1/3/2019	3.12	1/5/2026	1/3/2019	105.47402	103.4212441	101.4196852	99.46770871	97.56374842	95.70629996	93.89391764	92.12521171	90.39884573
190104A00034	1/4/2019	3.18	1/4/2029	1/4/2019	112.11374	108.0232773	104.1299215	100.4227623	96.89156046	93.5267031	90.31916178	87.26045348	84.34260449
190104A00035	1/4/2019	3.1	1/5/2026	1/4/2019	105.3657	103.3358606	101.3565432	99.42614218	97.54311404	95.70597586	93.91330264	92.16372448	90.45592401
190104A00038	1/4/2019	3.25	1/4/2029	1/4/2019	114.67717	109.8631133	105.2947457	100.9580222	96.83978243	92.92768784	89.21016604	85.67635881	82.31607408
200716A00004	7/16/2020	0.97	7/16/2027	7/16/2020	102.74697	99.38815658	96.16052178	93.05817956	90.07554729	87.20732489	84.44847862	81.79422609	79.24002203
161227A00073	12/27/2016	2.83	12/28/2026	12/27/2016	106.77244	104.2016151	101.7142145	99.30697763	96.97679768	94.72070873	92.53587836	90.41960079	88.36929026
200724A00011	7/24/2020	1.41	7/26/2038	7/24/2020	108.94728	98.14275787	88.66969387	80.34957319	73.02910124	66.57649686	60.87834734	55.83693938	51.36799147
190515A00035	5/15/2019	2.82	2/15/2029	5/15/2019	113.25698	108.2666705	103.5383611	99.05672664	94.80742367	90.7770248	86.95295491	83.32343215	79.87741327
200806A00004	8/6/2020	0.3	3/6/2024	8/6/2020	99.878164	99.76424637	99.65069775	99.537516	99.42469922	99.31224554	99.20015309	99.08842002	98.9770445
200814A00003	8/14/2020	0.96	8/14/2035	8/14/2020	104.22041	98.40549598	93.04652921	88.10193845	83.53433289	79.31004733	75.39874237	71.77305013	68.40826016
200330A00058	3/30/2020	1.49	3/29/2030	3/30/2020	106.62005	101.4305861	96.55424106	91.970033	87.65849867	83.6015795	79.7825131	76.18573353	72.79677988

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200330A00079	3/30/2020	1.51	3/30/2035	3/30/2020	106.64349	100.9144074	95.61928844	90.7198372	86.18148737	81.97301247	78.06617778	74.43543088	71.0576262
200330A00047	3/30/2020	1.5	3/30/2035	3/30/2020	106.58432	100.8584514	95.56630721	90.66960846	86.13380825	81.92769765	78.02305781	74.39435064	71.0184436
190829A00039	8/29/2019	1.85	8/29/2034	8/29/2019	109.09086	103.4990689	98.3123442	93.49643118	89.02028143	84.85572714	80.97719229	77.36143473	73.98731558
190829A00032	8/29/2019	1.69	8/28/2026	8/29/2019	101.62689	100.2854189	98.97513943	97.69507153	96.44427024	95.22182795	94.02687257	92.8585659	91.71610198
190118A00006	1/18/2019	3.14	1/18/2034	1/18/2019	115.7957	110.1672766	104.9267738	100.0428998	95.48716171	91.23359478	87.2585196	83.54032392	80.05926689
190905A00025	9/5/2019	2.08	9/5/2029	9/5/2019	110.19876	104.8576272	99.82303142	95.0755361	90.59704938	86.37072014	82.38084599	78.61278858	75.0528957
190905A00024	9/5/2019	2.08	9/5/2029	9/5/2019	110.19876	104.8576272	99.82303142	95.0755361	90.59704938	86.37072014	82.38084599	78.61278858	75.0528957
190905A00021	9/5/2019	2.08	9/5/2029	9/5/2019	110.19876	104.8576272	99.82303142	95.0755361	90.59704938	86.37072014	82.38084599	78.61278858	75.0528957
190905A00019	9/5/2019	2.08	9/5/2029	9/5/2019	110.19876	104.8576272	99.82303142	95.0755361	90.59704938	86.37072014	82.38084599	78.61278858	75.0528957
190905A00023	9/5/2019	2.08	9/5/2029	9/5/2019	110.19876	104.8576272	99.82303142	95.0755361	90.59704938	86.37072014	82.38084599	78.61278858	75.0528957
200818A00012	8/18/2020	0.97	8/18/2027	8/18/2020	102.85169	99.41436519	96.11390562	92.9440504	89.89886295	86.97271416	84.16026432	81.45644622	78.85644948
190910A00044	9/10/2019	2.02	9/10/2026	9/10/2019	104.60716	101.9502204	99.37611961	96.8817657	94.46419996	92.12059375	89.84824177	87.64455577	85.5070586
190911A00016	9/11/2019	1.9	9/11/2029	9/11/2019	105.34226	102.3778233	99.5387129	96.81849245	94.21110641	91.71085336	89.31236276	87.01057352	84.800714
190605A00023	6/5/2019	2.64	6/5/2029	6/5/2019	112.86974	107.6370036	102.6931994	98.0206617	93.60290289	89.42452604	85.47114704	81.72932268	78.18648423
190605A00025	6/5/2019	2.64	6/5/2029	6/5/2019	112.86974	107.6370036	102.6931994	98.0206617	93.60290289	89.42452604	85.47114704	81.72932268	78.18648423
190605A00024	6/5/2019	2.64	6/5/2029	6/5/2019	112.86974	107.6370036	102.6931994	98.0206617	93.60290289	89.42452604	85.47114704	81.72932268	78.18648423
190605A00027	6/5/2019	2.64	6/5/2029	6/5/2019	112.86974	107.6370036	102.6931994	98.0206617	93.60290289	89.42452604	85.47114704	81.72932268	78.18648423
190605A00007	6/5/2019	2.47	6/5/2026	6/5/2019	105.16403	102.7359585	100.3781142	98.08804139	95.8633907	93.70190921	91.60143594	89.55989746	87.57530376
200709A00019	7/9/2020	0.77	7/9/2025	7/9/2020	100.15413	98.62008943	97.11729535	95.64485879	94.20191988	92.7876511	91.40125575	90.04196647	88.70904391
200910A00006	9/10/2020	0.96	9/10/2027	9/10/2020	102.88759	99.3979199	96.04909564	92.83462633	89.74835874	86.78445806	83.93738936	81.20190037	78.57300518
201029A00004	10/29/2020	1.49	10/29/2038	10/29/2020	109.93799	98.914688	89.26754482	80.80955946	73.38050292	66.84293144	61.07881304	55.98667066	51.47916034
201207A00009	12/7/2020	1.01	12/7/2027	12/7/2020	103.3564	99.64803479	96.09783602	92.69817671	89.44184057	86.32199707	83.33217862	80.46625923	77.7184346
201110A00003	11/10/2020	1.12	11/10/2027	11/10/2020	103.67833	100.0260042	96.52680345	93.17347593	89.95914891	86.87731028	83.92178768	81.08672893	78.36658368
201207A00021	12/7/2020	1.85	12/7/2050	12/7/2020	115.41786	101.5415548	89.93392114	80.17333754	71.92271099	64.91161731	58.92236925	53.77911934	49.33931418
190925A00009	9/25/2019	2	9/25/2026	9/25/2019	104.43222	101.8382988	99.32545225	96.89068653	94.53113388	92.2440486	90.02680112	87.87687242	85.79184862
190926A00002	9/30/2019	2.01	9/29/2034	9/30/2019	110.06952	104.3847841	99.11469562	94.22395781	89.68060003	85.4556363	81.52276432	77.85809672	74.43992108
201221A00022	12/21/2020	0.51	12/19/2025	12/21/2020	100.29931	98.40257158	96.55247207	94.74754902	92.9863999	91.26767624	89.59008112	87.95236678	86.35333232
201228A00013	12/28/2020	0.84	12/30/2030	12/28/2020	102.16673	98.69345616	95.39371004	92.25712591	89.27403526	86.43541802	83.73285464	81.15848197	78.70495266
191004A00017	10/4/2019	2.02	10/4/2029	10/4/2019	109.94717	104.5482162	99.46307287	94.67168109	90.15536415	85.89672915	81.87957234	78.08879199	74.51030804
191004A00026	10/4/2019	1.74	10/4/2024	10/4/2019	100.43181	99.59838808	98.77888083	97.97294263	97.18023793	96.40044214	95.63324123	94.87833129	94.13541813
191004A00025	10/4/2019	1.74	10/4/2024	10/4/2019	100.43181	99.59838808	98.77888083	97.97294263	97.18023793	96.40044214	95.63324123	94.87833129	94.13541813
191004A00023	10/4/2019	2.02	10/4/2029	10/4/2019	109.94717	104.5482162	99.46307287	94.67168109	90.15536415	85.89672915	81.87957234	78.08879199	74.51030804
191004A00019	10/4/2019	2.02	10/4/2029	10/4/2019	109.94717	104.5482162	99.46307287	94.67168109	90.15536415	85.89672915	81.87957234	78.08879199	74.51030804

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191004A00022	10/4/2019	2.02	10/4/2029	10/4/2019	109.94717	104.5482162	99.46307287	94.67168109	90.15536415	85.89672915	81.87957234	78.08879199	74.51030804
191008A00014	10/8/2019	1.85	10/8/2026	10/8/2019	104.29738	101.5754581	98.94053912	96.38937275	93.91884699	91.52598261	89.2079268	86.96194708	84.78542552
