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												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
211202A00024	12/2/2021	0.61	12/2/2022	12/2/2021	100.00221	99.99666444	99.99112526	99.98559103	99.98006174	99.97453738	99.96901795	99.96350344	99.95799384
220112A00011	1/12/2022	0.79	1/12/2023	1/12/2022	100.05132	99.93227798	99.8135308	99.69508034	99.57692545	99.45906499	99.34149782	99.22422281	99.10723883
220114A00003	1/14/2022	0.76	12/14/2022	1/14/2022	100.02317	99.98434886	99.94557204	99.90684293	99.86816144	99.82952747	99.79094093	99.75240172	99.71390976
220125A00012	1/25/2022	0.92	1/20/2023	1/25/2022	100.07054	99.92939325	99.78865912	99.64833459	99.50841784	99.36890708	99.22980051	99.09109635	98.95279284
220317A00002	3/17/2022	1.49	1/17/2023	3/17/2022	100.14469	100.0117408	99.87916052	99.74694654	99.61509733	99.48361133	99.35248701	99.22172286	99.09131734
220322A00009	3/22/2022	1.87	3/22/2023	3/22/2022	100.3475	100.0381982	99.73080469	99.42530609	99.12168488	98.81992375	98.5200056	98.22191353	97.92563086
220323A00007	3/23/2022	1.58	12/23/2022	3/23/2022	100.08922	100.025413	99.96170445	99.89809005	99.83456953	99.77114271	99.70780936	99.64456928	99.58142228
220324A00006	3/24/2022	1.9	3/20/2023	3/24/2022	100.35285	100.0490125	99.74702348	99.4468652	99.14852099	98.85197438	98.55720909	98.26420905	97.97295836
220419A00010	4/19/2022	2.01	2/17/2023	4/19/2022	100.31015	100.0915127	99.87383538	99.6571132	99.44133987	99.22650913	99.01261479	98.7996507	98.58761076
220425A00007	4/25/2022	2.34	4/25/2023	4/25/2022	100.58928	100.1865331	99.78701124	99.39067343	98.99748167	98.60739859	98.22038742	97.83641196	97.45543661
220427A00017	4/27/2022	1.86	12/23/2022	4/27/2022	100.1071	100.0432843	99.9795609	99.91593167	99.85239635	99.78895474	99.72560664	99.66235182	99.5991901
220428A00013	4/28/2022	2.04	2/1/2023	4/28/2022	100.27118	100.0966795	99.92278353	99.74948943	99.5767941	99.40469446	99.23318746	99.06227007	98.89193928
220510A00013	5/10/2022	2.03	1/10/2023	5/10/2022	100.19085	100.0771954	99.96380971	99.85069418	99.73784777	99.62526949	99.51295835	99.40091337	99.28913357
220511A00001	5/11/2022	2.38	5/8/2023	5/11/2022	100.64025	100.2019829	99.76753085	99.33684653	98.90988097	98.48658608	98.06691461	97.65082008	97.23825683
220512A00011	5/12/2022	1.8	12/12/2022	5/12/2022	100.05452	100.0212166	99.98794746	99.95471742	99.92152641	99.88837433	99.85526113	99.82218673	99.78915105
220518A00016	5/18/2022	2.15	2/17/2023	5/18/2022	100.34085	100.1221634	99.90443846	99.68766885	99.47184825	99.25697041	99.04302913	98.83001826	98.61793171
220518A00017	5/18/2022	2.47	5/18/2023	5/18/2022	100.70848	100.2428442	99.78151861	99.32444226	98.87155651	98.42280381	97.97812764	97.53747253	97.100784
220524A00011	5/24/2022	2.14	2/24/2023	5/24/2022	100.36053	100.1225484	99.88569372	99.64996082	99.4153417	99.18182849	98.94941339	98.71808869	98.48784673
220531A00018	5/31/2022	1.95	12/30/2022	5/31/2022	100.14316	100.0599727	99.97692039	99.89400633	99.81123023	99.72859176	99.6460906	99.56372642	99.4814989
220531A00022	5/31/2022	2.12	2/28/2023	5/31/2022	100.36805	100.1190608	99.87129862	99.62475638	99.37942511	99.13529597	98.89236019	98.65060909	98.41003407
220601A00021	6/1/2022	2.48	6/1/2023	6/1/2022	100.75333	100.2495644	99.7508214	99.25702795	98.76811076	98.28399791	97.80461893	97.32990469	96.85978741
220601A00027	6/1/2022	2.16	3/1/2023	6/1/2022	100.38075	100.1289907	99.87848998	99.62923841	99.38122674	99.13444576	98.88888638	98.64453957	98.4013964
220602A00050	6/2/2022	2.41	6/2/2023	6/2/2022	100.80575	100.2980908	99.79553803	99.29801376	98.8054428	98.31775142	97.83486738	97.35671984	96.88323934
220608A00010	6/8/2022	2.33	3/8/2023	6/8/2022	100.44593	100.1748354	99.90520872	99.63704011	99.37031766	99.10502965	98.84116447	98.57871063	98.31765678
220614A00010	6/14/2022	3.46	6/14/2023	6/14/2022	101.32021	100.7794856	100.2445408	99.71528167	99.19161761	98.67346012	98.1607225	97.65331989	97.15116917
220615A00001	6/15/2022	2.75	12/16/2022	6/15/2022	100.11492	100.0704735	100.0260878	99.98175911	99.93748741	99.89327255	99.8491144	99.80501286	99.76096782
220616A00037	6/16/2022	3.24	4/14/2023	6/16/2022	100.89682	100.5233832	100.1527198	99.78479768	99.41958653	99.05705632	98.69717752	98.33992101	97.98525811
220617A00045	6/17/2022	3.13	3/17/2023	6/17/2022	100.71205	100.4157465	100.1211966	99.82838518	99.53729689	99.24791642	98.96022871	98.67421884	98.38987209
220621A00021	6/21/2022	3.31	6/21/2023	6/21/2022	101.2735	100.713961	100.1606043	99.61333108	99.07204131	98.53663714	98.00702282	97.4831047	96.96479111
220624A00026	6/24/2022	2.81	1/17/2023	6/24/2022	100.32062	100.1874644	100.0546819	99.92226629	99.79021589	99.65852918	99.52720463	99.39624072	99.26563593
220624A00027	6/24/2022	2.96	2/15/2023	6/24/2022	100.50767	100.2942305	100.0817117	99.87010284	99.65939815	99.44959175	99.24067789	99.03265082	98.82550487
220624A00028	6/24/2022	3.05	3/15/2023	6/24/2022	100.67795	100.3872046	100.098148	99.8107667	99.52504615	99.24097189	98.95852963	98.67770524	98.39848478
220624A00029	6/24/2022	3.13	4/17/2023	6/24/2022	100.87022	100.4886399	100.1099577	99.73413676	99.36114468	98.99094949	98.62351971	98.25882435	97.89683288

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220624A00030	6/24/2022	2.72	12/27/2022	6/24/2022	100.18731	100.1123801	100.0375664	99.96287122	99.88829419	99.81383508	99.7394936	99.66526949	99.59116249
220701A00031	7/1/2022	2.87	2/1/2023	7/1/2022	100.41635	100.2416613	100.0675763	99.89409372	99.72121042	99.54892334	99.37722944	99.20612568	99.03560906
220701A00032	7/1/2022	2.95	3/1/2023	7/1/2022	100.58027	100.3281746	100.0773405	99.82775694	99.57941452	99.33230406	99.08641646	98.84174267	98.59827377
220701A00034	7/1/2022	3.04	3/31/2023	7/1/2022	100.75739	100.4225777	100.0899832	99.75958393	99.43135834	99.10528506	98.78134305	98.45951151	98.13976995
220715A00023	7/15/2022	3.36	3/31/2023	7/15/2022	100.8648	100.5297675	100.1969499	99.86632857	99.53788202	99.21158887	98.88742806	98.56537881	98.24542059
220720A00031	7/20/2022	3.4	3/20/2023	7/20/2022	100.81064	100.5059085	100.2030269	99.90198022	99.60275163	99.30532465	99.00968298	98.7158105	98.42369131
220721A00010	7/21/2022	3.42	4/21/2023	7/21/2022	101.00386	100.6110319	100.2212666	99.8345267	99.45077696	99.06998271	98.69210984	98.31712476	97.94499438
220725A00012	7/25/2022	3.34	3/24/2023	7/25/2022	100.81624	100.5005182	100.1867758	99.87499748	99.56516488	99.25725976	98.95126414	98.64716026	98.34493059
220726A00056	7/26/2022	3.37	4/26/2023	7/26/2022	101.0118	100.6052924	100.2020558	99.80205067	99.40523834	99.01158065	98.6210401	98.23357975	97.84916327
220726A00058	7/26/2022	3.38	7/26/2023	7/26/2022	101.48839	100.8336042	100.1872701	99.54922136	98.91929919	98.29734901	97.68322008	97.07676546	96.47784186
220728A00069	7/28/2022	3.25	7/24/2023	7/28/2022	101.39352	100.7444698	100.1037314	99.47114335	98.84655076	98.22980261	97.62075164	97.01925431	96.4251706
220811A00002	8/11/2022	3.5	8/11/2023	8/11/2022	101.65282	100.9543549	100.2654954	99.58604435	98.91580968	98.25460454	97.60224709	96.95856036	96.32337209
220815A00005	8/15/2022	3.52	8/15/2023	8/15/2022	101.68852	100.979161	100.2797107	99.58995965	98.90970681	98.23875669	97.57691913	96.92400912	96.27984665
220823A00025	8/23/2022	3.44	2/24/2023	8/23/2022	100.67082	100.4323327	100.1949724	99.95873566	99.72361459	99.48960129	99.25668795	99.02486685	98.79413032
220826A00030	8/26/2022	3.49	3/27/2023	8/26/2022	100.88287	100.5587753	100.2367658	99.91681961	99.59891683	99.28303795	98.96916368	98.657275	98.3473531
220831A00035	8/31/2022	3.65	3/31/2023	8/31/2022	100.96215	100.6269083	100.2938884	99.96306589	99.6344191	99.3079267	98.98356761	98.66132105	98.34116648
220831A00084	8/31/2022	3.84	8/30/2023	8/31/2022	102.01136	101.2604086	100.5205167	99.791441	99.07294559	98.3648013	97.66678552	96.97868203	96.30028069
220901A00003	9/1/2022	3.74	6/1/2023	9/1/2022	101.39231	100.8866693	100.3860622	99.89041804	99.3996634	98.91372618	98.43253575	97.95602283	97.48411948
220908A00027	9/8/2022	3.87	7/10/2023	9/8/2022	101.71016	101.0977505	100.4927269	99.89495503	99.3043049	98.72064958	98.14386511	97.5738305	97.01042754
220912A00017	9/12/2022	3.89	6/12/2023	9/12/2022	101.54058	101.0045939	100.4742795	99.94954291	99.43029638	98.91645389	98.40793121	97.90464587	97.4065171
220914A00019	9/14/2022	4.25	8/14/2023	9/14/2022	102.20227	101.4935686	100.7947199	100.1055176	99.42576259	98.75526129	98.09382529	97.4412713	96.79742093
220914A00052	9/14/2022	4.29	9/11/2023	9/14/2022	102.43702	101.6520836	100.8792034	100.118104	99.36851722	98.63018273	97.90284817	97.18626861	96.48020641
220921A00020	9/21/2022	4.38	6/21/2023	9/21/2022	101.8752	101.3137226	100.7584433	100.2092628	99.66608071	99.12879903	98.59732183	98.07155524	97.55140743
220921A00021	9/21/2022	4.47	9/21/2023	9/21/2022	102.64696	101.8344176	101.0347713	100.247718	99.47296154	98.71021478	97.95919962	97.21964647	96.49129396
220921A00025	9/21/2022	4.47	9/21/2023	9/21/2022	102.64696	101.8344176	101.0347713	100.247718	99.47296154	98.71021478	97.95919962	97.21964647	96.49129396
220921A00045	9/21/2022	4.47	9/21/2023	9/21/2022	102.64696	101.8344176	101.0347713	100.247718	99.47296154	98.71021478	97.95919962	97.21964647	96.49129396
220921A00093	9/21/2022	4.44	9/21/2023	9/21/2022	102.768	101.9529649	101.1508927	100.3614767	99.58441873	98.81942965	98.06622941	97.32454655	96.59411791
220923A00017	9/23/2022	4.41	5/23/2023	9/23/2022	101.65834	101.1764479	100.6991296	100.2263241	99.75796743	99.29399701	98.83435129	98.37896989	97.92779356
220923A00019	9/23/2022	4.46	6/23/2023	9/23/2022	101.93647	101.3693587	100.8085705	100.253998	99.70553808	99.16309005	98.62655527	98.09583729	97.57084174
220923A00020	9/23/2022	4.54	8/23/2023	9/23/2022	102.48248	101.7484107	101.0248844	100.3116746	99.60856154	98.9153315	98.23177685	97.55769571	96.89289182
220926A00030	9/26/2022	4.4	4/26/2023	9/26/2022	101.43165	101.0241088	100.6198484	100.2188256	99.82100158	99.4263381	99.03479761	98.64634314	98.26093829
220926A00031	9/26/2022	4.44	5/26/2023	9/26/2022	101.69772	101.2075322	100.7220769	100.2412845	99.76508795	99.29342151	98.8262207	98.36342227	97.90496413
220926A00032	9/26/2022	4.49	6/26/2023	9/26/2022	101.97817	101.402781	100.8338919	100.2713938	99.71517943	99.16514371	98.62118406	98.08320011	97.5510937

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220926A00033	9/26/2022	4.53	7/26/2023	9/26/2022	102.24607	101.5884935	100.9393905	100.2985981	99.66595725	99.04131289	98.42451395	97.81541312	97.21386677
220926A00034	9/26/2022	4.58	8/28/2023	9/26/2022	102.55357	101.805746	101.0688513	100.3426468	99.62690087	98.92138847	98.22589107	97.54019628	96.8640977
220926A00036	9/26/2022	4.68	9/26/2023	9/26/2022	102.85908	102.0321929	101.2186386	100.4180953	99.63025216	98.85480837	98.09147248	97.33996212	96.60000367
220927A00037	9/27/2022	4.32	3/31/2023	9/27/2022	101.18705	100.851337	100.5178499	100.1865625	99.85745305	99.5305003	99.20568312	98.8829807	98.5623725
220927A00066	9/27/2022	4.57	7/27/2023	9/27/2022	102.28067	101.6202657	100.968402	100.3249163	99.68964769	99.06243933	98.44313836	97.83159578	97.22766631
220928A00054	9/28/2022	4.66	9/28/2023	9/28/2022	102.85871	102.026474	101.2077372	100.4021751	99.60947135	98.82931943	98.06142262	97.30549348	96.56125349
220929A00026	9/29/2022	4.43	6/29/2023	9/29/2022	101.96777	101.3842781	100.8074633	100.2372145	99.67342017	99.11597116	98.56476076	98.01968466	97.48064085
221003A00030	10/3/2022	4.33	4/12/2023	10/3/2022	101.28856	100.9197083	100.5535488	100.1900559	99.82920051	99.47095393	99.11528781	98.76217424	98.41158571
221004A00029	10/4/2022	4.54	9/28/2023	10/4/2022	102.75852	101.9267402	101.1084541	100.3033376	99.51107434	98.731358	97.96389193	97.20838878	96.46457011
221004A00030	10/4/2022	4.51	8/28/2023	10/4/2022	102.50109	101.7534823	101.0168023	100.2908102	99.5752745	98.86997021	98.17467883	97.48918799	96.81329134
221004A00031	10/4/2022	4.48	7/28/2023	10/4/2022	102.22913	101.5662101	100.9119024	100.2660374	99.6284522	98.99898833	98.37749116	97.76381002	97.15779802
221004A00032	10/4/2022	4.44	6/28/2023	10/4/2022	101.96553	101.3847579	100.8106024	100.2429544	99.68170369	99.12674243	98.57796534	98.03526942	97.49855397
221004A00033	10/4/2022	4.4	5/30/2023	10/4/2022	101.71086	101.2097405	100.7135549	100.2222334	99.73570479	99.25389923	98.77674819	98.3041845	97.83614224
221004A00034	10/4/2022	4.35	4/28/2023	10/4/2022	101.42774	101.0147432	100.605106	100.1987897	99.79575423	99.39595989	98.99936774	98.60593944	98.21563724
221011A00017	10/11/2022	4.44	5/11/2023	10/11/2022	101.5732	101.1242862	100.6793522	100.2383445	99.80121114	99.36790107	98.93836415	98.51255111	98.09041352
221012A00047	10/12/2022	4.71	10/12/2023	10/12/2022	103.0168	102.1463649	101.290691	100.4494064	99.62214966	98.80857128	98.00833339	97.22110916	96.44658235
221014A00006	10/14/2022	4.71	7/14/2023	10/14/2022	102.26107	101.6359074	101.0184093	100.408437	99.80585315	99.21052382	98.62231827	98.0411089	97.46677113
221018A00023	10/18/2022	4.89	10/18/2023	10/18/2022	103.2269	102.3394183	101.4672598	100.61003	99.76734723	98.93884269	98.12415996	97.32295452	96.53489319
221018A00025	10/18/2022	4.71	6/19/2023	10/18/2022	102.04312	101.4865314	100.9360342	100.3915249	99.8529061	99.32008233	98.79296022	98.27144842	97.75545752
221019A00032	10/19/2022	4.66	5/15/2023	10/19/2022	101.70763	101.2474321	100.7914092	100.3395077	99.89167189	99.44784683	99.00797867	98.57201449	98.13990232
221020A00038	10/20/2022	4.95	8/21/2023	10/20/2022	102.76553	102.0356995	101.3162754	100.6070319	99.90775346	99.21823083	98.53826043	97.86764433	97.20619009
221021A00012	10/21/2022	4.92	7/21/2023	10/21/2022	102.45696	101.812139	101.1754573	100.5467635	99.92590765	99.31274363	98.70712881	98.10892409	97.51799381
221021A00013	10/21/2022	5.01	9/21/2023	10/21/2022	103.08743	102.2729151	101.4713253	100.6823501	99.90569298	99.14106645	98.388192	97.64679967	96.91662771
221021A00020	10/21/2022	4.92	7/21/2023	10/21/2022	102.45696	101.812139	101.1754573	100.5467635	99.92590765	99.31274363	98.70712881	98.10892409	97.51799381
221024A00009	10/24/2022	4.98	10/19/2023	10/24/2022	103.31605	102.425462	101.5502965	100.6901533	99.84464714	99.01340597	98.19607018	97.39229218	96.60173592
221024A00016	10/24/2022	4.8	5/24/2023	10/24/2022	101.85572	101.3705399	100.8899899	100.4140062	99.94252381	99.47547898	99.01280916	98.55445299	98.10035023
221026A00018	10/26/2022	4.78	5/5/2023	10/26/2022	101.67045	101.2376902	100.8086157	100.3831839	99.96134851	99.54306392	99.1282854	98.71696893	98.30907124
221027A00003	10/27/2022	4.92	10/23/2023	10/27/2022	103.29809	102.3969038	101.511504	100.6414801	99.78643337	98.94597881	98.11974442	97.3073708	96.5085106
221027A00045	10/27/2022	4.83	6/27/2023	10/27/2022	102.18322	101.6044394	101.0322261	100.4664675	99.90705476	99.35388157	98.80684381	98.26583976	97.7307699
221028A00038	10/28/2022	4.8	5/3/2023	10/28/2022	101.66052	101.2332516	100.8095804	100.3894576	99.97283893	99.55968053	99.14993944	98.74357336	98.34054068
221028A00039	10/28/2022	4.88	8/2/2023	10/28/2022	102.54048	101.862868	101.1942319	100.5343914	99.88317369	99.24041047	98.60593768	97.97959552	97.36122827
221028A00041	10/28/2022	4.94	10/25/2023	10/28/2022	103.33407	102.4273669	101.5366363	100.661462	99.80143814	98.95617317	98.12528883	97.3084197	96.50521267
221031A00014	10/31/2022	4.9	6/30/2023	10/31/2022	102.25181	101.6646596	101.0842536	100.51048	99.94322571	99.38237998	98.82783469	98.27948407	97.73722476

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
221118A00051	11/18/2022	5.01	7/31/2023	11/18/2022	102.60962	101.937161	101.2735338	100.6185624	99.97207832	99.3339172	98.703919	98.08192775	97.46779141
221102A00034	11/2/2022	4.99	8/2/2023	11/2/2022	102.61507	101.9371817	101.268266	100.6081487	99.9566568	99.31362187	98.67887987	98.05227097	97.4336394
221116A00024	11/16/2022	4.99	11/16/2023	11/16/2022	103.60626	102.6390776	101.6900396	100.758638	99.84438331	98.94680418	98.06544637	97.19987202	96.34965895
221103A00038	11/3/2022	4.92	6/2/2023	11/3/2022	102.00013	101.4899726	100.9849206	100.4848995	99.98983426	99.49965142	99.01427901	98.53364643	98.05768447
221128A00048	11/28/2022	5.08	6/28/2023	11/28/2022	102.33779	101.7557883	101.180412	100.6115531	100.0491013	99.4929486	98.94298963	98.39912127	97.86124266
221118A00009	11/18/2022	5.05	8/30/2023	11/18/2022	102.92519	102.1704358	101.4267852	100.6939898	99.97181299	99.26002491	98.55840236	97.86672845	97.18479247
221103A00039	11/3/2022	4.99	7/3/2023	11/3/2022	102.33286	101.7372876	101.1486572	100.5668507	99.9917499	99.42323924	98.86120578	98.30553918	97.75613157
221118A00006	11/18/2022	4.92	5/30/2023	11/18/2022	101.9717	101.4698176	100.9728792	100.4808104	99.99353977	99.5109974	99.03311473	98.5598245	98.09106076
221123A00027	11/23/2022	5.15	8/23/2023	11/23/2022	102.93141	102.195517	101.4701819	100.7551817	100.0502962	99.35531135	98.67001934	97.99421798	97.3277107
221129A00022	11/29/2022	5.16	11/29/2023	11/29/2022	103.90702	102.9034531	101.919362	100.9541861	100.0073827	99.07843023	98.16682624	97.27208722	96.39374745
221129A00031	11/29/2022	5.13	8/23/2023	11/29/2022	102.91669	102.1808578	101.455582	100.7406405	100.0358131	99.34088578	98.65565074	97.97990577	97.31345434
221129A00030	11/29/2022	5.1	7/27/2023	11/29/2022	102.63133	101.9696226	101.3164733	100.6717137	100.0351829	99.40672369	98.78618317	98.17341214	97.56826513
221122A00010	11/22/2022	5.16	11/22/2023	11/22/2022	103.83843	102.8538926	101.8881233	100.9405866	100.0107683	99.09817394	98.202327	97.32276851	96.45905617
221130A00011	11/30/2022	5.19	11/27/2023	11/30/2022	103.91461	102.916367	101.9374027	100.9771585	100.0351001	99.11071355	98.20350391	97.31299473	96.43872702
150601A00342	6/1/2015	3.97	8/26/2033	6/1/2015	118.21163	112.5128161	107.2149751	102.2847755	97.69197276	93.40909609	89.41117257	85.67548063	82.18132946
150601A00439	6/1/2015	2.57	3/18/2024	6/1/2015	100.94409	100.2951553	99.65730804	99.03023115	98.41362383	97.80719708	97.21067306	96.62378453	96.04627437
150601A00440	6/1/2015	3.27	3/16/2029	6/1/2015	108.96693	105.7380364	102.6539412	99.70676677	96.88912767	94.19409389	91.6151597	89.14621473	86.78151723
150601A00450	6/1/2015	3.28	4/27/2029	6/1/2015	109.15987	105.8706459	102.7311459	99.73311505	96.86881836	94.13100374	91.51286854	89.00802853	86.61048936
150601A00460	6/1/2015	3.05	5/16/2029	6/1/2015	108.49384	105.1947786	102.046987	99.04207368	96.17217674	93.42992793	90.80841814	88.30116571	85.90208699
150601A00506	6/1/2015	3.14	7/6/2029	6/1/2015	108.97554	105.5939958	102.3703902	99.29580574	96.36190206	93.56087068	90.88539742	88.32862771	85.88413452
150601A00528	6/1/2015	3.08	7/27/2029	6/1/2015	108.84915	105.443717	102.1984688	99.10430922	96.15272721	93.33575788	90.64594354	88.0762979	85.62027305
150601A00559	6/1/2015	3.06	8/31/2029	6/1/2015	108.90691	105.4521322	102.1618782	99.02669438	96.03774619	93.18677172	90.46604082	87.86831711	85.38682304
150601A00684	6/1/2015	2.25	2/7/2025	6/1/2015	101.4076	100.319648	99.25392101	98.20976891	97.18656901	96.18372221	95.20065187	94.2368027	93.29163984
160603A00015	6/3/2016	1.95	6/5/2023	6/3/2016	100.48688	99.97677171	99.47185721	98.97205461	98.47728645	97.98747681	97.50255132	97.02243707	96.5470626
160608A00026	6/8/2016	2.36	6/8/2026	6/8/2016	106.50668	103.2487735	100.1133147	97.09499111	94.18875303	91.38979747	88.69355474	86.09567575	83.59202006
160608A00031	6/8/2016	2.36	6/8/2026	6/8/2016	106.50668	103.2487736	100.1133147	97.09499108	94.18875297	91.38979736	88.6935546	86.09567558	83.59201986
160608A00032	6/8/2016	2.36	6/8/2026	6/8/2016	106.50668	103.2487735	100.1133147	97.0949911	94.18875301	91.38979743	88.69355469	86.09567569	83.59201998
160609A00075	6/9/2016	1.94	6/9/2026	6/9/2016	102.39883	100.5657542	98.78511317	97.05498329	95.37352438	93.73897704	92.14965849	90.60395867	89.10033658
160628A00006	6/28/2016	1.44	6/28/2023	6/28/2016	100.19414	99.86090173	99.53039815	99.20259488	98.87745514	98.55494287	98.23502267	97.91765986	97.60282037
161222A00035	12/22/2016	2.29	12/22/2023	12/22/2016	100.68391	100.1043678	99.53329831	98.97049822	98.41576795	97.86891475	97.32975233	96.79810059	96.27378536
161222A00036	12/22/2016	2.69	12/22/2026	12/22/2016	104.43927	102.3531017	100.3326178	98.37520337	96.47836734	94.63973546	92.85704401	91.12813382	89.45094478
161222A00037	12/22/2016	3.08	12/22/2031	12/22/2016	112.04853	107.3282141	102.8971404	98.73427915	94.82030754	91.13746279	87.66940473	84.40109151	81.31866687
170406A00031	4/6/2017	3.01	4/6/2027	4/6/2017	111.08035	107.0097135	103.1205838	99.40383645	95.85085368	92.45349365	89.20406201	86.09528491	83.1202839

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170921A00056	9/21/2017	2.82	9/21/2027	9/21/2017	111.37056	106.9140031	102.6735444	98.63742999	94.79460992	91.13469219	87.64789986	84.32503133	81.15742349
180321A00015	3/21/2018	3.02	3/21/2025	3/21/2018	103.09844	101.6830159	100.2999997	98.94838649	97.62721533	96.3355624	95.07253931	93.83729144	92.62899637
180322A00030	3/22/2018	2.79	3/24/2025	3/22/2018	102.54211	101.3287119	100.1410289	98.97829576	97.83977618	96.72476207	95.63257225	94.56255118	93.51406774
180329A00011	3/29/2018	2.77	3/29/2023	3/29/2018	100.45022	100.2409124	100.0326328	99.82537392	99.61912745	99.41388526	99.20963929	99.00638158	98.80410426
180508A00038	5/8/2018	3.57	5/9/2033	5/8/2018	117.15185	111.2537395	105.7743489	100.6789215	95.93589456	91.51658312	87.39489618	83.54708289	79.95150512
201119A00023	11/23/2020	2.23	11/21/2030	11/23/2020	113.498	105.4818966	98.09519029	91.28511584	85.00358695	79.20675908	73.85463545	68.91071151	64.34165393
220315A00037	3/17/2022	2.63	3/16/2027	3/17/2022	110.41996	106.0627171	101.9032227	97.93144786	94.13792616	90.51372015	87.05038867	83.73995651	80.57488604
200318A00054	3/18/2020	1.56	3/18/2025	3/18/2020	101.99952	99.74311377	97.54743882	95.41049107	93.33034331	91.30514497	89.33311846	87.41255574	85.54181506
200327A00054	3/27/2020	0.9	3/27/2023	3/27/2020	100.04218	99.7198046	99.39950113	99.08125267	98.76503951	98.45084218	98.13864147	97.82841841	97.52015424
220915A00041	9/15/2022	4.28	5/15/2024	9/15/2022	104.90726	103.4464942	102.0134701	100.6074607	99.22776822	97.87371842	96.54465967	95.23996192	93.95901585
221108A00036	11/8/2022	4.95	11/7/2025	11/8/2022	113.18386	110.1459388	107.2073099	104.3641825	101.6129306	98.95008662	96.37233327	93.87649633	91.45953758
210706A00014	7/6/2021	1.15	6/26/2026	7/6/2021	102.95203	99.44984477	96.0846618	92.85038933	89.74123878	86.75171052	83.87657768	81.11087095	78.44986437
200325A00044	3/25/2020	1.7	12/23/2024	3/25/2020	101.87945	99.85450698	97.87975552	95.95361933	94.07458761	92.24120767	90.45208221	88.70586678	87.00126737
200327A00068	6/25/2020	0.93	6/26/2023	6/25/2020	99.92712	99.35846364	98.79625293	98.24037924	97.69073596	97.14721885	96.60972599	96.0781577	95.55241649
200421A00020	4/24/2020	0.83	3/15/2024	4/24/2020	99.800911	98.53679892	97.29918838	96.08724964	94.90018789	93.7372413	92.59767932	91.48080101	90.38593358
220512A00007	5/12/2022	2.91	5/13/2024	5/12/2022	102.88771	101.4475747	100.0347207	98.64843546	97.28803542	95.95285986	94.64227012	93.35564862	92.09239802
220727A00001	7/27/2022	3.39	7/27/2023	7/27/2022	101.49997	100.8424522	100.1934509	99.55280129	98.92034296	98.29591943	97.67937822	97.0705707	96.46935195
200611A00021	6/11/2020	0.72	6/11/2024	6/11/2020	99.697081	98.2053033	96.74302952	95.30945697	93.90381123	92.5253453	91.17333834	89.84709457	88.54594215
210201A00001	2/1/2021	0.77	12/16/2025	2/1/2021	100.9839	98.02414791	95.16571454	92.40457237	89.73688084	87.15897373	84.66735016	82.2586661	79.92972637
211227A00005	12/27/2021	1.61	12/18/2026	12/27/2021	105.55111	101.5371772	97.69774875	94.0243243	90.50886154	87.14375127	83.92179157	80.83616381	77.88041005
200327A00045	3/27/2020	2.24	3/27/2034	3/27/2020	118.91827	107.4296825	97.17230497	88.00704881	79.81120833	72.47645857	65.90710539	60.01855617	54.73598218
210121A00018	1/25/2021	0.5	8/25/2023	1/25/2021	99.503408	98.77615497	98.0594718	97.35312992	96.6569069	95.97058665	95.2939592	94.62682047	93.96897208
220525A00020	5/25/2022	2.79	5/24/2024	5/25/2022	102.77375	101.3057915	99.86616922	98.45413639	97.06897021	95.70997258	94.37646907	93.06780795	91.78335922
221129A00044	11/29/2022	4.56	11/28/2025	11/29/2022	112.3132	109.2295004	106.2485943	103.3664761	100.5793221	97.88347863	95.27545411	92.7519103	90.30965484
220909A00017	9/9/2022	3.85	9/9/2024	9/9/2022	105.33182	103.5521232	101.8111596	100.1077793	98.44087425	96.80937969	95.21227148	93.64856439	92.11731017
210929A00012	3/16/2022	1.03	3/14/2025	3/16/2022	100.76508	98.53345704	96.36173659	94.24792967	92.19012657	90.18649457	88.23527422	86.33477578	84.48337593
220601A00023	6/1/2022	2.9	6/3/2024	6/1/2022	102.99903	101.502826	100.0359249	98.59754249	97.18691924	95.80332228	94.44604399	93.11440097	91.807733
200331A00018	3/31/2020	0.82	3/31/2023	3/31/2020	100.0122	99.67894818	99.34790182	99.01904306	98.69235033	98.36780239	98.04537823	97.72505713	97.40681866
201216A00004	12/16/2020	0.74	9/8/2025	12/16/2020	100.61621	97.9205817	95.30990533	92.78098661	90.33077398	87.95635101	85.65492935	83.42384218	81.2605379
221027A00046	10/27/2022	4.92	10/27/2023	10/27/2022	103.33369	102.4216494	101.5257665	100.6456183	99.78079232	98.93089024	98.09552757	97.27433291	96.4669474
200826A00036	8/28/2020	0.88	7/28/2023	8/28/2020	99.837399	99.18336108	98.5378508	97.9007022	97.27175376	96.65084807	96.03783176	95.43255532	94.83487299
210407A00013	4/7/2021	1.23	4/7/2026	4/7/2021	102.8826	99.59309743	96.42529765	93.37408748	90.43459496	87.60217676	84.87240621	82.24106208	79.70411798
210914A00011	9/16/2021	0.52	9/18/2023	9/16/2021	99.434869	98.64456803	97.86675603	97.10113902	96.34743207	95.60535908	94.87465238	94.15505251	93.44630783

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210928A00008	9/28/2021	1.35	9/28/2026	9/28/2021	104.12084	100.3486933	96.73275709	93.26578319	89.94089695	86.75157571	83.69162897	80.75517979	77.93664728
220325A00019	3/28/2022	2.86	3/23/2027	3/28/2022	111.4677	107.0692616	102.8709578	98.86263103	95.03469544	91.37809884	87.8842902	84.54518929	81.35315818
200415A00003	4/15/2020	0.77	4/14/2023	4/15/2020	99.972025	99.6007179	99.23217168	98.86635521	98.50323816	98.14279067	97.78498329	97.42978701	97.07717326
200427A00018	4/27/2020	1.51	4/27/2028	4/27/2020	106.97581	101.6094	96.5433868	91.7594666	87.24053684	82.97061453	78.93475759	75.11899204	71.51024464
200916A00023	9/16/2020	0.42	9/16/2024	9/16/2020	99.559608	97.80788959	96.09495036	94.4196541	92.78090771	91.17765894	89.60889444	88.07363798	86.57094875
220518A00009	5/18/2022	3.38	5/18/2028	5/18/2022	117.25357	111.5561283	106.1762831	101.0946218	96.29301903	91.7545432	87.46337161	83.40471234	79.56473197
200310A00040	3/10/2020	1.36	3/10/2028	3/10/2020	106.09176	100.8742892	95.94271681	91.27990747	86.86984568	82.69755377	78.74901896	75.01112607	71.4715952
200320A00013	3/20/2020	1.25	3/20/2024	3/20/2020	100.62069	99.33461185	98.07413945	96.83852232	95.62703841	94.43899386	93.27372161	92.13058012	91.00895206
200708A00011	7/10/2020	2.87	7/10/2031	7/10/2020	119.68286	110.8157287	102.6877081	95.23297389	88.39189745	82.11042979	76.33955266	71.03478625	66.15574742
210611A00006	6/11/2021	1.85	6/11/2031	6/11/2021	110.88444	102.457833	94.736542	87.65784403	81.1648916	75.20613718	69.73481463	64.70847362	60.08856159
211206A00008	12/6/2021	1.24	12/6/2024	12/6/2021	100.87058	98.90072898	96.97906641	95.10411273	93.2744429	91.48868539	89.74551972	88.0436742	86.38192379
220722A00049	9/15/2022	3.25	9/15/2025	9/15/2022	107.66576	104.8520874	102.1268623	99.48678123	96.92868831	94.44956517	92.04652388	89.71680042	87.45774844
200305A00039	3/5/2020	1.58	3/5/2030	3/5/2020	108.00584	100.8561554	94.22646385	88.07629348	82.36852586	77.06909849	72.14673809	67.57271842	63.32064035
210729A00006	7/29/2021	1.87	11/30/2032	7/29/2021	111.87241	102.0746342	93.22083259	85.21496283	77.97120736	71.4128409	65.47122612	60.08492467	55.19890985
211213A00011	12/13/2021	1.32	12/13/2024	12/13/2021	101.05706	99.06696136	97.12582393	95.23212869	93.38441688	91.58128508	89.82138266	88.10340937	86.4261131
220331A00010	3/31/2022	2.83	2/18/2026	3/31/2022	107.83449	104.5930694	101.4666398	98.45042583	95.53988503	92.73069275	90.01873006	87.40007245	84.87097924
220727A00009	7/27/2022	3.31	7/28/2025	7/27/2022	107.3421	104.66546	102.0696871	99.55182759	97.10905621	94.73867036	92.43808371	90.20482038	88.03650926
221129A00048	11/29/2022	4.56	12/1/2025	11/29/2022	112.35285	109.2602276	106.2709355	103.3809381	100.5863827	97.88358876	95.26903886	92.73937078	90.2913696
200324A00029	3/24/2020	1.86	3/24/2025	3/24/2020	102.72394	100.443393	98.22455567	96.06540586	93.96399747	91.91846018	89.92699601	87.98787596	86.09943698
210309A00004	3/11/2021	0.87	11/25/2024	3/11/2021	100.0982	98.16519422	96.27896654	94.43810278	92.64123712	90.88705422	89.17428692	87.50171417	85.86815902
200220A00013	2/20/2020	2.09	12/14/2029	2/20/2020	111.47957	104.4215054	97.86030219	91.75839875	86.08125386	80.79709252	75.87667109	71.2930635	67.02146657
201201A00002	12/1/2020	0.54	12/1/2023	12/1/2020	99.263697	98.27981799	97.31528408	96.36953	95.44201225	94.53220811	93.63961465	92.76374781	91.9041415
201210A00021	12/10/2020	0.89	12/10/2027	12/10/2020	104.63679	99.66075381	94.94784974	90.48284803	86.25147471	82.24034974	78.43692643	74.82943523	71.40683164
210211A00005	2/11/2021	0.45	6/15/2023	2/11/2021	99.682807	99.14451745	98.61202453	98.0852345	97.56405606	97.04839983	96.53817835	96.03330598	95.53369887
220317A00026	5/3/2022	2.59	5/3/2027	5/3/2022	110.61396	106.1220062	101.8395957	97.75586821	93.86058482	90.14408626	86.59725712	83.21149245	79.97866659
200818A00018	3/31/2021	0.57	4/1/2024	3/31/2021	99.486062	98.18223903	96.90135962	95.64287126	94.40623891	93.19094412	91.99648436	90.82237245	89.66813595
210208A00004	2/11/2021	0.76	10/15/2025	2/11/2021	100.78123	97.98629281	95.28230735	92.66585024	90.13364182	87.68254295	85.30954823	83.01177958	80.78648012
210225A00006	2/25/2021	0.98	2/25/2026	2/25/2021	101.89543	98.72985593	95.67805526	92.73526178	89.89694083	87.15877712	84.51666241	81.96668406	79.50511424
210907A00010	9/7/2021	2.58	9/7/2040	9/7/2021	121.54363	104.7922255	90.66950094	78.74224757	68.65100037	60.09714721	52.83234538	46.64982353	41.37722562
220408A00014	4/8/2022	3.12	6/29/2026	4/8/2022	110.03185	106.3948622	102.8990696	99.53820551	96.30632029	93.19776099	90.20715486	87.32939377	84.55961957
220712A00006	7/12/2022	3.36	7/12/2024	7/12/2022	104.0046	102.3941873	100.8165655	99.27079685	97.75598033	96.27124872	94.81576702	93.38873094	91.9893655
210420A00010	4/20/2021	1.08	12/12/2025	4/20/2021	101.91535	98.9517761	96.08926096	93.32380378	90.65158615	88.06896232	85.57245039	83.15872387	80.82460379
200415A00020	4/15/2020	0.86	4/15/2024	4/15/2020	99.883271	98.53935439	97.21969367	95.9236902	94.6507642	93.40035437	92.17191713	90.96492599	89.77887081