191008A00007	10/8/2019	1.67	10/9/2029	10/8/2019	104.72312	101.7348516	98.8744528	96.13528827	93.51111576	90.99606158	88.58459631	86.27151225	84.0519025
191011A00027	10/11/2019	1.84	10/11/2029	10/11/2019	105.2433	102.2396998	99.36463506	96.61143439	93.97382265	91.44589527	89.02209378	86.6971831	84.46623058
190129A00073	1/29/2019	3.11	1/29/2029	1/29/2019	107.51982	104.8426247	102.2673252	99.78915246	97.4035998	95.10640291	92.89352522	90.7611442	88.70563855
190131A00013	1/31/2019	3.48	1/31/2034	1/31/2019	126.09353	116.6597452	108.0852508	100.2847218	93.18183262	86.70825823	80.80279232	75.41056721	70.48236308
190131A00023	1/31/2019	3.02	1/30/2034	1/31/2019	115.1234	109.5277692	104.317831	99.46247283	94.93336212	90.70468054	86.75288246	83.05647804	79.59583855
210107A00009	1/7/2021	0.54	1/5/2024	1/7/2021	99.903057	99.79835402	99.6938816	99.58963935	99.48562649	99.38184223	99.27828578	99.17495636	99.0718532
210107A00010	1/7/2021	0.54	1/5/2024	1/7/2021	99.903057	99.79835402	99.6938816	99.58963935	99.48562649	99.38184223	99.27828578	99.17495636	99.0718532
210107A00008	1/7/2021	0.54	1/5/2024	1/7/2021	99.903057	99.79835402	99.6938816	99.58963935	99.48562649	99.38184223	99.27828578	99.17495636	99.0718532
191015A00025	10/15/2019	2.01	10/15/2029	10/15/2019	105.36384	102.3639269	99.49215209	96.74187851	94.10686013	91.58121914	89.15942165	86.83625524	84.60680807
150714A00003	7/14/2015	3.76	7/12/2030	7/14/2015	112.74214	109.1152355	105.6604947	102.3681031	99.22888085	96.23423783	93.3761318	90.64702964	88.03987168
200319A00035	3/19/2020	1.72	3/18/2033	3/19/2020	108.62472	102.8287246	97.46034909	92.48340091	87.86503909	83.57544124	79.58750585	75.87658585	72.42024984
200318A00012	3/18/2020	1.68	3/18/2033	3/18/2020	108.38937	102.6070014	97.25126732	92.28605537	87.67859959	83.39914568	79.42065413	75.71853427	72.27040609
191031A00025	10/31/2019	1.91	10/31/2024	10/31/2019	100.23232	99.80975557	99.39210226	98.97926386	98.57114758	98.16766316	97.7687228	97.37424101	96.98413459
191101A00005	11/1/2019	1.83	11/2/2026	11/1/2019	104.73046	101.9358114	99.23244599	96.61687179	94.08575499	91.63590742	89.26427935	86.9679526	84.74413417
191101A00004	11/1/2019	1.91	11/1/2029	11/1/2019	109.2761	104.2445985	99.50053183	95.02558861	90.80272689	86.81607912	83.05086506	79.49331156	76.1305787
191105A00012	11/5/2019	2.07	11/3/2034	11/5/2019	110.54461	104.7510281	99.38575125	94.41185946	89.79594916	85.50777259	81.51991594	77.80751239	74.34798614
210331A00007	3/31/2021	1.25	3/31/2031	3/31/2021	103.75803	100.1069751	96.64396462	93.3574458	90.23666342	87.27160268	84.45293305	81.77195678	79.22056158
210408A00007	4/8/2021	1.05	4/8/2031	4/8/2021	103.52607	99.83312549	96.33261475	93.01259028	89.86193701	86.8703125	84.02808787	81.3262936	78.7565698
210412A00007	4/12/2021	0.66	4/12/2024	4/12/2021	99.706854	99.34055161	98.97696229	98.61605591	98.25780269	97.90217334	97.54913897	97.19867112	96.85074175
210412A00008	4/12/2021	0.66	4/12/2024	4/12/2021	99.706854	99.34055161	98.97696229	98.61605591	98.25780269	97.90217334	97.54913897	97.19867112	96.85074175
210423A00001	4/23/2021	1.72	4/23/2036	4/23/2021	109.20313	102.7768594	96.87988987	91.46164563	86.4768656	81.88500482	77.64970611	73.73833461	70.12156711
210423A00003	4/23/2021	1.31	4/23/2031	4/23/2021	104.51926	100.7897359	97.25459628	93.90176569	90.72001421	87.69889266	84.8286729	82.10029309	79.5053074
210512A00011	5/12/2021	1.16	5/12/2026	5/12/2021	101.85593	99.55813819	97.32540388	95.15550754	93.0463194	90.99579506	89.00197147	87.06296319	85.17695879
210512A00012	5/12/2021	1.16	5/12/2026	5/12/2021	101.85593	99.55813819	97.32540388	95.15550754	93.0463194	90.99579506	89.00197147	87.06296319	85.17695879
210512A00009	5/12/2021	0.66	5/10/2024	5/12/2021	99.659903	99.21668345	98.77743398	98.34210142	97.91063335	97.48297831	97.05908572	96.63890592	96.2223901
210512A00008	5/12/2021	0.66	5/10/2024	5/12/2021	99.659903	99.21668345	98.77743398	98.34210142	97.91063335	97.48297831	97.05908572	96.63890592	96.2223901
210714A00012	7/14/2021	1.12	7/14/2026	7/14/2021	101.97192	99.52109047	97.1433062	94.8359282	92.59643056	90.42239576	88.31150919	86.26155394	84.27040595
210714A00014	7/14/2021	1.12	7/14/2026	7/14/2021	101.97192	99.52109047	97.1433062	94.8359282	92.59643056	90.42239576	88.31150919	86.26155394	84.27040595
210714A00013	7/14/2021	1.12	7/14/2026	7/14/2021	101.97192	99.52109047	97.1433062	94.8359282	92.59643056	90.42239576	88.31150919	86.26155394	84.27040595
210714A00016	7/14/2021	0.75	7/12/2024	7/14/2021	99.621528	99.01572219	98.41735586	97.82629226	97.24239785	96.66554236	96.09559868	95.53244272	94.97595337
210714A00009	7/14/2021	0.75	7/12/2024	7/14/2021	99.620074	99.01159535	98.41059968	97.81694874	97.23050816	96.65114681	96.07873676	95.51315314	94.95427404

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210714A00010	7/14/2021	0.75	7/12/2024	7/14/2021	99.620074	99.01159535	98.41059968	97.81694874	97.23050816	96.65114681	96.07873676	95.51315314	94.95427404
210714A00011	7/14/2021	0.75	7/12/2024	7/14/2021	99.620074	99.01159535	98.41059968	97.81694874	97.23050816	96.65114681	96.07873676	95.51315314	94.95427404
210714A00015	7/14/2021	1.11	7/14/2026	7/14/2021	101.89658	99.49006994	97.15494679	94.88863441	92.68866956	90.55269455	88.47845194	86.46377946	84.50660531
210714A00017	7/14/2021	0.73	7/12/2024	7/14/2021	99.61816	99.02823681	98.44549893	97.86981435	97.30105467	96.73909459	96.18381184	95.63508707	95.09280376
210714A00018	7/14/2021	0.75	7/12/2024	7/14/2021	99.621528	99.01572219	98.41735586	97.82629226	97.24239785	96.66554236	96.09559868	95.53244272	94.97595337
210809A00016	8/9/2021	0.66	8/9/2024	8/9/2021	99.534988	98.89892717	98.27143156	97.65232726	97.04144466	96.43861872	95.84368879	95.25649851	94.67689567
210809A00015	8/9/2021	1.06	8/7/2026	8/9/2021	101.89431	99.38847885	96.95872315	94.60223362	92.31632845	90.09844378	87.9461275	85.85703351	83.82891629
210809A00012	8/9/2021	1.06	8/7/2026	8/9/2021	101.89431	99.38847885	96.95872315	94.60223362	92.31632845	90.09844378	87.9461275	85.85703351	83.82891629
210809A00013	8/9/2021	1.05	8/7/2026	8/9/2021	101.81874	99.35900069	96.97356719	94.65970833	92.41481037	90.23637433	88.12201007	86.06943057	84.07644675
210809A00014	8/9/2021	1.06	8/7/2026	8/9/2021	101.89431	99.38847885	96.95872315	94.60223362	92.31632845	90.09844378	87.9461275	85.85703351	83.82891629
200623A00028	6/23/2020	1.23	6/23/2038	6/23/2020	106.14953	99.42849823	93.30056455	87.70519196	82.58861913	77.9030507	73.60594731	69.659405	66.0296122
210913A00015	9/13/2021	1.08	9/14/2026	9/13/2021	101.90896	99.44785297	97.06257693	94.75032247	92.50840356	90.33425088	88.22540591	86.17951534	84.19432582
210913A00014	9/13/2021	1.15	9/13/2028	9/13/2021	102.13562	99.71970972	97.39192971	95.14830477	92.98507185	90.89866406	88.8856991	86.94296837	85.0674269
210915A00025	9/15/2021	1.09	9/15/2026	9/15/2021	102.03684	99.48607501	97.0147379	94.61987672	92.29866687	90.04840652	87.86651042	85.75050397	83.69801778
210915A00018	9/15/2021	0.74	9/16/2024	9/15/2021	99.567866	98.79133641	98.02700334	97.27458053	96.53379061	95.80436474	95.08604234	94.37857076	93.68170496
210915A00023	9/15/2021	0.74	9/16/2024	9/15/2021	99.567866	98.79133641	98.02700334	97.27458053	96.53379061	95.80436474	95.08604234	94.37857076	93.68170496
210915A00024	9/15/2021	1.1	9/15/2026	9/15/2021	102.11948	99.51938301	97.0006666	94.56030043	92.19538396	89.90314288	87.68092269	85.52618269	83.43649028
210915A00026	9/15/2021	1.1	9/15/2026	9/15/2021	102.11948	99.51938301	97.0006666	94.56030043	92.19538396	89.90314288	87.68092269	85.52618269	83.43649028
210212A00007	2/12/2021	0.76	2/12/2026	2/12/2021	100.69282	98.63700516	96.6342635	94.68283973	92.78104918	90.92727679	89.11997356	87.35765325	85.63888921
210212A00006	2/12/2021	0.77	2/12/2026	2/12/2021	100.72851	98.65211853	96.62945334	94.65873265	92.73824952	90.86636754	89.04151729	87.26219298	85.52694923
210212A00004	2/12/2021	1.1	2/12/2036	2/12/2021	105.14371	99.03830165	93.42972397	88.27105137	83.52023308	79.1395519	75.09514383	71.35657427	67.89646363
150224A00010	2/24/2015	2.34	2/24/2025	2/24/2015	100.88724	100.2102831	99.54700837	98.8969595	98.25970388	97.63482791	97.02193589	96.42064911	95.83060495
210319A00009	3/19/2021	1.1	3/19/2026	3/19/2021	101.54219	99.37953757	97.2748264	95.22615081	93.23167948	91.28965334	89.39838215	87.55624131	85.76166881
210319A00008	3/19/2021	0.63	3/19/2024	3/19/2021	99.739741	99.43487539	99.13189108	98.83077085	98.53149743	98.23405379	97.9384231	97.64458872	97.35253424
220211A00010	2/11/2022	1.99	2/11/2025	2/11/2022	100.99239	100.0276143	99.08377742	98.16018249	97.25616074	96.37107298	95.50430801	94.65528107	93.82343246
120808A00006	8/8/2012	2.06	8/9/2027	8/8/2012	103.30325	101.4372602	99.62590072	97.86712174	96.15896969	94.49957827	92.88716393	91.32002152	89.79652032
211007A00005	10/7/2021	0.86	10/7/2024	10/7/2021	99.690374	98.85615067	98.03599005	97.22953758	96.43645098	95.65639927	94.88906237	94.13413058	93.39130423
220308A00012	3/8/2022	2.51	3/8/2032	3/8/2022	114.48553	107.6043621	101.2398017	95.34899999	89.89292726	84.83600897	80.14580094	75.79269677	71.749664
220310A00009	3/10/2022	2.31	3/10/2027	3/10/2022	106.51635	103.3963146	100.3875155	97.48532466	94.68533744	91.98335907	89.37539314	86.8576308	84.42644076
220310A00008	3/10/2022	2.22	3/10/2025	3/10/2022	101.73525	100.4908651	99.27326476	98.08158518	96.91499714	95.77270691	94.65395435	93.55801114	92.48417909
220310A00010	3/10/2022	2.31	3/10/2027	3/10/2022	106.51635	103.3963146	100.3875155	97.48532466	94.68533744	91.98335907	89.37539314	86.8576308	84.42644076
211208A00013	12/8/2021	1.63	12/8/2026	12/8/2021	103.98516	101.1100857	98.33176971	95.64640304	93.05034777	90.54013026	88.11243268	85.76408497	83.4920574
200309A00034	3/9/2020	0.96	3/9/2035	3/9/2020	104.17323	98.55885747	93.37074584	88.57120527	84.12622684	80.00509291	76.1800336	72.62592138	69.31999941

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220104A00006	1/4/2022	1.76	1/4/2029	1/4/2022	108.07804	103.5479097	99.24912488	95.16844589	91.2934689	87.61256576	84.11483115	80.79003361	77.62857011
210611A00012	6/11/2021	1.02	6/11/2026	6/11/2021	101.61293	99.25035903	96.95645543	94.72880706	92.56510449	90.46313387	88.42077226	86.43598333	84.50681315
210611A00007	6/11/2021	0.61	6/11/2024	6/11/2021	99.591209	99.0664934	98.54734251	98.03366816	97.5253838	97.02240469	96.52464786	96.03203207	95.54447774
210611A00008	6/11/2021	0.61	6/11/2024	6/11/2021	99.590279	99.06426936	98.54384221	98.02890912	97.51938324	97.01517951	96.51621467	96.02240719	95.53367721
210611A00010	6/11/2021	1.02	6/11/2026	6/11/2021	101.61293	99.25035903	96.95645543	94.72880706	92.56510449	90.46313387	88.42077226	86.43598333	84.50681315
210611A00011	6/11/2021	1.02	6/11/2026	6/11/2021	101.61293	99.25035903	96.95645543	94.72880706	92.56510449	90.46313387	88.42077226	86.43598333	84.50681315
210611A00009	6/11/2021	0.61	6/11/2024	6/11/2021	99.591209	99.0664934	98.54734251	98.03366816	97.5253838	97.02240469	96.52464786	96.03203207	95.54447774
220407A00014	4/7/2022	3.14	4/6/2029	4/7/2022	113.17547	108.6577043	104.3712939	100.3028316	96.43976232	92.77032552	89.28350104	85.96895847	82.81701028
220407A00017	4/7/2022	3.16	4/6/2029	4/7/2022	114.23113	109.3934721	104.809638	100.4647175	96.34475895	92.43670149	88.7283133	85.20813482	81.86542606
220801A00066	8/1/2022	2.93	7/30/2027	8/1/2022	110.11649	106.559534	103.1417699	99.85691339	96.69900692	93.66239726	90.74171775	87.93187194	85.22801819
170524A00037	5/24/2017	2.46	5/24/2024	5/24/2017	100.51246	100.0327245	99.55761773	99.08707735	98.62103749	98.1594336	97.70220237	97.24928169	96.80061061
190930A00026	9/30/2019	1.95	9/30/2024	9/30/2019	100.58318	99.77091531	98.97194368	98.1859404	97.41259064	96.65158973	95.90264271	95.16546395	94.43977682
200327A00084	3/27/2020	1.1	3/27/2025	3/27/2020	100.36871	99.11538929	97.88460149	96.67577819	95.48836893	94.3218415	93.17568111	92.04938973	90.94248542
200430A00027	4/30/2020	1.31	4/30/2035	4/30/2020	105.48432	99.77839924	94.50751835	89.63304601	85.12013706	80.93733292	77.05620673	73.45104789	70.09858171
190930A00028	9/30/2019	1.95	9/30/2024	9/30/2019	100.58318	99.77091531	98.97194368	98.1859404	97.41259064	96.65158973	95.90264271	95.16546395	94.43977682
160812A00006	8/12/2016	2.16	8/12/2026	8/12/2016	104.81453	102.361246	99.98166227	97.67306341	95.43285653	93.25856303	91.14781255	89.09833737	87.10796712
221018A00007	10/18/2022	4.68	10/18/2027	10/18/2022	108.54339	106.4947101	104.5080222	102.5809437	100.7111985	98.89661455	97.13511828	95.42472935	93.76355584
221201A00043	12/1/2022	4.37	12/3/2029	12/1/2022	113.33486	109.9679606	106.7500876	103.6732672	100.7300141	97.91329641	95.21650593	92.63342912	90.15822108
221012A00053	10/12/2022	4.66	10/11/2024	10/12/2022	101.39106	100.9674343	100.5486361	100.1345734	99.72515724	99.32030107	98.91992057	98.52393362	98.13226023
221209A00070	12/9/2022	4.42	12/9/2037	12/9/2022	131.26899	122.5530123	114.6400271	107.4446101	100.8912924	94.91331715	89.4515626	84.45360609	79.87290889
221014A00032	10/14/2022	4.67	10/14/2027	10/14/2022	115.74259	112.0881031	108.5795617	105.2102706	101.9738802	98.86436573	95.87600837	93.00337839	90.24131888
170526A00017	5/26/2017	2.16	5/28/2024	5/26/2017	100.1498	99.93555266	99.72261371	99.51097422	99.30062097	99.09154095	98.88372131	98.6771494	98.47181276
210420A00035	4/20/2021	1.92	4/20/2034	4/20/2021	109.71734	103.2808214	97.36103347	91.91045998	86.88634697	82.25019191	77.96729238	74.00634531	70.33909084
171013A00024	10/13/2017	2.47	10/15/2024	10/13/2017	101.08771	100.234945	99.39683557	98.57299971	97.76307326	96.96670438	96.18355303	95.41329051	94.65559894
200501A00002	5/1/2020	1.3	5/1/2035	5/1/2020	105.44468	99.70160456	94.39917458	89.49802541	84.96267522	80.76110982	76.86441735	73.24646388	69.88360512
230307A00004	3/7/2023	4.67	3/7/2028	3/7/2023	118.69374	114.3723971	110.2417988	106.2923883	102.5151416	98.90153752	95.44352655	92.13350182	88.9642721
230314A00014	3/14/2023	4.18	3/14/2028	3/14/2023	116.82876	112.6254234	108.6074906	104.7656783	101.0912181	97.57582843	94.21168504	90.99139281	87.9079598
221228A00129	12/28/2022	4.11	12/28/2027	12/28/2022	116.09859	112.0156243	108.1068229	104.3637316	100.7783586	97.34314386	94.05093293	90.89495283	87.86878955