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220601A00024	6/1/2022	3.09	6/2/2025	6/1/2022	106.21914	103.7098098	101.2731939	98.90675983	96.60808307	94.37483819	92.20479394	90.0958089	88.0458272
221129A00073	11/29/2022	4.39	12/2/2026	11/29/2022	116.6287	112.4360344	108.4215021	104.5765534	100.8931004	97.3634847	93.98045228	90.73713003	87.62700356
221129A00075	11/29/2022	4.38	12/1/2026	11/29/2022	116.57556	112.3867528	108.3758291	104.5342595	100.8539712	97.32731944	93.94706328	90.70634159	87.59865122
221121A00052	11/21/2022	4.35	11/22/2027	11/21/2022	120.75526	115.4663196	110.4476339	105.6839051	101.1607849	96.86480688	92.78332808	88.90447417	85.21708887
220727A00049	7/27/2022	3.31	7/25/2025	7/27/2022	107.31205	104.6438593	102.0560965	99.54582937	97.11025508	94.74669192	92.45257329	90.22544181	88.06294384
200316A00019	3/16/2020	1.11	3/16/2023	3/16/2020	100.11255	99.82013228	99.52943518	99.24044006	98.95313192	98.66749594	98.38351748	98.10118207	97.82047539
221130A00085	11/30/2022	4.19	11/30/2027	11/30/2022	120.04218	114.7480815	109.7258861	104.9601294	100.4363123	96.14083096	92.06091706	88.18458218	84.50056608
200310A00033	3/10/2020	0.91	3/10/2025	3/10/2020	100.95254	98.71946583	96.54624775	94.43088526	92.37145724	90.36612135	88.41311003	86.51072687	84.65734311
200417A00008	4/17/2020	0.96	4/17/2025	4/17/2020	100.71464	98.3945874	96.13906894	93.94594577	91.81315864	89.73872808	87.72075091	85.75739679	83.84690501
200415A00037	4/15/2020	0.97	4/15/2025	4/15/2020	100.73158	98.41661758	96.16591755	93.97734754	91.84886137	89.77849202	87.76434808	85.80461035	83.89752871
200521A00016	5/21/2020	2.18	5/21/2037	5/21/2020	116.21715	102.3863188	90.38997674	79.97297652	70.91692052	63.03470415	56.16589297	50.17280217	44.93716879
220314A00009	3/14/2022	2.38	7/28/2025	3/14/2022	104.8629	102.2195972	99.65639562	97.1703619	94.75869393	92.41871137	90.14784931	87.94365242	85.8037694
220812A00014	8/12/2022	3.54	8/12/2024	8/12/2022	104.54772	102.8502322	101.1885014	99.56146112	97.96808745	96.40739694	94.87844463	93.38032212	91.91215576
200311A00031	3/11/2020	1.41	12/24/2027	3/11/2020	106.17013	101.1561672	96.40733211	91.90824923	87.64451605	83.6026344	79.76994895	76.13459012	72.6854213
201015A00003	10/15/2020	0.75	10/15/2025	10/15/2020	100.75241	97.95788947	95.25431166	92.63825237	90.10643225	87.65571245	85.28308789	82.98568075	80.76073443
210324A00002	3/24/2021	2.06	3/24/2031	3/24/2021	112.47804	104.1840224	96.56665586	89.56718195	83.13222739	77.21328302	71.7662382	66.75096182	62.13092511
220526A00011	5/26/2022	3.29	5/24/2029	5/26/2022	118.82825	112.0672437	105.7440672	99.82797108	94.29052218	89.10541599	84.24830661	79.69665147	75.42956899
221110A00110	11/10/2022	4.47	1/13/2026	11/10/2022	112.63962	109.4243588	106.3195746	103.3208196	100.4238536	97.6246329	94.91929979	92.30417284	89.77573754
200324A00031	3/24/2020	1.64	3/22/2024	3/24/2020	100.88316	99.59439221	98.33066526	97.09127051	95.87552302	94.68276368	93.51235804	92.36369514	91.23618636
221129A00032	11/29/2022	5.04	5/22/2024	11/29/2022	106.10316	104.6147133	103.1548494	101.7228191	100.3178951	98.93937483	97.58657971	96.25885387	94.95556326
220426A00004	4/26/2022	3.41	4/26/2032	4/26/2022	125.98853	116.0816548	107.0611046	98.8422076	91.34880859	84.51237162	78.27118226	72.56963676	67.35760851
220825A00006	8/25/2022	3.56	8/25/2027	8/25/2022	115.9942	111.0691215	106.385832	101.9310972	97.69248442	93.6583088	89.81758349	86.15997391	82.67575511
201223A00013	12/23/2020	0.9	12/11/2026	12/23/2020	102.64495	98.70785151	94.94199238	91.33903993	87.89111504	84.59076163	81.43092157	78.40491127	75.50639972
220224A00018	2/24/2022	2.15	3/16/2026	2/24/2022	105.82397	102.543529	99.38203882	96.33452537	93.3962554	90.56272042	87.82962453	85.19287303	82.64856175
220420A00037	6/15/2022	3.3	6/15/2027	6/15/2022	114.11469	109.4291266	104.9662366	100.7142393	96.66203736	92.79917682	89.11580576	85.60263664	82.25091087
210304A00006	3/4/2021	1.02	3/4/2026	3/4/2021	102.05349	98.8663485	95.79433539	92.8326151	89.97659137	87.22188974	84.56434524	81.99999077	79.52504634
220114A00010	1/14/2022	1.86	1/13/2027	1/14/2022	106.72145	102.6148887	98.68907107	94.93506788	91.34444523	87.90923035	84.62188377	81.47527318	78.46264909
221129A00067	11/29/2022	4.28	11/29/2027	11/29/2022	120.48249	115.1803444	110.1502205	105.3766624	100.8451754	96.54215943	92.4548489	88.57125753	84.88012656
221130A00044	11/30/2022	5.09	5/30/2024	11/30/2022	106.27234	104.7613802	103.2798271	101.8268965	100.4018311	99.00389984	97.63239663	96.28663943	94.96596915
200402A00044	4/2/2020	1.65	4/2/2030	4/2/2020	108.54871	101.3098526	94.60204685	88.38369262	82.61664274	77.26590037	72.29934457	67.68748097	63.40321517
200415A00027	4/15/2020	0.86	4/15/2024	4/15/2020	99.883271	98.53935439	97.21969367	95.9236902	94.6507642	93.40035437	92.17191713	90.96492599	89.77887081
200528A00021	5/28/2020	0.63	5/26/2023	5/28/2020	99.82872	99.34387975	98.86373298	98.38821207	97.91725044	97.45078277	96.988745	96.53107427	96.07770891
210917A00003	9/17/2021	0.8	9/17/2024	9/17/2021	99.8758	98.12516711	96.41322109	94.73883445	93.10092213	91.49843923	89.93037911	88.39577171	86.89368187

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220907A00023	9/7/2022	3.76	9/8/2026	9/7/2022	113.13697	109.248872	105.5177982	101.9365104	98.49814997	95.19621342	92.02453205	88.97725236	86.04881802
200406A00053	4/6/2020	1.13	4/7/2025	4/6/2020	101.08135	98.78341728	96.54870787	94.37514171	92.26072257	90.20353071	88.20171949	86.25351217	84.35719885
220929A00043	9/29/2022	4.44	9/28/2029	9/29/2022	127.3656	119.9748362	113.0796889	106.6440852	100.6347579	95.02101598	89.77453256	84.86915142	80.28071039
221121A00047	11/21/2022	4.89	11/21/2033	11/21/2022	144.79146	132.4077982	121.2668797	111.234881	102.1931319	94.03632744	86.67095723	80.01392583	73.99134127
200302A00056	3/2/2020	1.2	3/2/2023	3/2/2020	100.13834	99.88424915	99.63144049	99.37990877	99.12964434	98.88063767	98.63287932	98.38635992	98.14107024
200330A00037	3/30/2020	1.09	3/28/2025	3/30/2020	100.95022	98.68021244	96.47200795	94.32358716	92.23300722	90.19839991	88.21796829	86.28998351	84.41278185
201015A00024	10/19/2020	1.53	10/18/2027	10/19/2020	106.5607	101.7135829	97.11429314	92.74893289	88.60444917	84.66858094	80.92980719	77.3772987	74.00087315
210208A00006	2/9/2021	0.46	8/15/2023	2/9/2021	99.503883	98.80319188	98.11232055	97.43106395	96.75922245	96.0966019	95.44301348	94.79827347	94.16220314
220217A00011	2/17/2022	2.08	2/14/2025	2/17/2022	102.98983	100.8096241	98.68613244	96.6174715	94.60183468	92.63749026	90.72277755	88.85610328	87.03593831
220527A00014	5/27/2022	2.99	5/27/2026	5/27/2022	109.25065	105.7191237	102.3220766	99.05366742	95.90833765	92.88079971	89.96602202	87.1592152	84.45581904
220727A00035	10/24/2022	3.33	10/24/2029	10/24/2022	119.9194	112.708503	105.9903558	99.72858676	93.8896898	88.44278395	83.35939526	78.61325777	74.18013189
210305A00006	3/8/2021	1.02	8/11/2025	3/8/2021	101.28956	98.65788059	96.1071935	93.63449073	91.23690034	88.91167713	86.65619601	84.46794579	82.34452328
210624A00025	6/24/2021	1.43	6/24/2027	6/24/2021	105.64359	101.124342	96.82332241	92.72886223	88.82998146	85.1163415	81.57820425	78.20639395	74.99226171
220510A00015	5/13/2022	3.13	11/3/2025	5/13/2022	107.78648	104.8393955	101.9889171	99.23136228	96.56320593	93.98107617	91.48174708	89.06213144	86.71927404
220916A00045	9/16/2022	4.1	9/16/2032	9/16/2022	135.90618	125.0323177	115.1603741	106.1915128	98.03716796	90.61792906	83.86254967	77.70706862	72.09402973
221129A00059	11/29/2022	4.39	11/27/2026	11/29/2022	116.56345	112.3861561	108.385819	104.553975	100.882612	97.36414204	93.99137669	90.75750373	87.65606542
211214A00014	12/14/2021	1.31	12/13/2024	12/14/2021	101.03661	99.04672337	97.10579524	95.21230522	93.36479467	91.56186029	89.80215153	88.08436827	86.40725848
210224A00002	2/25/2021	0.88	11/3/2025	2/25/2021	101.18463	98.3348983	95.57937554	92.91445578	90.33668919	87.84277636	85.42956084	83.09402221	80.83326934
220603A00024	6/3/2022	2.94	6/3/2024	6/3/2022	103.05973	101.5630499	100.095679	98.65683475	97.24575761	95.86171442	94.50399738	93.17192287	91.8648305
200309A00007	3/9/2020	1.11	3/9/2027	3/9/2020	103.85665	99.65752327	95.64993322	91.82412989	88.17091607	84.68161132	81.34801983	78.16240052	75.1174391
200327A00042	3/27/2020	0.83	3/27/2024	3/27/2020	100.0877	98.78801764	97.51229684	96.25990973	95.03025131	93.82273745	92.63680396	91.47190576	90.32751603
201118A00021	11/20/2020	0.97	11/20/2023	11/20/2020	99.70829	98.75088702	97.81175833	96.89038441	95.98626574	95.09892138	94.22788811	93.37271963	92.53298579
220315A00018	3/15/2022	2.43	3/15/2027	3/15/2022	109.55246	105.2163793	101.0772096	97.12495451	93.35018449	89.74399725	86.29798517	83.00420506	79.85514984
221108A00033	11/8/2022	4.7	11/8/2027	11/8/2022	122.33284	117.0453256	112.0254628	107.2582364	102.7295479	98.4261586	94.3356325	90.4462836	86.74712686
221128A00034	11/28/2022	4.27	11/26/2027	11/28/2022	120.39962	115.1080522	110.087563	105.3227743	100.7992623	96.50349175	92.4227569	88.54512629	84.85939158
200330A00006	3/30/2020	0.9	3/28/2025	3/30/2020	100.99173	98.71128659	96.49311539	94.33517375	92.23549898	90.19220406	88.20347416	86.26756345	84.38279207
211028A00019	10/28/2021	1.1	10/28/2024	10/28/2021	100.49026	98.62726975	96.80767715	95.0302197	93.29367632	91.59686924	89.93866214	88.31795842	86.73369954
220425A00027	4/29/2022	3.15	8/20/2026	4/29/2022	110.64444	106.8553415	103.21794	99.72527978	96.37077115	93.14816564	90.05153606	87.07525776	84.21399118
200427A00017	4/27/2020	1.02	4/25/2025	4/27/2020	100.88669	98.54332692	96.26569102	94.05157749	91.89887233	89.80554425	87.76964091	85.78928536	83.86267269
220304A00004	3/4/2022	2.12	12/29/2028	3/4/2022	110.92668	104.8034104	99.05842737	93.66639092	88.60378721	83.84878693	79.38111613	75.18193767	71.23374217
220915A00025	9/15/2022	4.34	9/15/2023	9/15/2022	102.49755	101.7017346	100.9183086	100.1469838	99.38748089	98.6395292	97.90286615	97.17723714	96.46239517
210616A00008	5/2/2022	0.95	5/2/2025	5/2/2022	100.74155	98.38157874	96.08829678	93.85945258	91.69288572	89.58652096	87.53836434	85.54649952	83.60908426
221031A00036	10/31/2022	4.59	10/29/2027	10/31/2022	121.67006	116.427271	111.4487012	106.7195951	102.2260984	97.9551972	93.89466262	90.03299963	86.35939926

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
221123A00039	11/23/2022	4.29	11/23/2027	11/23/2022	120.46673	115.1820535	110.1676466	105.4082076	100.8893773	96.59767971	92.5204633	88.64584624	84.96266567
221129A00037	11/29/2022	4.56	11/26/2025	11/29/2022	112.28673	109.2090081	106.2337036	103.3568327	100.574592	97.88334731	95.27962478	92.76010319	90.32160614
200310A00015	3/10/2020	1.37	3/11/2030	3/10/2020	106.48435	99.3737764	92.78254983	86.67015024	80.9994134	75.73623883	70.84932232	66.30991322	62.09159386
201117A00016	11/17/2020	0.52	11/18/2024	11/17/2020	99.800092	97.88095741	96.00798391	94.17978093	92.3950095	90.65237981	88.950649	87.28861912	85.66513522
210104A00007	11/23/2021	0.88	11/23/2026	11/23/2021	102.50323	98.61616245	94.89643372	91.33599135	87.92721097	84.66287287	81.53613837	78.54052761	75.66989891
220419A00016	4/19/2022	3.21	4/19/2027	4/19/2022	113.23291	108.7220928	104.4192741	100.3137775	96.39553276	92.65503473	89.08330844	85.67187694	82.41273123
221110A00026	11/10/2022	4.29	11/10/2027	11/10/2022	120.32401	115.0798724	110.1021491	105.3758514	100.8869152	96.62213565	92.56911002	88.71618497	85.05240751
200305A00030	3/5/2020	1.58	3/5/2030	3/5/2020	108.00584	100.8561554	94.22646385	88.07629348	82.36852586	77.06909849	72.14673809	67.57271842	63.32064035
200414A00014	4/14/2020	0.76	4/12/2024	4/14/2020	100.01381	98.67263084	97.35559395	96.06210106	94.79157686	93.54346436	92.31722414	91.11233369	89.92828673
201029A00002	10/29/2020	0.59	10/29/2025	10/29/2020	100.93055	98.08348352	95.33045602	92.66786817	90.09228145	87.60040703	85.18909835	82.8553442	80.59626209
210629A00012	6/29/2021	1.14	12/29/2025	6/29/2021	102.1629	99.15112378	96.24315237	93.43482421	90.72217307	88.10141471	85.56893734	83.12129264	80.75518729
220412A00017	4/12/2022	3.09	3/19/2027	4/12/2022	112.42568	108.0175466	103.8092808	99.79075374	95.95240464	92.28520589	88.7806302	85.43062015	82.22755971
220418A00015	4/22/2022	3.03	7/28/2025	4/22/2022	106.59567	103.9290712	101.3431047	98.83482717	96.40142026	94.04018808	91.74855078	89.52403863	87.36428651
220425A00026	4/25/2022	3.13	2/25/2026	4/25/2022	108.87561	105.5965638	102.4343068	99.38396286	96.44089751	93.60069963	90.85916924	88.21230574	85.65629696
210224A00004	2/26/2021	0.91	12/18/2025	2/26/2021	101.41757	98.44597014	95.57616492	92.80410532	90.12592844	87.53794703	85.03664041	82.61864583	80.28075046
221110A00108	11/10/2022	4.48	12/10/2025	11/10/2022	112.22881	109.1133057	106.1025225	103.1923433	100.3788395	97.65825918	95.02701838	92.48169228	90.01900721
220311A00008	3/11/2022	2.07	3/11/2024	3/11/2022	101.38864	100.1236082	98.88616646	97.67541308	96.49048462	95.33055492	94.19483312	93.08256176	91.993015
200305A00032	3/5/2020	1.58	3/5/2030	3/5/2020	108.00584	100.8561554	94.22646385	88.07629348	82.36852586	77.06909849	72.14673809	67.57271842	63.32064035
200403A00018	4/3/2020	0.91	4/3/2024	4/3/2020	99.944643	98.63226026	97.34305427	96.07646534	94.83195087	93.60898515	92.40705871	91.22567766	90.0643632
200225A00034	10/5/2020	1.5	10/5/2023	10/5/2020	100.21678	99.37808072	98.55336219	97.74227353	96.9444791	96.15965421	95.38748466	94.62766633	93.87990477
200317A00027	3/17/2020	1.29	3/17/2025	3/17/2020	101.3733	99.12680757	96.94076616	94.8131723	92.74210541	90.72572155	88.76224974	86.84998854	84.98730272
220412A00016	4/12/2022	3.09	3/19/2027	4/12/2022	112.42568	108.0175466	103.8092808	99.79075374	95.95240464	92.28520589	88.7806302	85.43062015	82.22755971
221129A00076	11/29/2022	4.38	12/1/2026	11/29/2022	116.57556	112.3867528	108.3758291	104.5342595	100.8539712	97.32731944	93.94706328	90.70634159	87.59865122
200429A00054	4/29/2020	1.04	4/29/2025	4/29/2020	100.94949	98.59475882	96.30633636	94.08199724	91.9196	89.81708733	87.77248222	85.78388436	83.84946665
211213A00010	12/13/2021	1.02	12/13/2023	12/13/2021	99.768213	98.74972254	97.7518969	96.77411244	95.81577038	94.87629557	93.95513535	93.05175846	92.16565402
220421A00016	4/21/2022	3.31	4/21/2026	4/21/2022	110.01157	106.5636939	103.2435313	100.0456828	96.96500567	93.99660046	91.13579844	88.37814943	85.71941035
221117A00013	11/17/2022	4.54	11/14/2025	11/17/2022	112.06862	109.0276567	106.0868398	103.2423211	100.4904189	97.82761357	95.25053893	92.7559751	90.34084108
221107A00053	11/7/2022	4.95	10/7/2025	11/7/2022	112.74408	109.7974541	106.94467	104.1822346	101.5068063	98.91518516	96.40430645	93.97123392	91.61315382
200406A00060	4/6/2020	1.03	4/5/2024	4/6/2020	100.10865	98.78977327	97.49427154	96.22157938	94.97114754	93.74244389	92.53495285	91.34817466	90.18162488
210907A00015	9/9/2021	2.21	9/9/2026	9/9/2021	107.28229	103.5017278	99.87511099	96.39532282	93.0556138	89.84958463	86.77116583	83.81459859	80.97441699
211209A00007	12/9/2021	1.61	12/8/2026	12/9/2021	105.49751	101.5110899	97.69708317	94.04713729	90.55334532	87.20822367	84.00468698	80.93602481	77.99587971
220112A00008	1/12/2022	1.47	11/20/2024	1/12/2022	101.27837	99.34663397	97.46127787	95.62090988	93.82418497	92.06980744	90.35652875	88.68314546	87.04849731
220706A00032	7/6/2022	3.15	7/6/2027	7/6/2022	114.70395	109.9135629	105.3539149	101.0126296	96.87806683	92.93927062	89.1859248	85.60831217	82.19727642

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220711A00021	7/11/2022	3.27	7/11/2025	7/11/2022	107.63103	104.9840351	102.4161708	99.92457882	97.5065268	95.15939929	92.88069166	90.66800465	88.51903912
220812A00002	8/12/2022	3.17	8/12/2027	8/12/2022	115.14091	110.2377312	105.5749294	101.1393843	96.91876474	92.9014784	89.07662337	85.43394279	81.96378295
210330A00021	3/30/2021	2.16	3/28/2031	3/30/2021	113.31667	104.9788217	97.32118971	90.28469474	83.81566584	77.86532419	72.38931481	67.34728529	62.70250645
220420A00061	6/15/2022	3.3	6/15/2027	6/15/2022	114.11469	109.4291266	104.9662366	100.7142393	96.66203736	92.79917682	89.11580576	85.60263664	82.25091087
220308A00011	3/8/2022	2.07	1/10/2025	3/8/2022	102.74832	100.666768	98.6375867	96.6591003	94.72970236	92.84784983	91.01205998	89.22090756	87.47302203
220314A00006	3/14/2022	2.36	3/14/2025	3/14/2022	103.81587	101.5487188	99.34221484	97.19434685	95.10318398	93.06687315	91.08363533	89.1517619	87.26961139
200310A00038	3/10/2020	1.41	3/11/2030	3/10/2020	106.77535	99.65443434	93.0534042	86.93170063	81.25212896	75.98056037	71.08566424	66.53866528	62.31312286
200413A00003	4/13/2020	0.64	4/13/2023	4/13/2020	99.987678	99.61835119	99.25175917	98.88787102	98.52665678	98.16808692	97.81213237	97.45876446	97.10795496
210706A00006	7/6/2021	1.15	7/6/2026	7/6/2021	102.99558	99.46612462	96.07557164	92.81770147	89.68661055	86.67669218	83.7826197	80.99933082	78.32201285
211014A00018	10/14/2021	0.8	10/11/2024	10/14/2021	100.28491	98.46044138	96.67769114	94.93546657	93.23261533	91.56802509	89.94062194	88.34936875	86.7932637
220614A00011	6/14/2022	3.71	6/14/2024	6/14/2022	104.32698	102.7899453	101.2833116	99.80624842	98.35795397	96.93765506	95.54460582	94.17808643	92.83740205
220711A00009	7/11/2022	3.36	7/11/2023	7/11/2022	101.40155	100.787513	100.1809206	99.58163479	98.98952406	98.40445986	97.82631675	97.25497227	96.6903068
221028A00027	10/28/2022	4.73	10/28/2024	10/28/2022	107.45794	105.5264715	103.6397128	101.7963562	99.99514549	98.23486885	96.51435731	94.83248276	93.18815631
201028A00013	10/28/2020	0.68	10/28/2024	10/28/2020	99.684087	97.829015	96.01719369	94.24736093	92.51829972	90.82883623	89.17783791	87.56421181	85.98690289
221021A00026	10/21/2022	4.94	10/23/2023	10/21/2022	103.31616	102.4148864	101.5293993	100.6592892	99.8041573	98.9636186	98.13730108	97.32484533	96.52590394
200318A00037	3/18/2020	1.35	3/18/2024	3/18/2020	100.48677	99.21059419	97.96031581	96.73515857	95.53437382	94.35724284	93.20307539	92.07120823	90.96100382
220209A00013	2/9/2022	1.98	7/29/2025	2/9/2022	103.80295	101.1712673	98.61949804	96.14471255	93.74411137	91.41501682	89.15486673	86.96120851	84.83169366
220317A00010	3/17/2022	2.04	9/15/2023	3/17/2022	100.65944	99.8716793	99.0962224	98.33277958	97.58107313	96.84083387	96.11180078	95.3937207	94.68634809
220317A00023	5/3/2022	2.52	5/2/2025	5/3/2022	104.55319	102.1463578	99.80723344	97.53353306	95.32306679	93.17373112	91.08350489	89.05044556	87.07268568
200304A00019	3/4/2020	1.04	3/6/2023	3/4/2020	100.09591	99.83092113	99.56733959	99.30515333	99.04435125	98.78492237	98.52685585	98.27014093	98.01476698
200327A00035	3/27/2020	0.83	3/27/2024	3/27/2020	100.0877	98.78801764	97.51229684	96.25990973	95.03025131	93.82273745	92.63680396	91.47190576	90.32751603
200415A00023	4/15/2020	1.71	4/15/2030	4/15/2020	109.00953	101.7209531	94.96912698	88.71183501	82.91037631	77.52925966	72.53592264	67.90047656	63.59547486
220412A00010	4/12/2022	3.09	3/15/2027	4/12/2022	112.38982	107.9932732	103.7956286	99.78681061	95.95731117	92.29815339	88.80085864	85.45741606	82.26025414
201021A00012	10/21/2020	1.85	10/19/2035	10/21/2020	111.95115	99.68070518	88.88959924	79.39097523	71.02245421	63.64282575	57.12919632	51.37453362	46.28555045
200304A00022	3/4/2020	0.86	3/6/2023	3/4/2020	100.09296	99.82749351	99.56343967	99.3007892	99.03953086	98.77965354	98.52114622	98.26399803	98.0081982
210729A00003	7/29/2021	1.11	7/29/2026	7/29/2021	102.94574	99.35714482	95.91177272	92.60311869	89.42501116	86.37159417	83.4373091	80.61687773	77.90528625
220325A00010	3/28/2022	2.78	3/21/2025	3/28/2022	104.83537	102.5378712	100.3022034	98.12633542	96.00831331	93.9462599	91.93837132	89.98291358	88.0782194
221114A00002	11/14/2022	4.37	11/15/2027	11/14/2022	120.77669	115.5072062	110.5059733	105.7578718	101.2487088	96.96516066	92.89471517	89.02561802	85.34682307
221129A00064	11/29/2022	4.28	11/30/2027	11/29/2022	120.49341	115.1881569	110.155223	105.379126	100.8453484	96.54026927	92.45110395	88.56584854	84.87322815
200220A00014	2/20/2020	2.09	12/21/2029	2/20/2020	111.49725	104.4205632	97.84317492	91.72725247	86.03801735	80.74348236	75.81421404	71.22311652	66.94523468
200302A00002	3/2/2020	1.12	3/3/2025	3/2/2020	101.40476	99.18471758	97.02372069	94.91977576	92.87097362	90.87548519	88.93155734	87.03750904	85.19172769
200306A00055	3/6/2020	0.82	3/6/2025	3/6/2020	100.73366	98.51354669	96.3527074	94.24915218	92.20097007	90.20632952	88.2634743	86.37071978	84.52644928
200521A00013	5/21/2020	2.09	5/21/2035	5/21/2020	114.91385	102.8087783	92.11611274	82.66267638	74.29735974	66.88821277	60.31993045	54.49167894	49.31521503

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210518A00023	5/18/2021	1.17	5/18/2026	5/18/2021	102.85148	99.45485288	96.18782254	93.04477023	90.02035304	87.10948708	84.30733348	81.60928517	79.01095453
220420A00034	6/15/2022	3.3	6/15/2027	6/15/2022	114.11469	109.4291266	104.9662366	100.7142393	96.66203736	92.79917682	89.11580576	85.60263664	82.25091087
221129A00053	11/29/2022	4.56	12/2/2025	11/29/2022	112.36605	109.270474	106.2783924	103.3857605	100.5887169	97.88357274	95.266803	92.73503826	90.28505681
200415A00036	4/15/2020	0.91	10/15/2024	4/15/2020	100.10966	98.28370616	96.4996076	94.75616463	93.05221821	91.38664968	89.75837905	88.16636342	86.60959548
200402A00041	4/2/2020	1.03	4/2/2025	4/2/2020	100.82724	98.54562539	96.32645963	94.16770723	92.06740627	90.02366954	88.03468128	86.09869407	84.21402583
200327A00055	3/27/2020	1.01	3/27/2024	3/27/2020	100.06634	98.77092855	97.49933886	96.2509495	95.02516019	93.82139125	92.63908276	91.47769366	90.336701
200306A00013	3/6/2020	1.01	3/6/2025	3/6/2020	100.69381	98.48369851	96.33242969	94.23802511	92.1985927	90.21231874	88.27746395	86.3923597	84.55540456
201223A00012	12/23/2020	0.91	12/18/2026	12/23/2020	102.70939	98.75275869	94.96882991	91.34917132	87.885809	84.57119893	81.39820139	78.36005702	75.45036449
220106A00010	1/6/2022	2.64	1/6/2037	1/6/2022	122.48653	108.5386678	96.38349966	85.77834095	76.51461123	68.41288861	61.31869929	55.0989333	49.63879072
220714A00034	7/14/2022	3.62	1/16/2024	7/14/2022	102.825	101.6971441	100.5940646	99.51495469	98.4590383	97.42557262	96.41384625	95.42317763	94.45291342
221025A00027	10/25/2022	4.57	10/25/2027	10/25/2022	121.52469	116.2965496	111.3314026	106.6145934	102.1323561	97.87175827	93.82064604	89.96759344	86.30185518
210201A00003	2/2/2021	0.74	10/15/2025	2/2/2021	100.72359	97.92948613	95.22631597	92.6106545	90.07922267	87.62888196	85.25662755	82.95958192	80.73498874
221118A00080	11/18/2022	4.61	11/18/2025	11/18/2022	112.32961	109.2735804	106.3185221	103.4605394	100.6959079	98.02106784	95.43261545	92.92729523	90.50199266
201117A00017	11/17/2020	0.39	11/17/2023	11/17/2020	99.315205	98.36535858	97.43354321	96.51924966	95.62198777	94.74128549	93.87668811	93.0277574	92.19407091
220823A00034	8/23/2022	3.61	8/23/2024	8/23/2022	104.75863	103.0300552	101.3383379	99.68236153	98.06105612	96.47339495	94.91839209	93.39510038	91.90260949
200429A00066	4/29/2020	0.8	4/28/2023	4/29/2020	99.961052	99.55168376	99.1456558	98.74292728	98.34345819	97.94720914	97.55414136	97.16421673	96.77739771
210224A00003	2/26/2021	0.9	12/3/2025	2/26/2021	101.33943	98.40808143	95.57618695	92.8398339	90.19528614	87.63897522	85.16749183	82.77757774	80.46611817
210624A00026	6/24/2021	1.6	6/23/2028	6/24/2021	107.56222	102.0306616	96.81647536	91.89982999	87.26223617	82.88644664	78.7563664	74.85696982	71.17422425
210916A00008	9/16/2021	1.48	9/15/2028	9/16/2021	106.97499	101.2407623	95.84754921	90.77335213	85.99769992	81.50153732	77.26711982	73.27791682	69.51852254
220707A00041	7/7/2022	3.41	7/7/2025	7/7/2022	107.39257	104.771662	102.2286355	99.76069933	97.36518017	95.03951801	92.78126057	90.58805802	88.45765792
220920A00026	9/20/2022	4.1	9/20/2027	9/20/2022	118.84411	113.7782638	108.9635668	104.3862029	100.0331884	95.89231797	91.95211416	88.20177998	84.631155
221027A00047	10/27/2022	4.88	4/26/2024	10/27/2022	105.57105	104.1559138	102.7667635	101.402946	100.0638273	98.74879387	97.45725238	96.18862836	94.94236574
200305A00006	3/5/2020	0.99	3/6/2023	3/5/2020	100.08259	99.81762422	99.55406606	99.29190307	99.03112418	98.7717184	98.51367487	98.25698286	98.00163173
220217A00016	2/17/2022	2.24	9/15/2026	2/17/2022	107.43999	103.6400231	99.99537942	96.49887209	93.14368846	89.92336773	86.83178068	83.86311061	81.01183562
221129A00040	11/29/2022	4.56	11/26/2025	11/29/2022	112.28673	109.2090081	106.2337036	103.3568327	100.574592	97.88334731	95.27962478	92.76010319	90.32160614
220425A00028	4/29/2022	3.16	4/23/2027	4/29/2022	113.05016	108.5322243	104.2231424	100.1121764	96.18919155	92.44462259	88.86943933	85.45511386	82.19359009
221003A00067	10/3/2022	4.48	11/13/2024	10/3/2022	107.16318	105.1909829	103.2654257	101.3851226	99.54873531	97.75497404	96.0025956	94.29040126	92.61723487
221129A00051	11/29/2022	4.56	12/2/2025	11/29/2022	112.36605	109.270474	106.2783924	103.3857605	100.5887169	97.88357274	95.266803	92.73503826	90.28505681
200402A00030	4/2/2020	0.8	4/3/2023	4/2/2020	100.00072	99.65931508	99.32023145	98.98344927	98.64894519	98.31669617	97.98667948	97.65887269	97.33325369
201105A00016	11/9/2020	2.18	11/8/2027	11/9/2020	109.85088	104.8683716	100.1422264	95.6579379	91.40189617	87.36132493	83.52422657	79.87933069	76.41604646
201119A00021	11/23/2020	2.22	11/21/2030	11/23/2020	113.41844	105.405427	98.02163395	91.21431199	84.93538543	79.14101947	73.79122639	68.84951004	64.28254489
220609A00034	10/3/2022	3.32	9/30/2024	10/3/2022	104.53283	102.703516	100.9151604	99.16661585	97.45676977	95.78454759	94.14891116	92.54885728	90.98341631
220915A00033	9/15/2022	4.3	3/15/2024	9/15/2022	104.30613	103.0112972	101.7434861	100.501852	99.28558626	98.09391353	96.9260904	95.78140354	94.6591682

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
221031A00035	10/31/2022	4.67	10/30/2026	10/31/2022	117.29617	113.183884	109.2424347	105.4638089	101.8404109	98.36503939	95.03086479	91.83140803	88.76052076
200302A00016	3/2/2020	1.36	3/3/2025	3/2/2020	101.4766	99.26524896	97.11253659	95.0164848	92.97520245	90.98687751	89.04977297	87.16222305	85.32262966
200305A00014	3/10/2020	1	2/15/2023	3/10/2020	100.08876	99.87596381	99.6640839	99.45311181	99.24304166	99.03386766	98.82558403	98.61818507	98.4116651
210211A00007	2/11/2021	0.47	9/15/2023	2/11/2021	99.404725	98.62246761	97.85245052	97.09438801	96.34800349	95.6130288	94.88920398	94.17627687	93.47400292
210624A00002	6/24/2021	0.57	6/23/2023	6/24/2021	99.727506	99.16756639	98.61389075	98.06637407	97.52491406	96.98941064	96.45976595	95.93588425	95.41767189
220214A00010	2/14/2022	2.46	12/21/2029	2/14/2022	114.10953	106.9427442	100.2797737	94.08251711	88.3159434	82.9478297	77.94852264	73.29072102	68.94927791
220325A00015	3/28/2022	2.86	3/23/2027	3/28/2022	111.4677	107.0692616	102.8709578	98.86263103	95.03469544	91.37809884	87.8842902	84.54518929	81.35315818
220823A00015	8/23/2022	3.78	8/30/2032	8/23/2022	130.23467	119.7977186	110.3194154	101.7055737	93.87176	86.74223571	80.24901854	74.33105006	68.93345643
200318A00047	3/18/2020	1.29	3/18/2025	3/18/2020	101.85833	99.59377735	97.39037022	95.24608205	93.15896746	91.1271587	89.14886186	87.22235345	85.34597705
200421A00024	4/24/2020	0.8	10/16/2023	4/24/2020	99.592348	98.72765526	97.87789173	97.04267365	96.22163016	95.41440291	94.62064555	93.84002321	93.07221204
200327A00027	3/27/2020	0.9	3/27/2023	3/27/2020	100.04218	99.7198046	99.39950113	99.08125267	98.76503951	98.45084218	98.13864147	97.82841841	97.52015424
220722A00051	9/15/2022	3.23	9/15/2027	9/15/2022	114.60905	109.657981	104.9530659	100.4807426	96.2282661	92.18365789	88.33565557	84.6736661	81.18772244
221027A00009	10/27/2022	4.68	10/27/2025	10/27/2022	112.2401	109.24655	106.350018	103.5468315	100.8334787	98.20659969	95.66297889	93.19953794	90.81332911
221129A00046	11/29/2022	4.56	12/1/2025	11/29/2022	112.35285	109.2602276	106.2709355	103.3809381	100.5863827	97.88358876	95.26903886	92.73937078	90.2913696
200417A00013	4/17/2020	0.74	4/17/2023	4/17/2020	99.955534	99.57609965	99.19954787	98.82584546	98.45496008	98.0868599	97.72151355	97.35889015	96.99895927
210104A00006	11/22/2021	0.88	11/20/2026	11/22/2021	102.49293	98.61400622	94.90174514	91.34813749	87.94560444	84.68696854	81.56543035	78.5745465	75.70820914
210112A00003	1/12/2021	0.53	9/15/2023	1/12/2021	99.452676	98.67020819	97.8999832	97.14171508	96.39512717	95.65995129	94.93592742	94.22280339	93.52033458
211028A00012	10/28/2021	1.64	10/15/2027	10/28/2021	107.08824	102.2361547	97.63159463	93.26069874	89.11045324	85.16863256	81.42374771	77.8649984	74.48222836
220124A00009	1/24/2022	0.86	1/24/2023	1/24/2022	100.06233	99.9101659	99.7584765	99.60725654	99.45650382	99.30621617	99.15639144	99.00702749	98.85812218
220428A00016	5/2/2022	3.09	10/15/2024	5/2/2022	104.21666	102.3510384	100.5280221	98.74638817	97.00495755	95.3025921	93.63819315	92.01069978	90.41908732
220628A00034	6/28/2022	3.61	6/28/2027	6/28/2022	115.66121	110.9038148	106.3735003	102.0581877	97.94650471	94.02774216	90.29181146	86.72920541	83.33096146
200402A00038	4/2/2020	0.84	4/2/2025	4/2/2020	100.86872	98.57657555	96.34736164	94.17901281	92.06954701	90.01705795	88.01971174	86.07574372	84.18345543
200415A00031	4/15/2020	0.97	4/15/2025	4/15/2020	100.73158	98.41661758	96.16591755	93.97734754	91.84886137	89.77849202	87.76434808	85.80461035	83.89752871
220315A00021	3/15/2022	2.15	3/15/2024	3/15/2022	101.51471	100.2389135	98.98981461	97.76657966	96.56840859	95.39453449	94.24422186	93.11676508	92.01148681
200326A00011	3/30/2020	1.54	3/31/2025	3/30/2020	102.01353	99.72314401	97.49522745	95.32774798	93.21874805	91.16634446	89.16872516	87.22414612	85.3309284
200421A00031	4/21/2020	0.84	4/19/2024	4/21/2020	99.857437	98.50305807	97.17329902	95.86754732	94.58521057	93.32571537	92.08850659	90.87304662	89.67881474
210225A00007	2/25/2021	1.79	8/23/2030	2/25/2021	109.83623	102.1886148	95.12750352	88.6048644	82.57684	77.00336152	71.84780268	67.07666713	62.6593057
210319A00003	3/19/2021	0.95	3/19/2025	3/19/2021	100.59663	98.35404842	96.17198898	94.04845202	91.98151791	89.96934311	88.01015657	86.10225631	84.24400625
211117A00009	11/17/2021	0.84	11/17/2023	11/17/2021	99.582699	98.6338632	97.70299389	96.78958507	95.89314932	95.01321721	94.1493365	93.30107133	92.46800147
220921A00069	9/21/2022	3.98	9/21/2027	9/21/2022	119.43382	114.3155353	109.4519411	104.8289833	100.4334563	96.25294843	92.27579013	88.49100552	84.8882676
220912A00051	11/15/2022	3.76	11/15/2027	11/15/2022	117.74352	112.548429	107.6188314	102.9397276	98.49704454	94.27757212	90.26890561	86.45939268	82.83808384
200527A00013	5/27/2020	1.13	11/25/2026	5/27/2020	103.50919	99.59684225	95.85290948	92.2692789	88.83827251	85.55262028	82.4054362	79.39019596	76.50071603
201119A00003	11/19/2020	0.56	11/17/2023	11/19/2020	99.310504	98.36309093	97.43362583	96.52160279	95.62653481	94.74795286	93.88540506	93.03845592	92.20668558

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210914A00015	9/14/2021	0.81	9/15/2025	9/14/2021	101.41836	98.67953576	96.02774497	93.45971983	90.97233618	88.56260656	86.22767324	83.96480163	81.77137418
220629A00003	6/29/2022	3.59	6/29/2027	6/29/2022	115.57984	110.8214462	106.2903226	101.9743678	97.86219447	93.94307989	90.20692302	86.64420521	83.24595338
220502A00025	5/2/2022	3.21	5/2/2025	5/2/2022	106.22836	103.8009422	101.4416706	99.14825632	96.91849669	94.75027572	92.64156029	90.59039636	88.59490542
221117A00008	11/17/2022	4.82	11/15/2024	11/17/2022	107.85594	105.8712787	103.9336536	102.0416569	100.1939358	98.38918668	96.62615329	94.90362428	93.22043149
221130A00039	11/30/2022	5.16	11/30/2023	11/30/2022	103.91823	102.9119116	101.9251769	100.9574559	100.008202	99.07688948	98.16301227	97.26608325	96.3856333
210623A00026	6/23/2021	0.78	6/24/2024	6/23/2021	99.801845	98.27416154	96.7770756	95.30973695	93.87132617	92.46105361	91.078158	89.72190516	88.39158682
221018A00031	10/18/2022	4.71	10/17/2025	10/18/2022	112.19259	109.2267973	106.3563238	103.5775905	100.8871744	98.28179951	95.75832905	93.3137591	90.94521214
200304A00035	3/4/2020	1.17	3/4/2025	3/4/2020	101.05009	98.84105925	96.69068706	94.59700498	92.55812268	90.57222865	88.63758616	86.75252951	84.91546043
220201A00011	2/1/2022	1.86	4/20/2026	2/1/2022	105.07907	101.7176592	98.48146854	95.36519259	92.36377817	89.4724115	86.68650556	84.0016882	81.41379096
220217A00018	2/17/2022	2.28	2/17/2027	2/17/2022	108.71902	104.4730754	100.4172629	96.54201505	92.8383007	89.29759345	85.91184026	82.67343224	79.57517737
220412A00018	4/12/2022	3.09	3/15/2027	4/12/2022	112.38982	107.9932732	103.7956286	99.78681061	95.95731117	92.29815339	88.80085864	85.45741606	82.26025414
200429A00004	5/1/2020	0.74	5/1/2023	5/1/2020	99.930834	99.51339326	99.09942473	98.68888501	98.28173173	97.87792319	97.47741837	97.08017694	96.68615921
220224A00010	2/24/2022	2.04	3/10/2025	2/24/2022	103.05788	100.8100282	98.62210605	96.4921191	94.4181505	92.39836173	90.4309887	88.51433805	86.64678374
221123A00034	11/23/2022	4.43	11/23/2026	11/23/2022	116.67073	112.5026311	108.5106112	104.6862703	101.0216569	97.50923893	94.14187987	90.91281565	87.81563323
210208A00002	2/10/2021	0.45	6/15/2023	2/10/2021	99.682807	99.14451745	98.61202453	98.0852345	97.56405606	97.04839983	96.53817835	96.03330598	95.53369887
220419A00015	4/19/2022	3.14	4/17/2026	4/19/2022	109.39525	105.9688406	102.6690666	99.49059124	96.42832753	93.47742871	90.63327548	87.89146417	85.24779548
221019A00009	10/19/2022	4.8	10/17/2025	10/19/2022	112.45247	109.4829064	106.6087505	103.8264237	101.1325003	98.52370144	95.99688773	93.54905272	91.17731643
200114A00021	1/11/2021	1.93	1/11/2024	1/11/2021	100.88472	99.78188777	98.70307371	97.64749979	96.61442121	95.60312469	94.61292681	93.64317251	92.69323358
200402A00014	4/2/2020	0.84	4/2/2025	4/2/2020	100.86872	98.57657555	96.34736164	94.17901281	92.06954701	90.01705795	88.01971174	86.07574372	84.18345543
200413A00012	4/13/2020	0.64	4/13/2023	4/13/2020	99.987678	99.61835119	99.25175917	98.88787102	98.52665678	98.16808692	97.81213237	97.45876446	97.10795496
220915A00039	9/15/2022	4.29	4/15/2024	9/15/2022	104.62806	103.249832	101.8964461	100.5672863	99.26175728	97.97928296	96.71930539	95.48128425	94.26469611
221118A00023	11/18/2022	4.12	11/18/2027	11/18/2022	120.76753	115.4520632	110.408706	105.6220428	101.0776106	96.76183629	92.66197742	88.76606696	85.06286221
200916A00017	9/16/2020	0.54	9/15/2023	9/16/2020	99.460667	98.67816495	97.90790531	97.14960292	96.40298111	95.6677717	94.94371466	94.23055781	93.52805652
220314A00005	3/14/2022	2.36	3/14/2025	3/14/2022	103.81587	101.5487188	99.34221484	97.19434685	95.10318398	93.06687315	91.08363533	89.1517619	87.26961139
200417A00006	4/17/2020	0.74	4/17/2023	4/17/2020	99.955534	99.57609965	99.19954787	98.82584546	98.45496008	98.0868599	97.72151355	97.35889015	96.99895927
211015A00029	10/15/2021	0.98	10/15/2024	10/15/2021	100.24154	98.41430857	96.62896036	94.88429107	93.17914103	91.51239095	89.88296023	88.28980541	86.73191861
220131A00011	1/31/2022	1.52	1/31/2024	1/31/2022	100.52455	99.37001146	98.24183242	97.13911993	96.06101999	95.00671637	93.97542856	92.96640983	91.97894544
200218A00026	2/21/2020	1.73	3/25/2024	2/21/2020	101.0156	99.71850254	98.44579248	97.19680655	95.97090852	94.76748493	93.58594409	92.4257151	91.28624695
200330A00064	3/30/2020	0.83	3/30/2023	3/30/2020	100.01654	99.6860075	99.35765416	99.03145502	98.70738899	98.38543528	98.06557332	97.74778286	97.43204386
210225A00013	3/1/2021	0.93	10/6/2025	3/1/2021	101.24291	98.46435943	95.77548024	93.1729222	90.65347653	88.21407082	85.85176249	83.56373258	81.3472799
220308A00016	3/8/2022	2.37	3/8/2029	3/8/2022	112.66077	106.2969605	100.3362637	94.75100823	89.51556281	84.60617718	80.00083455	75.67911606	71.62207665
221122A00029	11/22/2022	4.31	11/22/2027	11/22/2022	120.55559	115.2715683	110.2576151	105.4984441	100.9797148	96.68796836	92.61056899	88.73564912	85.05205889
200316A00072	3/16/2020	1.18	3/16/2023	3/16/2020	100.13313	99.84068091	99.54994471	99.26091066	98.97356376	98.6878892	98.40387232	98.12149866	97.8407539

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220317A00028	5/3/2022	2.59	5/3/2027	5/3/2022	110.61396	106.1220062	101.8395957	97.75586821	93.86058482	90.14408626	86.59725712	83.21149245	79.97866659
200228A00091	2/28/2020	1.72	12/7/2029	2/28/2020	108.86354	101.9132533	95.45295478	89.44560971	83.85716098	78.65627612	73.81411639	69.30412649	65.10184301
200916A00019	9/16/2020	0.42	9/16/2024	9/16/2020	99.559608	97.80788959	96.09495037	94.4196541	92.78090771	91.17765894	89.60889444	88.07363798	86.57094875
210129A00002	2/3/2021	0.59	7/25/2024	2/3/2021	99.505308	97.89890607	96.32578919	94.7849876	93.27556911	91.79663736	90.34733008	88.92681742	87.53430045
220912A00044	11/15/2022	3.85	11/14/2025	11/15/2022	110.02326	107.0127587	104.1016492	101.2861065	98.56247279	95.92725122	93.37709778	90.90881369	88.51933827
200221A00023	2/21/2020	2.05	12/7/2029	2/21/2020	111.181	104.1511986	97.61535495	91.53619715	85.87944702	80.6135659	75.70952258	71.14058197	66.88211267
200331A00022	4/1/2020	1.07	4/1/2025	4/1/2020	100.91733	98.63729905	96.41960009	94.26220351	92.16315317	90.12056737	88.13263554	86.19761519	84.31382892
200909A00001	9/9/2020	0.98	9/8/2028	9/9/2020	105.36736	99.65069065	94.2751718	89.21873551	84.46085089	79.98241279	75.76563522	71.79395337	68.05193342
200922A00015	9/24/2020	1.09	9/24/2025	9/24/2020	101.65432	98.90132356	96.23621206	93.65570449	91.15666597	88.73609575	86.39112072	84.11898914	81.9170648
201019A00007	10/19/2020	0.64	10/21/2024	10/19/2020	99.603909	97.76750623	95.97354408	94.22079537	92.50807603	90.83424357	89.19819532	87.59886681	86.03523015
220526A00010	5/26/2022	3	5/26/2026	5/26/2022	109.2766	105.7472715	102.3522433	99.08567863	95.94203074	92.91602294	90.00263387	87.19708368	84.49482105
221129A00054	11/29/2022	4.56	12/3/2025	11/29/2022	112.37925	109.2807204	106.2858496	103.3905836	100.5910522	97.88355836	95.26456948	92.73070886	90.278748
200317A00045	3/19/2020	1.43	3/19/2025	3/19/2020	101.70423	99.44867429	97.2539158	95.11794453	93.03883311	91.01473052	89.0438585	87.12450816	85.25503674
210729A00004	7/29/2021	1.74	7/29/2031	7/29/2021	110.03017	101.5190774	93.73076539	86.60008716	80.06808219	74.08135959	68.59154564	63.55478881	58.93131588
221107A00048	11/7/2022	4.96	9/8/2025	11/7/2022	112.35114	109.4911416	106.7200004	104.034394	101.4311509	98.90723968	96.45976144	94.08594322	91.78313139
200302A00005	3/2/2020	1.31	3/3/2025	3/2/2020	101.36341	99.15336244	97.00192432	94.90712053	92.8670607	90.87993352	88.94400269	87.05760315	85.21913741
200327A00043	3/27/2020	1.48	3/27/2028	3/27/2020	107.96914	102.6175942	97.56202144	92.78458609	88.26861113	83.99850066	79.95966454	76.13844862	72.52207019
200330A00028	3/30/2020	1.09	3/28/2025	3/30/2020	100.95022	98.68021244	96.47200795	94.32358716	92.23300722	90.19839991	88.21796829	86.28998351	84.41278185
201123A00010	11/25/2020	1.48	11/24/2025	11/25/2020	103.04585	100.112564	97.2778515	94.53787205	91.88895259	89.32758343	86.85041004	84.45422527	82.13596196
210311A00007	3/11/2021	1.06	3/11/2026	3/11/2021	102.20994	99.00210831	95.91072528	92.93090808	90.05801114	87.28761111	84.6154947	82.03764726	79.55024212
221129A00034	11/29/2022	4.38	12/1/2025	11/29/2022	112.47559	109.3657393	106.3601052	103.4546115	100.6453619	97.92863451	95.30087331	92.75867933	90.29880299
211221A00023	12/21/2021	1.53	6/19/2026	12/21/2021	104.27264	100.7659141	97.39555404	94.1555233	91.04008863	88.04380142	85.16148181	82.38820384	79.71928151
211222A00035	12/22/2021	2.15	12/22/2033	12/22/2021	115.19442	104.2914063	94.53166255	85.78875032	77.95082569	70.91888929	64.6052529	58.93219589	53.83078715
220106A00007	1/6/2022	2.42	1/6/2034	1/6/2022	118.16328	107.0668175	97.13277691	88.23248488	80.25215063	73.09107224	66.66007088	60.8801194	55.6811401
220302A00010	3/2/2022	2.14	1/13/2027	3/2/2022	107.87816	103.747884	99.79910217	96.02286225	92.41070118	88.95461857	85.64704858	82.48083376	79.44920065
220324A00015	3/24/2022	2.79	3/3/2026	3/24/2022	107.82549	104.5466663	101.3852968	98.33647057	95.39551459	92.55798098	89.8196346	87.17644137	84.62455716
220630A00044	6/30/2022	3.34	6/30/2025	6/30/2022	107.13929	104.5405292	102.0185858	99.57072596	97.1943284	94.88688199	92.64598053	90.46931755	88.35468147
220802A00009	8/2/2022	3	8/2/2027	8/2/2022	113.15123	108.355426	103.7932787	99.45212392	95.32005119	91.38585844	87.63900566	84.06957197	80.66821565
200306A00031	3/6/2020	1.01	3/6/2025	3/6/2020	100.69381	98.48369851	96.33242969	94.23802511	92.1985927	90.21231874	88.27746395	86.3923597	84.55540456
200316A00041	3/16/2020	1.16	3/16/2023	3/16/2020	100.12725	99.83480987	99.54408484	99.25506191	98.96772609	98.68206255	98.39805665	98.11569392	97.83496004
200423A00027	4/28/2020	0.88	4/15/2024	4/28/2020	99.910938	98.56682074	97.24696336	95.95076656	94.67765046	93.42705366	92.19843252	90.99126044	89.80502723
200428A00003	4/29/2020	1.01	4/29/2025	4/29/2020	100.87691	98.5230605	96.23550823	94.01202061	91.85045674	89.74875983	87.7049534	85.71713761	83.78348588
210609A00003	6/9/2021	0.47	6/9/2023	6/9/2021	99.710981	99.18874376	98.67195954	98.16054322	97.65441144	97.15348258	96.65767668	96.16691544	95.68112211

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
211123A00012	11/23/2021	2.27	11/23/2033	11/23/2021	116.45841	105.5585824	95.7925657	87.03584296	79.17817422	72.1218972	65.78043535	60.07698938	54.94338899
200309A00038	3/9/2020	1.26	3/11/2030	3/9/2020	105.68412	98.60196706	92.03770032	85.95088667	80.3044456	75.06435458	70.19938206	65.68084507	61.4823891
200326A00009	3/27/2020	1.54	3/27/2025	3/27/2020	101.99504	99.7152743	97.49743894	95.33950955	93.23953819	91.19565197	89.20604971	87.2689987	85.38283169
201021A00011	10/21/2020	1.11	10/21/2027	10/21/2020	104.51122	99.70594092	95.14744216	90.82184509	86.71611561	82.81801227	79.11603426	75.59937294	72.25786691
200228A00070	5/18/2020	1.35	5/18/2023	5/18/2020	100.18383	99.71964078	99.25975392	98.80410666	98.35264048	97.90529792	97.46202258	97.02275909	96.58745308
210217A00009	2/18/2021	0.68	11/15/2024	2/18/2021	99.70573	97.80313516	95.94599168	94.13293995	92.36267009	90.6339199	88.94547282	87.29615591	85.68483799
210219A00004	2/19/2021	0.91	2/19/2026	2/19/2021	101.64221	98.49801	95.46633911	92.54250818	89.72205142	87.00071787	84.37445948	81.83941993	79.39192413
221129A00061	11/29/2022	4.39	11/27/2026	11/29/2022	116.56345	112.3861561	108.385819	104.553975	100.882612	97.36414204	93.99137669	90.75750373	87.65606542
200306A00077	3/6/2020	1.06	3/6/2025	3/6/2020	100.8074	98.59598571	96.44343353	94.34777208	92.30710853	90.31962841	88.38359171	86.49732914	84.65923858
220106A00011	1/6/2022	2.7	1/6/2038	1/6/2022	123.72679	108.8687294	96.03382993	84.93201267	75.31632228	66.97631615	59.73249697	53.43161814	47.94272165
200224A00006	2/24/2020	1.58	11/15/2024	2/24/2020	101.47751	99.55707941	97.68243992	95.85222624	94.06511915	92.31984747	90.61518597	88.94995338	87.32301049
211207A00011	12/7/2021	1.62	12/1/2026	12/7/2021	105.50012	101.5321593	97.7351824	94.10093737	90.62161027	87.28980375	84.09851253	81.04110047	78.11127912
220217A00013	2/17/2022	2.08	2/14/2025	2/17/2022	102.98983	100.8096241	98.68613244	96.6174715	94.60183468	92.63749026	90.72277755	88.85610328	87.03593831
221110A00076	11/10/2022	4.45	11/10/2026	11/10/2022	116.57825	112.4488342	108.4923825	104.7007163	101.0660881	97.58115586	94.23895949	91.03289896	87.95671375
200305A00015	3/5/2020	0.99	3/6/2023	3/5/2020	100.08259	99.81762422	99.55406606	99.29190307	99.03112418	98.7717184	98.51367487	98.25698286	98.00163173
200326A00016	3/26/2020	1.54	3/25/2025	3/26/2020	101.98579	99.7113369	97.49854209	95.34538801	93.24993147	91.21030471	89.22471193	87.29142605	85.40878563
200605A00005	6/5/2020	0.99	6/5/2025	6/5/2020	100.95473	98.50419521	96.12528916	93.81550334	91.57243724	89.39378877	87.27734955	85.22100046	83.22270749
210224A00006	2/26/2021	0.88	10/21/2025	2/26/2021	101.14512	98.32953011	95.60599199	92.97102106	90.42128242	87.95358489	85.56487392	83.25222508	81.01283769
200325A00016	3/30/2020	1.67	3/31/2025	3/30/2020	102.31777	100.023772	97.79232135	95.62138211	93.50899449	91.45327322	89.45240421	87.5046415	85.60830425
201116A00024	11/18/2020	2.36	11/15/2034	11/18/2020	117.97568	106.1333785	95.61669814	86.26921901	77.9537497	70.54987325	63.95182047	58.06662215	52.81250223
201123A00009	11/25/2020	1.02	11/25/2024	11/25/2020	100.3976	98.46153624	96.57231421	94.72851374	92.92876739	91.17175823	89.45621764	87.78092311	86.14469631
210104A00009	12/20/2021	0.89	12/18/2026	12/20/2021	102.6282	98.67320387	94.8908608	91.27273838	87.81086464	84.49769743	81.32609881	78.28931111	75.38093462
211028A00013	10/28/2021	1.65	10/22/2027	10/28/2021	107.16287	102.2908223	97.66817374	93.28091458	89.1158897	85.16074354	81.40386762	77.83435172	74.44193846
220727A00010	7/27/2022	3.38	7/24/2024	7/27/2022	104.12877	102.4854007	100.8759388	99.29939484	97.75482168	96.24130842	94.75797874	93.3039892	91.87852774
200330A00008	3/30/2020	1.09	3/28/2025	3/30/2020	100.95022	98.68021244	96.47200795	94.32358716	92.23300722	90.19839991	88.21796829	86.28998351	84.41278185
210616A00006	2/11/2022	0.86	2/11/2025	2/11/2022	100.27366	98.13269072	96.04741147	94.01597481	92.03661045	90.10762119	88.22737922	86.39432262	84.60695211
200529A00022	6/1/2020	0.98	6/1/2026	6/1/2020	102.24117	98.81905063	95.52894584	92.36507055	89.32192634	86.39428435	83.5771705	80.86585163	78.25582248
201030A00016	10/30/2020	1.14	10/8/2027	10/30/2020	104.62873	99.85392327	95.32267102	91.02136593	86.937224	83.05823349	79.37310455	75.87122236	72.54260358
201203A00005	12/3/2020	0.78	12/3/2026	12/3/2020	102.98531	99.03833615	95.26282228	91.65044	88.19331097	84.88397897	81.71538498	78.68084384	75.77402243
210616A00012	3/18/2022	0.9	3/18/2025	3/18/2022	100.47838	98.23976624	96.06151248	93.94162297	91.87818117	89.86934674	87.91335195	86.00849825	84.15315304
210709A00006	7/13/2021	2.4	7/11/2031	7/13/2021	115.65936	106.957557	98.98526165	91.67730551	84.97466205	78.82383956	73.17633586	67.98814926	63.21933979
211123A00010	11/23/2021	0.94	11/24/2023	11/23/2021	99.667856	98.70026219	97.75133448	96.82053684	95.90735397	95.01128989	94.13186712	93.26862576	92.42112271
221129A00043	11/29/2022	4.59	12/1/2025	11/29/2022	112.44317	109.3491881	106.3585649	103.4672696	100.6714483	97.96741942	95.35166461	92.82082067	90.37167173

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200302A00013	3/2/2020	1.25	3/4/2024	3/2/2020	100.30989	99.06939078	97.85795762	96.67456961	95.51825663	94.388093	93.28319493	92.2027182	91.14585598
200423A00006	4/23/2020	0.82	4/23/2025	4/23/2020	100.89839	98.54977539	96.26709226	94.04812964	91.89076551	89.79296099	87.75275647	85.76826812	83.83768445
210914A00018	9/14/2021	1.43	9/14/2029	9/14/2021	108.31839	101.5384133	95.22450155	89.34227876	83.86007694	78.74870535	73.98124459	69.53285874	65.38062409
220325A00012	3/28/2022	2.85	3/23/2026	3/28/2022	108.19325	104.8550268	101.6380923	98.53738947	95.54810067	92.66563467	89.88561491	87.20386819	84.616414
221011A00122	10/11/2022	4.64	12/11/2024	10/11/2022	107.82184	105.7665388	103.7613679	101.8047825	99.89529555	98.03147604	96.21194663	94.43538119	92.70050254
221024A00067	10/24/2022	4.92	10/24/2023	10/24/2022	103.30699	102.4030894	101.5150681	100.6425123	99.78501969	98.94220206	98.11368426	97.29910392	96.49811081
201030A00018	10/30/2020	1.15	10/22/2027	10/30/2020	104.70967	99.89702586	95.33159533	90.99947061	86.88759026	82.98368758	79.2762383	75.75441208	72.4080273
210330A00015	3/30/2021	0.47	3/30/2023	3/30/2021	99.896692	99.56641169	99.23830523	98.91235174	98.58853017	98.26681972	97.94719984	97.62965027	97.314151
200401A00001	4/1/2020	1.01	4/1/2025	4/1/2020	100.77675	98.49838749	96.28232343	94.12652734	92.02904411	89.98799302	88.00156444	86.06801677	84.18567348
200527A00012	5/27/2020	1.2	5/27/2027	5/27/2020	104.53222	100.1119189	95.90243843	91.89266041	88.07210595	84.43089948	80.95973083	77.64981999	74.4928841
220311A00013	3/15/2022	2.35	3/15/2027	3/15/2022	109.20853	104.8797862	100.7477043	96.80230528	93.03416913	89.43440256	85.99460657	82.70684616	79.56362205
200304A00032	3/4/2020	1.6	12/15/2028	3/4/2020	107.7467	101.7545167	96.13225079	90.85519438	85.90040941	81.24659502	76.87396258	72.76412085	68.89997051
200330A00043	3/30/2020	0.86	3/30/2023	3/30/2020	100.02652	99.69597381	99.3675999	99.04138029	98.7172939	98.39531991	98.07543778	97.75762724	97.44186826
210907A00006	9/7/2021	2.1	9/7/2034	9/7/2021	114.88891	103.3828805	93.15213665	84.04790575	75.93949751	68.71202024	62.2643992	56.50765224	51.36338831
220126A00003	1/26/2022	1.9	12/18/2026	1/26/2022	106.7284	102.690722	98.82830084	95.13260196	91.59555474	88.20952295	84.96727893	81.86197948	78.88714321
220217A00015	2/17/2022	2.28	2/16/2027	2/17/2022	108.71106	104.468236	100.4152938	96.54268303	92.84138949	89.30290256	85.91918377	82.68263769	79.58608478
220721A00017	7/21/2022	3.51	1/22/2024	7/21/2022	102.76263	101.6188154	100.5004923	99.40681412	98.33697212	97.2901924	96.26573431	95.26288862	94.28097591
221006A00095	10/6/2022	4.65	4/8/2024	10/6/2022	105.04976	103.6876121	102.3497146	101.0354706	99.74430569	98.47566367	97.22900567	96.00380963	94.79956963
200413A00026	4/13/2020	0.82	4/13/2023	4/13/2020	99.992277	99.62364633	99.2577361	98.89451621	98.53395699	98.17602922	97.82070407	97.46795316	97.11774851
210127A00009	1/27/2021	1.3	7/27/2029	1/27/2021	105.905	99.39120431	93.31688688	87.65019575	82.36174458	77.42441049	72.81314834	68.50482123	64.47804571
210420A00009	4/20/2021	1.08	12/5/2025	4/20/2021	101.8897	98.94479546	96.09986112	93.35095979	90.69433197	88.12638722	85.64369543	83.24297871	80.92110374
220325A00018	3/28/2022	2.85	9/10/2026	3/28/2022	109.71351	105.8843507	102.2107252	98.68544737	95.30170826	92.05305145	88.93335273	85.93680092	83.05787988
220628A00044	8/15/2022	3.6	8/13/2027	8/15/2022	116.06784	111.1741367	106.5192433	102.0901712	97.87470826	93.86137198	90.03936172	86.39851406	82.92926151
220722A00044	9/1/2022	3.23	9/1/2027	9/1/2022	114.48835	109.5793801	104.9127155	100.4750405	96.25384736	92.23738302	88.41459919	84.77510574	81.30912761
221129A00039	11/29/2022	4.56	11/26/2025	11/29/2022	112.28673	109.2090081	106.2337036	103.3568327	100.574592	97.88334731	95.27962478	92.76010319	90.32160614
210208A00015	2/10/2021	0.46	8/25/2023	2/10/2021	99.47375	98.74661792	98.03005497	97.32383209	96.62772687	95.94152323	95.26501122	94.59798679	93.94025157
210929A00011	3/16/2022	1.03	3/14/2025	3/16/2022	100.76508	98.53345704	96.36173659	94.24792967	92.19012657	90.18649457	88.23527422	86.33477578	84.48337593
220609A00035	8/30/2022	3.11	9/29/2023	8/30/2022	101.56845	100.7394185	99.92391052	99.12159296	98.33214772	97.55526684	96.79065212	96.03801473	95.29707482
220701A00050	7/1/2022	3.26	7/1/2027	7/1/2022	114.08355	109.3535791	104.8501763	100.5612609	96.47545936	92.58206296	88.87098493	85.33272099	81.95831253
220823A00002	8/23/2022	3.38	8/23/2027	8/23/2022	116.24287	111.2832091	106.5676647	102.0828498	97.81618729	93.75585757	89.89074866	86.21040947	82.7050066
200310A00041	3/10/2020	1.39	3/12/2029	3/10/2020	106.50302	100.3185979	94.52997732	89.10983625	84.03287773	79.27566683	74.81648422	70.63519194	66.71311043
200327A00022	3/27/2020	0.9	3/27/2023	3/27/2020	100.04218	99.7198046	99.39950113	99.08125267	98.76503951	98.45084218	98.13864147	97.82841841	97.52015424
200331A00008	3/31/2020	0.64	3/31/2023	3/31/2020	100.00804	99.67416441	99.34250849	99.01305167	98.68577217	98.36064849	98.03765941	97.716784	97.3980016

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210928A00007	9/28/2021	0.88	9/27/2024	9/28/2021	100.03242	98.25365073	96.5147149	94.81448152	93.15186078	91.52580074	89.9352857	88.37933478	86.85700041
221129A00049	11/29/2022	4.56	12/1/2025	11/29/2022	112.35285	109.2602276	106.2709355	103.3809381	100.5863827	97.88358876	95.26903886	92.73937078	90.2913696
221129A00047	11/29/2022	4.56	12/1/2025	11/29/2022	112.35285	109.2602276	106.2709355	103.3809381	100.5863827	97.88358876	95.26903886	92.73937078	90.2913696
200826A00019	8/26/2020	0.98	8/26/2026	8/26/2020	102.57343	98.91869183	95.41239928	92.04768323	88.81803919	85.71730204	82.739626	79.8794659	77.13155974
201015A00032	10/19/2020	2.33	10/19/2026	10/19/2020	108.03289	104.1304028	100.3908446	96.80658497	93.37038666	90.07538673	86.91507511	83.88327465	80.97412242
201215A00001	12/15/2020	0.76	12/15/2025	12/15/2020	100.95059	97.99394873	95.13845591	92.38009644	89.71503858	87.13962442	84.65036087	82.24391119	79.91708707
211206A00009	12/6/2021	1.43	12/5/2025	12/6/2021	102.94734	99.98638923	97.12581408	94.3616624	91.69016182	89.10770951	86.6108635	84.19633453	81.86097831
221102A00012	11/2/2022	4.82	11/3/2025	11/2/2022	112.74521	109.7249957	106.8031949	103.976061	101.2400118	98.59162137	96.0276114	93.5448446	91.14031757
200310A00021	3/10/2020	1.1	3/10/2025	3/10/2020	100.91197	98.68898482	96.52541834	94.41928264	92.36867567	90.37177312	88.42682452	86.53214969	84.68613525
220715A00001	7/15/2022	3.44	7/15/2027	7/15/2022	115.04268	110.2524559	105.6929887	101.351897	97.21752866	93.27891755	89.52573906	85.94826893	82.53734501
220915A00036	9/15/2022	4.23	9/16/2024	9/15/2022	106.06487	104.2595107	102.4937848	100.7665391	99.07666052	97.42307723	95.80475693	94.22070504	92.66996296
220930A00049	9/30/2022	4.55	6/28/2024	9/30/2022	105.78488	104.1972964	102.6415128	101.116643	99.6218307	98.15625094	96.7191087	95.30963747	93.92709797
200310A00062	3/10/2020	1.05	3/8/2024	3/10/2020	100.06727	98.81855156	97.59795825	96.40453834	95.23738504	94.09563184	92.97845021	91.88504761	90.81466548
200311A00050	3/2/2021	1.46	3/2/2026	3/2/2021	103.48086	100.2756059	97.18573929	94.20641992	91.33304425	88.5612313	85.88681023	83.30580873	80.81444206
200331A00024	3/31/2020	0.64	3/31/2023	3/31/2020	100.00804	99.67416441	99.34250849	99.01305167	98.68577217	98.36064849	98.03765941	97.716784	97.3980016
200824A00020	8/26/2020	1.57	8/26/2025	8/26/2020	102.85521	100.1628743	97.5542136	95.02608728	92.57549453	90.1995689	87.89557121	85.66088279	83.49299916
220121A00013	1/21/2022	1.78	11/3/2025	1/21/2022	103.82537	100.9366972	98.14319214	95.44121838	92.82729589	90.29809628	87.85043534	85.4812659	83.18767122
220728A00070	7/28/2022	3.19	1/29/2024	7/28/2022	102.4722	101.3109744	100.1760593	99.0665683	97.98165376	96.92050539	95.88234817	94.86644046	93.87207221
220816A00009	8/16/2022	3.33	8/16/2027	8/16/2022	114.82196	109.9490476	105.3146693	100.9058196	96.71027407	92.71654032	88.91380978	85.29191286	81.84127753
220831A00078	8/31/2022	3.81	8/30/2024	8/31/2022	105.16838	103.4175285	101.7042848	100.0275024	98.38608046	96.77896323	95.20513716	93.66362901	92.15350373
220913A00018	9/13/2022	3.91	9/13/2027	9/13/2022	117.85517	112.8327653	108.0587534	103.5194831	99.20212565	95.09462293	91.18563711	87.4645035	83.92118693
220919A00033	9/19/2022	4	9/17/2027	9/19/2022	118.33005	113.2849868	108.4898097	103.930779	99.59498086	95.47027636	91.54525101	87.80916748	84.25192184
211026A00012	10/26/2021	1.52	10/26/2026	10/26/2021	104.91305	101.0528291	97.35518475	93.81244713	90.41735086	87.16300834	84.04288811	81.05079463	78.18084924
221110A00041	11/10/2022	4.85	5/10/2024	11/10/2022	105.68655	104.2330904	102.8069824	101.4075177	100.0340135	98.68581012	97.36226973	96.06277546	94.78673058
221118A00046	11/18/2022	4.4	11/18/2026	11/18/2022	116.48542	112.3351595	108.3596814	104.5506788	100.9002822	97.40103647	94.04587623	90.82810376	87.74136774
200331A00016	3/31/2020	1.11	3/31/2026	3/31/2020	103.15631	99.86319085	96.69161105	93.63647927	90.69294201	87.85637288	85.12236082	82.48669894	79.94537401
200826A00028	8/28/2020	1.08	8/28/2024	8/28/2020	100.36529	98.66306665	96.99746806	95.36737315	93.77171088	92.20945366	90.67961511	89.18124796	87.71344208
200327A00040	3/27/2020	0.72	3/27/2023	3/27/2020	100.03822	99.71524528	99.39435476	99.0755302	98.75875165	98.44399943	98.13125412	97.82049654	97.51170776
200417A00019	4/17/2020	0.77	4/17/2025	4/17/2020	100.75683	98.42596012	96.16012475	93.95715464	91.81496931	89.73156918	87.70503197	85.73350918	83.81522289
201218A00014	12/18/2020	0.57	12/18/2025	12/18/2020	101.0156	98.03495622	95.15680115	92.37704255	89.6917798	87.09729018	84.59001965	82.1665741	79.82371116
220317A00027	5/3/2022	2.59	5/3/2027	5/3/2022	110.61396	106.1220062	101.8395957	97.75586821	93.86058482	90.14408626	86.59725712	83.21149245	79.97866659
220930A00046	9/30/2022	4.55	8/30/2024	9/30/2022	106.46957	104.7069518	102.9821554	101.2940296	99.64146789	98.02340891	96.43883376	94.88676404	93.36625972
200218A00025	2/21/2020	1.71	2/24/2023	2/21/2020	100.2579	100.0200812	99.78339386	99.5478276	99.31337451	99.08002671	98.84777642	98.61661591	98.38653754

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200312A00009	3/12/2020	1.46	3/12/2027	3/12/2020	105.36896	101.1298825	97.08408283	93.22172995	89.53354768	86.01078002	82.64515894	79.42887435	76.35454611
201221A00014	12/21/2020	0.76	12/19/2025	12/21/2020	100.96174	97.99453691	95.12910536	92.3613935	89.68753569	87.10384223	84.60679023	82.19301505	79.85930213
210225A00003	3/1/2021	0.93	9/24/2025	3/1/2021	101.20238	98.45581263	95.7969727	93.22258743	90.72952669	88.31479433	85.97552163	83.70896106	81.5124805
210302A00005	3/5/2021	0.92	9/10/2025	3/5/2021	101.12392	98.41584419	95.79320523	93.25279909	90.79156013	88.40655791	86.09499013	83.85417612	81.68155062
210826A00013	8/26/2021	1.97	2/28/2033	8/26/2021	112.98667	102.910558	93.82486305	85.62676485	78.22462179	71.5366991	65.4900516	60.01953768	55.06694833
220804A00037	8/4/2022	3.35	8/4/2025	8/4/2022	107.5195	104.8216653	102.2057747	99.66881221	97.20789886	94.82028161	92.50332671	90.25451365	88.07142934
200312A00037	3/12/2020	1.3	3/12/2025	3/12/2020	101.37648	99.14292413	96.96915862	94.85319201	92.79311472	90.78709469	88.83337355	86.93026305	85.07614165
200730A00013	7/30/2020	0.74	1/30/2025	7/30/2020	99.969421	97.86601782	95.81667661	93.81962913	91.87317972	89.97570151	88.12563302	86.32147492	84.56178705
201028A00011	10/28/2020	0.91	4/28/2026	10/28/2020	101.88263	98.55426623	95.35117899	92.26801588	89.29968318	86.44133024	83.68833655	81.03629958	78.48102336
220203A00009	2/3/2022	1.99	2/2/2027	2/3/2022	107.38562	103.2117152	99.22337477	95.41133485	91.76684918	88.28165565	84.94794652	81.75834071	78.70585787
220420A00032	4/20/2022	3.26	10/16/2026	4/20/2022	111.62562	107.6615733	103.8619357	100.219033	96.72559154	93.37471245	90.15985051	87.07479414	84.11364673
220516A00034	5/16/2022	2.72	11/16/2023	5/16/2022	101.40576	100.4500518	99.51233742	98.59211126	97.68888716	96.80219688	95.93158922	95.07662927	94.23689769
220722A00050	9/15/2022	3.25	9/15/2025	9/15/2022	107.66576	104.8520874	102.1268623	99.48678123	96.92868831	94.44956517	92.04652388	89.71680042	87.45774844
200306A00028	3/6/2020	1.01	3/6/2025	3/6/2020	100.69381	98.48369851	96.33242969	94.23802511	92.1985927	90.21231874	88.27746395	86.3923597	84.55540456
200916A00016	9/16/2020	0.6	9/16/2024	9/16/2020	99.51388	97.76927041	96.06317468	94.39446704	92.76206446	91.16492419	89.60204194	88.07245009	86.57521601
220817A00036	10/14/2022	3.41	10/15/2027	10/14/2022	115.73846	110.6777138	105.8721346	101.3075157	96.97051612	92.84860003	88.9299843	85.20358963	81.65899502
221129A00070	11/29/2022	4.28	11/26/2027	11/29/2022	120.44965	115.1568448	110.1351674	105.3692346	100.8446203	96.54778757	92.46602882	88.58741087	84.90072376
200504A00007	5/4/2020	1.47	5/4/2028	5/4/2020	106.7689	101.3898341	96.31296282	91.51980464	86.9930996	82.71672158	78.6755983	74.85563733	71.24365769
220408A00013	4/8/2022	3.15	1/14/2027	4/8/2022	112.06007	107.8413035	103.806997	99.94806559	96.25592664	92.72246619	89.34001051	86.10129965	82.99946269
200316A00048	3/16/2020	1.11	3/16/2023	3/16/2020	100.11255	99.82013228	99.52943518	99.24044006	98.95313192	98.66749594	98.38351748	98.10118207	97.82047539
200430A00030	4/30/2020	0.96	4/30/2025	4/30/2020	100.75936	98.40431007	96.11566074	93.89118166	91.72872611	89.62623179	87.58171702	85.59327704	83.6590806
210730A00009	7/30/2021	0.74	7/31/2024	7/30/2021	99.756786	98.13262655	96.54233748	94.98492335	93.459428	91.96493241	90.50055282	89.06543907	87.65877296
220502A00030	5/4/2022	3.24	6/20/2025	5/4/2022	106.77883	104.2124667	101.7214353	99.30307146	96.95482535	94.67425324	92.45901245	90.30685641	88.21563006
220726A00032	7/26/2022	3.36	7/26/2023	7/26/2022	101.47521	100.8204757	100.1741898	99.53618872	98.90631383	98.28441051	97.67032802	97.06391942	96.46504143
221129A00042	11/29/2022	4.56	11/28/2025	11/29/2022	112.3132	109.2295004	106.2485943	103.3664761	100.5793221	97.88347863	95.27545411	92.7519103	90.30965484
221117A00025	11/17/2022	4.28	11/17/2027	11/17/2022	120.35108	115.0863329	110.0900278	105.3470096	100.8430577	96.5648237	92.49977283	88.63613075	84.96283331
210826A00008	8/26/2021	0.89	2/26/2025	8/26/2021	100.39654	98.21110259	96.08337911	94.01142653	91.99337983	90.02745256	88.11193283	86.24517941	84.42561823
220209A00011	2/9/2022	2.14	1/11/2027	2/9/2022	107.8648	103.7401305	99.7965148	96.02503195	92.41724818	88.96519022	85.6613173	82.49849526	79.4699722
220314A00008	3/14/2022	2.38	7/28/2025	3/14/2022	104.8629	102.2195972	99.65639562	97.1703619	94.75869393	92.41871137	90.14784931	87.94365242	85.8037694
221129A00066	11/29/2022	4.28	11/29/2027	11/29/2022	120.48249	115.1803444	110.1502205	105.3766624	100.8451754	96.54215943	92.4548489	88.57125753	84.88012656
221130A00041	11/30/2022	4.95	12/2/2024	11/30/2022	108.33352	106.297332	104.3104142	102.3712652	100.4784376	98.63053819	96.82622506	95.06420573	93.34323478
221129A00069	11/29/2022	4.28	11/26/2027	11/29/2022	120.44965	115.1568448	110.1351674	105.3692346	100.8446203	96.54778757	92.46602882	88.58741087	84.90072376
200421A00029	4/24/2020	0.72	12/15/2022	4/24/2020	100.02316	99.98156665	99.94002336	99.89853233	99.85709346	99.81570664	99.77437177	99.73308876	99.69185748