230406A00016	4/6/2023	3.89	4/6/2028	4/6/2023	114.56479	110.5539005	106.7193524	103.0523353	99.54452396	96.18805212	92.97548487	89.89979268	86.9543272
230323A00028	3/23/2023	4.1	3/23/2028	3/23/2023	116.02731	111.8377875	107.8337056	104.0057719	100.3452141	96.84374476	93.49353188	90.28717129	87.21766104
230328A00028	3/28/2023	4.34	3/27/2026	3/28/2023	108.98172	106.669083	104.4186746	102.2284622	100.096496	98.02090113	95.99987403	94.0316796	92.11464802
230421A00062	4/21/2023	4.33	4/21/2028	4/21/2023	109.03363	106.7117776	104.4674115	102.2972928	100.1983459	98.16764546	96.20240779	94.2999832	92.45784852
230530A00045	5/30/2023	4.56	5/29/2026	5/30/2023	110.35936	107.8435285	105.3999862	103.0262234	100.7198358	98.47851745	96.30005555	94.18232649	92.12329148

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
230530A00054	5/30/2023	4.56	5/29/2026	5/30/2023	110.35936	107.8435285	105.3999862	103.0262234	100.7198358	98.47851745	96.30005555	94.18232649	92.12329148
230530A00055	5/30/2023	4.56	5/29/2026	5/30/2023	110.35936	107.8435285	105.3999862	103.0262234	100.7198358	98.47851745	96.30005555	94.18232649	92.12329148
230301A00047	3/1/2023	4.61	3/1/2028	3/1/2023	118.36968	114.07194	109.9633305	106.034381	102.2761522	98.68020385	95.23856415	91.94370043	88.78849231
230727A00033	7/27/2023	4.82	7/27/2026	7/27/2023	111.80233	109.1064677	106.4914928	103.95445	101.4925175	99.10299589	96.78330213	94.5309635	92.34361207
230727A00037	7/27/2023	4.82	7/27/2026	7/27/2023	111.80233	109.1064677	106.4914928	103.95445	101.4925175	99.10299589	96.78330213	94.5309635	92.34361207
230908A00009	9/8/2023	4.55	9/8/2028	9/8/2023	120.32206	115.4913128	110.8946552	106.5193377	102.3533784	98.38551314	94.60514784	91.00231512	87.56763345
230908A00010	9/8/2023	4.73	9/9/2030	9/8/2023	116.19732	112.3744685	108.7367065	105.2732909	101.9741818	98.82999555	95.83195697	92.97185595	90.24200712
230928A00051	9/28/2023	5.04	9/28/2026	9/28/2023	113.1235	110.2648941	107.4961837	104.8140488	102.215308	99.69691456	97.25594979	94.88961721	92.59523661
230928A00058	9/28/2023	5.04	9/28/2026	9/28/2023	113.1235	110.2648941	107.4961837	104.8140488	102.215308	99.69691456	97.25594979	94.88961721	92.59523661
230928A00059	9/28/2023	4.84	9/28/2028	9/28/2023	121.92581	116.9953883	112.3060169	107.8445148	103.5984957	99.55631148	95.70700482	92.04026436	88.54638353
230928A00060	9/28/2023	4.84	9/28/2028	9/28/2023	121.92581	116.9953883	112.3060169	107.8445148	103.5984957	99.55631148	95.70700482	92.04026436	88.54638353
230928A00061	9/28/2023	4.84	9/28/2028	9/28/2023	121.92581	116.9953883	112.3060169	107.8445148	103.5984957	99.55631148	95.70700482	92.04026436	88.54638353
201103A00005	11/3/2020	0.89	11/4/2030	11/3/2020	102.32528	98.88751756	95.61967033	92.5116899	89.55419757	86.73843778	84.05623244	81.49993888	79.0624111
110909A00006	9/9/2011	2.26	9/9/2026	9/9/2011	102.32659	100.9378355	99.58193807	98.25785254	96.96457156	95.701128	94.46659295	93.2600739	92.080713
210217A00005	2/17/2021	0.83	2/14/2031	2/17/2021	102.64446	99.06432732	95.66709678	92.44161408	89.37749268	86.46505597	83.69528378	81.05976334	78.5506442
110701A00011	7/1/2011	3.87	7/1/2026	7/1/2011	104.28332	102.9520091	101.6508959	100.3790475	99.13556601	97.91958877	96.73028622	95.56686047	94.42854386
120806A00015	8/6/2012	2.38	8/6/2027	8/6/2012	103.66524	101.7962974	99.98196694	98.22020641	96.50906605	94.84668308	93.23127709	91.66114584	90.13466123
160115A00011	1/15/2016	2.18	1/15/2026	1/15/2016	101.47734	100.4297321	99.40302898	98.39662623	97.40994682	96.44243531	95.49355688	94.56279629	93.64965707
180813A00045	8/13/2018	2.89	8/13/2025	8/13/2018	101.76392	100.9189243	100.0891599	99.27420215	98.47364608	97.68710177	96.91419378	96.15456037	95.40785296
181116A00006	11/16/2018	3.18	11/17/2025	11/16/2018	102.27823	101.3048332	100.3500148	99.41325257	98.4940439	97.59190476	96.70636899	95.83698744	94.98332716
191009A00009	10/9/2019	1.8	10/9/2026	10/9/2019	101.75458	100.3328481	98.94544655	97.59126419	96.26923329	94.97832923	93.71756834	92.48600595	91.28273448
200227A00046	2/27/2020	1.52	3/1/2027	2/27/2020	101.61959	100.0338755	98.48970137	96.98563744	95.52031735	94.0924319	92.70072621	91.34399703	90.02109024
110719A00017	7/19/2011	3.68	7/20/2026	7/19/2011	104.03368	102.7041518	101.4048235	100.134761	98.89306485	97.67887076	96.49134782	95.32969689	94.19314915
151029A00008	10/29/2015	2.28	10/29/2025	10/29/2015	101.30491	100.3812291	99.47484849	98.58528022	97.71205795	96.8547328	96.01287253	95.18606075	94.37389619
170309A00042	3/9/2017	2.18	3/11/2024	3/9/2017	100.09507	99.97867082	99.86265657	99.74702699	99.63178002	99.51691365	99.40242585	99.28831461	99.17457795
190322A00008	3/22/2019	2.64	3/20/2026	3/22/2019	102.19101	101.0519326	99.9365803	98.84425705	97.77428895	96.72602791	95.69885041	94.69215635	93.70536789
190913A00018	9/13/2019	2.11	9/11/2026	9/13/2019	102.11498	100.7289381	99.37570369	98.05422836	96.76350603	95.50257083	94.27049507	93.06638743	91.88939121
200130A00046	1/30/2020	1.81	1/29/2027	1/30/2020	102.01113	100.4601602	98.94904056	97.47642593	96.04102411	94.64159635	93.27695466	91.94595938	90.64751678
200317A00043	3/17/2020	1.29	3/15/2030	3/17/2020	103.83838	100.6686733	97.64285559	94.75305347	91.99188059	89.35240817	86.82813348	84.41295071	82.10112407
150824A00050	8/24/2015	2.03	8/25/2025	8/24/2015	101.03214	100.1923884	99.36779115	98.5579304	97.76240223	96.98081791	96.21280315	95.45799736	94.71605305
150925A00034	9/25/2015	2.36	9/25/2025	9/25/2015	101.2873	100.4053306	99.5395462	98.68949467	97.85474033	97.03486396	96.22946201	95.43814588	94.6605412
160211A00038	2/11/2016	1.83	2/11/2026	2/11/2016	101.1774	100.0923095	99.02932266	97.98780122	96.96712704	95.96670536	94.98596363	94.0243505	93.08133483
120807A00026	8/7/2012	2.42	8/9/2027	8/7/2012	103.74161	101.8711776	100.0554011	98.29223871	96.57973911	94.91603778	93.29935275	91.72798024	90.2002907

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170804A00005	8/4/2017	1.94	8/5/2024	8/4/2017	100.22102	99.88894671	99.55989059	99.23380549	98.91064709	98.590372	98.27293771	97.95830262	97.64642596
200306A00058	3/6/2020	1.06	3/6/2030	3/6/2020	102.6731	99.54813748	96.5647312	93.71514301	90.99212086	88.38886096	85.89897704	83.51647181	81.2357107
171204A00009	12/4/2017	2.23	12/4/2024	12/4/2017	100.5466	100.0442536	99.54870548	99.05980735	98.57741128	98.1013739	97.6315563	97.1678238	96.71004579
181003A00032	10/3/2018	3.23	10/3/2025	10/3/2018	102.1908	101.2614969	100.3495216	99.45438855	98.57562721	97.71278514	96.8654269	96.03313327	95.21550047
190104A00006	1/4/2019	2.83	1/5/2026	1/4/2019	102.17002	101.115882	100.0827471	99.07001772	98.07711464	97.10348031	96.14857782	95.2118899	94.29291808
190802A00011	8/2/2019	2.01	8/2/2029	8/2/2019	105.58345	102.6546497	99.8481225	97.1576615	94.57742204	92.10189756	89.72589776	87.44452824	85.25317166
160201A00016	2/1/2016	2.1	2/2/2026	2/1/2016	101.47459	100.3870979	99.32174071	98.27787427	97.25488054	96.25216479	95.2691545	94.30529828	93.36006493
160606A00018	6/6/2016	1.74	6/5/2026	6/6/2016	101.53116	100.275455	99.04767316	97.84696378	96.67250691	95.52351427	94.39922773	93.29891793	92.22188289