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210624A00003	6/24/2021	0.78	6/24/2024	6/24/2021	99.801845	98.27416154	96.7770756	95.30973695	93.87132617	92.46105361	91.078158	89.72190516	88.39158682
210916A00003	9/16/2021	0.75	9/16/2024	9/16/2021	99.784582	98.03746216	96.32890237	94.6577758	93.02299818	91.42352555	89.85835248	88.32651021	86.82706506
220301A00014	3/1/2022	1.85	1/10/2025	3/1/2022	102.28155	100.2050508	98.18081384	96.20717357	94.28252633	92.40533178	90.57410978	88.78743756	87.04394701
221104A00044	11/4/2022	5.11	11/15/2023	11/4/2022	103.70188	102.7370282	101.7902186	100.8609512	99.9487404	99.05311875	98.17363563	97.30985665	96.4613629
200319A00025	3/19/2020	1.39	3/21/2024	3/19/2020	100.55009	99.26608887	98.00731379	96.77304121	95.56257089	94.3752295	93.21036924	92.06736667	90.94562152
210225A00016	3/1/2021	0.88	7/15/2025	3/1/2021	100.82041	98.26526307	95.78713809	93.38324472	91.05091178	88.78758261	86.59080932	84.45824735	82.38765029
211220A00006	12/20/2021	1.21	12/20/2024	12/20/2021	100.85438	98.84811387	96.8915003	94.98299073	93.12109451	91.30437811	89.53146244	87.80102039	86.1117744
221014A00027	10/14/2022	4.63	10/14/2027	10/14/2022	121.68887	116.4873816	111.5460384	106.8504253	102.3869965	98.14302176	94.10653289	90.26627459	86.61165843
221021A00022	10/21/2022	4.84	10/21/2024	10/21/2022	107.58534	105.6712209	103.8010173	101.9734576	100.1873179	98.44141752	96.73461694	95.06581619	93.43395317
200521A00015	5/21/2020	2.14	5/21/2036	5/21/2020	115.65019	102.6668687	91.30279827	81.34602301	72.61336625	64.94639556	58.20797022	52.27928508	47.05733734
220331A00004	3/31/2022	2.66	5/20/2024	3/31/2022	102.55918	101.1033017	99.67533893	98.27455975	96.90025659	95.55174592	94.22836726	92.92948219	91.65447344
200310A00051	3/10/2020	1.41	3/8/2030	3/10/2020	106.7736	99.66016549	93.06554642	86.94929585	81.27432149	76.00658754	71.11484781	66.5704035	62.34688324
200327A00031	3/27/2020	1.18	3/27/2025	3/27/2020	101.15647	98.88661147	96.67847499	94.53004104	92.43936764	90.4045877	88.42390555	86.49559383	84.61799044
200417A00002	4/17/2020	0.96	4/17/2025	4/17/2020	100.71464	98.3945874	96.13906894	93.94594577	91.81315864	89.73872808	87.72075091	85.75739679	83.84690501
200511A00006	5/11/2020	1.65	5/13/2030	5/11/2020	108.60414	101.2598775	94.46199082	88.1670762	82.33538575	76.93050032	71.91903528	67.27037374	62.95642437
220617A00027	6/17/2022	3.45	6/17/2024	6/17/2022	103.94938	102.407115	100.8954527	99.41355029	97.96059713	96.53581154	95.1384396	93.7677539	92.42305238
220701A00049	7/1/2022	3.19	7/1/2025	7/1/2022	106.76061	104.1641097	101.6444634	99.19892485	96.82486901	94.5197813	92.28125235	90.10697276	87.99472828
200413A00011	4/13/2020	0.94	4/12/2024	4/13/2020	99.991741	98.65503371	97.34232214	96.05301716	94.7865481	93.54236236	92.31992471	91.11871661	89.9382356
200415A00026	4/15/2020	0.77	4/14/2023	4/15/2020	99.972025	99.6007179	99.23217168	98.8663552	98.50323816	98.14279067	97.78498329	97.42978701	97.07717326
220315A00014	3/15/2022	2.78	3/15/2032	3/15/2022	119.94905	110.4238376	101.7480377	93.84100721	86.63015802	80.05011713	74.04197538	68.55261796	63.53412735
200327A00061	3/31/2020	1.18	3/31/2025	3/31/2020	101.17103	98.89063577	96.67250587	94.51460733	92.41498866	90.37177249	88.38315237	86.44738968	84.56281067
200415A00038	4/15/2020	1.37	4/15/2027	4/15/2020	105.12805	100.804398	96.68184546	92.7500423	88.99922323	85.42017111	82.00418339	78.74304086	75.6289784
200428A00002	4/28/2020	1.47	4/26/2030	4/28/2020	108.91962	101.5342706	94.69756229	88.36601742	82.49980815	77.06243292	72.02042336	67.34307838	63.00222276
210526A00014	5/26/2021	1.01	12/19/2025	5/26/2021	101.72679	98.74783531	95.87095375	93.09208039	90.40734	87.81303367	85.30562969	82.88175494	80.53818673
200310A00020	3/10/2020	1.1	3/10/2025	3/10/2020	100.91197	98.68898482	96.52541834	94.41928264	92.36867567	90.37177312	88.42682452	86.53214969	84.68613525
220329A00007	3/29/2022	2.94	3/29/2029	3/29/2022	116.32682	109.7945845	103.6774625	97.94688022	92.57637228	87.54141417	82.81927081	78.38885748	74.23061227
220729A00045	7/29/2022	3.03	7/29/2027	7/29/2022	113.25894	108.4715215	103.9168689	99.5823843	95.45622567	91.52725368	87.78498595	84.21955454	80.82166643
200325A00048	3/25/2020	1.34	12/27/2022	3/25/2020	100.08383	100.0089852	99.93425739	99.85964789	99.78515643	99.71078275	99.63652657	99.56238763	99.48836566
200527A00015	5/27/2020	0.99	11/26/2025	5/27/2020	101.58684	98.67016513	95.85187775	93.12812562	90.49523359	87.94969038	85.4881403	83.10737539	80.80432808
210714A00020	7/14/2021	0.9	3/14/2025	7/14/2021	100.46688	98.2387322	96.07041165	93.95993401	91.90539164	89.90495381	87.95686299	86.05943128	84.21103713
220121A00014	1/21/2022	1.78	11/3/2025	1/21/2022	103.82537	100.9366972	98.14319214	95.44121838	92.82729589	90.29809628	87.85043534	85.4812659	83.18767122
221027A00004	10/27/2022	4.76	10/28/2024	10/27/2022	107.51552	105.5834897	103.6961759	101.8522747	100.0505295	98.28972835	96.5687019	94.88632181	93.24149893
200327A00066	6/25/2020	0.93	6/26/2023	6/25/2020	99.92712	99.35846364	98.79625293	98.24037924	97.69073596	97.14721885	96.60972599	96.0781577	95.55241649

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
211123A00011	11/23/2021	1.69	11/23/2026	11/23/2021	105.73582	101.7846243	98.00276716	94.38211134	90.91495779	87.59401555	84.41237798	81.36350038	78.44117914
220915A00035	9/15/2022	4.2	3/17/2025	9/15/2022	108.0722	105.74743	103.4847535	101.28212	99.13756194	97.04919046	95.01519126	93.03382118	91.10340487
221129A00085	11/29/2022	4.38	11/30/2026	11/29/2022	116.56258	112.3768259	108.3687347	104.5297925	100.8519402	97.32754609	93.94938131	90.71059592	87.6046972
200302A00003	3/2/2020	1.2	3/2/2023	3/2/2020	100.13834	99.88424915	99.63144049	99.37990877	99.12964434	98.88063767	98.63287932	98.38635992	98.14107024
210104A00012	12/20/2021	0.89	12/18/2026	12/20/2021	102.6282	98.67320387	94.8908608	91.27273838	87.81086464	84.49769743	81.32609881	78.28931111	75.38093462
210305A00005	3/9/2021	0.54	8/11/2023	3/9/2021	99.572175	98.88184878	98.20104845	97.52957829	96.86724752	96.21387054	95.56926672	94.93326029	94.30568012
220217A00020	2/17/2022	2.08	2/13/2025	2/17/2022	102.98281	100.8055845	98.68494472	96.61900695	94.60597094	92.64411089	90.73177169	88.86736536	87.04936773
220331A00003	3/31/2022	2.66	5/17/2024	3/31/2022	102.54354	101.0956025	99.67528178	98.28186051	96.91464194	95.57295291	94.25614284	92.96358277	91.69466446
221031A00033	10/31/2022	4.74	10/31/2025	10/31/2022	112.46929	109.461555	106.5515901	103.7356872	101.0102964	98.37202189	95.81761408	93.34396263	90.94808962
201030A00017	10/30/2020	1.14	10/15/2027	10/30/2020	104.64467	99.85153353	95.3037585	90.9875866	86.8900965	82.99915022	79.3033419	75.79195003	72.45489314
200304A00012	3/4/2020	0.98	3/4/2025	3/4/2020	101.09073	98.87169912	96.71176952	94.60894823	92.5613261	90.56707382	88.62443781	86.7317364	84.88735615
200402A00036	4/2/2020	0.71	4/2/2024	4/2/2020	99.938462	98.62460204	97.33396225	96.06598139	94.82011567	93.59583823	92.39263856	91.2100218	90.04750818
210616A00009	2/11/2022	0.86	2/11/2025	2/11/2022	100.27366	98.13269072	96.04741147	94.01597481	92.03661045	90.10762119	88.22737922	86.39432262	84.60695211
210624A00004	6/24/2021	1.01	6/24/2025	6/24/2021	101.08218	98.57878619	96.14960623	93.79199998	91.50343975	89.28150371	87.12387071	85.02831537	82.99270347
220301A00013	3/1/2022	2.01	2/16/2027	3/1/2022	107.57039	103.3514697	99.32165421	95.47142444	91.79179645	88.27428835	84.91088911	81.6940294	78.61655455
220325A00017	3/28/2022	2.86	3/23/2027	3/28/2022	111.4677	107.0692616	102.8709578	98.86263103	95.03469544	91.37809884	87.8842902	84.54518929	81.35315818
220613A00030	6/13/2022	3.08	6/13/2023	6/13/2022	101.10953	100.5721802	100.0405406	99.51452509	98.99404465	98.47901211	97.96934209	97.46495103	96.96575707
200302A00060	3/2/2021	1.44	3/3/2025	3/2/2021	101.6577	99.44426739	97.28951622	95.19146763	93.14822927	91.1579879	89.2190054	87.32961491	85.48821725
201015A00025	10/19/2020	1.54	10/18/2027	10/19/2020	106.60966	101.761354	97.16092479	92.79446655	88.64892438	84.71203549	80.97227721	77.41881873	74.0414762
210330A00024	3/30/2021	0.68	3/29/2024	3/30/2021	99.630509	98.33323466	97.05928104	95.80806314	94.57901518	93.37158991	92.18525782	91.01950646	89.87383971
210917A00012	9/17/2021	1.2	9/11/2026	9/17/2021	103.4688	99.75473311	96.19289788	92.77623163	89.49804296	86.35198766	83.3320485	80.43251636	77.64797255
220422A00014	4/22/2022	3.36	9/29/2026	4/22/2022	111.84339	107.9209821	104.1594448	100.551353	97.08965892	93.76767468	90.57905172	87.51776198	84.57808012
200330A00007	3/30/2020	0.93	4/1/2024	3/30/2020	99.970244	98.66301286	97.37878282	96.11700002	94.8771279	93.65864654	92.46105199	91.28385568	90.12658388
211214A00015	12/14/2021	1.49	12/12/2025	12/14/2021	103.16216	100.1795571	97.29849179	94.51494972	91.82509701	89.22527315	86.71198204	84.28188356	81.9317857
220324A00007	3/24/2022	2.72	3/24/2025	3/24/2022	104.72014	102.4160843	100.1742338	97.99255245	95.86907996	93.80193242	91.78929871	89.82943726	87.92067281
210121A00014	1/22/2021	0.64	10/25/2024	1/22/2021	99.605851	97.75921075	95.95546473	94.19336638	92.47171311	90.78934478	89.14514189	87.53802396	85.9669478
211206A00017	12/6/2021	1.56	12/4/2026	12/6/2021	105.27502	101.3036185	97.50367657	93.86690094	90.38544321	87.05187416	83.85915905	80.80063453	77.86998699
220808A00025	8/8/2022	3.25	8/6/2027	8/8/2022	114.35698	109.5223022	104.9232661	100.5470849	96.38173413	92.4159056	88.63896053	85.04088605	81.61225474
200316A00071	3/16/2020	1.18	3/16/2023	3/16/2020	100.13313	99.84068091	99.54994471	99.26091066	98.97356376	98.6878892	98.40387232	98.12149866	97.8407539
210907A00007	9/7/2021	2.35	9/4/2037	9/7/2021	118.63158	104.4021387	92.08589499	81.41277115	72.15218572	64.10710043	57.10898804	51.0135768	45.69724832
200414A00015	4/14/2020	0.64	4/14/2023	4/14/2020	99.986112	99.61406046	99.24478386	98.87825094	98.51443107	98.15329408	97.79481026	97.43895032	97.0856854
210122A00005	1/26/2021	0.6	7/15/2024	1/26/2021	99.521583	97.94102568	96.39285603	94.87614411	93.38999537	91.93354905	90.50597654	89.10647991	87.73429042
220124A00007	1/24/2022	1.88	1/22/2027	1/24/2022	106.85775	102.7245308	98.7740819	94.99733506	91.38572229	87.93114674	84.62595397	81.46290512	78.4351519

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220125A00008	1/25/2022	1.31	1/26/2024	1/25/2022	100.25505	99.11563098	98.00194776	96.91313656	95.84837196	94.80686475	93.78785985	92.79063459	91.81449692
220506A00016	5/6/2022	3.35	5/6/2027	5/6/2022	114.0117	109.4370329	105.0751687	100.9150906	96.9464053	93.15930789	89.54454595	86.0933854	82.79757882
220920A00024	9/20/2022	4.25	9/19/2025	9/20/2022	110.51654	107.6514978	104.8765275	102.1882766	99.58354056	97.05925344	94.61248054	92.24041208	89.940357
221110A00023	11/10/2022	4.71	11/8/2024	11/10/2022	107.55304	105.590666	103.6743723	101.8027981	99.97462991	98.18860165	96.44349252	94.73812513	93.07136361
200331A00014	3/31/2020	0.72	3/29/2024	3/31/2020	99.945832	98.64220968	97.36207997	96.10485178	94.86995392	93.65683393	92.4649574	91.29380716	90.14288259
200218A00030	2/21/2020	1.71	2/24/2023	2/21/2020	100.2579	100.0200812	99.78339386	99.5478276	99.31337451	99.08002671	98.84777642	98.61661591	98.38653754
200225A00023	2/25/2020	1.62	2/25/2025	2/25/2020	102.03334	99.83208151	97.68879202	95.60152151	93.56840032	91.58763745	89.65751648	87.77639175	85.94268475
200305A00045	3/5/2020	0.99	3/6/2023	3/5/2020	100.08259	99.81762422	99.55406606	99.29190307	99.03112418	98.7717184	98.51367487	98.25698286	98.00163173
200310A00028	3/10/2020	1.1	3/10/2025	3/10/2020	100.91197	98.68898482	96.52541834	94.41928264	92.36867567	90.37177312	88.42682452	86.53214969	84.68613525
210218A00010	2/18/2021	1.72	2/18/2031	2/18/2021	109.60242	101.5108582	94.07536792	87.23934499	80.95134967	75.16460684	69.83656044	64.92847259	60.40506283
211015A00031	10/15/2021	1.22	10/15/2025	10/15/2021	102.10701	99.29284666	96.57010905	93.93535236	91.38528233	88.91674581	86.52672398	84.21232582	81.97078204
220817A00038	10/14/2022	3.41	10/15/2027	10/14/2022	115.73846	110.6777138	105.8721346	101.3075157	96.97051612	92.84860003	88.9299843	85.20358963	81.65899502
200304A00033	3/4/2020	1.17	3/4/2025	3/4/2020	101.05009	98.84105925	96.69068706	94.59700498	92.55812268	90.57222865	88.63758616	86.75252951	84.91546043
220126A00002	1/26/2022	1.9	12/18/2026	1/26/2022	106.7284	102.690722	98.82830084	95.13260196	91.59555474	88.20952295	84.96727893	81.86197948	78.88714321
220331A00012	3/31/2022	2.81	3/17/2025	3/31/2022	104.87238	102.5850021	100.3589314	98.19214153	96.08268751	94.02870187	92.02839102	90.0800317	88.18196776
220511A00015	5/11/2022	3.29	5/11/2027	5/11/2022	113.79092	109.2075934	104.8381509	100.6714832	96.69711426	92.90516305	89.28630697	85.8317473	82.53317706
221129A00038	11/29/2022	4.56	11/26/2025	11/29/2022	112.28673	109.2090081	106.2337036	103.3568327	100.574592	97.88334731	95.27962478	92.76010319	90.32160614
221107A00010	11/7/2022	5.12	11/7/2024	11/7/2022	108.33889	106.3714367	104.450087	102.5734813	100.7403075	98.94930054	97.19924083	95.48895188	93.81729874
200403A00017	4/3/2020	0.81	4/3/2023	4/3/2020	100.00416	99.66274744	99.32365649	98.98686703	98.65235571	98.32009948	97.99007562	97.6622617	97.3366356
210226A00004	3/1/2021	1.04	12/5/2025	3/1/2021	101.76883	98.82575617	95.98260936	93.23545092	90.58052285	88.0142361	85.53316193	83.13402376	80.8136895
221118A00018	11/18/2022	4.55	11/18/2025	11/18/2022	112.1511	109.0977336	106.1452771	103.289832	100.5276759	97.85525123	95.26915599	92.76613661	90.34308034
200316A00049	3/16/2020	1.25	3/14/2025	3/16/2020	101.26972	99.03222215	96.85474803	94.73530695	92.67198569	90.66294817	88.7064317	86.80074341	84.94425698
210121A00012	1/22/2021	0.64	10/15/2024	1/22/2021	99.600997	97.77995401	96.00067554	94.26196263	92.56265875	90.90164763	89.27785161	87.69023002	86.13777768
220222A00018	2/22/2022	2.5	12/19/2031	2/22/2022	117.06961	107.8978017	99.52838633	91.8866726	84.90528557	78.523419	72.6861642	67.34391056	62.4518097
220224A00023	2/24/2022	2.15	3/16/2026	2/24/2022	105.82397	102.543529	99.38203882	96.33452537	93.3962554	90.56272042	87.82962453	85.19287303	82.64856175
220225A00015	2/25/2022	2.26	2/25/2027	2/25/2022	108.69772	104.4285926	100.3515564	96.45690014	92.735458	89.17857922	85.77809582	82.52629261	79.41587927
220428A00019	4/28/2022	3.27	4/28/2027	4/28/2022	113.58267	109.039199	104.7062275	100.5729038	96.6289889	92.86482124	89.27128097	85.83975684	82.56211532
220812A00001	8/12/2022	3.17	8/12/2027	8/12/2022	115.14091	110.2377312	105.5749294	101.1393843	96.91876474	92.9014784	89.07662337	85.43394279	81.96378295
200225A00029	2/25/2020	1.89	12/28/2029	2/25/2020	110.09912	103.0527913	96.50573391	90.41999925	84.76070852	79.49579005	74.59573984	70.03340364	65.78377851
200407A00019	4/7/2020	1.06	4/8/2024	4/7/2020	100.15251	98.82531656	97.5217753	96.24130984	94.98336149	93.74738912	92.53286847	91.33929152	90.16616586
200629A00020	6/29/2020	1.4	6/28/2030	6/29/2020	106.78285	99.38893489	92.55481608	86.23531417	80.38911357	74.97841238	69.96860688	65.32800594	61.02757225
200108A00016	12/18/2020	1.98	12/18/2023	12/18/2020	100.80553	99.76769622	98.75116341	97.75527629	96.77941068	95.82296731	94.88537064	93.96606768	93.06452689
200312A00015	3/12/2020	1.23	3/10/2025	3/12/2020	101.20874	98.9823206	96.81538579	94.70595151	92.65211368	90.65204601	88.70399616	86.80628213	84.95728877

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200916A00015	9/16/2020	0.72	9/16/2025	9/16/2020	100.5849	97.86841126	95.23814403	92.69087203	90.22350828	87.8331002	85.51682284	83.27197246	81.09596049
220617A00026	6/17/2022	3.36	12/18/2023	6/17/2022	102.26429	101.2182344	100.1935896	99.18970551	98.20595523	97.24173686	96.29647231	95.36960611	94.46060436
220826A00015	8/26/2022	3.64	8/25/2023	8/26/2022	101.8316	101.0948136	100.3686928	99.65300944	98.94753956	98.25206545	97.56637557	96.89026431	96.22353181
221118A00045	11/18/2022	4.57	11/18/2025	11/18/2022	112.2106	109.1563492	106.2030255	103.3467344	100.5837532	97.91052343	95.32364248	92.81985615	90.39605111
210721A00009	7/21/2021	1.7	7/21/2031	7/21/2021	109.67425	101.1976867	93.43977134	86.33584981	79.82739524	73.8613987	68.38982293	63.3691129	58.75975668
220106A00009	1/6/2022	2.57	1/4/2036	1/6/2022	121.10021	108.0916848	96.65345027	86.58573539	77.71519428	69.89129262	62.98320113	56.87712568	51.47401065
220630A00057	6/30/2022	3.34	6/30/2025	6/30/2022	107.13929	104.5405292	102.0185858	99.57072596	97.1943284	94.88688199	92.64598053	90.46931755	88.35468147
200316A00050	3/16/2020	1.54	3/16/2027	3/16/2020	105.73101	101.4737594	97.41095701	93.53271103	89.82968488	86.29306459	82.91452655	79.6862075	76.60067645
200324A00012	3/25/2020	1.78	3/25/2025	3/25/2020	102.54353	100.2624965	98.04326489	95.88380879	93.78218109	91.7365102	89.74499665	87.80590983	85.91758489
200417A00014	4/17/2020	0.96	4/17/2025	4/17/2020	100.71464	98.3945874	96.13906894	93.94594577	91.81315864	89.73872808	87.72075091	85.75739679	83.84690501
200504A00006	5/4/2020	0.94	5/5/2025	5/4/2020	100.7268	98.35931175	96.05894	93.82341119	91.65054418	89.53824411	87.48449849	85.48737344	83.54501009
210907A00014	9/9/2021	2.45	9/9/2026	9/9/2021	108.19061	104.3929251	100.7496995	97.25379352	93.89843913	90.67721937	87.58404785	84.61314965	81.75904341
220527A00011	5/27/2022	2.75	5/24/2024	5/27/2022	102.71415	101.2466466	99.807478	98.39589109	97.01116325	95.65259657	94.31951683	93.01127248	91.72723371
210826A00009	8/26/2021	1.18	8/26/2026	8/26/2021	103.32266	99.65394638	96.13408553	92.75619918	89.51376791	86.40061236	83.41087314	80.53899208	77.77969474
210920A00015	9/9/2022	1.28	9/9/2026	9/9/2022	103.76257	100.0483383	96.48608049	93.06874885	89.78966562	86.64250002	83.62124797	80.72021323	77.9339896
200225A00035	10/5/2020	1.5	10/5/2023	10/5/2020	100.21678	99.37808072	98.55336219	97.74227353	96.9444791	96.15965421	95.38748466	94.62766633	93.87990477
200324A00066	3/26/2020	1.81	3/26/2025	3/26/2020	102.61861	100.3340814	98.11150845	95.94886089	93.84418871	91.79561729	89.80134399	87.85963493	85.96882196
200330A00017	3/30/2020	0.86	3/30/2023	3/30/2020	100.02652	99.69597381	99.3675999	99.04138029	98.7172939	98.39531991	98.07543778	97.75762724	97.44186826
200826A00029	8/28/2020	1.16	11/27/2024	8/28/2020	100.68231	98.73803343	96.84091118	94.98950686	93.18244057	91.41838355	89.69605588	88.01422433	86.37170032
210104A00010	11/22/2021	0.88	11/20/2026	11/22/2021	102.49293	98.61400622	94.90174514	91.34813749	87.94560444	84.68696854	81.56543035	78.5745465	75.70820914
211026A00013	10/26/2021	1.52	10/26/2026	10/26/2021	104.91305	101.0528291	97.35518475	93.81244713	90.41735086	87.16300834	84.04288811	81.05079463	78.18084924
221129A00077	11/29/2022	4.38	12/1/2026	11/29/2022	116.57556	112.3867528	108.3758291	104.5342595	100.8539712	97.32731944	93.94706328	90.70634159	87.59865122
200318A00038	3/18/2020	1.48	3/18/2025	3/18/2020	101.81514	99.56088983	97.36732654	95.23244645	93.15432366	91.13110882	89.16102555	87.24236695	85.37349239
211129A00011	11/29/2021	1.53	11/20/2026	11/29/2021	105.08161	101.151444	97.38952553	93.78778849	90.33859452	87.03470943	83.8692796	80.83580999	77.9281434
220106A00013	1/6/2022	2.75	1/6/2039	1/6/2022	124.59429	108.8711982	95.40773935	83.86203339	73.94577097	65.41556966	58.06576364	51.72238163	46.23811221
220323A00017	6/2/2022	2.78	6/2/2025	6/2/2022	105.44024	102.9408072	100.5138677	98.1568971	95.86747737	93.64328924	91.48210743	89.38179623	87.34030531
221129A00065	11/29/2022	4.28	11/30/2027	11/29/2022	120.49341	115.1881569	110.155223	105.379126	100.8453484	96.54026927	92.45110395	88.56584854	84.87322815
200226A00004	2/26/2020	1.58	2/26/2025	2/26/2020	101.94911	99.74591716	97.60081263	95.51183617	93.47711233	91.49484466	89.56331162	87.68086271	85.84591491
200304A00018	3/4/2020	0.98	3/4/2025	3/4/2020	101.09073	98.87169912	96.71176952	94.60894823	92.5613261	90.56707382	88.62443781	86.7317364	84.88735615
200327A00041	3/27/2020	0.9	3/27/2023	3/27/2020	100.04218	99.7198046	99.39950113	99.08125267	98.76503951	98.45084218	98.13864147	97.82841841	97.52015424
200928A00009	9/28/2020	1.51	9/28/2032	9/28/2020	108.31249	98.83478901	90.26058547	82.49914025	75.46924534	69.09817826	63.32077808	58.07862619	53.31931918
220315A00015	3/15/2022	3.18	3/13/2037	3/15/2022	130.03238	115.4222138	102.6926014	91.58751503	81.88717346	73.40273918	65.97181499	59.45461573	53.73071124
220819A00034	8/19/2022	3.73	8/19/2032	8/19/2022	129.68462	119.3028167	109.8726735	101.3009042	93.5038559	86.40646992	79.94135639	74.0479732	68.67189664

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
221129A00078	11/29/2022	4.38	12/1/2026	11/29/2022	116.57556	112.3867528	108.3758291	104.5342595	100.8539712	97.32731944	93.94706328	90.70634159	87.59865122
200320A00049	3/25/2020	1.47	3/25/2025	3/25/2020	101.82312	99.550582	97.3396646	95.18834861	93.094692	91.05682811	89.07296222	87.14136828	85.26038584
200424A00014	4/28/2020	1.01	4/23/2025	4/28/2020	100.85545	98.51777115	96.24552609	94.03652376	91.88866385	89.799928	87.76837614	85.79214296	83.86943456
200826A00021	8/26/2020	0.83	8/26/2025	8/26/2020	100.82377	98.15953139	95.57831083	93.07698416	90.65257075	88.30222359	86.02322212	83.81296558	81.66896674
201019A00005	10/19/2020	0.79	10/20/2025	10/19/2020	100.88149	98.07230284	95.35491053	92.72584198	90.18177381	87.71952569	85.33605339	83.02844222	80.79390076
210304A00002	3/5/2021	0.93	7/10/2025	3/5/2021	100.93441	98.39075043	95.92345964	93.52977738	91.20706678	88.95280339	86.7645696	84.64004925	82.57702269
210610A00012	6/11/2021	1.9	6/10/2026	6/11/2021	105.52998	102.0255694	98.65646774	95.41672765	92.30069468	89.30299306	86.41851039	83.64238319	80.96998332
211210A00016	12/10/2021	1.76	12/10/2027	12/10/2021	107.89605	102.8758252	98.11879512	93.60980877	89.33466401	85.28004419	81.43345836	77.78318579	74.31822458
220314A00007	3/14/2022	2.44	3/12/2027	3/14/2022	109.57392	105.2453933	101.113091	97.16705932	93.39790652	89.7967665	86.35526644	83.06549646	79.91998136
221129A00068	11/29/2022	4.28	11/29/2027	11/29/2022	120.48249	115.1803444	110.1502205	105.3766624	100.8451754	96.54215943	92.4548489	88.57125753	84.88012656
200316A00009	3/16/2020	1.25	3/14/2025	3/16/2020	101.26972	99.03222215	96.85474803	94.73530695	92.67198569	90.66294817	88.7064317	86.80074341	84.94425698
210218A00009	2/19/2021	0.62	7/15/2024	2/19/2021	99.554234	97.97340066	96.42496038	94.9079826	93.42157265	91.96486964	90.53704484	89.13730019	87.76486685
210225A00015	3/1/2021	0.7	8/26/2024	3/1/2021	99.698509	98.00748156	96.3527719	94.73327502	93.14793102	91.59572289	90.07567431	88.58684755	87.12834158
220715A00047	7/15/2022	3.44	7/15/2027	7/15/2022	115.04268	110.2524559	105.6929887	101.351897	97.21752866	93.27891755	89.52573906	85.94826893	82.53734501
221129A00052	11/29/2022	4.56	12/2/2025	11/29/2022	112.36605	109.270474	106.2783924	103.3857605	100.5887169	97.88357274	95.266803	92.73503826	90.28505681
200402A00048	4/2/2020	0.71	4/2/2024	4/2/2020	99.938462	98.62460204	97.33396225	96.06598139	94.82011567	93.59583823	92.39263856	91.2100218	90.04750818
201216A00013	12/16/2020	0.59	12/16/2025	12/16/2020	101.07115	98.09489258	95.22083309	92.44489684	89.7631996	87.17203401	84.66786042	82.24729817	79.90711751
220427A00011	4/29/2022	3.15	4/29/2027	4/29/2022	113.06147	108.5266353	104.2021683	100.0772116	96.14152402	92.3854423	88.79984544	85.37612149	82.10613662
220519A00010	5/19/2022	3.15	11/19/2026	5/19/2022	111.52373	107.4688001	103.585841	99.86665078	96.30345833	92.88890249	89.61600819	86.47816407	83.46910165
220714A00035	7/14/2022	3.62	7/15/2024	7/14/2022	104.45181	102.8296479	101.2406134	99.6837573	98.15816549	96.66295829	95.19728893	93.76034194	92.35133169
220908A00029	9/8/2022	3.88	3/8/2024	9/8/2022	103.68723	102.41417	101.1696456	99.95269412	98.76239786	97.59787964	96.4583007	95.34285868	94.25078555
200327A00056	3/27/2020	1.18	3/27/2025	3/27/2020	101.15647	98.88661147	96.67847499	94.53004104	92.43936764	90.4045877	88.42390555	86.49559383	84.61799044
200330A00036	3/30/2020	0.86	3/30/2023	3/30/2020	100.02652	99.69597381	99.3675999	99.04138029	98.7172939	98.39531991	98.07543778	97.75762724	97.44186826
210526A00017	5/26/2021	2.13	5/26/2033	5/26/2021	114.71821	104.3472721	95.01444385	86.60997144	79.03623232	72.20633961	66.04291296	60.47699547	55.44709885
210610A00014	6/11/2021	2.03	6/10/2026	6/11/2021	105.98949	102.4769712	99.09999079	95.85259295	92.72911521	89.72417419	86.83265019	84.04967272	81.37060696
211210A00014	12/10/2021	1.54	12/10/2025	12/10/2021	103.30436	100.3248465	97.44661428	94.66566606	91.97818308	89.38051894	86.86919077	84.44087081	82.09237859
220411A00002	4/11/2022	3.18	4/9/2027	4/11/2022	113.00792	108.5297873	104.256999	100.1790785	96.28613648	92.56883515	89.01835466	85.62636183	82.38498081
200306A00040	3/6/2020	1.01	3/6/2025	3/6/2020	100.69381	98.48369851	96.33242969	94.23802511	92.1985927	90.21231874	88.27746395	86.3923597	84.55540456
200325A00042	3/25/2020	1.58	3/25/2024	3/25/2020	100.81673	99.5210209	98.24966922	97.00201888	95.77743425	94.57530249	93.39503249	92.23605391	91.09781626
220921A00014	9/21/2022	4.08	9/21/2027	9/21/2022	118.75871	113.6920365	108.8767168	104.2989152	99.94563379	95.80465417	91.86448621	88.11432097	84.54398677
200305A00038	3/5/2020	1.51	3/5/2029	3/5/2020	107.25713	101.0672028	95.27191025	89.84407557	84.7585319	79.99196384	75.5227616	71.33088737	67.3977529
201015A00030	10/19/2020	2.39	10/18/2027	10/19/2020	110.77074	105.8218948	101.1246155	96.66482734	92.42931737	88.40567294	84.58222932	80.94802094	77.4927361
210119A00007	1/20/2021	0.51	8/25/2023	1/20/2021	99.510823	98.78353923	98.06682601	97.36045438	96.66420191	95.97785251	95.3011962	94.63402889	93.9761522

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210629A00005	6/29/2021	1.25	6/29/2026	6/29/2021	103.32442	99.8074587	96.42825822	93.18067828	90.05888973	87.05735494	84.17081145	81.39425663	78.72293331
210803A00005	8/5/2021	2.06	8/4/2026	8/5/2021	106.47177	102.8027367	99.27996609	95.89680831	92.64695249	89.52441139	86.52350268	83.63883141	80.86527365
200518A00019	5/19/2020	0.9	5/19/2025	5/19/2020	100.67229	98.26957641	95.93598849	93.66915113	91.46678501	89.32670247	87.24680324	85.22507042	83.25956656
220204A00005	2/4/2022	1.83	1/10/2025	2/4/2022	102.23912	100.1630765	98.13928904	96.16608932	94.24187397	92.36510287	90.53429612	88.74803119	87.00494019
220920A00025	9/20/2022	4.23	9/18/2026	9/20/2022	115.04275	111.0903795	107.2982932	103.6591122	100.1658362	96.81182486	93.59077675	90.49671038	87.52394601
220622A00006	6/22/2022	3.58	6/22/2027	6/22/2022	115.51048	110.7721039	106.2593213	101.9601612	97.86335362	93.95828412	90.2349515	86.68392926	83.29632944
220920A00015	9/20/2022	4.33	10/21/2024	9/20/2022	106.61616	104.7114841	102.8505384	101.0320629	99.25483854	97.51768926	95.81948003	94.1591152	92.53553681
200327A00051	3/27/2020	0.99	3/27/2025	3/27/2020	101.19845	98.91816161	96.70006342	94.54211282	92.44234807	90.39888324	88.40990485	86.47366858	84.58849621
200330A00011	3/30/2020	0.93	4/1/2024	3/30/2020	99.970244	98.66301286	97.37878282	96.11700002	94.8771279	93.65864654	92.46105199	91.28385568	90.12658388
210407A00012	4/7/2021	0.94	4/7/2025	4/7/2021	100.63305	98.34048729	96.11102673	93.94259852	91.83320969	89.78094367	87.78395685	85.84047539	83.94879221
220404A00014	4/4/2022	2.94	4/5/2027	4/4/2022	111.92503	107.4813923	103.2413324	99.19447791	95.33103971	91.64177343	88.11794647	84.75130714	81.5340558
220824A00011	8/24/2022	3.7	8/22/2025	8/24/2022	108.65825	105.8964197	103.2195553	100.6244889	98.10819291	95.66777469	93.30046913	91.0036321	88.7747341
220929A00063	9/29/2022	4.38	9/29/2027	9/29/2022	120.29932	115.1729953	110.3015518	105.6709506	101.2679996	97.08029544	93.09617303	89.30465747	85.69542006
220912A00046	11/15/2022	3.85	11/14/2025	11/15/2022	110.02326	107.0127587	104.1016492	101.2861065	98.56247279	95.92725122	93.37709778	90.90881369	88.51933827
200318A00044	3/18/2020	1.17	3/18/2024	3/18/2020	100.50834	99.22798061	97.97367323	96.74462719	95.54008823	94.35933231	93.20166415	92.06641575	90.95294504
200331A00011	3/31/2020	1.09	3/31/2025	3/31/2020	100.9604	98.68250871	96.46682547	94.31132217	92.21404881	90.1731295	88.18675918	86.25320058	84.37078124
200408A00013	4/13/2020	0.87	4/14/2023	4/13/2020	100.00947	99.63807278	99.26944083	98.90353911	98.54033729	98.17980547	97.82191423	97.46663454	97.11393783
200421A00028	4/21/2020	0.56	4/21/2023	4/21/2020	99.94364	99.552596	99.16461374	98.77965728	98.39769122	98.01868073	97.64259152	97.26938981	96.89904236
201216A00003	12/16/2020	0.59	7/1/2024	12/16/2020	99.505192	97.96117396	96.44830368	94.96570589	93.51253777	92.08798751	90.69127284	89.3216397	87.97836098
210310A00015	3/11/2021	0.51	5/15/2023	3/11/2021	99.798022	99.34301669	98.89215538	98.44538156	98.00263972	97.56387537	97.12903502	96.6980661	96.270917
210315A00003	3/15/2021	1.13	3/13/2026	3/15/2021	102.44765	99.23072408	96.13071069	93.14271026	90.26206015	87.48432018	84.80526051	82.22085028	79.72724697
210907A00008	9/7/2021	2.42	9/7/2038	9/7/2021	119.62333	104.5264651	91.57551412	80.45028823	70.8800328	62.63556895	55.52271995	49.37680502	44.05802269
221108A00041	11/8/2022	5.15	4/8/2024	11/8/2022	105.73182	104.3648121	103.0221295	101.703181	100.4073898	99.13419773	97.88306377	96.65346396	95.44489049
221129A00086	11/29/2022	4.38	11/30/2026	11/29/2022	116.56258	112.3768259	108.3687347	104.5297925	100.8519402	97.32754609	93.94938131	90.71059592	87.6046972
221031A00042	10/31/2022	4.73	10/30/2026	10/31/2022	117.53166	113.4147783	109.4688738	105.6859283	102.0583408	98.57890521	95.24078703	92.03750269	88.96289951
200327A00048	3/27/2020	1.18	3/24/2025	3/27/2020	101.14555	98.8835905	96.68294968	94.54161553	92.45765317	90.42920307	88.45447759	86.53175773	84.65939004
200402A00035	4/2/2020	0.62	4/3/2023	4/2/2020	99.996459	99.65441174	99.31470227	98.97730621	98.64219997	98.30936025	97.97876411	97.65038888	97.32421222
200403A00025	4/3/2020	0.91	4/3/2024	4/3/2020	99.944643	98.63226026	97.34305427	96.07646534	94.83195087	93.60898515	92.40705871	91.22567766	90.0643632
210707A00008	7/9/2021	2.44	7/7/2031	7/9/2021	115.98875	107.2833388	99.30660787	91.99354576	85.28526237	79.12838291	73.47450521	68.2797129	63.50413858
220131A00003	1/31/2022	1.98	2/1/2027	1/31/2022	107.33662	103.166676	99.18201722	95.37340249	91.73210329	88.24987394	84.91892197	81.73188041	78.68178207
221114A00019	11/14/2022	4.94	11/14/2023	11/14/2022	103.52697	102.5657087	101.6223848	100.6964952	99.78755869	98.89511177	98.01870767	97.15791567	96.31232036
221129A00055	11/29/2022	4.56	12/3/2025	11/29/2022	112.37925	109.2807204	106.2858496	103.3905836	100.5910522	97.88355836	95.26456948	92.73070886	90.278748
221129A00041	11/29/2022	4.56	11/28/2025	11/29/2022	112.3132	109.2295004	106.2485943	103.3664761	100.5793221	97.88347863	95.27545411	92.7519103	90.30965484

	Parallel-Shift Sensitivity Analysis												
11/30/2022					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	109.32043	102.3010257	95.77954233	89.71810929	84.08192355	78.83898418	73.95985316	69.41743785	65.18679288
211028A00021	10/28/2021	2.28	10/28/2033	10/28/2021	116.52893	105.6883562	95.96862179	87.24737066	79.41619686	72.37898859	66.05047868	60.35497235	55.22522967
220512A00013	5/12/2022	3.18	5/12/2027	5/12/2022	113.30961	108.7342061	104.3725751	100.213603	96.24681008	92.46231273	88.8507862	85.40343013	82.11193643
221110A00074	11/10/2022	4.75	11/12/2024	11/10/2022	107.6808	105.7061493	103.7781152	101.8953106	100.0563997	98.26009546	96.50515692	94.79038762	93.1146335
201030A00012	10/30/2020	0.63	10/30/2025	10/30/2020	101.05063	98.19921536	95.44204739	92.77551626	90.19617329	87.70072009	85.28600108	82.94899651	80.68681583
211214A00012	12/14/2021	0.64	12/14/2022	12/14/2021	100.01851	99.97968671	99.94091377	99.90218853	99.8635109	99.82488079	99.78629811	99.74776275	99.70927464
220315A00036	3/17/2022	2.63	3/16/2027	3/17/2022	110.41996	106.0627171	101.9032227	97.93144786	94.13792616	90.51372015	87.05038867	83.73995651	80.57488604
220715A00027	7/15/2022	3.44	7/15/2027	7/15/2022	115.04268	110.2524559	105.6929887	101.351897	97.21752866	93.27891755	89.52573906	85.94826893	82.53734501
221014A00031	10/14/2022	4.89	4/12/2024	10/14/2022	105.42338	104.047612	102.6965065	101.3694543	100.0658671	98.7851755	97.52682785	96.29028993	95.07504415
200306A00066	3/6/2020	1.2	3/8/2027	3/6/2020	104.23831	100.0336841	96.02062853	92.18940024	88.53080398	85.03616137	81.69727863	78.50641668	75.45626317
200527A00014	5/27/2020	1.06	5/27/2026	5/27/2020	102.50287	99.08914848	95.80660411	92.64951205	89.61242823	86.69017441	83.87782366	81.1706868	78.56429954
210719A00009	7/19/2021	1.04	7/17/2026	7/19/2021	102.64195	99.09017393	95.6791899	92.40264477	89.25451378	86.22907762	83.32090502	80.52483636	77.83596847
210914A00012	9/14/2021	1.18	9/14/2027	9/14/2021	105.83676	101.0624689	96.52921204	92.22358245	88.13299364	84.24562123	80.55035262	77.03674025	73.69495823
200228A00047	5/18/2020	1.35	5/18/2023	5/18/2020	100.18383	99.71964078	99.25975392	98.80410666	98.35264048	97.90529792	97.46202258	97.02275909	96.58745308
210121A00017	1/25/2021	0.48	5/25/2023	1/25/2021	99.75778	99.27584556	98.79855235	98.32583403	97.85762507	97.3938612	96.93447934	96.47941762	96.02861531
220217A00017	2/17/2022	2.27	1/29/2027	2/17/2022	108.52781	104.3414426	100.340477	96.51569076	92.85837063	89.36028405	86.01364989	82.81111095	79.7457083
221006A00097	10/6/2022	4.58	10/7/2024	10/6/2022	106.93372	105.0630946	103.2346516	101.4471936	99.69956489	97.99064962	96.31937024	94.68468586	93.08559075
201216A00001	12/16/2020	0.49	7/14/2023	12/16/2020	99.620302	99.0044686	98.39621976	97.79541601	97.20192125	96.61560267	96.03633066	95.46397872	94.89842337
220216A00003	2/16/2022	2.49	12/14/2029	2/16/2022	114.29614	107.1411768	100.4879278	94.29853687	88.53819223	83.17486655	78.17908069	73.52368863	69.18368171
221018A00030	10/18/2022	4.71	10/17/2025	10/18/2022	112.19259	109.2267973	106.3563238	103.5775905	100.8871744	98.28179951	95.75832905	93.3137591	90.94521214
221102A00026	11/2/2022	4.66	11/2/2027	11/2/2022	122.06274	116.7990773	111.8011068	107.0539607	102.543684	98.25717008	94.18210424	90.30691228	86.62071208
200312A00014	3/12/2020	1.04	3/12/2025	3/12/2020	101.25771	99.01586777	96.83422045	94.71076191	92.64356453	90.63077915	88.67063122	86.76141717	84.90150092
220727A00027	7/27/2022	3.23	7/27/2027	7/27/2022	114.17574	109.3726036	104.8024836	100.4527919	96.31169104	92.36804536	88.61137483	85.03181287	81.62006695
220811A00021	8/11/2022	3.47	8/11/2025	8/11/2022	107.91468	105.1926622	102.5537395	99.99483916	97.51302542	95.10549184	92.76955447	90.5026455	88.30230738
220825A00022	8/25/2022	3.68	8/25/2025	8/25/2022	108.63657	105.8669536	103.1827446	100.5807511	98.05792258	95.61134464	93.23823191	90.93592117	88.70186501
220929A00041	9/29/2022	4.38	9/29/2027	9/29/2022	120.29932	115.1729953	110.3015518	105.6709506	101.2679996	97.08029544	93.09617303	89.30465747	85.69542006
221026A00022	10/26/2022	4.84	10/26/2023	10/26/2022	103.25185	102.3428791	101.4499712	100.5727038	99.71066791	98.86346861	98.03072465	97.21206771	96.40714193
221031A00061	10/31/2022	4.94	4/30/2024	10/31/2022	105.70265	104.2756058	102.8749447	101.4999952	100.1501097	98.82466199	97.52304615	96.24467596	94.98898396
220912A00050	11/15/2022	3.76	11/15/2027	11/15/2022	117.74352	112.548429	107.6188314	102.9397276	98.49704454	94.27757212	90.26890561	86.45939268	82.83808384
210218A00011	2/22/2021	0.85	10/24/2025	2/22/2021	101.06694	98.24480073	95.51517777	92.87455374	90.31956886	87.84700851	85.45379611	83.13698645	80.8937593
221129A00045	11/29/2022	4.56	11/28/2025	11/29/2022	112.3132	109.2295004	106.2485943	103.3664761	100.5793221	97.88347863	95.27545411	92.7519103	90.30965484
200114A00017	1/11/2021	1.93	1/11/2024	1/11/2021	100.88472	99.78188777	98.70307371	97.64749979	96.61442121	95.60312469	94.61292681	93.64317251	92.69323358
210629A00009	6/29/2021	1.14	12/31/2025	6/29/2021	102.17055	99.15343462	96.24043595	93.42737836	90.71027835	88.08533549	85.54892281	83.09757776	80.7279937

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220114A00009	1/14/2022	1.74	4/21/2026	1/14/2022	104.67755	101.3202655	98.08820941	94.97606973	91.97878815	89.09154625	86.30975284	83.62903197	81.04521173
220419A00012	4/19/2022	2.21	4/19/2023	4/19/2022	100.52275	100.136532	99.75328436	99.37297418	98.99556774	98.6210318	98.24933362	97.88044096	97.51432208
200306A00087	3/8/2021	1.26	3/7/2025	3/8/2021	101.26565	99.04635419	96.88616165	94.78309563	92.73525806	90.7408292	88.7980637	86.90528694	85.06089147
200402A00013	4/2/2020	0.89	4/2/2024	4/2/2020	99.91704	98.60751792	97.32107972	96.05716891	94.81524604	93.59478842	92.39528946	91.21625806	90.05721805
221011A00114	10/11/2022	4.66	8/12/2024	10/11/2022	106.46195	104.7475962	103.0693053	101.4260016	99.81665315	98.24026861	96.69589547	95.18261807	93.69955577
221107A00030	11/7/2022	4.7	11/5/2027	11/7/2022	122.29652	117.018529	112.0072951	107.2478757	102.7262405	98.42921304	94.34441483	90.46021249	86.7656694
221019A00008	10/19/2022	4.8	10/17/2025	10/19/2022	112.45247	109.4829064	106.6087505	103.8264237	101.1325003	98.52370144	95.99688773	93.54905272	91.17731643
200225A00041	10/30/2020	1.48	10/30/2023	10/30/2020	100.1861	99.28171146	98.39357146	97.52124178	96.66430349	95.82235233	94.99499808	94.18186397	93.38258607
200826A00035	8/28/2020	0.78	8/28/2023	8/28/2020	99.704625	98.96857489	98.24333175	97.52865878	96.82432642	96.1301117	95.44579803	94.77117494	94.10603791
210217A00008	2/18/2021	0.63	8/15/2024	2/18/2021	99.57458	97.9131398	96.28694699	94.69494462	93.1361179	91.60949243	90.11413214	88.64913739	87.21364316
220421A00014	4/21/2022	3.24	5/30/2025	4/21/2022	106.56625	104.0607015	101.6275449	99.26426718	96.96846171	94.73781955	92.57012507	90.46325153	88.41515688
200316A00042	3/16/2020	1.23	3/15/2024	3/16/2020	100.32024	99.05259123	97.81149936	96.59613752	95.40570931	94.23945136	93.09663161	91.9765477	90.87852547
220913A00005	9/13/2022	4.09	9/13/2024	9/13/2022	105.80042	104.005425	102.2496952	100.5320752	98.85145347	97.20676089	95.59696829	94.02108472	92.47815568
200108A00015	12/18/2020	1.98	12/18/2023	12/18/2020	100.80553	99.76769622	98.75116341	97.75527629	96.77941068	95.82296731	94.88537064	93.96606768	93.06452689
200429A00061	4/29/2020	1.66	10/29/2029	4/29/2020	108.39356	101.5591574	95.20008958	89.28092342	83.76903408	78.63437025	73.84923918	69.38811064	65.22743816
220901A00033	9/1/2022	3.72	9/1/2027	9/1/2022	116.82371	111.8597542	107.1400812	102.6512825	98.3807673	94.31670382	90.44796897	86.76410165	83.2552594
211207A00017	12/7/2021	1.3	11/15/2024	12/7/2021	100.92629	99.01140787	97.14221158	95.31733717	93.53546833	91.79533667	90.09571965	88.43543861	86.81335683
220421A00012	4/21/2022	3.31	4/21/2026	4/21/2022	110.01157	106.5636939	103.2435313	100.0456828	96.96500567	93.99660046	91.13579844	88.37814943	85.71941035
200325A00046	3/25/2020	1.76	3/25/2025	3/25/2020	102.49705	100.2165666	97.99787133	95.8389404	93.73782696	91.69265974	89.70163959	87.76303618	85.87518496
200325A00009	3/27/2020	1.67	3/27/2025	3/27/2020	102.29786	100.0145137	97.79317592	95.63181762	93.52848866	91.48131407	89.48849065	87.54828379	85.65902437
210318A00007	3/22/2021	1.41	3/21/2024	3/22/2021	100.57639	99.29220324	98.03324987	96.79880197	95.58815926	94.40064829	93.23562121	92.09245449	90.97054779
210624A00005	6/24/2021	1.22	6/24/2026	6/24/2021	103.19302	99.69193964	96.32761418	93.09396697	89.98522767	86.99591357	84.12081343	81.35497246	78.69367816
220623A00005	6/23/2022	3.45	6/23/2027	6/23/2022	114.87732	110.1518823	105.6516785	101.364748	97.2798309	93.38632242	89.67423097	86.13413945	82.75716912
200423A00022	4/28/2020	0.76	2/15/2023	4/28/2020	100.03746	99.82474749	99.61294581	99.40205168	99.19205924	98.98296267	98.77475622	98.56743416	98.36099085
201123A00011	11/25/2020	1.41	11/24/2025	11/25/2020	102.83644	99.90629238	97.07464781	94.33766024	91.6916591	89.13313709	86.65874199	84.26526884	81.94965262
221129A00060	11/29/2022	4.39	11/27/2026	11/29/2022	116.56345	112.3861561	108.385819	104.553975	100.882612	97.36414204	93.99137669	90.75750373	87.65606542
200306A00080	11/6/2020	1.12	11/6/2023	11/6/2020	99.853259	98.9320499	98.02774194	97.13987345	96.26799957	95.41169135	94.57053506	93.74413151	92.93209542
200406A00059	4/6/2020	0.92	4/6/2023	4/6/2020	100.03823	99.68856553	99.34134261	98.9965368	98.65412289	98.31407604	97.97637172	97.64098577	97.30789435
220509A00013	7/15/2022	3.37	7/15/2027	7/15/2022	114.71831	109.9355151	105.38322	101.0490511	96.92136719	92.98921223	89.24227134	85.67082952	82.26573336
220624A00003	6/24/2022	3.5	6/24/2027	6/24/2022	115.11612	110.382437	105.8744255	101.580094	97.48815745	93.58798776	89.86957161	86.3234717	82.94079037
200327A00073	3/27/2020	0.99	3/27/2025	3/27/2020	101.19845	98.91816161	96.70006342	94.54211282	92.44234807	90.39888324	88.40990485	86.47366858	84.58849621
220624A00049	6/24/2022	3.29	6/24/2024	6/24/2022	104.0708	102.5029696	100.9665443	99.46064467	97.98442845	96.53708386	95.11782846	93.72590778	92.36059403
220705A00011	7/5/2022	3.14	7/7/2025	7/5/2022	106.68832	104.0766866	101.5427248	99.08364911	96.69679225	94.3796003	92.1296268	89.94452751	87.82205537

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220823A00006	8/23/2022	3.66	2/23/2024	8/23/2022	103.26585	102.0319263	100.8275383	99.65163399	98.5032107	97.38131222	96.28502632	95.2134822	94.16584818
221005A00041	10/5/2022	4.3	10/5/2027	10/5/2022	119.97827	114.8429177	109.9637809	105.326707	100.9183978	96.72635217	92.73881474	88.94472757	85.33368543
200305A00016	3/5/2020	0.99	3/6/2023	3/5/2020	100.08259	99.81762422	99.55406606	99.29190307	99.03112418	98.7717184	98.51367487	98.25698286	98.00163173
200417A00004	4/17/2020	0.86	4/17/2024	4/17/2020	99.884297	98.53504708	97.21023675	95.90926015	94.63153116	93.37648239	92.14356448	90.93224534	89.74200951
220831A00079	8/31/2022	3.79	8/29/2025	8/31/2022	108.98345	106.1982463	103.4991654	100.8829774	98.34659714	95.88707763	93.5016028	91.18748057	88.94213634
200305A00037	3/5/2020	1.43	3/6/2028	3/5/2020	106.45538	101.2387849	96.30735564	91.64402581	87.23283936	83.05887453	79.10817104	75.36766285	71.82511601
200407A00004	4/7/2020	0.99	4/7/2025	4/7/2020	101.24207	98.93208331	96.68583002	94.50120771	92.3761988	90.30886326	88.29733516	86.33981945	84.43458878
210127A00010	1/27/2021	1.41	7/26/2030	1/27/2021	106.88079	99.4139118	92.51718691	86.14421844	80.25260706	74.80358999	69.76171149	65.09452492	60.77232306
200429A00049	4/29/2020	1.25	4/29/2026	4/29/2020	103.0488	99.69785818	96.47293825	93.36865356	90.37988015	87.50173869	84.72958145	82.05898003	79.48571388
210709A00005	7/9/2021	1.69	7/9/2031	7/9/2021	109.57178	101.1289254	93.39961651	86.31986054	79.83170771	73.8826545	68.42510638	63.41589602	58.81585105
211207A00012	12/7/2021	1.62	12/4/2026	12/7/2021	105.51629	101.5400635	97.73545183	94.09415122	90.60830762	87.27048639	84.07364764	81.01112308	78.07659441
220404A00013	4/4/2022	2.1	4/4/2023	4/4/2022	100.44989	100.1047933	99.76206078	99.42167293	99.08360573	98.74783547	98.41433882	98.08309272	97.75407444
221027A00050	10/27/2022	4.52	10/27/2027	10/27/2022	121.30212	116.0738193	111.108863	106.3925552	101.9110972	97.65152647	93.60166201	89.75005297	86.08593141
200318A00013	3/18/2020	1.5	3/18/2025	3/18/2020	101.86124	99.60644581	97.41235461	95.27695761	93.19832857	91.17461786	89.20404878	87.28491415	85.41557306
200331A00007	3/31/2020	0.72	3/29/2024	3/31/2020	99.945832	98.64220968	97.36207997	96.10485178	94.86995392	93.65683393	92.4649574	91.29380716	90.14288259
211227A00009	12/27/2021	1.6	12/23/2026	12/27/2021	105.53718	101.5103128	97.65897767	93.97459771	90.44906335	87.07470303	83.84425704	80.75085309	77.78798349
220615A00010	6/15/2022	3.86	6/15/2027	6/15/2022	116.66343	111.9204704	107.402167	103.0966539	98.99275294	95.07993318	91.34826967	87.78840536	84.39151559
220630A00036	6/30/2022	3.42	6/30/2027	6/30/2022	114.80944	110.0657144	105.5488904	101.2468786	97.14829935	93.24243769	89.51920041	85.96907671	82.58310137
220829A00057	8/29/2022	3.67	8/31/2026	8/29/2022	112.70628	108.8487784	105.1463243	101.5917727	98.178354	94.89965141	91.74958024	88.72236847	85.81253845
221129A00083	11/29/2022	4.38	11/30/2026	11/29/2022	116.56258	112.3768259	108.3687347	104.5297925	100.8519402	97.32754609	93.94938131	90.71059592	87.6046972
200304A00002	3/4/2020	0.98	3/4/2025	3/4/2020	101.09073	98.87169912	96.71176952	94.60894823	92.5613261	90.56707382	88.62443781	86.7317364	84.88735615
200327A00047	3/27/2020	0.99	3/27/2025	3/27/2020	101.19845	98.91816161	96.70006342	94.54211282	92.44234807	90.39888324	88.40990485	86.47366858	84.58849621
200310A00003	3/10/2020	1.1	3/10/2025	3/10/2020	100.91197	98.68898482	96.52541834	94.41928264	92.36867567	90.37177312	88.42682452	86.53214969	84.68613525
200330A00044	3/30/2020	1.09	3/28/2025	3/30/2020	100.95022	98.68021244	96.47200795	94.32358716	92.23300722	90.19839991	88.21796829	86.28998351	84.41278185
210616A00011	5/2/2022	0.95	5/2/2025	5/2/2022	100.74155	98.38157874	96.08829678	93.85945258	91.69288572	89.58652096	87.53836434	85.54649952	83.60908426
220217A00012	2/17/2022	2.28	2/16/2027	2/17/2022	108.71106	104.468236	100.4152938	96.54268303	92.84138949	89.30290256	85.91918377	82.68263769	79.58608478
220325A00011	3/28/2022	2.79	4/25/2025	3/28/2022	105.15001	102.7546268	100.4260925	98.1621706	95.96071482	93.81966261	91.73703158	89.71091591	87.73948286
220701A00024	7/1/2022	3.08	7/1/2025	7/1/2022	106.47549	103.8827308	101.3667319	98.92475892	96.55418922	94.25251068	92.01731623	89.84629872	87.73724604
220729A00047	7/29/2022	3.06	1/29/2027	7/29/2022	111.82619	107.5714856	103.5043902	99.61558684	95.89627735	92.33814825	88.93334134	85.67442597	82.55437316
220907A00010	9/7/2022	3.9	9/9/2032	9/7/2022	133.89378	123.1350803	113.3682928	104.495588	96.42930104	89.09082645	82.40963798	76.32241852	70.77228804
200306A00022	3/6/2020	1.2	3/8/2027	3/6/2020	104.23831	100.0336841	96.02062853	92.18940023	88.53080398	85.03616137	81.69727863	78.50641668	75.45626317
200327A00030	3/27/2020	1.01	3/27/2024	3/27/2020	100.06634	98.77092855	97.49933886	96.2509495	95.02516019	93.82139125	92.63908276	91.47769366	90.336701
200330A00038	3/30/2020	1.79	3/29/2030	3/30/2020	109.56863	102.3033978	95.56963946	89.32580606	83.53378827	78.15861974	73.16820349	68.53306336	64.22611812

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210201A00007	2/3/2021	0.57	8/15/2024	2/3/2021	99.47154	97.81101142	96.18571402	94.59459099	93.03662798	91.51085101	90.01632442	88.55214897	87.11746
210616A00007	3/18/2022	0.9	3/18/2025	3/18/2022	100.47838	98.23976624	96.06151248	93.94162297	91.87818117	89.86934674	87.91335195	86.00849825	84.15315304
221110A00075	11/10/2022	4.56	11/10/2025	11/10/2022	112.07497	109.0450788	106.1146161	103.2797724	100.5369053	97.88253189	95.31332068	92.82608439	90.41777269
200302A00018	3/2/2020	1.25	3/2/2023	3/2/2020	100.15111	99.89699379	99.64416358	99.39261039	99.14232458	98.89329661	98.64551703	98.3989765	98.15366576
200316A00037	3/16/2020	1.06	3/14/2025	3/16/2020	101.31137	99.06367604	96.87646023	94.74770752	92.67548548	90.65793977	88.69329043	86.77982818	84.91591112
200611A00023	6/11/2020	0.64	6/12/2023	6/11/2020	99.793725	99.26315947	98.73822073	98.21881905	97.70486712	97.19627943	96.69297227	96.19486366	95.70187331
201001A00011	10/1/2020	0.71	6/17/2025	10/1/2020	100.28771	97.81344467	95.41221475	93.0814391	90.81864368	88.62145731	86.48760666	84.4149115	82.4012803
201030A00019	10/30/2020	1.15	10/29/2027	10/30/2020	104.7258	99.89483	95.31289288	90.96592795	86.84073475	82.92491881	79.20683849	75.67555557	72.32078933
220214A00012	2/14/2022	2.47	12/28/2029	2/14/2022	114.20496	107.0166466	100.334744	94.12087357	88.33975651	82.95894827	77.94859688	73.28122321	68.93152092
210127A00008	1/27/2021	0.93	1/27/2027	1/27/2021	102.9264	98.86127209	94.97737943	91.26568142	87.71763791	84.32518058	81.08068401	77.97693872	75.00712602
211028A00020	10/28/2021	2.05	1/28/2031	10/28/2021	112.23733	104.0982492	96.61224818	89.72345677	83.38106006	77.53881559	72.15461986	67.19011808	62.61035255
200826A00038	8/28/2020	1.11	8/28/2024	8/28/2020	100.41787	98.71517928	97.04911508	95.418563	93.82245176	92.25975354	90.72948175	89.23068892	87.76246472
210312A00008	3/12/2021	1.13	3/12/2026	3/12/2021	102.44377	99.2295004	96.13196239	93.14626252	90.26774501	87.49197649	84.81473383	82.23199281	79.73991743
210330A00022	3/30/2021	1.27	3/30/2026	3/30/2021	102.98081	99.71092652	96.56127199	93.52682349	90.60279248	87.78461413	85.06793564	82.44860535	79.92266233
210907A00009	9/7/2021	2.5	9/7/2039	9/7/2021	120.56129	104.6285612	91.079641	79.54011214	69.69634565	61.28535623	54.08639219	47.9139576	42.61201704
210914A00017	9/14/2021	1.32	9/14/2028	9/14/2021	107.35476	101.5652381	96.12114426	91.00012787	86.18139832	81.64560725	77.37474109	73.35202214	69.56181757
220131A00006	1/31/2022	1.83	2/1/2027	1/31/2022	107.61416	103.4125657	99.39825104	95.56185084	91.89451906	88.3879004	85.0341	81.82565534	78.75550989
220628A00052	8/15/2022	3.6	8/13/2027	8/15/2022	116.06784	111.1741367	106.5192433	102.0901712	97.87470826	93.86137198	90.03936172	86.39851406	82.92926151
220829A00048	8/29/2022	3.75	2/25/2025	8/29/2022	106.82022	104.5642939	102.3674749	100.227774	98.14328961	96.11219979	94.13275853	92.20329161	90.32219305
221117A00014	11/17/2022	4.54	11/14/2025	11/17/2022	112.06862	109.0276567	106.0868398	103.2423211	100.4904189	97.82761357	95.25053893	92.7559751	90.34084108
200316A00055	3/16/2020	1.06	3/14/2025	3/16/2020	101.31137	99.06367604	96.87646023	94.74770752	92.67548548	90.65793977	88.69329043	86.77982818	84.91591112
220609A00038	10/3/2022	3.28	3/29/2024	10/3/2022	103.106	101.7843961	100.4865312	99.21180411	97.959638	96.72947501	95.52077542	94.33301695	93.16569402
220630A00019	6/30/2022	3.25	12/29/2023	6/30/2022	102.23173	101.1563299	100.1035543	99.07269092	98.06306049	97.07401169	96.1049196	95.15518436	94.22422994
220719A00004	7/19/2022	3.46	7/19/2027	7/19/2022	115.17329	110.3690844	105.796733	101.443765	97.29845297	93.34976092	89.58729994	86.00128642	82.58250342
220906A00046	9/6/2022	3.79	9/7/2027	9/6/2022	117.21831	112.2280227	107.4839679	102.9726183	98.68126867	94.59797882	90.71152262	87.01134129	83.48749989
220908A00030	9/8/2022	3.85	9/9/2024	9/8/2022	105.33182	103.5521232	101.8111596	100.1077793	98.44087425	96.80937969	95.21227148	93.64856439	92.11731017
221130A00019	11/30/2022	4.63	11/26/2025	11/30/2022	112.49653	109.4156521	106.4372688	103.5573956	100.7722265	98.0781249	95.47161467	92.94937236	90.50821943
200423A00017	4/23/2020	1.82	4/23/2035	4/23/2020	114.39498	102.2080464	91.44572154	81.93344117	73.51884824	66.06887355	59.46720968	53.61212648	48.41458028
200429A00057	4/29/2020	1.4	4/29/2027	4/29/2020	105.32132	100.9560206	96.79536496	92.82873834	89.04612878	85.43809087	81.99571088	78.7105741	75.57473443
201118A00009	11/18/2020	0.61	11/18/2025	11/18/2020	101.049	98.14701352	95.34260218	92.63196158	90.01146108	87.47763119	85.02715546	82.65686285	80.3637204
210216A00011	2/17/2021	0.83	12/15/2025	2/17/2021	101.16404	98.20412805	95.34545145	92.58398822	89.91590395	87.33753818	84.84539538	82.43613649	80.10657091
211119A00009	11/19/2021	1.68	11/19/2027	11/19/2021	107.41608	102.4635864	97.76827875	93.31549221	89.09147531	85.08332513	81.2789306	77.66691993	74.23661182
220325A00020	3/28/2022	2.86	3/23/2027	3/28/2022	111.4677	107.0692616	102.8709578	98.86263103	95.03469544	91.37809884	87.8842902	84.54518929	81.35315818

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220624A00033	6/24/2022	3.5	6/24/2027	6/24/2022	115.11612	110.382437	105.8744255	101.580094	97.48815745	93.58798776	89.86957161	86.3234717	82.94079037
200401A00023	4/1/2020	0.82	4/1/2025	4/1/2020	100.81803	98.52916645	96.30307552	94.13770295	92.03107361	89.98128775	87.98651768	86.04500463	84.15505575
200413A00027	4/13/2020	0.94	4/12/2024	4/13/2020	99.991741	98.65503371	97.34232214	96.05301716	94.7865481	93.54236236	92.31992471	91.11871661	89.9382356
210224A00007	2/26/2021	0.68	10/21/2024	2/26/2021	99.679923	97.8427797	96.04809145	94.29463025	92.58121167	90.90669284	89.26997076	87.66998061	86.10569418
211214A00013	12/14/2021	1.02	12/14/2023	12/14/2021	99.770657	98.74948558	97.74908698	96.76883301	95.80812025	94.86636917	93.94302294	93.03754636	92.1494248
220329A00009	3/29/2022	2.94	3/29/2029	3/29/2022	116.32682	109.7945845	103.6774625	97.94688022	92.57637228	87.54141417	82.81927081	78.38885748	74.23061227
220419A00014	4/19/2022	3.06	4/18/2025	4/19/2022	105.73607	103.3525473	101.035014	98.7812787	96.5892378	94.45686943	92.3822296	90.36344883	88.3987288
220617A00040	6/17/2022	3.23	6/16/2023	6/17/2022	101.2048	100.6590196	100.1191301	99.58503677	99.05664643	98.53386797	98.01661217	97.5047917	96.99832106
210226A00002	2/26/2021	0.86	2/26/2025	2/26/2021	100.32904	98.14437152	96.01740374	93.94619133	91.92886972	89.96365291	88.0488294	86.1827584	84.3638662
210629A00015	6/29/2021	1.89	6/27/2031	6/29/2021	111.2608	102.7774783	95.00701795	87.88576897	81.35607097	75.36566114	69.86714374	64.81751432	60.17773251
210719A00004	7/19/2021	1	4/20/2026	7/19/2021	102.15961	98.84774416	95.65974029	92.59034057	89.63453803	86.78756311	84.04487115	81.40213058	78.8552118
210907A00004	9/7/2021	2.01	9/7/2033	9/7/2021	113.58556	103.0198716	93.53856115	85.02426686	77.37289946	70.49207655	64.29975225	58.72301348	53.69702172
220216A00002	2/16/2022	2.09	2/14/2025	2/16/2022	103.012	100.831547	98.70781052	96.63890972	94.62303788	92.65846315	90.74352468	88.87662911	87.05624714
220418A00016	4/22/2022	3.11	9/15/2026	4/22/2022	110.74698	106.8844275	103.1790654	99.6236407	96.21127261	92.93543531	89.78993747	86.76890308	83.8667535
200311A00055	3/11/2020	1.66	12/17/2027	3/11/2020	107.41599	102.3892609	97.62705402	93.1140912	88.83605433	84.77952109	80.93190418	77.28139503	73.81691165
210623A00028	6/23/2021	1.22	6/23/2026	6/23/2021	103.18826	99.68997171	96.32824784	93.09702475	89.99054347	87.00333183	84.13018848	81.36616781	78.70656591
221129A00056	11/29/2022	4.31	11/29/2027	11/29/2022	120.63282	115.3269578	110.2932582	105.5162568	100.981453	96.67524096	92.58484968	88.69828771	85.00429142
200818A00016	3/31/2021	0.57	4/1/2024	3/31/2021	99.486062	98.18223903	96.90135962	95.64287126	94.40623891	93.19094412	91.99648436	90.82237245	89.66813595
221110A00032	11/10/2022	4.75	11/12/2024	11/10/2022	107.6808	105.7061493	103.7781152	101.8953106	100.0563997	98.26009546	96.50515692	94.79038762	93.1146335
220511A00002	5/11/2022	3.18	5/12/2025	5/11/2022	106.24855	103.7944781	101.4100291	99.09283616	96.84062558	94.65121421	92.52250538	90.4524849	88.43921729
220817A00047	8/17/2022	3.29	8/17/2027	8/17/2022	115.75679	110.8252779	106.1359338	101.6755129	97.43156841	93.39240141	89.54701114	85.88504932	82.39677753
200305A00001	3/5/2020	1.14	3/5/2025	3/5/2020	100.98563	98.77474619	96.62264041	94.52733829	92.48694786	90.49965576	88.56372329	86.67748259	84.83933315
200323A00011	3/23/2020	1.37	3/23/2023	3/23/2020	100.19266	99.88091989	99.57112693	99.26325979	98.95730051	98.65323138	98.35103486	98.05069367	97.75219071
210309A00002	3/11/2021	0.77	7/25/2024	3/11/2021	99.804089	98.19512624	96.6194949	95.07622349	93.5643786	92.0830627	90.63141238	89.2085967	87.8138157
220209A00010	2/9/2022	2.14	1/11/2027	2/9/2022	107.8648	103.7401305	99.7965148	96.02503195	92.41724818	88.96519022	85.6613173	82.49849526	79.4699722
220419A00013	4/19/2022	2.84	4/19/2024	4/19/2022	102.646	101.2713121	99.92158853	98.59620969	97.29457402	96.01609929	94.76022187	93.52639597	92.31409298
221130A00061	11/30/2022	5.05	11/30/2023	11/30/2022	103.80738	102.8016597	101.8155146	100.8483752	99.89969517	98.96894882	98.05563033	97.15925273	96.27934707
201221A00015	12/21/2020	0.88	12/4/2026	12/21/2020	102.54068	98.6239084	94.87689036	91.29139779	87.85964659	84.57426888	81.42828841	78.41509762	75.52843617
211209A00006	12/9/2021	1.61	12/8/2026	12/9/2021	105.49751	101.5110899	97.69708317	94.04713729	90.55334532	87.20822367	84.00468698	80.93602481	77.99587971
220705A00005	7/5/2022	3.15	1/5/2024	7/5/2022	102.18684	101.0927149	100.0220094	98.97398111	97.94791484	96.94312513	95.95895482	94.99477357	94.04997652
221110A00025	11/10/2022	4.39	11/10/2026	11/10/2022	116.34094	112.2161953	108.2642662	104.4769842	100.8466071	97.36579814	94.02760201	90.82542335	87.75300611
200402A00009	4/2/2020	1.03	4/2/2025	4/2/2020	100.82724	98.54562539	96.32645963	94.16770723	92.06740627	90.02366954	88.03468128	86.09869407	84.21402583
201001A00012	10/1/2020	0.74	9/16/2025	10/1/2020	100.64096	97.92367408	95.29263462	92.74460868	90.27650867	87.88538147	85.5684016	83.32286479	81.14618198