180716A00062	7/16/2018	2.91	7/16/2025	7/16/2018	101.66338	100.8604665	100.071782	99.29693889	98.53556155	97.78728832	97.05177086	96.32867351	95.61767272
150603A00032	6/3/2015	2.21	6/3/2025	6/3/2015	101.00504	100.2506111	99.5092949	98.7807339	98.06458393	97.36051362	96.6682038	95.98734693	95.31764656
170301A00031	3/1/2017	2.11	3/1/2024	3/1/2017	100.08281	99.97192861	99.86139459	99.75120204	99.64134929	99.53183469	99.42265662	99.31381343	99.20530352
171219A00009	12/19/2017	2.3	12/19/2024	12/19/2017	100.58898	100.0832704	99.58448249	99.09246022	98.60705086	98.12810652	97.655484	97.1890445	96.72865355
180126A00011	1/26/2018	2.72	1/26/2028	1/26/2018	105.22588	103.1100149	101.0616147	99.07797017	97.15649995	95.29474473	93.49036057	91.74111268	90.04486957
190529A00061	5/29/2019	2.46	5/29/2026	5/29/2019	102.1916	100.9689066	99.77283313	98.60257632	97.45736381	96.33645293	95.23912925	94.16470529	93.11251924
190620A00033	6/20/2019	2.1	6/20/2029	6/20/2019	105.65909	102.8120046	100.0808595	97.45990248	94.94370606	92.52715061	90.20540473	87.97390711	85.82834959
230824A00008	8/24/2023	4.69	8/24/2028	8/24/2023	117.22365	113.2250562	109.4073497	105.7610516	102.2772411	98.94751933	95.76397559	92.71915582	89.8060333
160212A00047	2/12/2016	1.94	2/12/2026	2/12/2016	101.29962	100.2130225	99.14856324	98.10560133	97.08351769	96.08171658	95.09962455	94.13668935	93.192379
231109A00025	11/9/2023	4.75	11/9/2028	11/9/2023	121.36984	116.4685149	111.8098701	107.38042	103.1675029	99.15922579	95.34441325	91.71256068	88.25379039
231017A00041	10/17/2023	5.12	10/16/2026	10/17/2023	113.60961	110.6933305	107.8701984	105.1367239	102.4895641	99.92551904	97.44152574	95.03465094	92.70208511
230830A00055	8/30/2023	4.47	8/30/2028	8/30/2023	119.30695	114.6401805	110.1968688	105.964917	101.9329534	98.09028669	94.426861	90.93321428	87.60043956
231221A00022	12/21/2023	4.01	12/21/2028	12/21/2023	117.26474	112.6174247	108.2014474	104.0038004	100.0122801	96.21543539	92.60251693	89.16343049	85.8886932
231226A00016	12/26/2023	3.92	12/26/2028	12/26/2023	118.9896	113.926539	109.1229601	104.5640146	100.2357875	96.12523219	92.22011219	88.5089458	84.98095572
110824A00006	8/24/2011	2.69	8/24/2026	8/24/2011	103.77945	102.0924182	100.4473642	98.84288539	97.27763752	95.75033229	94.25973455	92.80465961	91.38397079
140414A00009	4/14/2014	2.32	4/30/2024	4/14/2014	100.27872	99.97792566	99.67892318	99.38169174	99.08621553	98.79247889	98.50046637	98.2101627	97.92155278
121120A00010	11/20/2012	1.93	11/22/2027	11/20/2012	104.14738	101.7225247	99.37844946	97.11184411	94.91955811	92.79859041	90.7460813	88.75930493	86.83566213
121120A00011	11/20/2012	2.22	11/22/2027	11/20/2012	107.25542	103.8583741	100.5973515	97.46604076	94.45845964	91.56893707	88.79209519	86.12283252	83.5563081
120410A00005	4/10/2012	2.35	4/12/2027	4/10/2012	103.68581	101.8701734	100.1080052	98.39726813	96.73602317	95.12241924	93.55468881	92.03114344	90.55016961
120119A00015	1/19/2012	2.27	1/19/2024	1/19/2012	100.12655	99.97965447	99.83319667	99.68717472	99.54158661	99.39643036	99.25170401	99.10740559	98.96353317
120217A00007	2/17/2012	2.25	2/20/2024	2/17/2012	100.19345	99.96253662	99.73267656	99.50386576	99.276097	99.04936309	98.82365693	98.59897147	98.37529973
050812A00050	8/12/2005	4.97	8/12/2025	8/12/2005	104.65743	103.5216339	102.406492	101.3114495	100.2359729	99.17954826	98.14167982	97.12188937	96.11971543
070518A00023	5/18/2007	5.46	5/18/2027	5/18/2007	109.58058	107.613947	105.7045638	103.850303	102.0491303	100.2991001	98.59835177	96.94510499	95.33765585
140311A00039	3/11/2014	3.06	3/11/2024	3/11/2014	100.44042	100.1463537	99.8539777	99.56328092	99.27424888	98.98686721	98.70112171	98.41699833	98.13448322
120827A00048	8/27/2012	2.01	8/27/2027	8/27/2012	103.844	101.6737047	99.57141461	97.53440611	95.56008763	93.64599096	91.78976441	89.98916647	88.24205971

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
120827A00052	8/27/2012	2.01	8/27/2027	8/27/2012	103.844	101.6737047	99.57141461	97.53440611	95.56008763	93.64599096	91.78976441	89.98916647	88.24205971
050823A00085	8/23/2005	4.78	8/25/2025	8/23/2005	105.31732	104.0303717	102.7679615	101.5294145	100.3140775	99.12132177	97.95054128	96.80115207	95.67259103
050823A00088	8/23/2005	4.78	8/25/2025	8/23/2005	105.31732	104.0303717	102.7679615	101.5294145	100.3140775	99.12132177	97.95054128	96.80115207	95.67259103
160930A00032	9/30/2016	2.15	9/30/2031	9/30/2016	107.41009	103.4807892	99.76338238	96.2442329	92.91068898	89.75100949	86.75429207	83.91040717	81.20993792
160930A00033	9/30/2016	1.8	9/30/2026	9/30/2016	101.65978	100.2907675	98.95411459	97.64878592	96.37378898	95.12817089	93.91101647	92.72144648	91.55861587
150601A00739	6/1/2015	2.35	5/6/2025	6/1/2015	100.82991	100.1439809	99.46971568	98.80679131	98.15489831	97.51373899	96.88302684	96.26248601	95.65185079
150601A00261	6/1/2015	3.19	2/11/2033	6/1/2015	113.76829	108.9492444	104.4279117	100.1824778	96.19291837	92.44083754	88.90932298	85.58281555	82.446991
150601A00832	6/1/2015	7.17	8/28/2025	6/1/2015	105.35773	104.4633488	103.5849908	102.7222151	101.8745959	101.0417231	100.2232018	99.41865193	98.62770679
150601A00899	6/1/2015	7.07	6/14/2029	6/1/2015	118.62533	115.6075194	112.7086076	109.9228211	107.2447096	104.6691269	102.1912116	99.80637	97.51025881
150601A00684	6/1/2015	2.25	2/7/2025	6/1/2015	100.55365	99.9885336	99.43194532	98.88367097	98.34350298	97.8112411	97.28669203	96.76966913	96.25999212
150601A00001	6/1/2015	5.43	6/15/2037	6/1/2015	134.00706	126.1706674	118.999444	112.4269409	106.3940577	100.848166	95.74234568	91.03471643	86.68785226
150601A00005	6/1/2015	4.84	6/9/2025	6/1/2015	102.86421	102.1170085	101.3826761	100.6608608	99.95122347	99.25343751	98.5671886	97.89217386	97.22810146
150601A00018	6/1/2015	4.91	9/5/2025	6/1/2015	103.45505	102.5911837	101.7429068	100.9097858	100.0914049	99.28736355	98.49727619	97.72077148	96.95749152
150601A00022	6/1/2015	5.43	10/26/2037	6/1/2015	134.85293	126.7704635	119.3896014	112.638708	106.4542386	100.7797554	95.56507164	90.76550381	86.34122
150601A00023	6/1/2015	5.46	10/30/2037	6/1/2015	134.898	126.8420507	119.4857022	112.7574907	106.5940261	100.9390116	95.74238864	90.9595907	86.55089247
150601A00030	6/1/2015	5.28	11/26/2027	6/1/2015	109.90947	107.8247913	105.8034761	103.8430661	101.9412201	100.095704	98.3043859	96.56523045	94.87629359
150601A00033	6/1/2015	5.96	12/24/2025	6/1/2015	105.36376	104.3103105	103.2772915	102.2641255	101.2702548	100.2951424	99.33827126	98.39914314	97.47727796
150601A00035	6/1/2015	5.73	4/1/2038	6/1/2015	137.70306	129.2913051	121.627186	114.6325303	108.2382054	102.3829931	97.01261322	92.07887589	87.53894318
150601A00865	6/1/2015	6	4/3/2028	6/1/2015	112.2682	109.9972714	107.8000592	105.6735385	103.6148349	101.6212126	99.69006653	97.81891544	96.00539491
150601A00919	6/1/2015	7.41	6/7/2030	6/1/2015	123.51683	119.8645163	116.3771903	113.045775	109.8617648	106.8171856	103.9045576	101.1168614	98.4475062
150601A00931	6/1/2015	7.13	9/20/2030	6/1/2015	123.7307	119.8991298	116.2471799	112.7646267	109.4419113	106.2700907	103.240794	100.3461815	97.57890757