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220218A00003	2/18/2022	2.16	9/4/2026	2/18/2022	107.05737	103.2947083	99.68480913	96.22060297	92.8953942	89.70283611	86.63691023	83.69190723	80.86240902
220408A00012	4/8/2022	3.12	6/29/2026	4/8/2022	110.03185	106.3948622	102.8990696	99.53820551	96.30632029	93.19776099	90.20715486	87.32939377	84.55961957
221129A00071	11/29/2022	4.28	11/26/2027	11/29/2022	120.44965	115.1568448	110.1351674	105.3692346	100.8446203	96.54778757	92.46602882	88.58741087	84.90072376
221117A00012	11/17/2022	4.54	11/14/2025	11/17/2022	112.06862	109.0276567	106.0868398	103.2423211	100.4904189	97.82761357	95.25053893	92.7559751	90.34084108
200316A00043	3/16/2020	1.3	3/14/2025	3/16/2020	101.38441	99.14557785	96.96679609	94.84607451	92.78149913	90.77123308	88.81351294	86.90664515	85.04900268
200402A00010	4/2/2020	0.89	4/2/2024	4/2/2020	99.91704	98.60751792	97.32107972	96.05716891	94.81524604	93.59478842	92.39528946	91.21625806	90.05721805
211115A00032	11/15/2021	1.75	11/12/2027	11/15/2021	107.73698	102.7953901	98.10934649	93.66433988	89.44675708	85.4438215	81.64353753	78.03463895	74.60654091
220209A00012	2/9/2022	1.98	7/29/2025	2/9/2022	103.80295	101.1712673	98.61949804	96.14471255	93.74411137	91.41501682	89.15486673	86.96120851	84.83169366
220317A00011	3/17/2022	2.48	3/17/2025	3/17/2022	104.11271	101.8342099	99.61682973	97.45854953	95.35742956	93.31160746	91.31929456	89.37877233	87.48838917
200327A00058	3/27/2020	0.9	3/27/2023	3/27/2020	100.04218	99.7198046	99.39950113	99.08125267	98.76503951	98.45084218	98.13864147	97.82841841	97.52015424
220301A00015	3/1/2022	2	1/4/2027	3/1/2022	107.24315	103.1498242	99.23564398	95.49181096	91.91000768	88.48236883	85.20145407	82.06022262	79.05200949
221006A00012	10/6/2022	4.37	10/6/2027	10/6/2022	120.32961	115.1830547	110.2932927	105.6461343	101.2282478	97.02710097	93.03090961	89.22858881	85.60970818
221110A00038	11/10/2022	4.34	11/10/2027	11/10/2022	120.57194	115.3217405	110.3381769	105.6062534	101.1118963	96.84189135	92.78382723	88.92604228	85.25757567
200310A00054	3/10/2020	1.1	3/10/2025	3/10/2020	100.91197	98.68898482	96.52541834	94.41928264	92.36867567	90.37177312	88.42682452	86.53214969	84.68613525
200611A00020	6/11/2020	0.81	6/11/2025	6/11/2020	100.52203	98.06087347	95.67201915	93.35292315	91.10114918	88.91436153	86.79032022	84.72687644	82.72196821
211221A00025	12/21/2021	1.59	12/21/2026	12/21/2021	105.48584	101.4652908	97.61983097	93.94091065	90.42044861	87.05079957	83.82472823	80.735385	77.77628322
220309A00010	3/9/2022	2.27	3/8/2027	3/9/2022	108.81766	104.5158592	100.4088281	96.48668578	92.74011178	89.1603086	85.73896906	82.46824605	79.34072431
220913A00017	9/13/2022	3.98	9/14/2026	9/13/2022	114.04184	110.1197444	106.3564925	102.7447638	99.27761995	95.94848041	92.75110166	89.67955798	86.72822335
200330A00066	3/30/2020	1.08	3/31/2025	3/30/2020	100.937	98.65938348	96.4439721	94.28873493	92.19172216	90.15105805	88.16493771	86.23162401	84.34944464
220823A00009	8/23/2022	3.52	8/23/2027	8/23/2022	115.7854	110.8707223	106.1971531	101.7515052	97.52139074	93.49516591	89.66188207	86.01123993	82.53354718
200312A00006	3/12/2020	1.23	3/12/2025	3/12/2020	101.21629	98.98460012	96.81265682	94.69847463	92.64014509	90.63583718	88.68379356	86.78232696	84.92981681
201116A00021	11/16/2020	0.53	11/15/2024	11/16/2020	99.81542	97.9041082	96.03858259	94.21746973	92.43944676	90.70323918	89.00761868	87.35140118	85.73344487
211220A00005	12/20/2021	0.97	12/20/2023	12/20/2021	99.742544	98.70537834	97.68964047	96.69467237	95.71984246	94.76454452	93.82819643	92.91023901	92.01013489
220420A00033	4/20/2022	3.29	4/20/2027	4/20/2022	113.59415	109.0726909	104.7597364	100.6445877	96.71714667	92.96788174	89.38779343	85.96838185	82.70161648
200225A00040	10/30/2020	1.48	10/30/2023	10/30/2020	100.1861	99.28171146	98.39357146	97.52124178	96.66430349	95.82235233	94.99499808	94.18186397	93.38258607
210219A00008	2/22/2021	0.86	12/1/2025	2/22/2021	101.21265	98.28843033	95.46330736	92.73339133	90.09496426	87.5444747	85.07852936	82.69388501	80.38744101
220509A00014	7/15/2022	3.37	7/15/2027	7/15/2022	114.71831	109.9355151	105.38322	101.0490511	96.92136719	92.98921223	89.24227134	85.67082952	82.26573336
220509A00016	7/15/2022	3.37	7/15/2027	7/15/2022	114.71831	109.9355151	105.38322	101.0490511	96.92136719	92.98921223	89.24227134	85.67082952	82.26573336
200327A00060	3/27/2020	1.18	3/27/2025	3/27/2020	101.15647	98.88661147	96.67847499	94.53004104	92.43936764	90.4045877	88.42390555	86.49559383	84.61799044
200320A00052	3/25/2020	1.47	3/25/2025	3/25/2020	101.82312	99.550582	97.3396646	95.18834861	93.094692	91.05682811	89.07296222	87.14136828	85.26038584
220929A00034	9/29/2022	4.67	5/31/2024	9/29/2022	105.65029	104.1415425	102.6622177	101.2115283	99.78871551	98.39304698	97.02381536	95.68033741	94.36195294
221130A00110	11/30/2022	4.15	11/30/2027	11/30/2022	119.84163	114.5524925	109.5350697	104.7739087	100.2545185	95.96330282	91.88750067	88.01513046	84.3349385
221129A00050	11/29/2022	4.56	12/2/2025	11/29/2022	112.36605	109.270474	106.2783924	103.3857605	100.5887169	97.88357274	95.266803	92.73503826	90.28505681

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200304A00005	3/4/2020	0.98	3/4/2025	3/4/2020	101.09073	98.87169912	96.71176952	94.60894823	92.5613261	90.56707382	88.62443781	86.7317364	84.88735615
200327A00046	3/27/2020	1.23	3/27/2025	3/27/2020	101.27294	99.00170353	96.79221998	94.64246722	92.55050244	90.51445773	88.53253668	86.60301117	84.7242184
210707A00002	7/7/2021	1.12	6/26/2026	7/7/2021	102.84467	99.344403	95.98108227	92.74861929	89.64122742	86.65340886	83.77993848	81.01584866	78.35641506
210712A00010	6/27/2022	1.05	6/27/2025	6/27/2022	101.19758	98.68459871	96.24626942	93.87993299	91.58304045	89.35314998	87.18792154	85.08511201	83.04257038
221020A00052	10/20/2022	4.95	10/21/2024	10/20/2022	107.79437	105.878223	104.0060226	102.1765035	100.3884409	98.64065303	96.93199941	95.26137915	93.62772925
210701A00007	7/1/2021	1.22	7/1/2026	7/1/2021	103.22597	99.70545281	96.32301721	93.07250351	89.94806157	86.94413426	84.05544099	81.27696226	78.60392523
211210A00015	12/10/2021	1.63	12/10/2026	12/10/2021	105.58899	101.5954391	97.77477766	94.11861351	90.61901086	87.26845925	84.05984838	80.98644458	78.04186879
220111A00002	1/11/2022	1.75	1/16/2026	1/11/2022	104.14623	101.0563044	98.07391142	95.19469061	92.41448582	89.72933454	87.13545756	84.62924923	82.20726836
220209A00004	2/9/2022	1.21	2/9/2023	2/9/2022	100.13037	99.93402187	99.73845359	99.54365838	99.34963164	99.15636879	98.96386529	98.77211665	98.5811184
200402A00003	4/2/2020	0.8	4/3/2023	4/2/2020	100.00072	99.65931508	99.32023145	98.98344927	98.64894519	98.31669617	97.98667948	97.65887269	97.33325369
200527A00016	5/27/2020	0.92	5/27/2025	5/27/2020	100.74675	98.32258918	95.96874714	93.68278397	91.46236238	89.30523994	87.20926459	85.17237042	83.19257363
220204A00003	2/4/2022	1.15	2/3/2023	2/4/2022	100.11627	99.93646427	99.75730427	99.57878758	99.40091078	99.22367042	99.0470631	98.87108545	98.69573411
220624A00044	6/24/2022	3.43	6/24/2025	6/24/2022	107.30828	104.7239533	102.2156666	99.78072218	97.41653818	95.12064082	92.89065898	90.72431922	88.61944106
221020A00046	10/20/2022	4.95	1/21/2025	10/20/2022	109.00879	106.8297051	104.7056463	102.634836	100.6155708	98.64621565	96.72520014	94.85101564	93.0222122
200401A00013	4/1/2020	1.01	4/1/2025	4/1/2020	100.77675	98.49838749	96.28232343	94.12652734	92.02904411	89.98799302	88.00156444	86.06801677	84.18567348
200826A00039	8/28/2020	1.03	7/29/2024	8/28/2020	100.2405	98.61736977	97.02800468	95.47141317	93.94664473	92.45278565	90.98895718	89.55431386	88.14804189
210208A00008	2/11/2021	0.78	11/17/2025	2/11/2021	100.93152	98.04849957	95.26203497	92.56837932	89.96395243	87.44533239	85.00924763	82.65256947	80.37230499
210706A00015	7/6/2021	1.06	12/31/2025	7/6/2021	101.92311	98.90982778	96.00056934	93.19115704	90.47761053	87.85613242	85.32309867	82.87504955	80.50868108
200305A00019	3/5/2020	0.81	3/6/2023	3/5/2020	100.07964	99.81419271	99.5501623	99.28753515	99.02630005	98.76644586	98.50796158	98.25083634	97.99505937
200403A00010	4/6/2020	0.8	4/6/2023	4/6/2020	99.995958	99.64638521	99.29925419	98.95453981	98.61221686	98.27226049	97.93464621	97.59934982	97.26634751
220302A00011	3/2/2022	2.14	1/13/2027	3/2/2022	107.87816	103.747884	99.79910217	96.02286225	92.41070118	88.95461857	85.64704858	82.48083376	79.44920065
200220A00034	2/25/2020	1.71	3/27/2023	2/25/2020	100.3051	99.98218538	99.66134839	99.34256897	99.0258274	98.71110418	98.39838008	98.08763611	97.7788535
200302A00017	3/2/2020	1.3	3/4/2024	3/2/2020	100.37329	99.13237635	97.92052744	96.73673063	95.58001558	94.44945644	93.34416925	92.26330961	91.20607053
200330A00054	3/30/2021	1.19	3/30/2026	3/30/2021	102.71384	99.44841414	96.30309467	93.27286483	90.35294015	87.53875968	84.82597438	82.21043612	79.68818741
200331A00017	3/31/2020	0.9	3/31/2025	3/31/2020	101.00207	98.71369079	96.4879875	94.32291368	92.21649936	90.1668497	88.17214162	86.23062073	84.34059828
221129A00084	11/29/2022	4.38	11/30/2026	11/29/2022	116.56258	112.3768259	108.3687347	104.5297925	100.8519402	97.32754609	93.94938131	90.71059592	87.6046972
200325A00047	3/25/2020	1.68	9/25/2024	3/25/2020	101.51151	99.7238598	97.97608807	96.26705794	94.59567306	92.96087567	91.361645	89.79699563	88.26597608
200415A00024	4/15/2020	2.2	4/16/2035	4/15/2020	116.23675	104.1332613	93.42972331	83.95582941	75.5628155	68.12063874	61.51553851	55.64792549	50.43055332
220404A00010	4/4/2022	2.93	4/2/2027	4/4/2022	111.85559	107.4217492	103.1906975	99.15212051	95.29628271	91.61398931	88.09655371	84.73576681	81.52386849
220627A00055	6/27/2022	3.55	6/26/2026	6/27/2022	111.54073	107.8851865	104.3710246	100.9919924	97.74214765	94.61584396	91.60771392	88.71265383	85.92580912
210308A00009	3/8/2021	0.62	3/8/2024	3/8/2021	99.517238	98.27222084	97.05526371	95.86541926	94.70178239	93.56348818	92.44970968	91.35965582	90.2925695
220628A00053	8/15/2022	3.6	8/13/2027	8/15/2022	116.06784	111.1741367	106.5192433	102.0901712	97.87470826	93.86137198	90.03936172	86.39851406	82.92926151
200417A00012	4/22/2020	0.71	12/15/2022	4/22/2020	100.02275	99.98115038	99.93960744	99.89811676	99.85667823	99.81529176	99.77395724	99.73267456	99.69144363

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210104A00011	11/23/2021	0.88	11/23/2026	11/23/2021	102.50323	98.61616245	94.89643372	91.33599135	87.92721097	84.66287287	81.53613837	78.54052761	75.66989891
210122A00006	1/25/2021	0.61	8/15/2024	1/25/2021	99.540234	97.87909701	96.25320267	94.66149341	93.10295459	91.57661195	90.08152957	88.61680792	87.18158211
210303A00006	3/4/2021	0.97	10/10/2025	3/4/2021	101.37022	98.57956913	95.87927873	93.26595805	90.73636328	88.28738897	85.91606136	83.61953208	81.39507218
210916A00009	9/16/2021	2.25	9/16/2036	9/16/2021	117.14208	103.796777	92.14674732	81.96587025	73.05930601	65.25902757	58.42001067	52.41698141	47.14163759
220124A00008	1/24/2022	1.88	1/22/2027	1/24/2022	106.85775	102.7245308	98.7740819	94.99733506	91.38572229	87.93114674	84.62595397	81.46290512	78.4351519
221110A00024	11/10/2022	4.51	11/10/2025	11/10/2022	111.9273	108.8996036	105.9712781	103.1385192	100.3976861	97.74529752	95.17802362	92.6926786	90.28621359
200311A00052	3/2/2021	1.43	2/28/2025	3/2/2021	101.62209	99.41686965	97.26992775	95.17929481	93.14308484	91.15949157	89.22678421	87.34330363	85.50745867
200207A00013	2/12/2020	1.73	2/10/2023	2/12/2020	100.23484	100.0355908	99.83714029	99.63948546	99.44262151	99.24654366	99.05124718	98.85672737	98.66297956
200306A00064	3/6/2020	1.2	3/8/2027	3/6/2020	104.23831	100.0336841	96.02062853	92.18940023	88.53080398	85.03616137	81.69727863	78.50641668	75.45626317
200421A00032	4/21/2020	1.31	4/21/2027	4/21/2020	104.88996	100.5554594	96.42333796	92.48314303	88.72501344	85.13964353	81.71824909	78.45253551	75.3346681
200629A00023	6/29/2020	0.95	6/29/2026	6/29/2020	102.24836	98.75065599	95.39016014	92.16075413	89.05662815	86.07226306	83.20241411	80.4420956	77.78656653
210928A00009	9/28/2021	2.18	9/28/2033	9/28/2021	115.42114	104.7092251	95.09917225	86.4713952	78.71985469	71.75046621	65.479699	59.83334519	54.74543783
220629A00002	6/29/2022	3.48	6/28/2024	6/29/2022	104.08786	102.5142074	100.9721093	99.46068547	97.97908616	96.52649269	95.10211605	93.70519553	92.33499745
220727A00004	7/27/2022	3.23	7/27/2027	7/27/2022	114.17574	109.3726036	104.8024836	100.4527919	96.31169104	92.36804536	88.61137483	85.03181287	81.62006695
220817A00037	10/14/2022	3.41	10/15/2027	10/14/2022	115.73846	110.6777138	105.8721346	101.3075157	96.97051612	92.84860003	88.9299843	85.20358963	81.65899502
201204A00015	12/8/2020	1.07	12/8/2025	12/8/2020	101.87039	98.91794735	96.06592661	93.31036618	90.64748173	88.07365953	85.58544769	83.17954786	80.8528075
200327A00088	3/27/2020	1.22	3/27/2025	3/27/2020	101.24965	98.97868512	96.76947099	94.61998198	92.52827548	90.49248373	88.51081045	86.5815277	84.7029728
210525A00004	5/25/2021	1.02	12/19/2025	5/25/2021	101.75739	98.77796724	95.90062768	93.12130787	90.43613217	87.84140133	85.33358327	82.90930453	80.56534212
210907A00011	9/7/2021	2.65	9/6/2041	9/7/2021	122.62543	105.0678652	90.39015486	78.09587981	67.77696242	59.09753901	51.78084185	45.59851965	40.36193356
211019A00009	10/19/2021	1.48	10/9/2026	10/19/2021	104.67389	100.8624265	97.20980262	93.70860924	90.35181851	87.13276404	84.0451204	81.08288397	78.24035495
220729A00043	7/29/2022	3.04	7/29/2027	7/29/2022	113.30566	108.5171668	103.9614731	99.62598392	95.49885549	91.56894704	87.82577477	84.25946938	80.86073657
220915A00040	9/15/2022	4.16	9/15/2025	9/15/2022	110.21372	107.3641225	104.6038278	101.9295065	99.33797658	96.82619414	94.39124696	92.03034762	89.74082732
200331A00015	3/31/2020	0.64	3/31/2023	3/31/2020	100.00804	99.67416441	99.34250849	99.01305167	98.68577217	98.36064849	98.03765941	97.716784	97.3980016
210119A00005	1/20/2021	0.52	9/25/2023	1/20/2021	99.420017	98.61122181	97.8155007	97.03253892	96.26203178	95.50368421	94.75721041	94.02233345	93.29878497
200304A00030	3/4/2020	1.6	12/22/2028	3/4/2020	107.75193	101.7415374	96.10316063	90.81188187	85.84458031	81.17978959	76.79757117	72.67939809	68.808048
200629A00021	6/29/2020	1.21	6/29/2028	6/29/2020	105.39138	99.90338026	94.73202156	89.85744078	85.26112257	80.92579964	76.83536228	72.9747748	69.32999855
221118A00019	11/18/2022	4.55	11/18/2025	11/18/2022	112.1511	109.0977336	106.1452771	103.289832	100.5276759	97.85525123	95.26915599	92.76613661	90.34308034
200324A00051	3/24/2020	1.73	11/1/2024	3/24/2020	101.71411	99.82867673	97.98733811	96.18880438	94.43182898	92.7152098	91.03778729	89.39844267	87.79609619
210914A00014	9/14/2021	0.97	9/14/2026	9/14/2021	103.41318	99.67026884	96.08161473	92.64003787	89.33873689	86.17126354	83.13150217	80.21365056	77.41220198
220331A00011	3/31/2022	2.73	10/15/2024	3/31/2022	103.53844	101.6793688	99.8627793	98.08745218	96.3522116	94.65592271	92.9974899	91.37585524	89.78999693
220712A00016	7/15/2022	3.35	1/15/2026	7/15/2022	109.15536	105.9893584	102.9327569	99.98113772	97.13028776	94.37618968	91.71501154	89.14309689	86.65695562
221129A00035	11/29/2022	4.09	11/29/2027	11/29/2022	120.73998	115.3934456	110.3222156	105.5106012	100.9438897	96.60827891	92.49081636	88.57934244	84.86243781
200225A00028	2/25/2020	1.89	12/21/2029	2/25/2020	110.0852	103.057222	96.52609451	90.45413645	84.80670597	79.55194326	74.66053371	70.10549246	65.86196807

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200310A00034	3/10/2020	1.41	3/11/2030	3/10/2020	106.77535	99.65443434	93.0534042	86.93170063	81.25212896	75.98056037	71.08566424	66.53866528	62.31312286
201214A00002	12/14/2020	0.45	12/14/2022	12/14/2020	100.01112	99.97230497	99.93353817	99.89481906	99.85614755	99.81752355	99.77894697	99.74041772	99.7019357
211019A00011	10/19/2021	1.48	10/16/2026	10/19/2021	104.7079	100.8776176	97.20766662	93.69053662	90.31910391	87.08661283	83.98665487	81.01314901	78.16032333
200316A00046	3/16/2020	1.18	3/18/2024	3/16/2020	100.26466	98.99000222	97.7412214	96.51753664	95.31819998	94.14249338	92.98972722	91.85923889	90.75039143
200611A00019	6/11/2020	0.88	12/11/2025	6/11/2020	101.30403	98.35239278	95.50142163	92.74713525	90.08573117	87.51357878	85.0272105	82.62331341	80.29872148
210310A00003	3/15/2021	0.79	8/26/2024	3/15/2021	99.855778	98.16333555	96.50723732	94.88637699	93.29969396	91.74617056	90.22482982	88.73473341	87.27497968
220225A00014	2/25/2022	2.42	2/23/2029	2/25/2022	112.93516	106.5982577	100.6605268	95.09467604	89.87542628	84.97934911	80.38472148	76.07139255	72.02066163
220901A00035	9/1/2022	3.82	9/1/2028	9/1/2022	120.46667	114.3872497	108.6606618	103.2644294	98.1776334	93.38079382	88.85576265	84.5856254	80.55461047
200324A00013	3/25/2020	1.78	3/25/2025	3/25/2020	102.54353	100.2624965	98.04326489	95.88380879	93.78218109	91.7365102	89.74499665	87.80590983	85.91758489
201014A00002	10/14/2020	0.61	10/15/2024	10/14/2020	99.544478	97.72398154	95.94523864	94.20705129	92.50826325	90.84775852	89.22445968	87.63732631	86.08535348
220314A00004	3/14/2022	2.44	3/12/2027	3/14/2022	109.57392	105.2453933	101.113091	97.16705932	93.39790652	89.7967665	86.35526644	83.06549646	79.91998136
220830A00093	11/16/2022	3.69	11/16/2029	11/16/2022	122.55649	115.1938634	108.3369071	101.9480427	95.99267717	90.43894772	85.25749345	80.42124676	75.90524317
200415A00033	4/15/2020	0.82	10/13/2023	4/15/2020	99.617103	98.7601713	97.91789947	97.08991426	96.27585468	95.4753718	94.68812828	93.91379787	93.15206496
220912A00033	9/12/2022	3.9	10/7/2024	9/12/2022	105.6675	103.8089718	101.9923956	100.216584	98.48038744	96.78269598	95.12243771	93.49857716	91.91011389
200422A00015	4/27/2020	0.73	12/22/2022	4/27/2020	100.03399	99.97299823	99.91209358	99.85127727	99.79054911	99.7299089	99.66935646	99.60889158	99.54851409
201105A00003	11/6/2020	2.24	11/4/2030	11/6/2020	113.52605	105.5527078	98.20193125	91.42181809	85.16504237	79.38842952	74.05257292	69.12148777	64.56229824
210907A00013	9/9/2021	2.14	9/9/2025	9/9/2021	104.51624	101.7632703	99.09671059	96.51332138	94.01000681	91.58380762	89.23189412	86.9515595	84.74021358
200317A00023	3/17/2020	1.1	3/17/2025	3/17/2020	101.41534	99.15859816	96.96275687	94.82579689	92.74577826	90.72083866	88.7491897	86.82911339	84.9589588
201015A00002	10/15/2020	0.61	10/15/2024	10/15/2020	99.544478	97.72398154	95.94523864	94.20705129	92.50826325	90.84775852	89.22445968	87.63732631	86.08535348
210920A00014	9/9/2022	1.28	9/9/2026	9/9/2022	103.76257	100.0483383	96.48608049	93.06874885	89.78966562	86.64250002	83.62124797	80.72021323	77.9339896
220114A00007	1/14/2022	1.7	1/27/2026	1/14/2022	104.049	100.9316609	97.92363968	95.02046944	92.21789228	89.51185065	86.89847646	84.37408093	81.93514503
220119A00009	1/19/2022	1.35	1/19/2024	1/19/2022	100.25862	99.13816693	98.04261343	96.97113522	95.92294578	94.8972925	93.89345491	92.91074294	91.94849536
220804A00023	8/4/2022	3.19	8/4/2027	8/4/2022	114.0582	109.235926	104.6485503	100.2833357	96.12830433	92.17219132	88.40439799	84.81494863	81.39445032
221107A00029	11/7/2022	4.83	11/9/2026	11/7/2022	118.06689	113.9110534	109.9288529	106.1120874	102.4529913	98.9442047	95.57875037	92.35001145	89.25171105
200730A00011	7/30/2020	1.15	7/28/2028	7/30/2020	105.05961	99.50639811	94.27760469	89.35263258	84.7122993	80.33873182	76.21527022	72.32637895	68.65756512
210928A00010	9/28/2021	1.12	9/26/2025	9/28/2021	101.74732	98.9876545	96.31622477	93.72974602	91.22507303	88.7991946	86.44922708	84.1724082	81.96609125
200228A00071	2/28/2020	1.74	12/14/2029	2/28/2020	109.01508	102.0417929	95.56112975	89.53577789	83.93143279	78.71654024	73.86206269	69.34126651	65.12952832
200304A00020	3/4/2020	0.98	3/4/2025	3/4/2020	101.09073	98.87169912	96.71176952	94.60894823	92.5613261	90.56707382	88.62443781	86.7317364	84.88735615
200325A00043	3/25/2020	1.62	6/25/2024	3/25/2020	101.12814	99.5869222	98.07657744	96.59624622	95.14510062	93.72234284	92.32720379	90.95894184	89.61684157
200409A00011	4/9/2020	0.7	4/7/2023	4/9/2020	100.01838	99.66536666	99.31484381	98.96678916	98.62117664	98.2779805	97.9371754	97.59873632	97.26263861
210108A00008	1/11/2021	0.51	8/15/2023	1/11/2021	99.53958	98.83874693	98.14773542	97.46634003	96.79436108	96.13160443	95.47788122	94.83300772	94.19680516
210917A00004	9/17/2021	1.03	9/17/2025	9/17/2021	101.45763	98.72614382	96.08134116	93.51997526	91.03894554	88.6352861	86.30615893	84.04884755	81.86075095
220921A00050	9/21/2022	4.51	4/29/2024	9/21/2022	105.07962	103.6599261	102.2664437	100.8985069	99.55547353	98.23672228	96.94165211	95.66968141	94.42024716

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200323A00018	3/23/2020	1.37	3/23/2023	3/23/2020	100.19266	99.88091989	99.57112692	99.26325979	98.95730051	98.65323138	98.35103486	98.05069367	97.75219071
200401A00012	4/2/2020	1	4/2/2025	4/2/2020	100.75687	98.47608953	96.2577431	94.09979278	92.00027716	89.95730952	87.96907457	86.03382534	84.14988019
200423A00026	4/28/2020	0.85	12/15/2023	4/28/2020	99.594807	98.57195238	97.56996552	96.588213	95.6260871	94.68300418	93.75840357	92.85174639	91.96251455
210324A00003	3/24/2021	1.18	3/24/2026	3/24/2021	102.65637	99.40746124	96.27754565	93.26164551	90.35501927	87.55314854	84.85172628	82.24664571	79.73398986
210526A00018	5/26/2021	1.11	5/26/2026	5/26/2021	102.67385	99.25971622	95.97664834	92.81893108	89.78112941	86.85807348	84.04484414	81.3367594	78.72936165
220824A00008	8/24/2022	3.62	8/24/2023	8/24/2022	101.81109	101.0770655	100.3536357	99.64056886	98.9376431	98.24464304	97.56135932	96.88758841	96.22313248
221121A00064	11/21/2022	4.34	11/22/2027	11/21/2022	120.70534	115.4176318	110.4001292	105.6375399	101.1155174	96.82059725	92.74013831	88.86226791	85.17583137
200221A00011	2/21/2020	1.69	8/21/2024	2/21/2020	101.41323	99.71984197	98.06256825	96.44032052	94.8520518	93.29675711	91.77347139	90.28126743	88.819254
200221A00024	2/21/2020	2.05	12/28/2029	2/21/2020	111.23177	104.1462687	97.56201256	91.4409301	85.7480321	80.45114404	75.52066592	70.92935386	66.65212124
200306A00003	3/6/2020	0.7	3/6/2023	3/6/2020	100.05032	99.78493096	99.52095207	99.25837625	98.99719225	98.73738896	98.47895538	98.22188064	97.96615396
200309A00030	3/9/2020	1.11	3/9/2027	3/9/2020	103.85665	99.65752327	95.64993322	91.82412989	88.17091607	84.68161132	81.34801983	78.16240052	75.1174391
200415A00021	4/15/2020	1.37	4/15/2027	4/15/2020	105.12805	100.804398	96.68184546	92.7500423	88.99922323	85.42017111	82.00418339	78.74304086	75.6289784
200521A00017	5/21/2020	2.22	5/21/2038	5/21/2020	116.69839	102.0472406	89.45351348	78.61442985	69.27329045	61.21225796	54.24630052	48.21810447	42.99379716
210218A00006	2/18/2021	0.5	2/20/2024	2/18/2021	99.352769	98.15223302	96.98043551	95.83635562	94.71902037	93.62750182	92.56091449	91.51841295	90.49918961
221129A00072	11/29/2022	4.39	12/2/2026	11/29/2022	116.6287	112.4360344	108.4215021	104.5765534	100.8931004	97.3634847	93.98045228	90.73713003	87.62700356
201117A00006	11/17/2020	0.57	11/17/2023	11/17/2020	99.320225	98.37276137	97.44324611	96.53117359	95.63605676	94.75742658	93.89483118	93.04783504	92.21601829
210712A00008	6/27/2022	1.05	6/27/2025	6/27/2022	101.19758	98.68459871	96.24626942	93.87993299	91.58304045	89.35314998	87.18792154	85.08511201	83.04257038
211129A00012	11/29/2021	1.53	11/25/2026	11/29/2021	105.10773	101.1636297	97.3889347	93.77549114	90.31558397	87.00190779	83.82754288	80.78593276	77.87086319
220106A00008	1/6/2022	2.5	1/5/2035	1/6/2022	119.69928	107.6370579	96.93549978	87.4326733	78.98672523	71.47330118	64.78330669	58.8209647	53.50212873
220323A00016	6/2/2022	2.78	6/2/2025	6/2/2022	105.44024	102.9408072	100.5138677	98.1568971	95.86747737	93.64328924	91.48210743	89.38179623	87.34030531
221122A00040	11/22/2022	4.31	11/22/2027	11/22/2022	120.55559	115.2715683	110.2576151	105.4984441	100.9797148	96.68796836	92.61056899	88.73564912	85.05205889
200327A00059	3/27/2020	1.01	3/27/2024	3/27/2020	100.06634	98.77092855	97.49933886	96.2509495	95.02516019	93.82139125	92.63908276	91.47769366	90.336701
201116A00025	11/18/2020	1.96	11/15/2032	11/18/2020	112.74599	102.9428566	94.07942799	86.06052324	78.80105343	72.22490635	66.26395907	60.85720346	55.94997125
211221A00010	12/21/2021	1.31	12/20/2024	12/21/2021	101.06081	99.05236727	97.09362268	95.18302381	93.31907884	91.50035312	89.72546644	87.99309065	86.30194717
220510A00016	5/13/2022	3.23	5/5/2027	5/13/2022	113.46965	108.9096049	104.5617112	100.4149882	96.45907656	92.68420328	89.08114576	85.64119789	82.35613847
220527A00015	5/27/2022	3.03	5/27/2027	5/27/2022	112.76731	108.1635918	103.7769764	99.5960743	95.61015214	91.80909266	88.18335591	84.72394329	81.42236401
221024A00018	10/24/2022	4.91	10/24/2024	10/24/2022	107.75482	105.8310761	103.9516222	102.115177	100.3205016	98.56640088	96.85172181	95.17535138	93.53621506
200310A00005	3/10/2020	1.41	3/8/2030	3/10/2020	106.7736	99.66016549	93.06554642	86.94929585	81.27432149	76.00658754	71.11484781	66.5704035	62.34688324
200327A00037	3/27/2020	1.18	3/27/2026	3/27/2020	103.3725	100.0862628	96.92092526	93.87142148	90.93292325	88.10082941	85.37075387	82.7385144	80.20012199
200406A00049	4/6/2020	0.92	4/6/2023	4/6/2020	100.03823	99.68856553	99.34134261	98.9965368	98.65412289	98.31407604	97.97637172	97.64098577	97.30789435
200429A00021	5/4/2020	0.97	4/29/2025	5/4/2020	100.78012	98.42746273	96.14107073	93.91871845	91.75826572	89.65765649	87.61491496	85.62814195	83.69551151
201019A00006	10/19/2020	0.57	10/19/2023	10/19/2020	99.379826	98.50828539	97.65193294	96.81037493	95.98323076	95.17013278	94.37072578	93.58466639	92.81162269
210225A00012	3/1/2021	0.91	8/25/2025	3/1/2021	101.03996	98.37533365	95.79364293	93.29177645	90.86675909	88.51574889	86.23603003	84.02500613	81.88019404

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220204A00004	2/4/2022	2.08	1/8/2027	2/4/2022	107.59772	103.4865081	99.55553197	95.79592159	92.19929315	88.75771977	85.46370385	82.31015137	79.29034777
220823A00032	8/23/2022	3.6	8/23/2023	8/23/2022	101.79068	101.0594271	100.3386881	99.62823748	98.92785576	98.23732978	97.55645235	96.88502205	96.22284305
220921A00074	9/21/2022	3.98	9/21/2027	9/21/2022	119.43382	114.3155353	109.4519411	104.8289833	100.4334563	96.25294843	92.27579013	88.49100552	84.8882676
211117A00010	11/17/2021	1.18	11/18/2024	11/17/2021	100.69812	98.77757321	96.90304144	95.07314739	93.28655988	91.54199641	89.83822105	88.17404238	86.54831158
221129A00062	11/29/2022	4.39	11/27/2026	11/29/2022	116.56345	112.3861561	108.385819	104.553975	100.882612	97.36414204	93.99137669	90.75750373	87.65606542
200605A00014	6/5/2020	1.02	6/5/2025	6/5/2020	100.96304	98.60546568	96.31608146	94.09251175	91.93248071	89.83380568	87.79439265	85.81223214	83.88539515
200605A00016	6/5/2020	1.02	6/5/2025	6/5/2020	100.96304	98.60546568	96.31608146	94.09251174	91.93248071	89.83380568	87.79439265	85.81223213	83.88539514
200605A00017	6/5/2020	1.02	6/5/2025	6/5/2020	100.96304	98.60546569	96.3160815	94.09251181	91.9324808	89.83380578	87.79439278	85.81223228	83.88539531
200709A00021	7/9/2020	0.83	7/9/2025	7/9/2020	100.60983	98.17555196	95.81351159	93.52111796	91.29589038	89.13545355	87.0375323	84.99994663	83.02060699
200709A00025	7/9/2020	1.37	7/9/2030	7/9/2020	105.90151	99.33872696	93.25407522	87.60968324	82.37088311	77.50592419	72.98571273	68.78357603	64.87504874
200813A00019	8/13/2020	1.44	8/13/2030	8/13/2020	106.40443	99.74751407	93.5804409	87.86401943	82.56240907	77.6428163	73.07521973	68.83212138	64.8883215
200813A00020	8/13/2020	1.44	8/13/2030	8/13/2020	106.40443	99.74751403	93.58044093	87.86401953	82.56240922	77.64281651	73.07522	68.83212169	64.88832186
200813A00023	8/13/2020	0.86	10/14/2025	8/13/2020	100.97635	98.3048646	95.71911413	93.21588401	90.79210184	88.44482651	86.17124182	83.96865047	81.8344684
200911A00011	9/11/2020	1.18	9/11/2030	9/11/2020	104.62758	98.00269468	91.87021735	86.19040974	80.92695663	76.04665253	71.51911948	67.31655196	63.41348596
200911A00012	9/11/2020	1.18	9/11/2030	9/11/2020	104.62693	98.00311964	91.87161238	86.19267692	80.93000697	76.05040515	71.52350089	67.32149536	63.41893065
200911A00013	9/11/2020	0.69	9/11/2025	9/11/2020	100.42481	97.84205817	95.33992476	92.91540448	90.56562038	88.28782171	86.07937749	83.93777035	81.8605908
201007A00008	10/7/2020	1.22	10/7/2030	10/7/2020	104.77162	98.31478134	92.33492568	86.79360116	81.65566607	76.88898674	72.46416508	68.35429215	64.53472506
201007A00010	10/7/2020	1.22	10/7/2030	10/7/2020	104.77162	98.31478134	92.33492568	86.79360116	81.65566607	76.88898674	72.46416508	68.35429215	64.53472506
201007A00014	10/7/2020	0.8	10/7/2025	10/7/2020	100.77383	98.15146118	95.61250031	93.15384586	90.77252919	88.46570766	86.23065853	84.06477328	81.96555217
201015A00020	10/15/2020	0.94	10/15/2027	10/15/2020	103.28096	98.87531508	94.68993029	90.71259739	86.93184728	83.33690142	79.9176268	76.66449407	73.56853858
201109A00012	11/9/2020	1.39	11/8/2030	11/9/2020	106.11563	99.30130179	93.00188576	87.1751699	81.78262559	76.78906979	72.16235809	67.87310728	63.89444471
201211A00001	12/11/2020	0.95	12/11/2030	12/11/2020	104.24075	98.0175872	92.25341623	86.91092072	81.95603578	77.35765136	73.08734012	69.11911183	65.4291914
210107A00007	1/7/2021	0.84	1/7/2026	1/7/2021	101.15378	98.27694353	95.4985956	92.81478665	90.22175173	87.71589948	85.29380292	82.9521908	80.68793954
210201A00002	2/1/2021	1.19	2/1/2036	2/1/2021	103.8121	97.30909422	91.37307088	85.94676667	80.97926864	76.42525838	72.24435245	68.40052514	64.86160266
210809A00010	8/9/2021	1.06	8/7/2026	8/9/2021	102.52178	99.15648535	95.92345586	92.81671295	89.83058341	86.95968418	84.19890556	81.54339554	78.98854511
210915A00027	9/15/2021	1.1	9/15/2026	9/15/2021	102.80066	99.33964718	96.01790099	92.82902295	89.7669499	86.82593042	84.00050692	81.28549886	78.67598701
210921A00006	9/21/2021	1.43	9/21/2028	9/21/2021	106.08143	100.8140323	95.85222551	91.17653975	86.76884698	82.612262	78.69105104	74.99054731	71.4970733
210921A00009	9/21/2021	1.28	9/21/2028	9/21/2021	106.4694	101.158151	96.15600036	91.44319733	87.00135779	82.81336166	78.86325943	75.13618622	71.6182825
211007A00006	10/7/2021	1.28	10/7/2026	10/7/2021	103.53309	100.0021402	96.61518296	93.36557322	90.24700722	87.25350323	84.37938348	81.61925711	78.96800422
211014A00012	10/14/2021	1.46	10/14/2031	10/14/2021	105.69578	101.1131473	96.81335499	92.77584015	88.98170542	85.41357415	82.05545709	78.89263174	75.9115329
211110A00012	11/10/2021	1.44	11/10/2026	11/10/2021	104.25848	100.6315835	97.15568906	93.82368244	90.62881896	87.56470621	84.62528383	81.80480441	79.09781567
211110A00013	11/10/2021	1.44	11/10/2026	11/10/2021	104.25848	100.6315836	97.15568896	93.82368215	90.62881847	87.56470554	84.62528299	81.80480341	79.09781451
211110A00014	11/10/2021	1.44	11/10/2026	11/10/2021	104.25848	100.6315833	97.15568924	93.82368303	90.62881992	87.56470753	84.62528549	81.80480638	79.09781794

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
211208A00012	12/8/2021	1.62	12/8/2026	12/8/2021	105.06425	101.3508916	97.79469018	94.38811053	91.12401952	87.99566345	84.9966458	82.12090632	79.36270149
220111A00005	1/11/2022	1.54	1/10/2025	1/11/2022	101.55194	99.55465809	97.60727821	95.70820598	93.85591491	92.04893864	90.28586809	88.56534869	86.88607785
220411A00008	4/11/2022	3.02	4/12/2027	4/11/2022	112.39205	108.1565095	104.1124162	100.2500482	96.56023085	93.03430082	89.66407478	86.44182039	83.36022915
220520A00006	5/20/2022	3.02	5/20/2027	5/20/2022	112.35247	108.1266831	104.0943714	100.2455449	96.57078206	93.06119645	89.70840374	86.5044905	83.44198524
220617A00030	6/17/2022	3.43	6/17/2025	6/17/2022	103.4921	102.1396321	100.8177594	99.52553658	98.26205596	97.02644519	95.81786545	94.63550987	93.4786021
220617A00061	6/17/2022	3.26	6/17/2024	6/17/2022	101.87096	101.0342871	100.2123643	99.40479338	98.61118648	97.83117003	97.0643842	96.31048223	95.5691298
220916A00018	9/16/2022	4.07	9/16/2027	9/16/2022	116.1726	111.7627126	107.5620484	103.5593556	99.74405289	96.10618548	92.63638453	89.32582929	86.16621195
220919A00036	9/19/2022	4.11	9/19/2029	9/19/2022	123.48949	116.6727956	110.3036776	104.3499353	98.78186258	93.57203805	88.69513763	84.1277634	79.84828737
221017A00055	10/17/2022	4.88	11/18/2024	10/17/2022	104.14734	103.0810018	102.035387	101.0099131	100.0040163	99.01715356	98.04880177	97.09845691	96.16563313
221123A00016	11/23/2022	4.58	11/23/2029	11/23/2022	127.13611	120.0072984	113.3561196	107.1475056	101.3491534	95.93129324	90.86647661	86.1293837	81.6966476
210603A00008	6/3/2021	1.74	6/3/2036	6/3/2021	108.99801	102.2063079	96.01206909	90.35410305	85.17811493	80.43587177	76.08447557	72.0857286	68.40557882
220722A00036	7/22/2022	3.34	7/22/2025	7/22/2022	103.44865	102.0735586	100.7300956	99.41726903	98.13412835	96.87976035	95.65328732	94.45386538	93.28068288
220916A00021	9/16/2022	4.17	9/16/2027	9/16/2022	109.12052	106.5889115	104.1481205	101.7940998	99.52301125	97.33121529	95.21525904	93.17186555	91.1979236
170130A00010	1/30/2017	2.92	1/30/2025	1/30/2017	104.71374	102.5578138	100.4570196	98.40955625	96.41369822	94.46778996	92.57024237	90.71952951	88.91418559
170203A00013	2/3/2017	3.67	2/1/2036	2/3/2017	135.23923	121.2848108	108.9928269	98.15283692	88.58219943	80.12226729	72.63511897	66.00074988	60.11465702
190328A00033	4/25/2019	2.56	4/25/2024	4/25/2019	102.28664	100.8984077	99.53565971	98.19775065	96.88406072	95.59399026	94.32695894	93.082405	91.85978452
190828A00009	8/28/2019	1.71	8/28/2024	8/28/2019	101.46961	99.75743185	98.08205549	96.44235995	94.83726927	93.26575114	91.72681467	90.21950821	88.74291742
200429A00047	5/1/2020	2.7	4/30/2025	5/1/2020	104.97421	102.5674556	100.228226	97.95425322	95.7433581	93.59344723	91.50250898	89.46860979	87.48989064
201028A00006	10/30/2020	1.56	2/15/2024	10/30/2020	100.63741	99.44192519	98.27468834	97.13470549	96.02103106	94.93276274	93.86903907	92.82903717	91.81197055
180810A00028	8/10/2018	2.91	8/10/2023	8/10/2018	101.35157	100.6554583	99.96890541	99.29171824	98.62370582	97.96468239	97.31446716	96.6728842	96.03976221
190712A00009	7/12/2019	2.19	7/12/2023	7/12/2019	100.68075	100.0665454	99.45982583	98.86045539	98.26830101	97.68323283	97.10512407	96.53385097	95.9692927
200130A00028	1/30/2020	1.54	2/7/2023	1/30/2020	100.22428	100.0329726	99.84240127	99.65256472	99.46345864	99.27507879	99.08742093	98.90048086	98.71425442
200925A00002	9/25/2020	0.74	9/25/2025	9/25/2020	100.6688	97.92715534	95.27321949	92.70371957	90.21552646	87.80564469	85.47120591	83.20946282	81.01778325
171005A00006	10/5/2017	2.32	10/7/2024	10/5/2017	103.11505	101.2738028	99.47433147	97.71544915	95.99600794	94.31489968	92.67105427	91.06343809	89.49105256
190108A00039	1/8/2019	3.04	4/30/2024	1/8/2019	102.99623	101.5892785	100.2083665	98.85283131	97.52203456	96.21535865	94.93220612	93.67199877	92.43417696
191001A00023	10/1/2019	1.85	9/27/2024	10/1/2019	101.81213	100.0166013	98.26121846	96.5448418	94.86637309	93.22475229	91.61895593	90.04799559	88.51091648
200207A00018	2/7/2020	2.14	2/7/2030	2/7/2020	111.98276	104.7643201	98.06304864	91.83916082	86.0561321	80.68041536	75.68118328	71.03009427	66.70107981
200601A00006	6/1/2020	0.6	6/1/2023	6/1/2020	99.799929	99.29896357	98.80300185	98.31196973	97.82579412	97.34440335	96.86772716	96.39569667	95.92824432
210312A00010	3/12/2021	0.63	3/12/2024	3/12/2021	99.536438	98.28148382	97.05368185	95.85215201	94.67605242	93.52457724	92.39695475	91.29244554	90.21034081
060308A00014	3/8/2006	5.44	3/16/2026	3/8/2006	116.6767	113.217107	109.881274	106.6640577	103.5605641	100.5661304	97.676313	94.88687569	92.1937786
090226A00006	2/26/2009	4.55	3/1/2024	2/26/2009	104.71096	103.4447802	102.2089995	101.00253	99.82433466	98.67342473	97.54885728	96.44973243	95.37519094
150601A00930	6/1/2015	7.1	8/30/2030	6/1/2015	150.12905	140.943791	132.4303377	124.5349996	117.2086832	110.4064734	104.0872553	98.21337254	92.75031794
200302A00051	3/2/2020	1.22	8/8/2023	3/2/2020	100.05293	99.36872248	98.69383802	98.02808736	97.37128601	96.72325443	96.08381785	95.45280611	94.83005354

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210323A00007	3/23/2021	0.51	3/25/2024	3/23/2021	99.65749	98.36574183	97.09835491	95.85466857	94.634046	93.43587326	92.25955828	91.10452983	89.97023663
221122A00011	11/22/2022	5.14	5/22/2024	11/22/2022	106.25163	104.7620359	103.3010457	101.8679083	100.461896	99.08230575	97.72845849	96.39969784	95.09538932
111024A00027	10/24/2011	3.11	10/30/2023	10/24/2011	101.85364	100.9386822	100.0401468	99.15759631	98.29060703	97.43876996	96.60169038	95.77898717	94.97029222
121116A00021	11/16/2012	2.35	11/17/2025	11/16/2012	106.23462	103.2576212	100.3799597	97.59777631	94.90738859	92.30527722	89.78807772	87.35257276	84.9956848
170530A00064	5/30/2017	2.32	3/27/2023	5/30/2017	100.5031	100.1797808	99.858542	99.53936273	99.22222321	98.90710395	98.5939857	98.28284943	97.9736764
180622A00006	6/22/2018	3.53	12/21/2029	6/22/2018	121.66397	114.2366192	107.3261539	100.8936878	94.90345926	89.3225639	84.12071239	79.27000972	74.74475426
180808A00009	8/8/2018	3.12	8/7/2023	8/8/2018	101.36848	100.6818671	100.0045534	99.33635019	98.67707457	98.02654829	97.38459789	96.75105444	96.12575346
191121A00009	11/21/2019	2.55	11/21/2036	11/21/2019	124.42294	110.2332585	97.86181768	87.06346951	77.62736825	69.37201523	62.14104037	55.79960822	50.23135339
120312A00009	3/12/2012	2.72	3/15/2024	3/12/2012	102.51262	101.22599	99.96632228	98.73277146	97.52452845	96.34081781	95.18089595	94.04404949	92.92959373
160329A00045	3/29/2016	2.12	3/29/2024	3/29/2016	101.81986	100.5030931	99.21004002	97.94010629	96.6927147	95.46730707	94.2633434	93.08030122	91.91767476
160802A00003	8/2/2016	2.53	8/1/2031	8/2/2016	118.88138	109.8947778	101.6665454	94.1284533	87.21874866	80.88151236	75.06607976	69.72652162	64.82117893
171011A00013	10/11/2017	2.77	10/13/2026	10/11/2017	109.69609	105.7773331	102.0212074	98.42012609	94.96689878	91.65470509	88.4770738	85.42786321	82.50124261
190703A00017	7/3/2019	2.33	5/4/2026	7/3/2019	106.77794	103.3500461	100.0508987	96.8749936	93.81708859	90.87219221	88.03555065	85.30263506	82.66912968
190923A00078	9/23/2019	1.96	6/28/2024	9/23/2019	101.67714	100.1232772	98.60062014	97.10829717	95.64546775	94.2113221	92.80507976	91.42598828	90.07332194
191031A00041	10/31/2019	1.72	10/31/2023	10/31/2019	100.57045	99.65924187	98.76447081	97.88569505	97.02248895	96.17444184	95.34115736	94.52225287	93.71735884
200210A00005	2/10/2020	1.77	2/10/2027	2/10/2020	107.42724	103.2027914	99.16771621	95.31249097	91.6281232	88.10612242	84.73846895	81.51758487	78.43630698
200309A00021	3/9/2020	1.05	3/9/2026	3/9/2020	102.16977	98.96777603	95.88185651	92.90714031	90.03899598	87.27301416	84.60499534	82.03093851	79.54703032
200424A00006	4/24/2020	0.6	4/24/2023	4/24/2020	99.954371	99.55512268	99.15906135	98.76614921	98.37634874	97.98962304	97.60593577	97.22525118	96.84753407
161109A00018	11/9/2016	2.63	11/9/2026	11/9/2016	109.37174	105.386777	101.5701796	97.91395263	94.41052671	91.05272929	87.8337617	84.74717764	81.78686307
170515A00010	5/15/2017	2.58	5/15/2024	5/15/2017	102.41588	100.974124	99.55977858	98.17212873	96.81048534	95.47418251	94.16257657	92.87504521	91.61098654
180412A00036	4/12/2018	3.54	4/15/2038	4/12/2018	139.92168	123.4107516	109.154725	96.82732848	86.15135227	76.89103776	68.84567871	61.84423845	55.74081753
180717A00076	7/17/2018	3.03	7/17/2023	7/17/2018	101.22177	100.5921973	99.97045647	99.35640352	98.7498963	98.15079615	97.5589678	96.97427924	96.39660165
210128A00008	1/28/2021	0.54	4/9/2024	1/28/2021	99.442796	98.11800861	96.81687861	95.53882777	94.28329659	93.04974313	91.83764242	90.64648574	89.47578003
211222A00024	12/22/2021	1.13	4/15/2024	12/22/2021	100.25677	98.91015001	97.58783453	96.28922108	95.01372867	93.76079481	92.52987481	91.32044107	90.13198242
221031A00045	10/31/2022	4.79	10/31/2025	10/31/2022	112.61559	109.6057004	106.6936371	103.8756869	101.1482983	98.50807387	95.95176258	93.47625259	91.07856455
150519A00013	5/19/2015	2.98	5/19/2025	5/19/2015	105.81881	103.3516524	100.9550374	98.62654607	96.36385791	94.16474553	92.02707048	89.9487791	87.92789858
160706A00029	7/6/2016	2.49	7/8/2030	7/6/2016	115.06748	107.3417753	100.1959143	93.58324597	87.46110293	81.79044351	76.53552624	71.66361494	67.14471152
180925A00060	9/25/2018	3.23	8/25/2023	9/25/2018	101.5276	100.7920588	100.0671703	99.3527067	98.64844421	97.95416535	97.26965878	96.5947191	95.92914662
200123A00048	1/23/2020	1.7	1/23/2025	1/23/2020	102.47535	100.3537722	98.28638281	96.27142457	94.30720765	92.3921103	90.52457551	88.70310781	86.92627035
160119A00028	1/19/2016	3.34	1/21/2031	1/19/2016	122.69166	114.1565806	106.2953429	99.05083773	92.37109062	86.2087728	80.52076308	75.26775323	70.41389222
170313A00035	3/13/2017	3.31	3/15/2027	3/13/2017	113.33561	108.9189045	104.7017683	100.674096	96.8263534	93.14953878	89.63514979	86.27515305	83.06195557
170322A00025	3/22/2017	3.58	3/22/2033	3/22/2017	129.41059	118.4687665	108.5845325	99.64888705	91.56463029	84.24502653	77.61262808	71.59823673	66.13998607
180329A00003	3/29/2018	3.08	3/29/2028	3/29/2018	116.57452	110.9905148	105.7120408	100.7207835	95.99961501	91.53251394	87.30448817	83.3015039	79.51041964

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
181119A00018	11/19/2018	3.28	11/17/2023	11/19/2018	101.95469	100.9934501	100.0503442	99.12485922	98.2165043	97.32480659	96.44931053	95.58957705	94.74518285
190215A00006	2/15/2019	2.89	2/15/2024	2/15/2019	102.25852	101.052612	99.87511608	98.72504051	97.60143519	96.50339347	95.43004976	94.38057713	93.35418524
201028A00004	10/30/2020	1.55	12/29/2023	10/30/2020	100.38353	99.31881502	98.27656753	97.25607898	96.25667396	95.2777047	94.31854973	93.37861256	92.45732039
130606A00013	6/6/2013	2.94	6/15/2023	6/6/2013	101.04178	100.4992241	99.9624941	99.43149961	98.9061489	98.3863522	97.87202162	97.36307114	96.85941652
150601A00531	6/1/2015	3.28	7/24/2024	6/1/2015	103.88363	102.2423853	100.6350091	99.06051367	97.51795288	96.00641682	94.52503009	93.07295019	91.64936591
160129A00068	1/29/2016	1.97	1/30/2023	1/29/2016	100.28063	100.1113414	99.94262608	99.77447982	99.60689978	99.43988312	99.27342699	99.1075286	98.94218515
160701A00020	7/1/2016	2.13	7/1/2026	7/1/2016	106.49501	102.9159063	99.47656517	96.17076193	92.99258747	89.93642829	86.9969499	84.16908126	81.44800014
160712A00023	7/12/2016	1.79	7/12/2023	7/12/2016	100.43265	99.81931073	99.21345342	98.6149378	98.02363091	97.43940296	96.8621273	96.29168025	95.72794109
160830A00035	8/30/2016	2.06	8/30/2024	8/30/2016	102.09124	100.3682166	98.68229361	97.03233668	95.41725884	93.83601736	92.2876114	90.77107994	89.28549969
190919A00025	9/19/2019	1.8	9/19/2024	9/19/2019	102.06786	100.2846858	98.54106101	96.83583769	95.1679099	93.53621229	91.93971821	90.377438	88.84841733
200305A00035	3/5/2020	1.25	3/5/2026	3/5/2020	102.80883	99.6067422	96.52029049	93.54462154	90.67512147	87.90739868	85.23727154	82.66075685	80.17405902
200709A00007	7/10/2020	1.67	7/9/2027	7/10/2020	106.81335	102.2275091	97.86438628	93.71199772	89.7590686	85.9949878	82.40976507	78.99399133	75.73880161
210312A00004	3/12/2021	0.34	3/10/2023	3/12/2021	99.946853	99.67066819	99.39602043	99.12289635	98.85128318	98.5811683	98.31253925	98.04538367	97.77968939
130904A00036	9/4/2013	3.57	9/15/2023	9/4/2013	102.02415	101.228513	100.4453017	99.67422413	98.91499962	98.16735599	97.43102936	96.70576381	95.99131113
170111A00013	1/11/2017	3.4	1/10/2031	1/11/2017	123.11216	114.5896026	106.7373839	99.49888646	92.82256387	86.6614621	80.97278774	75.7175191	70.8600555
181210A00015	12/10/2018	3.12	12/11/2023	12/10/2018	101.94276	100.9175455	99.91294692	98.92834914	97.96315869	97.01680544	96.08874141	95.17843969	94.28539348
191104A00022	11/4/2019	2.17	8/4/2027	11/4/2019	109.27547	104.5640316	100.0835753	95.82152875	91.76607753	87.90611183	84.23118021	80.73144683	77.39765164
191126A00026	11/26/2019	1.91	11/25/2026	11/26/2019	107.49057	103.4751256	99.6321847	95.95343441	92.43100814	89.05745791	85.82572971	82.72914058	79.76135705
200130A00006	1/30/2020	1.77	1/30/2025	1/30/2020	102.211	100.0827838	98.00913225	95.98826442	94.01847057	92.09811028	90.22560899	88.39945484	86.61819554
200218A00004	2/18/2020	1.73	2/21/2023	2/18/2020	100.25671	100.0271442	99.79863809	99.57118094	99.34476554	99.11938474	98.89503145	98.67169864	98.44937934
220902A00043	9/2/2022	3.91	3/4/2024	9/2/2022	103.68322	102.4202231	101.1866722	99.9815355	98.80383266	97.65262816	96.52702877	95.42618117	94.34926975
171227A00018	12/27/2017	2.83	12/27/2024	12/27/2017	104.25178	102.191144	100.1816246	98.22161402	96.30956834	94.44400351	92.62349232	90.84666182	89.11219079
180904A00012	9/4/2018	3.35	9/4/2030	9/4/2018	123.8172	115.5301684	107.8721714	100.7918414	94.2422724	88.18061012	82.56768126	77.36765901	72.54776034
190529A00089	5/29/2019	2.38	5/29/2024	5/29/2019	102.18501	100.708619	99.26097864	97.84132526	96.44891973	95.08304849	93.74302236	92.42817552	91.13786454
200306A00065	3/6/2020	1.38	3/6/2030	3/6/2020	106.55459	99.45386817	92.87085126	86.76519179	81.09988827	75.84098794	70.95732051	66.42025645	62.20348761
151223A00066	12/23/2015	2.34	12/23/2022	12/23/2015	100.14395	100.080043	100.0162276	99.95250708	99.88888131	99.82535004	99.76191306	99.69857015	99.63532111
171206A00040	12/6/2017	2.23	12/6/2022	12/6/2017	100.03572	100.0190445	100.002386	99.98574453	99.96911995	99.95251226	99.93592142	99.91934741	99.90279019
190529A00028	5/29/2019	2.38	5/29/2024	5/29/2019	102.18501	100.708619	99.26097864	97.84132526	96.44891973	95.08304849	93.74302236	92.42817552	91.13786454
200818A00006	8/18/2020	1.18	8/18/2028	8/18/2020	105.23126	99.61939223	94.33813854	89.36633104	84.68426847	80.27360645	76.11725667	72.19929414	68.50487175
200826A00040	8/28/2020	0.92	10/27/2023	8/28/2020	99.675586	98.78161326	97.9035768	97.04105408	96.1936371	95.36093208	94.54255878	93.73814999	92.94735092
110824A00004	8/24/2011	3.11	8/30/2023	8/24/2011	101.5864	100.8355473	100.095787	99.36687148	98.64856355	97.94063287	97.24285572	96.5550148	95.87689894
160616A00027	6/16/2016	2.27	6/16/2026	6/16/2016	106.88367	103.3388309	99.93110764	96.65445419	93.50312512	90.47165932	87.55486422	84.74780101	82.04577073
180702A00012	7/2/2018	3.01	7/3/2023	7/2/2018	101.15387	100.5622751	99.97759163	99.39969929	98.82848025	98.26381939	97.70560424	97.15372486	96.60807383

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190110A00004	1/10/2019	3.09	1/10/2025	1/10/2019	104.9124	102.8074569	100.7553518	98.75439695	96.80297301	94.89952441	93.04255639	91.2306321	89.46236986
190514A00021	5/14/2019	2.72	11/14/2025	5/14/2019	106.67361	103.7129981	100.85054	98.08245076	95.4051117	92.8150636	90.3089985	87.88375226	85.53629743
190812A00003	8/12/2019	1.67	8/12/2024	8/12/2019	101.68959	100.0113641	98.36865647	96.76040748	95.18559699	93.64324531	92.13241123	90.65219006	89.20171182
200331A00060	3/31/2020	1.09	3/31/2025	3/31/2020	100.9604	98.68250871	96.46682547	94.31132217	92.21404881	90.1731295	88.18675918	86.25320058	84.37078124
200408A00021	4/8/2020	0.99	4/4/2025	4/8/2020	101.22971	98.92790502	96.68940389	94.51212597	92.39407349	90.33332522	88.32803305	86.37641883	84.47677124
140815A00032	8/15/2014	3.59	10/15/2029	8/15/2014	121.65994	114.4142717	107.6610165	101.3639866	95.48983314	90.00781	84.8895582	80.10890932	75.64170594
180817A00022	8/17/2018	2.87	8/17/2023	8/17/2018	101.35206	100.6371058	99.93224312	99.23725459	98.55193352	97.87607896	97.20949548	96.55199304	95.90338674
190620A00045	6/20/2019	2.14	6/20/2024	6/20/2019	101.9252	100.3910932	98.88754942	97.41372739	95.96881353	94.55202358	93.16260133	91.79981726	90.46296741
190807A00036	8/7/2019	1.75	8/7/2023	8/7/2019	100.42057	99.73760699	99.06391239	98.39929378	97.74356863	97.09655931	96.45809286	95.82800088	95.2061194
200310A00065	3/13/2020	1.1	3/13/2025	3/13/2020	100.92223	98.69136239	96.52030713	94.40707305	92.34975153	90.34651117	88.39559403	86.495312	84.64404357
130531A00021	5/31/2013	3.22	5/30/2028	5/31/2013	117.75822	111.9705047	106.5083502	101.3516885	96.48179044	91.88117082	87.5334995	83.4235192	79.53696965
170327A00070	3/29/2017	3.05	3/29/2027	3/29/2017	113.30786	108.8257154	104.5484457	100.4656222	96.56740406	92.84449852	89.28812719	85.88999516	82.64226191
181004A00028	10/4/2018	3.31	10/4/2023	10/4/2018	101.75829	100.9150898	100.0858612	99.27025843	98.46794757	97.67860542	96.90191924	96.13758625	95.38531327
200407A00002	4/8/2020	1.82	4/8/2024	4/8/2020	101.18925	99.85466046	98.543846	97.25622966	95.9912494	94.74836089	93.52703679	92.3267661	91.14705357
200508A00004	5/8/2020	0.43	5/8/2023	5/8/2020	99.854422	99.41735206	98.98410537	98.55463135	98.12888076	97.70680525	97.28835728	96.87349013	96.46215788
201030A00001	11/2/2020	2.54	10/29/2040	11/2/2020	120.82924	104.0351582	89.89680231	77.97333836	67.89948449	59.37221908	52.1398836	45.99323812	40.75811192
191115A00030	11/15/2019	2.35	11/9/2029	11/15/2019	113.20013	106.1744248	99.63604053	93.54862583	87.8787178	82.59549849	77.6705733	73.07776909	68.7929499
200304A00052	3/6/2020	2.11	3/8/2027	3/6/2020	108.1329	103.8456274	99.75264875	95.84410103	92.11068258	88.54361369	85.13460414	81.87582296	78.75987031
200310A00019	3/10/2020	0.95	3/10/2023	3/10/2020	100.06935	99.79345325	99.51908166	99.24622605	98.97487381	98.70501248	98.43662973	98.16971337	97.90425133
220505A00026	5/9/2022	2.69	8/22/2023	5/9/2022	101.11783	100.391995	99.67656752	98.9713275	98.27605833	97.59054951	96.91459642	96.24800015	95.59056726
180820A00036	8/20/2018	3	8/21/2023	8/20/2018	101.34115	100.6170819	99.9033613	99.19976386	98.50607514	97.82208671	97.14759595	96.48240586	95.82632485
181227A00026	12/27/2018	3.03	12/27/2023	12/27/2018	101.97664	100.9081017	99.86194277	98.8374631	97.83399375	96.85089299	95.88754502	94.94335863	94.01776601
200226A00014	2/26/2020	1.53	2/27/2023	2/26/2020	100.21924	99.97323405	99.72843534	99.48483091	99.24241207	99.00117024	98.76109689	98.5221836	98.28442201
200720A00044	7/22/2020	2.22	7/21/2026	7/22/2020	106.96139	103.3206351	99.82370136	96.46410428	93.23569157	90.13262322	87.14935364	84.28061498	81.52140143
200922A00038	9/24/2020	2.33	9/25/2023	9/24/2020	100.91635	100.100803	99.29840446	98.50884059	97.73180525	96.96700202	96.21414373	95.47295215	94.74315763
211217A00021	12/21/2021	2.44	12/18/2026	12/21/2021	108.92059	104.838702	100.9334668	97.1962914	93.61905242	90.19406332	86.91404851	83.772119	80.76174978
180207A00003	2/7/2018	3.28	2/7/2028	2/7/2018	116.01128	110.6265824	105.5285886	100.7004481	96.12639554	91.79167279	87.68245891	83.78580538	80.08957622
190528A00005	5/28/2019	2.42	6/15/2023	5/28/2019	100.75798	100.2163135	99.68046833	99.15035187	98.62587248	98.10694046	97.59346801	97.08536918	96.58255982
200121A00009	1/24/2020	1.94	1/24/2025	1/24/2020	102.54843	100.4322384	98.36998684	96.35992659	94.40037807	92.4897293	90.62643252	88.80900109	87.03600653
200303A00007	3/3/2020	1.11	3/4/2024	3/3/2020	100.38141	99.13656283	97.92094207	96.73352211	95.57332572	94.43942053	93.33091643	92.24696324	91.18674848
200604A00004	6/4/2020	0.76	6/4/2024	6/4/2020	99.752369	98.27903949	96.83465132	95.41842599	94.02961249	92.66748598	91.33134668	90.02051877	88.73434937
221011A00036	10/11/2022	4.59	10/6/2026	10/11/2022	116.66038	112.6265254	108.7578511	105.0467199	101.485889	98.06848562	94.78798654	91.63819836	88.61323919
150601A00485	6/1/2015	3.09	6/21/2024	6/1/2015	103.66136	102.1051816	100.5800907	99.0852219	97.61974505	96.18285993	94.77379507	93.39180643	92.03617615

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
151223A00077	12/23/2015	3.57	12/24/2035	12/23/2015	137.01684	122.8480565	110.3635474	99.35079412	89.62525422	81.02654281	73.41515389	66.66964157	60.68419448
161214A00023	12/14/2016	3.3	12/15/2031	12/14/2016	126.43212	116.7558551	107.919375	99.84478417	92.46180733	85.70700882	79.52309417	73.85828629	68.66576795
170809A00005	8/9/2017	2.61	8/11/2025	8/9/2017	105.58913	102.8988205	100.2908703	97.76222706	95.30997743	92.93133647	90.62364089	88.38434275	86.21100357
190529A00032	5/29/2019	2.38	5/29/2024	5/29/2019	102.18501	100.708619	99.26097864	97.84132526	96.44891973	95.08304849	93.74302236	92.42817552	91.13786454
190613A00011	6/13/2019	2.26	6/13/2024	6/13/2019	102.07785	100.5616023	99.07535283	97.61828663	96.18961375	94.78857227	93.4144271	92.06646882	90.7440125
190805A00050	8/5/2019	1.91	8/5/2024	8/5/2019	101.7363	100.0819227	98.46218847	96.87607631	95.32260216	93.80082051	92.3098224	90.84873371	89.41671341
200501A00003	5/1/2020	0.66	4/14/2023	5/1/2020	99.93084	99.55962755	99.19117561	98.82545291	98.46242913	98.10207439	97.74435925	97.38925473	97.03673223
210609A00013	6/11/2021	1.64	6/11/2025	6/11/2021	102.6279	100.1397373	97.72447422	95.37955423	93.1025233	90.89102864	88.74281385	86.65571433	84.62765289
220819A00038	8/19/2022	3.59	8/19/2024	8/19/2022	104.69087	102.9735263	101.2926348	99.64710162	98.03587377	96.45794029	94.91233019	93.39811047	91.91438418
150601A00495	6/1/2015	2.99	6/27/2024	6/1/2015	103.55134	101.9795048	100.4392569	98.92970794	97.45000694	95.99933399	94.57689896	93.18194008	91.8137227
190110A00010	1/10/2019	2.97	1/16/2024	1/10/2019	102.08626	100.9628502	99.86415728	98.78936737	97.7377061	96.70843227	95.70083607	94.71423743	93.74798447
200317A00026	3/17/2020	1.22	3/15/2024	3/17/2020	100.30726	99.03969642	97.79869159	96.58341533	95.39307128	94.22689611	93.0841578	91.96415403	90.86621067
210818A00005	8/18/2021	0.6	8/19/2024	8/18/2021	99.861743	98.18141171	96.53697854	94.92735838	93.35151049	91.80843593	90.29717543	88.81680732	87.36644572
180823A00033	8/23/2018	2.85	8/23/2023	8/23/2018	101.36177	100.6306506	99.91007668	99.19981804	98.49965414	97.80937068	97.12875943	96.45761795	95.79574944
190114A00061	1/14/2019	2.98	1/31/2024	1/14/2019	102.24406	101.0788133	99.94009897	98.82701649	97.73870752	96.67435166	95.63316439	94.61439512	93.61732538
191009A00017	10/9/2019	1.76	10/4/2024	10/9/2019	101.67201	99.85939407	98.08768347	96.35572061	94.66238865	93.00660904	91.38733997	89.80357487	88.254341
191023A00006	10/23/2019	1.95	10/23/2024	10/23/2019	102.10149	100.2355896	98.41282379	96.63193757	94.89172518	93.19102329	91.52870927	89.90369948	88.31494768
200302A00045	3/4/2020	1.31	3/4/2025	3/4/2020	101.3674	99.15471548	97.00076688	94.90358212	92.86126873	90.87201312	88.93407658	87.04579147	85.2055577
151106A00011	11/6/2015	3.1	1/15/2026	11/6/2015	108.37182	105.2181256	102.1735181	99.23358557	96.39412509	93.65112933	91.00077585	88.43941737	85.96357252
191009A00028	10/9/2019	1.76	10/9/2024	10/9/2019	101.68974	99.86402738	98.07978442	96.33582888	94.6310213	92.96426161	91.33448742	89.7406726	88.1818257
210129A00008	1/29/2021	0.62	10/8/2024	1/29/2021	99.560303	97.75754376	95.99575817	94.27378111	92.59048792	90.94479274	89.33564683	87.76203715	86.22298485
211222A00003	12/22/2021	1.33	1/15/2025	12/22/2021	101.19708	99.11924083	97.09400383	95.11967917	93.19464347	91.31733789	89.48626495	87.69998561	85.95711654
211222A00031	12/22/2021	1.33	1/15/2025	12/22/2021	101.19708	99.11924083	97.09400383	95.11967917	93.19464347	91.31733789	89.48626495	87.69998561	85.95711654
221018A00048	10/18/2022	4.71	10/19/2026	10/18/2022	117.30205	113.2199703	109.3062976	105.5531873	101.9531999	98.49927975	95.18473265	92.00320568	88.94866803
221110A00036	11/10/2022	4.56	11/10/2025	11/10/2022	112.07497	109.0450788	106.1146161	103.2797724	100.5369053	97.88253189	95.31332068	92.82608439	90.41777269
170508A00010	5/8/2017	2.43	5/8/2024	5/8/2017	102.45129	101.0228431	99.621285	98.24592648	96.8960977	95.57115118	94.27046094	92.99342154	91.73944724
180531A00015	5/31/2018	2.95	5/31/2023	5/31/2018	100.98772	100.4859718	99.98920168	99.49733134	99.01028866	98.52800291	98.05040473	97.57742612	97.10900035
190130A00020	1/30/2019	2.97	4/17/2023	1/30/2019	100.80898	100.4275493	100.0490097	99.67333065	99.3004796	98.93042466	98.56313436	98.19857771	97.83672418
190327A00032	3/27/2019	2.53	1/26/2024	3/27/2019	101.67517	100.5269995	99.40470416	98.30741449	97.23430164	96.18457302	95.15747038	94.15226793	93.16827063
190528A00009	5/28/2019	2.45	5/15/2024	5/28/2019	102.22536	100.7850604	99.37214335	97.98589746	96.6256343	95.29068858	93.98041728	92.69419864	91.43143136
191226A00019	12/26/2019	2.4	12/22/2028	12/26/2019	112.61288	106.4577008	100.6809037	95.25723701	90.16326124	85.37721082	80.87886587	76.64943481	72.67144633
200505A00005	5/5/2020	0.77	5/5/2025	5/5/2020	100.81895	98.43969709	96.12808427	93.88181989	91.69869982	89.57660741	87.5135095	85.50745255	83.55655908
190530A00029	5/30/2019	2.25	5/30/2024	5/30/2019	102.29242	100.8076495	99.35191278	97.92443718	96.52447359	95.15129885	93.80421466	92.48254651	91.18564263

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191203A00004	12/4/2019	1.87	12/4/2024	12/4/2019	102.137	100.1593118	98.22985931	96.34716586	94.50980871	92.71641837	90.96567621	89.25631215	87.58710257
200207A00009	2/7/2020	1.58	2/7/2025	2/7/2020	102.3002	100.1389811	98.03378593	95.98276373	93.98413885	92.03620871	90.1373401	88.28596568	86.48058076
200304A00054	3/6/2020	2.35	3/8/2027	3/6/2020	109.16004	104.8509751	100.7369178	96.80797816	93.05482639	89.46865606	86.04115152	82.76445759	79.63115131
200604A00013	6/4/2020	2.21	6/4/2035	6/4/2020	116.38471	104.1604465	93.36337399	83.81821988	75.3720966	67.89153939	61.25995162	55.37539712	50.14869095
210527A00009	5/27/2021	0.5	5/28/2024	5/27/2021	99.652101	98.19318629	96.76275027	95.36003427	93.98430602	92.63485858	91.31100917	90.01209818	88.73748819
210816A00003	8/16/2021	0.71	8/16/2024	8/16/2021	99.712332	98.04708169	96.41719563	94.82161207	93.25931161	91.7293155	90.23068353	88.76251214	87.32393259
221122A00041	11/22/2022	4.97	11/22/2024	11/22/2022	108.24255	106.2347259	104.2749098	102.3616547	100.4935676	98.66930645	96.88757845	95.14713749	93.44678231
180530A00028	5/30/2018	3.67	5/31/2033	5/30/2018	130.69273	119.5050925	109.4151308	100.3079616	92.08132523	84.64413955	77.91522475	71.82217972	66.30039093
190308A00007	3/8/2019	2.8	3/8/2024	3/8/2019	102.30576	101.0419905	99.80659881	98.5986276	97.41716329	96.26133277	95.13030122	94.02327	92.93947471
200203A00004	2/3/2020	1.7	2/3/2023	2/3/2020	100.21552	100.0355792	99.85628621	99.67763693	99.4996279	99.32225572	99.14551697	98.96940827	98.79392625
200326A00026	3/26/2020	1.32	3/26/2024	3/26/2020	100.47553	99.17972727	97.90801916	96.65976578	95.43434907	94.23117262	93.0496608	91.8892578	90.74942678
170622A00036	6/22/2017	3.23	6/22/2032	6/22/2017	124.58846	114.5963323	105.5130264	97.2503734	89.72920514	82.87839406	76.63399826	70.93850153	65.74013721
180706A00013	7/6/2018	3.01	7/6/2023	7/6/2018	101.1657	100.5659711	99.97334893	99.38770787	98.80892495	98.23688014	97.67145616	97.11253847	96.56001515
190530A00024	5/30/2019	2.25	5/30/2024	5/30/2019	102.29242	100.8076495	99.35191278	97.92443718	96.52447359	95.15129885	93.80421466	92.48254651	91.18564263
190606A00029	6/6/2019	2.96	6/6/2034	6/6/2019	124.54163	112.7256658	102.1778663	92.75399621	84.32696244	76.78469636	70.02830764	63.97047323	58.53403051
190816A00033	8/16/2019	1.77	8/16/2024	8/16/2019	101.53561	99.8541994	98.20844558	96.59727935	95.01967346	93.4746416	91.96123632	90.47854705	89.02569832
200306A00039	3/6/2020	0.88	3/6/2023	3/6/2020	100.05328	99.78837102	99.52486428	99.26275251	99.00202462	98.74266964	98.48467672	98.2280351	97.97273417
200709A00003	7/10/2020	1.63	7/10/2026	7/10/2020	104.74863	101.1770984	97.74613055	94.44942433	91.28099773	88.23517027	85.30654584	82.48999673	79.7806486
170502A00028	5/2/2017	2.84	5/3/2027	5/2/2017	112.70739	108.1404665	103.7867575	99.63519689	95.67534999	91.89737399	88.29198148	84.85040627	81.56437139
190102A00050	1/2/2019	3.38	1/3/2034	1/2/2019	131.34911	119.4092143	108.7055233	99.10195321	90.47811485	82.72742557	75.7554601	69.47850584	63.82229644
190809A00010	8/9/2019	1.88	8/8/2024	8/9/2019	101.6963	100.0344079	98.40744038	96.81435918	95.25416849	93.72591165	92.22866924	90.7615572	89.32372512
201006A00007	10/8/2020	1.47	10/10/2023	10/8/2020	100.18828	99.33653989	98.49921794	97.67595485	96.86639882	96.07020971	95.28705854	94.51662706	93.75860731
211222A00019	12/22/2021	0.97	10/16/2023	12/22/2021	99.742685	98.87727032	98.02679405	97.19087179	96.36913251	95.56121769	94.76678081	93.98548685	93.21701181
160401A00016	4/1/2016	2.42	4/1/2025	4/1/2016	104.08043	101.7628089	99.50832507	97.31491739	95.18060698	93.1034902	91.08173541	89.11357978	87.19732637
160630A00011	6/30/2016	1.8	6/30/2023	6/30/2016	100.43155	99.85046103	99.27606678	98.70825564	98.14691506	97.59193506	97.04320812	96.50062914	95.96409535
170215A00040	2/15/2017	2.59	5/15/2023	2/15/2017	100.75513	100.2975189	99.84407053	99.39472671	98.94943175	98.50813095	98.07077063	97.63729806	97.20766145
181005A00011	10/5/2018	3.2	10/5/2023	10/5/2018	101.82036	100.9721498	100.13807	99.31776796	98.51090424	97.71715035	96.93618847	96.16771097	95.41142004
191004A00004	10/4/2019	1.54	10/4/2024	10/4/2019	101.64916	99.82975016	98.05151426	96.31328684	94.61394078	92.95238773	91.32757657	89.73849183	88.18415232
191015A00013	10/15/2019	1.72	10/15/2024	10/15/2019	102.0276	100.1759367	98.36676178	96.59885617	94.87104054	93.1821768	91.53116635	89.91694845	88.33849871
191021A00021	10/21/2019	2.22	12/21/2027	10/21/2019	110.26974	105.1611404	100.320772	95.73314941	91.38375845	87.25899339	83.34609541	79.63309545	76.10876122
091210A00005	12/10/2009	5.08	12/16/2024	12/10/2009	108.78809	106.7091349	104.6810491	102.7022563	100.77124	98.88654122	97.04675614	95.2505335	93.4965722
160706A00006	7/6/2016	1.47	7/6/2023	7/6/2016	100.33685	99.73869774	99.14766309	98.56361668	97.98643505	97.41599761	96.85218661	96.29488703	95.74398648
200305A00029	3/5/2020	1.14	3/5/2025	3/5/2020	100.98563	98.77474619	96.62264041	94.52733829	92.48694786	90.49965576	88.56372329	86.67748259	84.83933315