150601A00946	6/1/2015	6.28	8/22/2031	6/1/2015	123.63185	119.2954873	115.186256	111.2898413	107.592948	104.0832219	100.7491765	97.58012605	94.56612362
150601A00950	6/1/2015	6.76	12/18/2031	6/1/2015	126.46577	121.8844849	117.5511151	113.4495371	109.5648131	105.8830944	102.3915337	99.0782059	95.93203481
150601A00952	6/1/2015	6.34	2/13/2032	6/1/2015	125.20046	120.5755642	116.2054632	112.0733124	108.1635267	104.4616741	100.954382	97.62925207	94.4747819
150601A00953	6/1/2015	6.6	6/10/2032	6/1/2015	127.23352	122.3782582	117.799139	113.4773462	109.3955078	105.5375745	101.8887096	98.4351881	95.16430567
150601A00955	6/1/2015	5.84	7/15/2032	6/1/2015	124.3272	119.4941126	114.9395725	110.6443862	106.5908441	102.7625991	99.14455152	95.7227449	92.48427105
150601A00960	6/1/2015	6.49	12/16/2032	6/1/2015	128.37682	123.1958099	118.3247524	113.7414983	109.4256725	105.3585228	101.5227782	97.90252126	94.4830716
150601A00964	6/1/2015	5.25	1/6/2033	6/1/2015	122.88113	117.8461804	113.1159583	108.6684833	104.4835571	100.5426017	96.82851847	93.32555841	90.01920617
150601A00971	6/1/2015	6.42	6/20/2033	6/1/2015	128.87027	123.4141698	118.2994469	113.5006357	108.9943989	104.7593345	100.7758008	97.02575839	93.49262708
150601A00976	6/1/2015	6.8	9/22/2033	6/1/2015	132.22269	126.4893364	121.1230061	116.0957017	111.3818204	106.9579282	102.8025598	98.89603852	95.2203129
150601A00978	6/1/2015	6.32	11/24/2033	6/1/2015	130.39547	124.6228214	119.2261716	114.1763854	109.4468533	105.0132532	100.8533363	96.9467343	93.274786
150601A00993	6/1/2015	5.37	6/9/2034	6/1/2015	126.86826	120.937546	115.4131324	110.2620331	105.4542477	100.9624691	96.76182147	92.8296244	89.14518218
150601A01005	6/1/2015	5.82	3/10/2025	6/1/2015	102.91298	102.286779	101.6707403	101.0645881	100.4680572	99.88089248	99.30284818	98.73368772	98.17318313

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A01015	6/1/2015	5.61	10/28/2025	6/1/2015	104.59931	103.6239793	102.6668406	101.7273876	100.8051296	99.89959425	99.01032685	98.1368894	97.27885982
150601A01016	6/1/2015	5.73	10/28/2025	6/1/2015	104.71323	103.7371397	102.7792587	101.8390753	100.9160985	100.0098557	99.11989195	98.24576894	97.38706432
150601A01040	6/1/2015	5.4	10/2/2026	6/1/2015	106.75962	105.3326699	103.9393733	102.5786572	101.2494893	99.95087857	98.68187314	97.44155862	96.22905617
150601A01047	6/1/2015	5.35	12/30/2024	6/1/2015	102.0959	101.5857308	101.0825629	100.5862396	100.096605	99.61350863	99.13680451	98.6663514	98.20201239
150601A01048	6/1/2015	5.27	1/3/2025	6/1/2015	102.09904	101.578957	101.0660871	100.5602583	100.061309	99.5690827	99.08342787	98.60419786	98.13125062
150601A01051	6/1/2015	4.91	2/7/2025	6/1/2015	102.13943	101.5663592	101.0019359	100.4459392	99.89815888	99.35839175	98.8264419	98.3021201	97.7852436
150601A00395	6/1/2015	2.86	1/3/2024	6/1/2015	100.01899	100.0051136	99.99125163	99.97740327	99.96356847	99.94974722	99.9359395	99.92214527	99.90836453
150601A00396	6/1/2015	3.61	1/3/2029	6/1/2015	108.31273	105.7249945	103.2333853	100.8334834	98.52110842	96.2923019	94.14331375	92.07058993	90.07076087
150601A00410	6/1/2015	2.68	1/24/2024	6/1/2015	100.08456	100.0125169	99.94058239	99.86875999	99.79704946	99.72545055	99.653963	99.58258656	99.51132097
150601A00411	6/1/2015	3.38	1/24/2029	6/1/2015	107.92835	105.2900915	102.7508303	100.3059741	97.95118243	95.68234648	93.4955756	91.38718406	89.35367885
150601A00425	6/1/2015	2.64	2/21/2024	6/1/2015	100.11898	100.0124414	99.90617333	99.80017946	99.69445862	99.58900966	99.48383144	99.37892284	99.27428271
150601A00426	6/1/2015	3.37	2/21/2029	6/1/2015	108.0205	105.3466595	102.7743648	100.2988621	97.91565274	95.62048108	93.40931935	91.27835402	89.22397288
150601A00439	6/1/2015	2.57	3/18/2024	6/1/2015	100.14407	100.0049758	99.86636874	99.72824951	99.59061523	99.45346308	99.31679028	99.18059403	99.04487159
150601A00448	6/1/2015	2.61	4/26/2024	6/1/2015	100.22087	100.0180889	99.81629889	99.61549473	99.41566842	99.21681208	99.01891787	98.82197808	98.62598507
150601A00459	6/1/2015	2.42	5/16/2024	6/1/2015	100.19795	99.98134979	99.76597065	99.55180212	99.33883279	99.12705142	98.91644691	98.7070083	98.49872478
150601A00509	6/1/2015	2.52	7/8/2024	6/1/2015	100.28423	100.00654	99.73094158	99.45740893	99.18591613	98.91643767	98.6489485	98.383424	98.11984001
150601A00527	6/1/2015	2.5	7/26/2024	6/1/2015	100.31751	99.99078658	99.66673174	99.34530821	99.0264803	98.71021298	98.3964719	98.08522335	97.77643427
150601A00558	6/1/2015	2.51	8/30/2024	6/1/2015	100.33822	100.0012717	99.66749052	99.3368258	99.00922886	98.68465216	98.36304916	98.04437436	97.72858323
150601A00948	6/1/2015	6.04	10/22/2031	6/1/2015	122.59446	118.2134033	114.0657565	110.1365767	106.4119998	102.879157	99.52609708	96.34171351	93.31567923
150601A01041	6/1/2015	5.99	10/2/2036	6/1/2015	135.94926	128.4274131	121.5135658	115.1497336	109.2840649	103.8701418	98.86636595	94.23541638	89.94377377
160928A00029	9/28/2016	2.52	9/29/2036	9/28/2016	113.90989	106.924317	100.533052	94.67695363	89.30337369	84.36539037	79.82113784	75.63321912	71.76819131
160928A00030	9/28/2016	2.52	9/29/2036	9/28/2016	113.90989	106.924317	100.533052	94.67695363	89.30337369	84.36539037	79.82113784	75.63321912	71.76819131
160928A00032	9/28/2016	2.52	9/29/2036	9/28/2016	113.90989	106.924317	100.533052	94.67695363	89.30337369	84.36539037	79.82113784	75.63321912	71.76819131
160928A00033	9/28/2016	2.46	9/29/2036	9/28/2016	113.50628	106.5397085	100.1661265	94.32650973	88.96831109	84.0447002	79.51389394	75.33857025	71.48535415
160928A00041	9/28/2016	3.26	9/29/2036	9/30/2019	118.88769	111.6678227	105.0584666	98.99909515	93.43581239	88.32056907	83.61047925	79.26722192	75.25651625
160928A00042	9/28/2016	3.05	9/29/2036	9/28/2021	117.47507	110.3216927	103.7742274	97.77254147	92.2630933	87.19815349	82.53512561	78.23595086	74.2665862
160928A00044	9/28/2016	2.89	9/29/2036	9/28/2023	116.39879	109.2960699	102.7957593	96.83802439	91.36959304	86.34297972	81.71580855	77.45022052	73.51235378
150601A00473	6/1/2015	2.22	5/31/2024	6/1/2015	100.18229	99.96766921	99.75436951	99.54237905	99.33168439	99.12227231	98.91412975	98.70724386	98.50160196
150601A00475	6/1/2015	3.04	6/1/2029	6/1/2015	107.52329	104.7446436	102.076338	99.51299561	97.04954374	94.68119291	92.40341926	90.21194789	88.1027375
150601A00477	6/1/2015	3.21	6/1/2029	6/1/2015	108.35348	105.5499035	102.857801	100.271737	97.78657967	95.39748414	93.09987463	90.88942757	88.76205601
150601A00496	6/1/2015	2.27	6/27/2024	6/1/2015	100.26495	99.97616257	99.68943744	99.40475022	99.12207671	98.84139311	98.56267603	98.28590246	98.01104976
150601A00678	6/1/2015	2.12	1/30/2025	6/1/2015	100.45612	99.91213911	99.37622234	98.8481671	98.32778087	97.81487775	97.30927821	96.81080876	96.3193017
150601A00690	6/1/2015	2.34	2/28/2025	6/1/2015	100.64701	100.0595823	99.4814938	98.9124951	98.3523477	97.80082191	97.25769646	96.72275803	96.19580094

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00736	6/1/2015	2.87	5/1/2030	6/1/2015	108.32112	105.0674449	101.9610951	98.99399599	96.15857364	93.44772477	90.85478418	88.37349474	85.99797955
150601A00270	6/1/2015	3.12	3/21/2031	6/1/2015	110.91315	107.1134372	103.5061999	100.0797278	96.82312049	93.7262226	90.77956748	87.97432577	85.302258
150601A00851	6/1/2015	7.12	4/30/2027	6/1/2015	111.20688	109.4378022	107.7162926	106.0406754	104.4093497	102.8207833	101.2735084	99.76611905	98.29726778
150601A00864	6/1/2015	7.37	3/31/2028	6/1/2015	115.11686	112.8129317	110.5834363	108.4253283	106.3357141	104.3118393	102.3510809	100.4509402	98.6090359
150601A00868	6/1/2015	7.08	6/5/2028	6/1/2015	115.21578	112.8074419	110.4795449	108.228705	106.0517107	103.9455085	101.907194	99.93400318	98.0233053
150601A00871	6/1/2015	6.74	7/31/2028	6/1/2015	114.95754	112.4783814	110.0843665	107.7718291	105.5372919	103.3774519	101.2891706	99.26946486	97.31549779
150601A00872	6/1/2015	7.42	7/31/2028	6/1/2015	116.50904	114.0056885	111.5881613	109.2527666	106.9960026	104.8145431	102.7052275	100.6650513	98.69115743
150601A00875	6/1/2015	7.14	9/29/2028	6/1/2015	116.74907	114.1157688	111.5753492	109.1237206	106.7570024	104.4715129	102.2637577	100.1304188	98.0683448
150601A00883	6/1/2015	6.21	11/30/2028	6/1/2015	114.83114	112.176785	109.6189933	107.1533962	104.7758583	102.4824606	100.269488	98.13341708	96.07090504
150601A00888	6/1/2015	5.92	3/1/2029	6/1/2015	114.90805	112.1169697	109.4317185	106.8473379	104.3591351	101.9626713	99.65374597	97.42838256	95.28281483
150601A00889	6/1/2015	6.55	3/2/2029	6/1/2015	116.54867	113.7260793	111.0103582	108.3965009	105.8797721	103.4556924	101.120023	98.86875084	96.69807503
150601A00893	6/1/2015	6.49	4/6/2029	6/1/2015	116.74436	113.8624223	111.0912323	108.4255319	105.8603521	103.3909957	101.0130208	98.72222467	96.51462975
150601A00897	6/1/2015	6.15	5/28/2029	6/1/2015	116.48472	113.5012693	110.6351372	107.8806446	105.2324263	102.6854161	100.2348275	97.8761367	95.60506603
150601A00900	6/1/2015	6.06	6/28/2024	6/1/2015	101.36034	101.0663688	100.7745063	100.4847247	100.1969993	99.91130556	99.62761966	99.34591798	99.06617737
150601A00905	6/1/2015	6.14	10/29/2029	6/1/2015	117.7719	114.5384483	111.4401934	108.4702119	105.6219899	102.8893948	100.26665	97.74831175	95.32924787
150601A00906	6/1/2015	6.2	11/1/2029	6/1/2015	117.73772	114.5385602	111.4732568	108.5349543	105.7171987	103.0139139	100.4193767	97.92819414	95.53528187
150601A00912	6/1/2015	5.96	11/30/2029	6/1/2015	117.27223	114.0405025	110.9456501	107.9805837	105.1386369	102.4135373	99.79938036	97.29060531	94.88197271
150601A00918	6/1/2015	5.62	4/28/2025	6/1/2015	103.25081	102.5325274	101.8264281	101.1321788	100.4494546	99.77794314	99.1173439	98.46736762	97.82773577
150601A00927	6/1/2015	6.08	8/7/2030	6/1/2015	119.7309	116.0705559	112.5799457	109.2495196	106.0703394	103.0340366	100.1327718	97.35919808	94.70642623
150601A00928	6/1/2015	5.94	8/21/2030	6/1/2015	119.49035	115.7960923	112.2740623	108.914526	105.7083729	102.6470756	99.72264833	96.92760916	94.2549442
150601A00929	6/1/2015	5.91	8/30/2030	6/1/2015	119.28844	115.6144417	112.1122734	108.7721954	105.5850938	102.5424394	99.63624657	96.85903427	94.20379107
150601A00935	6/1/2015	6.46	11/21/2030	6/1/2015	122.00347	118.1172711	114.4175506	110.8934713	107.534915	104.3324279	101.2771719	98.36088052	95.57581777
150601A00939	6/1/2015	5.79	1/17/2031	6/1/2015	120.08211	116.1619068	112.4338805	108.8866514	105.5096047	102.2928346	99.22709152	96.30373463	93.51468698
150601A00943	6/1/2015	6.44	5/9/2031	6/1/2015	123.26449	119.1100839	115.1662798	111.420204	107.8598717	104.4741225	101.2525587	98.18548692	95.26386585
110414A00007	4/14/2011	3.95	1/21/2025	4/14/2011	102.42406	101.585939	100.7656531	99.96261114	99.17624663	98.40601781	97.65140629	96.91191584	96.18707121
170130A00036	1/30/2017	3.11	1/31/2033	1/30/2017	112.96447	108.1508875	103.6390293	99.40648224	95.43269289	91.69880088	88.18748706	84.88283613	81.77021242
170130A00039	1/30/2017	2.74	1/31/2028	1/30/2017	105.02532	102.9036735	100.8517526	98.86667194	96.94568934	95.08619579	93.28570786	91.54186079	89.85240197
170130A00043	1/30/2017	2.64	1/29/2027	1/30/2017	103.41703	101.8161044	100.2580971	98.74150573	97.26488854	95.82686517	94.42611362	93.06136732	91.73141234
170130A00046	1/30/2017	2.52	1/30/2026	1/30/2017	101.95674	100.8663633	99.7989291	98.75375629	97.73018646	96.72758662	95.74534787	94.7828843	93.83963191
170313A00041	3/13/2017	3.21	3/15/2032	3/13/2017	112.459	108.0671561	103.926891	100.0210413	96.33375524	92.8503868	89.55739509	86.44225312	83.49336458
970806A00017	8/1/1997	7.02	7/23/2026	8/1/1997	108.48653	107.1135748	105.7714498	104.4592044	103.1759246	101.9207319	100.6927814	99.49126101	98.315389
970806A00018	8/1/1997	6.7	10/23/2026	8/1/1997	108.92083	107.4150917	105.9452999	104.5102988	103.108977	101.740268	100.4031476	99.09663181	97.81977532
970806A00059	8/1/1997	8.25	9/22/2025	8/1/1997	106.50357	105.5763825	104.6660254	103.7720319	102.893951	102.0313487	101.1838068	100.3509231	99.5323097

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
171206A00020	12/6/2017	2.62	12/6/2027	12/6/2017	104.43763	102.4446394	100.5128214	98.63979201	96.82327676	95.06110616	93.35121012	91.6916126	90.08042669
180529A00057	5/29/2018	3.09	5/30/2028	5/29/2018	108.87617	105.8651678	102.9754472	100.2011641	97.53679567	94.97712024	92.51719901	90.15235893	87.87817679
130913A00018	9/13/2013	3.72	9/13/2028	9/13/2013	109.41531	106.5671588	103.8262836	101.1876556	98.64651895	96.19837659	93.83897455	91.56428683	89.37050151
191115A00029	11/15/2019	2.07	11/15/2029	11/15/2019	105.49521	102.5099488	99.65191285	96.91450835	94.29153021	91.77713967	89.36584012	87.05245476	84.83210576
140911A00033	9/11/2014	3.02	9/13/2027	9/11/2014	107.75936	104.8757515	102.0963181	99.4165297	96.83208413	94.33889406	91.93307475	89.6109327	87.36895496
190628A00007	6/28/2019	2.28	6/28/2034	6/28/2019	111.0587	105.6196039	100.5621414	95.85481885	91.46902736	87.37875889	83.56035019	79.99225354	76.65483136
181029A00097	10/29/2018	3.53	10/27/2028	10/29/2018	114.19448	109.8881092	105.7886369	101.8847812	98.16593729	94.62213542	91.24399908	88.02270666	84.94995562
200402A00050	4/6/2020	0.73	4/5/2024	4/6/2020	99.886216	99.7388998	99.59220064	99.44611387	99.30063522	99.15576047	99.01148544	98.86780597	98.72471797
200130A00027	1/31/2020	1.79	1/31/2025	1/31/2020	100.29514	99.75009354	99.21313604	98.68406996	98.16270163	97.64884405	97.14231664	96.64294491	96.15056023
200203A00046	2/3/2020	1.98	2/3/2040	2/3/2020	112.34738	104.2554302	96.9867765	90.44424767	84.54324166	79.20998704	74.38005957	69.99711319	66.01179273
150601A00988	6/1/2015	4.57	3/22/2024	6/1/2015	100.45154	100.3010185	100.1510458	100.0016211	99.85274129	99.70440297	99.55660291	99.4093379	99.26260473
190327A00030	3/27/2019	2.9	3/27/2036	3/27/2019	115.38303	108.9706435	103.0684461	97.62884376	92.60915337	87.97105691	83.68011984	79.705366	76.01890209
200210A00007	2/10/2020	1.78	2/10/2025	2/10/2023	101.08423	100.0094442	98.95894399	97.9319005	96.92752151	95.94505041	94.98376418	94.0429715	93.1220111
200428A00018	4/28/2020	1.33	4/27/2035	4/28/2020	105.51545	99.91046519	94.72777784	89.93016426	85.48402988	81.35902827	77.52772198	73.96528116	70.64921542
181211A00042	12/11/2018	3.7	12/11/2028	12/11/2023	114.82923	110.4499733	106.286809	102.3276706	98.56123307	94.97686584	91.56458601	88.3150154	85.21934053
200225A00049	2/25/2020	1.79	2/24/2040	2/25/2020	110.85105	102.8186339	95.60413855	89.11102369	83.25522742	77.96344671	73.17166452	68.82388956	64.87107659
200521A00005	5/21/2020	0.75	5/21/2030	5/21/2020	102.13257	98.9447129	95.9038864	93.0019193	90.23115319	87.58441094	85.05496315	82.63649716	80.32308834
200310A00067	3/10/2020	0.94	3/10/2025	3/10/2020	99.840443	99.22957915	98.62865756	98.03740846	97.45557204	96.88289832	96.31914667	95.76408532	95.21749096
200311A00028	3/11/2020	1.04	3/12/2024	3/11/2020	99.905089	99.70373655	99.50320558	99.30349108	99.10458804	98.90649145	98.70919637	98.51269788	98.31699111
200316A00008	3/16/2020	1.31	3/15/2030	3/16/2020	103.37725	100.309635	97.37792449	94.5748241	91.8934893	89.32749207	86.87079272	84.51771375	82.26291565
200317A00024	3/17/2020	1.09	3/17/2025	3/17/2020	99.938062	99.30783622	98.68802152	98.07833128	97.47848956	96.88823102	96.30730033	95.73545175	95.17244863
200326A00037	3/26/2020	1.78	3/26/2035	3/26/2020	108.04452	102.3904079	97.15786757	92.31005815	87.81370782	83.63873694	79.757927	76.14662628	72.78248774
190102A00020	1/2/2019	2.97	1/3/2034	1/2/2019	114.04906	108.7845597	103.8728884	99.2861323	94.99883369	90.9877603	87.23169412	83.71124155	80.40866271
190102A00022	1/2/2019	2.97	1/3/2034	1/2/2019	114.04906	108.7845597	103.8728884	99.2861323	94.99883369	90.9877603	87.23169412	83.71124155	80.40866271
190102A00024	1/2/2019	2.97	1/3/2034	1/2/2019	114.04906	108.7845597	103.8728884	99.2861323	94.99883369	90.9877603	87.23169412	83.71124155	80.40866271
190102A00015	1/2/2019	2.97	1/3/2034	1/2/2019	114.04906	108.7845597	103.8728884	99.2861323	94.99883369	90.9877603	87.23169412	83.71124155	80.40866271
111007A00007	10/7/2011	3.92	10/7/2031	10/7/2011	122.67657	115.7737447	109.3567847	103.387534	97.83107072	92.65541452	87.83126288	83.33175231	79.13224214
120621A00009	6/21/2012	3.18	6/21/2032	6/21/2012	116.90913	110.6663513	104.8731615	99.49277539	94.49167752	89.83931378	85.50781192	81.47172983	77.707829
190823A00009	8/23/2019	1.8	8/23/2029	8/23/2019	104.89165	102.009479	99.24649068	96.59667363	94.05436361	91.61422271	89.27121827	87.02060333	84.85789846
190520A00020	5/20/2019	2.39	5/20/2026	5/20/2019	102.25117	101.0248919	99.82508695	98.65096004	97.50174547	96.37670701	95.2751364	94.1963521	93.13969802
200331A00056	3/31/2020	0.96	3/29/2030	3/31/2020	102.69473	99.63159744	96.70538784	93.90869654	91.23457819	88.67651297	86.22837768	83.88441879	81.63922768
121217A00009	12/17/2012	2.02	12/17/2027	12/17/2012	104.53129	102.0268847	99.60772058	97.27023605	95.01104331	92.82691855	90.71479291	88.67174403	86.69498811
130206A00004	2/6/2013	2.14	2/7/2028	2/6/2013	104.08724	101.9564444	99.89615531	97.9034394	95.97550513	94.1096975	92.30349031	90.55447895	88.8603737

	Parallel-Shift Sensitivity Analysis												
12/29/2023					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210409A00010	4/9/2021	1.05	4/9/2031	4/9/2021	103.46314	99.8346393	96.39290995	93.12645892	90.02459294	87.0773563	84.27547482	81.61030443	79.07378398
210514A00007	5/14/2021	0.95	5/15/2028	5/14/2021	101.65852	99.4715825	97.3580963	95.31497782	93.33929355	91.42825403	89.57920574	87.78962352	86.05710345
210514A00010	5/14/2021	1.34	5/14/2031	5/14/2021	104.59316	100.8835185	97.3667203	94.0307883	90.86458239	87.85773768	85.00060526	82.28419769	79.70013903
170929A00046	9/29/2017	2.49	9/30/2027	9/29/2017	103.99362	102.068722	100.2007379	98.38751764	96.62700532	94.91723765	93.2563393	91.64251826	90.07406151
220610A00068	6/10/2022	3.09	6/10/2025	6/10/2022	101.62622	100.8829671	100.1525414	99.43459048	98.72877598	98.03477233	97.35226601	96.68095503	96.02054832
221206A00040	12/6/2022	5	11/29/2024	12/6/2022	101.7803	101.2959672	100.8178673	100.3458653	99.87983083	99.41963769	98.96516334	98.51628887	98.07289886
220629A00034	6/29/2022	3.51	6/29/2027	6/29/2022	105.50057	103.6815652	101.9134925	100.1945059	98.52284228	96.89681518	95.31481096	93.77528511	92.27675869
230412A00059	4/12/2023	4.2	4/12/2028	4/10/2026	114.09585	110.5597006	107.1720866	103.9257468	100.8138153	97.82980089	94.96756437	92.22129739	89.58550286
230412A00053	4/12/2023	4.2	4/12/2028	4/10/2026	114.09585	110.5597006	107.1720866	103.9257468	100.8138153	97.82980089	94.96756437	92.22129739	89.58550286
230324A00050	3/24/2023	4.13	3/24/2026	3/24/2023	104.08966	102.9202676	101.7750932	100.6534178	99.55455515	98.47784528	97.42265316	96.38836761	95.37440015
230324A00021	3/24/2023	3.72	3/24/2028	3/24/2023	114.5056	110.4669128	106.6057103	102.913125	99.38078389	96.00077621	92.76562525	89.66826221	86.70200172
230328A00027	3/28/2023	4.22	3/28/2028	3/28/2023	116.38843	112.2170531	108.230116	104.4183905	100.7731576	97.28617887	93.94966744	90.75626084	87.69899568
230417A00085	4/17/2023	4.68	4/17/2026	4/17/2023	104.68783	103.4935606	102.3243613	101.1794923	100.0582386	98.9599127	97.88385286	96.8294223	95.79600788
230418A00035	4/18/2023	4.13	4/18/2028	4/18/2023	108.60254	106.3438393	104.1593455	102.0459904	100.0008558	98.02116492	96.10427465	94.24766829	92.44894847
230602A00051	6/2/2023	4.33	6/2/2038	6/2/2023	128.56367	120.4842729	113.1375524	106.4456436	100.3398095	94.75929402	89.65032529	84.96525125	80.66178828
230504A00059	5/4/2023	4.34	5/4/2026	5/4/2023	104.32294	103.1253831	101.9532807	100.8058772	99.68244259	98.58227471	97.50469805	96.44906245	95.41474193
230426A00142	4/26/2023	4.51	4/27/2026	4/26/2023	104.58888	103.3709806	102.1788277	101.0116521	99.86871758	98.74931586	97.65276565	96.57841122	95.52562119
230428A00050	4/28/2023	4.31	4/28/2028	4/28/2023	108.8155	106.5332011	104.3260961	102.191069	100.1251563	98.12553844	96.18953202	94.31458192	92.49825442
230613A00015	6/13/2023	4.73	6/13/2033	6/13/2028	121.13845	115.9423533	111.0736424	106.5078025	102.2223703	98.19675011	94.41204414	90.85089991	87.49737234
230804A00030	8/4/2023	4.88	8/4/2027	8/4/2023	108.06759	106.2009781	104.3875768	102.6254265	100.912658	99.24748423	97.62819642	96.05315982	94.52081003
230621A00047	6/21/2023	4.44	6/21/2028	6/21/2023	109.72251	107.3531949	105.0641707	102.8520272	100.713526	98.64558944	96.64529137	94.70984845	92.83661232
230918A00030	9/18/2023	5.01	9/17/2027	9/18/2023	108.70839	106.7528692	104.8544889	103.011108	101.2206785	99.48124398	97.7909354	96.14796601	94.55062738
130925A00035	9/25/2013	1.53	6/25/2025	9/25/2013	101.11172	99.87396916	98.65945753	97.46755944	96.29767081	95.14920916	94.02161268	92.91433927	91.82686567
130207A00012	2/7/2013	2.9	2/7/2033	2/7/2013	112.01032	107.1689066	102.6392672	98.39770538	94.4225316	90.69388127	87.19354751	83.90483044	80.81240126
230718A00065	7/18/2023	4.3	7/18/2033	7/18/2023	119.993	114.7494469	109.8407694	105.2415909	100.9286845	96.880775	93.07835991	89.50354888	86.13991809
230929A00049	9/29/2023	4.87	9/30/2030	9/29/2023	115.97083	112.3038032	108.8103327	105.4804818	102.3049593	99.27507529	96.38269813	93.62021474	90.98049388
230830A00101	8/30/2023	5.06	8/31/2026	8/30/2023	105.96647	104.5996871	103.2644067	101.959638	100.6844312	99.43787383	98.21908922	97.02723452	95.86149921