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210720A00035	7/22/2021	2.27	7/21/2031	7/22/2021	114.5743	105.8926353	97.94188319	90.65652759	83.97724343	77.85028606	72.22693973	67.0630232	62.31844628
130314A00027	3/14/2013	2.38	3/15/2023	3/14/2013	100.53196	100.2409531	99.95164374	99.66401785	99.37806064	99.09375749	98.81109397	98.53005578	98.25062883
160330A00056	3/30/2016	2.26	3/31/2025	3/30/2016	104.19288	101.8665256	99.60365446	97.40219614	95.26015759	93.17562171	91.14674405	89.17174961	87.24892983
180702A00034	7/2/2018	2.86	7/3/2023	7/2/2018	101.16456	100.5716858	99.98575756	99.40665099	98.83424739	98.26843082	97.70908799	97.15610821	96.6093833
190115A00025	1/15/2019	2.96	1/12/2024	1/15/2019	102.05026	100.9377606	99.84950426	98.78470314	97.74260446	96.72248734	95.72366117	94.74546402	93.78726116
190827A00002	8/27/2019	1.74	8/27/2024	8/27/2019	101.51902	99.80900263	98.13570383	96.49800111	94.89482242	93.32513914	91.78796383	90.28234814	88.80738083
191206A00013	12/6/2019	3.05	12/6/2044	12/6/2019	132.42739	111.7029979	94.80405743	80.98331468	69.64436203	60.31043145	52.59977799	46.20623674	40.88384516
210609A00007	6/11/2021	2.6	6/11/2029	6/11/2021	114.41017	107.7414653	101.5100938	95.68504347	90.23766029	85.14145354	80.37192181	75.90639397	71.72388354
210802A00002	8/2/2021	0.7	8/1/2025	8/2/2021	100.95302	98.33958251	95.8062161	93.34996787	90.96801398	88.65765428	86.41630585	84.24149705	82.13086178
211222A00011	12/22/2021	0.97	10/16/2023	12/22/2021	99.742685	98.87727032	98.02679405	97.19087179	96.36913251	95.56121769	94.76678081	93.98548685	93.21701181
120127A00018	1/27/2012	3.64	2/1/2027	1/27/2012	114.28108	109.9669942	105.8428459	101.8992042	98.12716079	94.51829904	91.06466346	87.75873177	84.59338865
150319A00012	3/19/2015	3.13	3/19/2029	3/19/2015	117.48579	110.9441834	104.8160315	99.07296974	93.68872265	88.63893992	83.90104589	79.45410138	75.27867699
150601A00648	6/1/2015	2.71	12/30/2022	6/1/2015	100.20339	100.1201508	100.0370485	99.95408458	99.87125869	99.78857052	99.70601974	99.62360603	99.54132905
170831A00004	8/31/2017	2	8/31/2023	8/31/2017	100.74918	99.99913582	99.26022093	98.53218962	97.81480291	97.10782878	96.4110419	95.7242234	95.04716064
180827A00020	8/27/2018	3.21	8/27/2025	8/27/2018	107.36705	104.6096184	101.9374848	99.34744932	96.83645847	94.40159542	92.04007274	89.74922555	87.5265051
190625A00021	6/25/2019	1.88	6/26/2023	6/25/2019	100.57092	99.99895922	99.43349363	98.87441045	98.32160205	97.7749632	97.23439103	96.69978494	96.17104653
221107A00056	11/7/2022	4.73	11/8/2027	11/7/2022	122.48144	117.1902893	112.1669299	107.3963352	102.8644009	98.55788281	94.46433972	90.57208066	86.87011591
190807A00022	8/7/2019	1.76	1/17/2023	8/7/2019	100.18067	100.0476843	99.91506262	99.7828074	99.65091703	99.51938998	99.38822471	99.25741969	99.12697342
190809A00012	8/9/2019	1.69	8/9/2024	8/9/2019	101.71308	100.0425408	98.4072396	96.8061269	95.2381945	93.70247407	92.19803512	90.72398309	89.27945762
190829A00005	8/30/2019	2.06	8/30/2023	8/30/2019	100.66705	99.92169079	99.18732822	98.46372455	97.7506448	97.04786077	96.35515084	95.67229968	94.99909807
190904A00001	9/4/2019	1.5	9/4/2024	9/4/2019	101.47067	99.73364375	98.03438214	96.37174544	94.74463539	93.15199763	91.59281948	90.06612786	88.57098726
200511A00015	5/11/2020	0.6	2/1/2023	5/11/2020	100.01932	99.84514468	99.67157674	99.4986097	99.32624049	99.15446604	98.9832833	98.81268924	98.64268087
200928A00003	9/28/2020	0.55	9/26/2025	9/28/2020	100.72306	97.96453497	95.29460464	92.70995707	90.20742408	87.78397297	85.43669988	83.1628236	80.9596796
120112A00013	1/12/2012	2.76	1/16/2024	1/12/2012	102.07183	100.9451673	99.84334158	98.76554011	97.71098314	96.67892431	95.66864897	94.67947245	93.71073853
130528A00028	5/28/2013	2.63	5/30/2023	5/28/2013	100.82302	100.3244784	99.83085478	99.34207705	98.85807421	98.37877661	97.90411595	97.43402525	96.9684388
190925A00011	9/25/2019	1.89	9/25/2024	9/25/2019	101.8957	100.1044374	98.35312436	96.64061824	94.96582087	93.32767275	91.72515142	90.15726987	88.62307504
200124A00008	1/24/2020	1.92	1/22/2027	1/24/2020	107.92445	103.7435936	99.74800127	95.92845638	92.27625553	88.78317513	85.44144201	82.24370604	79.18301462
171026A00011	10/26/2017	2.94	10/26/2027	10/26/2017	113.52104	108.484333	103.7037419	99.16491395	94.85437024	90.75945062	86.86826003	83.16961841	79.65301423
190130A00019	1/30/2019	3.01	1/30/2024	1/30/2019	102.27029	101.1076027	99.9713271	98.860571	97.77448164	96.71224392	95.67307825	94.65623873	93.66101128
190906A00005	9/6/2019	1.77	9/6/2023	9/6/2019	100.44219	99.67925883	98.92787893	98.18778975	97.45873827	96.74047896	96.03277356	95.33539073	94.6481059
191115A00016	11/18/2019	2.48	11/18/2024	11/18/2019	103.26802	101.3214949	99.42148734	97.56660507	95.75550326	93.98688628	92.25950556	90.57215748	88.9236815
200203A00006	2/3/2020	1.76	2/3/2025	2/3/2020	102.21263	100.0730657	97.98858239	95.95736899	93.97769198	92.04788858	90.16636317	88.33158397	86.54207994
210916A00007	9/16/2021	0.75	9/16/2024	9/16/2021	99.784582	98.03746216	96.32890237	94.6577758	93.02299818	91.42352555	89.85835248	88.32651021	86.82706506

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
211001A00001	10/1/2021	0.59	10/2/2023	10/1/2021	99.44848	98.62123595	97.80766071	97.00741817	96.22018307	95.44564065	94.68348623	93.93342481	93.19517068
170803A00021	8/3/2017	2.5	8/5/2024	8/3/2017	102.7334	101.0703246	99.44205656	97.84756286	96.28585527	94.75598424	93.25703698	91.78813562	90.34843557
180118A00039	1/18/2018	3.09	1/19/2027	1/18/2018	111.85851	107.6302885	103.5874944	99.72096737	96.02205615	92.48258363	89.0948177	85.85144445	82.74554306
181213A00031	12/13/2018	2.97	12/13/2023	12/13/2018	102.00845	100.9744904	99.96148437	98.96879463	97.99581411	97.04195969	96.10667109	95.18940973	94.28965768
190719A00006	7/19/2019	2.17	7/19/2024	7/19/2019	102.10196	100.4890991	98.90937185	97.36182535	95.84553967	94.35962987	92.90324431	91.47556306	90.07579642
200228A00059	2/28/2020	1.79	2/28/2030	2/28/2020	109.52217	102.3313029	95.66139303	89.47199232	83.72599552	78.38934865	73.4307826	68.82157136	64.53531252
200812A00004	8/12/2020	0.59	8/12/2025	8/12/2020	100.69205	98.05339942	95.49633334	93.0178095	90.61492403	88.28490172	86.02508929	83.832949	81.70605271
211222A00023	12/22/2021	1.13	4/15/2024	12/22/2021	100.25677	98.91015001	97.58783453	96.28922108	95.01372867	93.76079481	92.52987481	91.32044107	90.13198242
170216A00043	2/16/2017	3.17	2/16/2027	2/16/2017	112.47105	108.1494288	104.020254	100.0738687	96.30115915	92.69351974	89.24282171	85.94138356	82.7819437
180125A00022	1/25/2018	2.69	1/25/2023	1/25/2018	100.34877	100.1934842	100.0386845	99.8843707	99.73054059	99.5771919	99.42432236	99.27192972	99.12001175
180529A00042	5/29/2018	3.42	5/30/2028	5/29/2018	117.55125	111.813457	106.3971629	101.2826155	96.45137496	91.88622219	87.57107227	83.49089385	79.6316349
180904A00004	9/4/2018	2.89	9/5/2023	9/4/2018	101.44293	100.676593	99.921828	99.17837097	98.44596906	97.7243769	97.01335635	96.31267619	95.62211194
190708A00011	7/8/2019	2.2	7/8/2024	7/8/2019	102.10275	100.5188509	98.96709989	97.44658361	95.95642343	94.49577346	93.06381903	91.65977523	90.28288554
190815A00007	8/15/2019	1.81	7/6/2023	8/15/2019	100.44123	99.84398384	99.25381877	98.67061406	98.09424705	97.52459801	96.96154994	96.40498857	95.85480226
200130A00025	1/30/2020	1.54	1/30/2023	1/30/2020	100.20779	100.0385949	99.86997162	99.70191717	99.53442869	99.36750332	99.20113824	99.03533064	98.87007771
200605A00007	6/5/2020	0.52	6/5/2023	6/5/2020	99.834744	99.32185848	98.81422669	98.31176792	97.81440339	97.32205588	96.83464973	96.35211081	95.87436645
210201A00004	2/3/2021	1.15	2/3/2025	2/3/2021	100.87842	98.75370205	96.68375976	94.66679361	92.70107855	90.78495997	88.91685006	87.09522461	85.31861982
140911A00027	9/11/2014	3.18	9/16/2024	9/11/2014	104.16996	102.3821685	100.6336909	98.92337775	97.25012447	95.61286767	94.01058317	92.44228419	90.90701963
170602A00026	6/2/2017	2.25	6/3/2024	6/2/2017	102.31368	100.8178787	99.35146106	97.91363844	96.50364771	95.12075249	93.76424191	92.43342947	91.12765204
180730A00081	7/30/2018	3.5	7/28/2028	7/30/2018	118.39602	112.4710694	106.8859658	101.6193357	96.65126248	91.96318113	87.53777937	83.35890632	79.41148843
190122A00008	1/22/2019	2.98	1/20/2023	1/22/2019	100.36224	100.2207524	100.079674	99.93900603	99.79874668	99.65889418	99.51944671	99.3804025	99.24175978
190523A00018	5/23/2019	2.51	3/15/2024	5/23/2019	101.98211	100.7031266	99.45089449	98.22457876	97.02337788	95.84652354	94.69327892	93.5629371	92.45481951
190930A00069	9/30/2019	1.9	9/29/2023	9/30/2019	100.55487	99.73047119	98.91953441	98.12173589	97.3367585	96.56429526	95.80404889	95.05573148	94.3190641
200224A00019	2/24/2020	1.59	2/18/2025	2/24/2020	101.92611	99.74632002	97.62353565	95.5558508	93.5414408	91.57855699	89.66552287	87.80073042	85.98263666
200803A00011	8/3/2020	0.72	8/4/2025	8/3/2020	100.45803	97.85582325	95.33334001	92.88763773	90.51590444	88.21545136	85.98370655	83.81820889	81.71660244
210527A00008	5/27/2021	0.32	5/30/2023	5/27/2021	99.74785	99.2514307	98.75993007	98.27327556	97.79139585	97.314221	96.84168242	96.37371286	95.91024637
220429A00002	4/29/2022	3.63	4/29/2032	4/29/2022	128.05983	118.0509163	108.9358231	100.6292122	93.05433092	86.14210487	79.8303337	74.06297473	68.78950444
171206A00010	12/6/2017	2.45	12/6/2022	12/6/2017	100.03793	100.0212695	100.004623	99.98799325	99.97138028	99.95478403	99.93820448	99.9216416	99.90509536
180914A00028	9/14/2018	3.37	9/12/2025	9/14/2018	107.97087	105.1611758	102.4395399	99.8026673	97.24741285	94.77076933	92.36986025	90.04193318	87.78435353
190805A00049	8/5/2019	1.88	8/4/2023	8/5/2019	100.50783	99.83256129	99.16633591	98.50897637	97.86030661	97.2201552	96.58835521	95.96474402	95.34916322
210414A00001	4/14/2021	0.7	5/16/2024	4/14/2021	99.660553	98.23724991	96.84108996	95.47136554	94.12739354	92.80851384	91.51408839	90.24350031	88.99615297
220815A00004	8/15/2022	3.54	2/15/2024	8/15/2022	103.0508	101.8397897	100.65728	99.50227191	98.37381315	97.27099496	96.19294971	95.13884853	94.10789919
160628A00039	6/28/2016	2.01	6/29/2026	6/28/2016	106.82311	103.2234402	99.76457475	96.44023638	93.24446345	90.17159299	87.21624386	84.37330102	81.63790074

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170317A00059	3/17/2017	2.47	3/17/2023	3/17/2017	100.56623	100.2696589	99.97484839	99.68178478	99.39045245	99.10083595	98.81292005	98.52668967	98.24212993
170622A00039	6/22/2017	3.36	6/22/2035	6/22/2017	130.51143	117.4020182	105.7997938	95.52091527	86.40494794	78.3117705	71.11890639	64.71921791	59.01891198
190514A00024	5/14/2019	2.34	5/14/2024	5/14/2019	102.35019	100.9067969	99.49086737	98.10168684	96.73856446	95.40083266	94.08784628	92.79898152	91.53363514
211222A00021	12/22/2021	1.06	1/16/2024	12/22/2021	99.91547	98.80515574	97.71935266	96.65725694	95.61809918	94.60114296	93.60568307	92.6310439	91.67657788
100809A00029	8/9/2010	4.23	8/15/2025	8/9/2010	110.01985	107.2582574	104.5810255	101.985027	99.46727539	97.02491576	94.65521842	92.35557217	90.12347821
150601A00515	6/1/2015	2.95	1/16/2024	6/1/2015	102.24172	101.114032	100.0111969	98.93240131	97.87686517	96.84384176	95.83261605	94.84250301	93.87284609
160624A00011	6/24/2016	1.83	6/26/2023	6/24/2016	100.44564	99.87528543	99.31138638	98.75383799	98.20253346	97.65736839	97.11824067	96.58505044	96.05770005
170120A00009	1/20/2017	3.67	1/22/2035	1/20/2017	133.64003	120.7321965	109.2591051	99.05111448	89.95956216	81.85406605	74.62018818	68.1574078	62.37736133
180529A00044	5/29/2018	3.11	5/29/2024	5/29/2018	103.28283	101.7978641	100.3417997	98.9138674	97.51332423	96.13945282	94.79156036	93.4689775	92.17105743
181005A00005	10/5/2018	3.31	10/5/2023	10/5/2018	101.76277	100.9168858	100.0850665	99.26695957	98.46222779	97.67054491	96.89159522	96.12507312	95.37068272
191206A00008	12/6/2019	2.44	12/6/2030	12/6/2019	115.2223	107.1005152	99.61785652	92.72056107	86.35965532	80.49050215	75.07239645	70.06820025	65.44401346
200127A00023	1/27/2020	1.8	1/27/2025	1/27/2020	102.26117	100.1402633	98.07358513	96.05936862	94.09591984	92.18161331	90.31488857	88.49424703	86.71824897
160119A00027	1/19/2016	3.25	1/18/2030	1/19/2016	119.84406	112.4047537	105.4891902	99.05756299	93.07329913	87.50277645	82.31507083	77.48172628	72.97654563
180829A00008	8/29/2018	3.23	8/30/2027	8/29/2018	115.59335	110.6294944	105.911008	101.4243821	97.15692965	93.09673096	89.23258258	85.55394998	82.0509236
181211A00031	12/11/2018	2.95	12/11/2023	12/11/2018	101.97099	100.9426584	99.93505661	98.9475593	97.97956882	97.03051099	96.09983396	95.18700717	94.29152033
200106A00015	1/6/2020	1.87	2/15/2024	1/6/2020	101.01526	99.81734842	98.64772037	97.50538508	96.38939593	95.2988496	94.23288367	93.1906743	92.17143412
200305A00007	3/5/2020	1.14	3/5/2025	3/5/2020	100.98563	98.77474619	96.62264041	94.52733829	92.48694786	90.49965576	88.56372329	86.67748259	84.83933315
200818A00007	8/18/2020	1.31	8/20/2029	8/18/2020	105.97016	99.39379123	93.26486662	87.55068229	82.22109317	77.24829589	72.60663491	68.2724257	64.22379339
081209A00008	12/9/2008	4.87	12/15/2023	12/9/2008	103.81096	102.7644894	101.7392227	100.734518	99.74975977	98.78435704	97.8377419	96.90936852	95.99871205
190603A00002	6/3/2019	2.03	6/2/2023	6/3/2019	100.61189	100.1048101	99.60282686	99.10586797	98.61385831	98.12672421	97.64439346	97.16679528	96.69386026
190814A00015	8/14/2019	1.84	8/14/2024	8/14/2019	101.6491	99.97192065	98.33022178	96.72294591	95.14907341	93.60762511	92.09766031	90.61827482	89.16859918
190826A00029	8/26/2019	1.53	8/26/2024	8/26/2019	101.49394	99.78065293	98.10420956	96.46348633	94.85740654	93.28493714	91.74508649	90.23690224	88.75946936
200131A00047	1/31/2020	1.68	1/31/2023	1/31/2020	100.20637	100.0347066	99.86363035	99.69313488	99.52321729	99.35387469	99.1851042	99.01690297	98.84926816
200303A00012	3/3/2020	1.71	3/1/2030	3/3/2020	108.94393	101.7710126	95.11836311	88.94555751	83.21551631	77.89421028	72.95039414	68.35536482	64.08274202
200309A00027	3/9/2020	0.97	3/10/2025	3/9/2020	100.61519	98.39564904	96.23545089	94.13261377	92.08523767	90.09150022	88.14965288	86.25801726	84.41498174
200720A00012	7/20/2020	0.77	7/15/2025	7/20/2020	100.53109	97.97977926	95.50540815	93.10518351	90.7764368	88.5166139	86.32326934	84.19406089	82.12674438
201030A00004	11/2/2020	2.56	10/29/2040	11/2/2020	121.16584	104.3439741	90.18098834	78.23563912	68.14229139	59.59761998	52.34970496	46.18908096	40.9413825
130424A00005	4/24/2013	3.07	4/24/2030	4/24/2013	120.84215	113.02972	105.7878264	99.07166966	92.84018607	87.05572121	81.68373078	76.69250911	72.05294258
160524A00027	5/24/2016	3.06	5/27/2031	5/24/2016	121.07995	112.271706	104.1873403	96.76320569	89.94157251	83.67004645	77.90105048	72.59135921	67.70168047
160610A00009	6/10/2016	1.89	6/12/2023	6/10/2016	100.46559	99.93294195	99.40593563	98.88448207	98.36849376	97.85788499	97.35257186	96.8524722	96.35750553
191115A00028	11/15/2019	2.34	9/28/2029	11/15/2019	113.01356	106.1022944	99.66327378	93.66179026	88.06585173	82.84595829	77.97489657	73.42755182	69.18073639
210901A00012	9/1/2021	0.51	9/1/2023	9/1/2021	99.490301	98.74453147	98.00986869	97.28606635	96.57288534	95.87009351	95.17746546	94.49478222	93.82183109
221116A00028	11/16/2022	4.21	11/16/2027	11/16/2022	119.99187	114.7387839	109.7535286	105.0209846	100.5269679	96.25816388	92.20206932	88.34693915	84.68173649

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170224A00020	2/24/2017	3.08	2/24/2027	2/24/2017	112.17214	107.832783	103.6876671	99.72699406	95.9415219	92.32252671	88.8617705	85.55147094	82.38427335
171026A00008	10/26/2017	2.6	10/25/2024	10/26/2017	103.35194	101.468633	99.62891513	97.83152197	96.07523203	94.35886706	92.68129011	91.04140387	89.43814896
181107A00008	11/7/2018	3.42	11/7/2023	11/7/2018	102.02622	101.0913063	100.1735328	99.27243212	98.38755254	97.51845858	96.66473021	95.8259622	95.00176348
190507A00027	5/7/2019	2.59	5/7/2024	5/7/2019	102.39037	100.9696613	99.57558153	98.20744923	96.86460365	95.54640594	94.25223834	92.98150325	91.73362247
190812A00006	8/12/2019	1.86	8/12/2024	8/12/2019	101.67638	100.0041862	98.36729558	96.76465039	95.1952389	93.65808944	92.15226836	90.67687818	89.23105575
200317A00065	3/19/2020	2.05	3/19/2025	3/19/2020	103.13487	100.8625661	98.6514046	96.49937236	94.40453191	92.36502258	90.37905682	88.44491679	86.56095113
200420A00047	4/20/2020	0.77	4/20/2023	4/20/2020	99.962007	99.5743942	99.18978723	98.80815077	98.42945045	98.05365243	97.68072338	97.3106305	96.94334146
200429A00056	5/1/2020	1.54	4/30/2025	5/1/2020	102.16431	99.79202525	97.48651584	95.24553885	93.06693677	90.94863694	88.88864767	86.88505462	84.93601728
180216A00004	2/16/2018	2.75	2/16/2023	2/16/2018	100.50398	100.2874133	100.0717874	99.85710052	99.64334656	99.43051932	99.21861273	99.00762075	98.7975374
180313A00026	3/13/2018	3.34	3/13/2028	3/13/2018	116.58931	111.0902634	105.8886623	100.9667998	96.30811701	91.8971229	87.7193197	83.76113386	80.00985225
190724A00023	7/24/2019	2.13	7/24/2025	7/24/2019	104.7327	102.0894293	99.5262678	97.04028322	94.62867493	92.28876383	90.01798606	87.81388715	85.6741165
200207A00017	2/7/2020	1.96	2/8/2027	2/7/2020	107.30251	103.1127048	99.10986323	95.28462122	91.62813534	88.13205378	84.78848588	81.58997391	78.5294666
200922A00029	9/24/2020	2.73	9/25/2023	9/24/2020	101.24703	100.4299922	99.626118	98.8350951	98.05661707	97.29038717	96.53611794	95.79353087	95.06235601
210212A00014	2/17/2021	1.38	2/17/2026	2/17/2021	103.14915	99.98635998	96.93636997	93.99448733	91.15624663	88.41739673	85.77388895	83.22186587	80.75765094
191025A00005	10/28/2019	1.98	10/28/2024	10/28/2019	102.1794	100.2998035	98.46392821	96.67049522	94.91827491	93.20608127	91.53277006	89.89723705	88.29841634
200506A00002	5/8/2020	0.97	5/5/2025	5/8/2020	100.79988	98.43149032	96.13023676	93.89384516	91.72013379	89.60700726	87.55245256	85.55453529	83.61139611
150601A00667	6/1/2015	3.88	1/16/2036	6/1/2015	137.14877	123.1151595	110.7448429	99.82811886	90.18289373	81.65091085	74.09451383	67.39386413	61.44454713
170111A00012	1/11/2017	3.31	1/11/2030	1/11/2017	120.23193	112.7977856	105.8855412	99.45563569	93.47170803	87.90032364	82.71072445	77.87460134	73.36588704
190829A00029	8/29/2019	1.75	7/14/2023	8/29/2019	100.40878	99.79015886	99.17914839	98.57560711	97.97939855	97.39038956	96.80845018	96.23345361	95.66527602
190919A00007	9/19/2019	2.04	9/19/2024	9/19/2019	102.12574	100.3488212	98.6111978	96.91173362	95.2493324	93.62293798	92.0315325	90.47413462	88.94979791
160815A00007	8/15/2016	2.23	8/17/2026	8/15/2016	107.1916	103.4746629	99.90693822	96.48158169	93.19210888	90.03237088	86.99653471	84.07906495	81.27470658
170630A00027	6/30/2017	2.35	6/28/2024	6/30/2017	102.6111	101.0442254	99.50888655	98.0041964	96.52930393	95.08338937	93.66566273	92.27536244	90.91175409
200227A00022	2/27/2020	1.41	2/27/2023	2/27/2020	100.1896	99.9436428	99.69889329	99.45533787	99.21296786	98.97177466	98.73174977	98.49288475	98.25517125
200228A00039	2/28/2020	1.33	4/28/2023	2/28/2020	100.18002	99.77011235	99.36354554	98.96028139	98.56027985	98.1635015	97.76990755	97.37945984	96.9921208
210125A00006	1/27/2021	2.16	1/26/2027	1/27/2021	108.04834	103.8799011	99.89588873	96.08714215	92.44500442	88.96129558	85.62828347	82.43865652	79.38549836
210212A00008	2/12/2021	0.95	10/13/2026	2/12/2021	102.63793	98.85537048	95.23130015	91.75829551	88.42931844	85.23769396	82.17708964	79.24149632	76.4252099
130712A00005	7/12/2013	3.25	7/17/2023	7/12/2013	101.46775	100.8359525	100.2120359	99.59584881	98.9872479	98.38609344	97.79224912	97.20558194	96.62596212
170215A00043	2/15/2017	2.7	8/28/2024	2/15/2017	103.20498	101.4771486	99.78640717	98.13162491	96.51171815	94.92564718	93.37241398	91.85106003	90.36066439
190327A00006	3/27/2019	2.53	3/27/2024	3/27/2019	102.08983	100.7803033	99.4948415	98.23281313	96.99361145	95.77665065	94.58136487	93.40720737	92.2536497
190627A00010	6/27/2019	1.97	6/27/2024	6/27/2019	102.00265	100.4435255	98.91575724	97.41846935	95.95081671	94.51198518	93.10119012	91.71767509	90.36071054
200430A00017	4/30/2020	0.94	4/30/2025	4/30/2020	100.71092	98.35645782	96.06838987	93.84447969	91.68258091	89.58063161	87.53665044	85.54873298	83.6150483
190806A00026	8/6/2019	1.71	8/7/2023	8/6/2019	100.5082	99.82341669	99.14794397	98.48158998	97.8241709	97.17550785	96.5354267	95.9037579	95.28033635
190917A00028	9/17/2019	2.02	3/1/2023	9/17/2019	100.34539	100.0936923	99.84325064	99.59405791	99.34610485	99.09938227	98.85388105	98.60959218	98.36650674

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
211222A00029	12/22/2021	1.26	10/15/2024	12/22/2021	100.76904	98.93671822	97.14637139	95.39679685	93.68683232	92.01535603	90.38128498	88.78357339	87.22121114
160926A00004	9/26/2016	1.66	9/26/2023	9/26/2016	100.50038	99.68219727	98.8772837	98.08532035	97.30599669	96.53901205	95.78407524	95.04090415	94.30922543
181227A00019	12/28/2020	3.1	12/29/2025	12/28/2020	108.21457	105.1090796	102.1097865	99.21245321	96.41303614	93.70767678	91.09269215	88.56456559	86.11993823
190820A00013	8/20/2019	1.76	8/21/2023	8/20/2019	100.43539	99.71498668	99.00489287	98.30488575	97.61475149	96.93428224	96.26327598	95.60153627	94.94887208
191009A00027	10/9/2019	1.74	10/6/2023	10/9/2019	100.42194	99.57964735	98.75143554	97.9369505	97.13585314	96.3478155	95.57252021	94.80966016	94.058938
191126A00023	11/26/2019	1.81	5/27/2025	11/26/2019	103.49422	101.0242439	98.62588664	96.29666472	94.0341942	91.83618816	89.70045209	87.62487954	85.60744798
200214A00015	2/18/2020	1.76	8/6/2024	2/18/2020	101.48604	99.83122563	98.21111049	96.62466913	95.07091459	93.54889857	92.05770959	90.59647107	89.16433974
200303A00002	3/3/2020	1.06	3/3/2023	3/3/2020	100.14592	99.8886049	99.63260921	99.37792769	99.1245502	98.87246671	98.62166729	98.37214213	98.1238815
221018A00047	10/18/2022	4.78	10/20/2025	10/18/2022	112.43578	109.4583276	106.5767796	103.7875307	101.0871292	98.47227146	95.9397948	93.48667084	91.10999893
160307A00027	3/7/2016	2.71	3/6/2026	3/7/2016	107.58909	104.3061371	101.1410813	98.08899589	95.1451905	92.30520027	89.56477315	86.91985822	84.36659483
180730A00023	7/30/2018	3.13	7/30/2024	7/30/2018	104.09138	102.426601	100.7964883	99.20002147	97.63622243	96.10415093	94.60290291	93.13160866	91.6894312
200204A00012	2/4/2020	1.98	2/4/2027	2/4/2020	107.35803	103.1788172	99.18563808	95.36919207	91.72070061	88.23187174	84.89487014	81.70228922	78.64712505
221014A00037	10/14/2022	4.86	10/15/2024	10/14/2022	107.55124	105.6534136	103.7987989	101.9861568	100.2142918	98.48204994	96.78831744	95.13201875	93.51211511
181114A00014	11/14/2018	3.17	11/14/2023	11/14/2018	102.00143	101.0455406	100.1075695	99.18701439	98.28339296	97.39624072	96.52511003	95.66956933	94.82920247
190327A00013	3/27/2019	2.53	3/27/2024	3/27/2019	102.08983	100.7803033	99.4948415	98.23281313	96.99361145	95.77665065	94.58136487	93.40720737	92.2536497
190701A00008	7/3/2019	2.1	7/3/2023	7/3/2019	100.61201	100.0222441	99.43937464	98.86328122	98.29384622	97.73095472	97.17449444	96.62435566	96.08043113
200615A00019	6/17/2020	1.34	6/16/2025	6/17/2020	101.89153	99.39927203	96.98037828	94.63226092	92.35243888	90.13853408	87.9882664	85.89944902	83.86998393
200709A00014	7/13/2020	0.57	1/20/2023	7/13/2020	100.02098	99.87989048	99.73921485	99.59894867	99.45909013	99.31963742	99.18058877	99.04194239	98.90369651
200720A00035	7/20/2020	1.81	7/20/2035	7/20/2020	111.48557	99.44742123	88.83698004	79.47677237	71.21223159	63.9086368	57.44847669	51.72917496	46.66112604
220106A00019	1/10/2022	3.17	1/7/2033	1/10/2022	124.90493	114.3821364	104.8640703	96.24860386	88.44451117	81.37025369	74.95290546	69.12720263	63.8347021
190813A00008	8/13/2019	1.88	8/13/2024	8/13/2019	101.71412	100.0389831	98.39924281	96.79384465	95.22177273	93.68205142	92.17374336	90.69594751	89.24779738
190830A00012	8/30/2019	1.76	8/30/2024	8/30/2019	101.56373	99.8454774	98.16423798	96.51887971	94.908318	93.33151235	91.78746413	90.27521439	88.79384185
191216A00042	12/16/2019	1.95	12/16/2022	12/16/2019	100.07937	100.0349523	99.99059615	99.94629698	99.90205473	99.85786927	99.8137405	99.7696683	99.72565255
200129A00018	2/3/2020	1.74	12/15/2022	2/3/2020	100.06566	100.0240255	99.98244692	99.94092065	99.89944658	99.8580246	99.81665462	99.77533653	99.73407023
200221A00031	2/21/2020	1.69	2/21/2025	2/21/2020	102.16681	99.97561048	97.84187062	95.76366773	93.73915664	91.76656937	89.84421118	87.97045682	86.14374702
200417A00009	4/17/2020	1.35	4/16/2027	4/17/2020	105.04463	100.720122	96.59689006	92.66457307	88.91339103	85.33411327	81.91802482	78.65689501	75.5429482
211015A00028	10/15/2021	0.73	10/16/2023	10/15/2021	99.530445	98.66604906	97.81657901	96.98165089	96.1608939	95.35394977	94.56047221	93.78012641	93.0125886
120411A00013	4/11/2012	3.59	4/15/2027	4/11/2012	114.86139	110.3263302	105.9994498	101.8701063	97.92825243	94.16440274	90.56959944	87.13538038	83.85374911
160830A00061	8/30/2018	1.89	8/30/2023	8/30/2018	100.53867	99.79383572	99.06000123	98.33692017	97.62435764	96.92208555	96.22988236	95.54753283	94.87482782
181109A00027	11/13/2018	3.48	4/15/2024	11/13/2018	103.50757	102.1374452	100.7920235	99.4706936	98.17286387	96.89796163	95.64543236	94.414739	93.20536127
190625A00017	6/25/2019	2.02	12/15/2022	6/25/2019	100.07732	100.0356809	99.99409261	99.95255666	99.91107292	99.8696413	99.82826168	99.78693396	99.74565805
190925A00019	9/27/2019	1.93	9/27/2023	9/27/2019	100.57879	99.75957539	98.95365873	98.16071879	97.38044416	96.61253336	95.85669436	95.11264432	94.38010911
200108A00021	1/13/2020	1.97	1/13/2025	1/13/2020	102.55267	100.4653438	98.43068894	96.44701538	94.51270215	92.62619242	90.78599051	88.99065891	87.2388156

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
221110A00086	11/10/2022	4.34	11/8/2027	11/10/2022	120.54971	115.3057607	110.3278576	105.6010509	101.1113119	96.84546808	92.79114594	88.9367189	85.27125823
200922A00037	9/24/2020	2.76	9/23/2025	9/24/2020	106.36278	103.545578	100.8176985	98.17581771	95.61675583	93.13746926	90.73504393	88.40668902	86.14973092
210429A00005	4/29/2021	2.08	4/29/2031	4/29/2021	112.73449	104.3388289	96.63532284	89.56325554	83.06752926	77.09811534	71.60956466	66.56056764	61.91355844
190501A00017	5/1/2019	2.61	5/1/2024	5/1/2019	102.3888	100.9837476	99.60475397	98.25115404	96.92230783	95.61759646	94.33642118	93.07820263	91.84237999
190626A00015	6/26/2019	2.15	6/26/2024	6/26/2019	101.96907	100.4182584	98.89852423	97.4090026	95.94885891	94.51728897	93.11351759	91.7367973	90.38640708
190926A00016	9/26/2019	2.28	5/24/2030	9/26/2019	113.32491	105.7813852	98.79737137	92.32840715	86.33378433	80.77620939	75.62150097	70.83831552	66.39789846
191004A00003	10/4/2019	1.89	10/5/2026	10/4/2019	106.23546	102.4044146	98.73227472	95.21165572	91.83555055	88.59731138	85.49062932	82.50951545	79.64828294
191017A00026	10/17/2019	2.3	7/17/2029	10/17/2019	112.54432	105.8400319	99.58222765	93.73881515	88.28016955	83.17893296	78.40982954	73.94949659	69.77633031
200115A00018	1/15/2020	1.9	1/16/2024	1/15/2020	100.87016	99.75408942	98.66261752	97.59493901	96.55028233	95.52790894	94.52711162	93.54721278	92.58756298
220726A00060	7/26/2022	3.32	7/26/2024	7/26/2022	104.04429	102.3963352	100.7824563	99.20165898	97.65298866	96.13552751	94.64839263	93.19073439	91.76173481
050902A00032	9/2/2005	4.69	8/22/2025	9/2/2005	111.96651	109.1458965	106.411998	103.7615726	101.1915283	98.69891079	96.28089649	93.93478533	91.65799458
180724A00075	7/24/2018	2.98	7/24/2023	7/24/2018	101.32666	100.6764688	100.034621	99.40095715	98.77532121	98.15756119	97.5475289	96.94507984	96.35007311
200922A00043	9/24/2020	2.4	9/25/2023	9/24/2020	100.97422	100.1584111	99.35575433	98.56593513	97.78864732	97.02359442	96.27048922	95.52905342	94.79901735
210624A00022	6/24/2021	0.87	6/24/2025	6/24/2021	101.25832	98.74104477	96.29860272	93.92832839	91.62766635	89.39416852	87.22548888	85.1193785	83.0736808
220819A00037	8/19/2022	3.61	2/20/2024	8/19/2022	103.18615	101.9606967	100.7643949	99.59621208	98.45516445	97.34031347	96.25076351	95.18565939	94.14418411
150220A00022	2/20/2015	2.8	2/20/2025	2/20/2015	104.64025	102.4238605	100.2653786	98.16286855	96.11447503	94.11842032	92.17300014	90.27657994	88.42759142
170908A00017	9/9/2019	2.32	9/9/2024	9/9/2019	102.59969	100.8450722	99.12873204	97.44952627	95.80635942	94.19817851	92.62397092	91.08276251	89.57361569
180629A00071	6/29/2018	3.02	6/29/2023	6/29/2018	101.14374	100.5629822	99.98887911	99.42131995	98.86019334	98.30539045	97.75680486	97.21433255	96.6778718
181016A00087	10/16/2018	3.31	10/16/2023	10/16/2018	101.81202	100.9366776	100.0763907	99.23077559	98.39945893	97.58207987	96.77828966	95.98775111	95.21013811
200604A00009	6/4/2020	0.7	6/4/2025	6/4/2020	100.74364	98.28731497	95.90296287	93.5880659	91.34020719	89.15706916	87.03642878	84.97615303	82.97419467
200814A00011	8/18/2020	1.58	8/16/2030	8/18/2020	108.20676	100.6379763	93.64976509	87.19462455	81.22917378	75.71377418	70.61218822	65.8912711	61.52069183
210527A00019	5/27/2021	1	5/27/2026	5/27/2021	103.03167	99.58966141	96.28026432	93.09767245	90.03636888	87.09110678	84.25689473	81.52898275	78.90284933
211222A00012	12/22/2021	0.88	7/17/2023	12/22/2021	99.858575	99.2338722	98.61695984	98.00769273	97.40592937	96.8115317	96.22436505	95.64429802	95.07120235
170427A00046	4/27/2017	3.1	4/27/2028	4/27/2017	115.59844	110.0020311	104.715206	99.71921303	94.9965265	90.53076389	86.30660576	82.30972154	78.52670089
180130A00084	1/30/2018	2.59	1/30/2023	1/30/2018	100.38565	100.2162318	100.0473837	99.87910503	99.71139298	99.54424468	99.37765729	99.211628	99.04615401
181203A00053	12/4/2018	3.23	12/1/2023	12/4/2018	101.98185	100.9832744	100.0042442	99.04419083	98.10256622	97.17884335	96.27251511	95.38309339	94.51010818
190530A00045	5/30/2019	2.44	5/30/2024	5/30/2019	102.27985	100.8001204	99.34925245	97.92647853	96.53105563	95.16226636	93.81941794	92.50184104	91.20888892
191121A00034	11/21/2019	2.28	11/2/2029	11/21/2019	112.69343	105.7033167	99.19711986	93.13882845	87.49528178	82.23593379	77.33263463	72.75943141	68.49238656
200225A00017	2/25/2020	1.94	2/25/2030	2/25/2020	110.59985	103.3792753	96.6804416	90.46291193	84.68958891	79.32642097	74.34213685	69.70800457	65.39761261
200306A00046	3/6/2020	1.01	3/3/2025	3/6/2020	100.68428	98.4820433	96.3382507	94.25093491	92.21821015	90.23826955	88.30938106	86.42988369	84.59818393
200326A00029	3/26/2020	1.82	3/26/2027	3/26/2020	106.9902	102.6797567	98.56696774	94.64176768	90.89465737	87.31666679	83.89932286	80.63461936	77.51498878
200611A00011	6/11/2020	1.2	6/9/2028	6/11/2020	105.31906	99.88628208	94.76439443	89.93405313	85.37721246	81.077033	77.01779493	73.18481802	69.56438775
200722A00012	7/22/2020	0.41	7/21/2023	7/22/2020	99.654863	99.01884332	98.39090946	97.77090796	97.15868919	96.55410726	95.95701991	95.36728841	94.78477742

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210209A00029	2/12/2021	0.8	12/15/2025	2/12/2021	101.07256	98.1140512	95.25673908	92.49660603	89.82981879	87.252718	84.76180916	82.35375422	80.02536355
111024A00022	10/24/2011	3.11	10/30/2023	10/24/2011	101.85364	100.9386822	100.0401468	99.15759631	98.29060703	97.43876996	96.60169038	95.77898717	94.97029222
150601A00916	6/1/2015	7.27	4/5/2030	6/1/2015	149.04359	140.345726	132.2553865	124.7261767	117.7154933	111.1841969	105.0963134	99.41876208	94.1211089
180103A00027	1/3/2018	2.51	1/3/2023	1/3/2018	100.21128	100.1169573	100.0228132	99.92885043	99.83506837	99.74146653	99.64804439	99.55480144	99.46173714
180814A00010	8/14/2018	3.1	8/14/2025	8/14/2018	107.52607	104.7884558	102.1349107	99.56230741	97.06766011	94.64811526	92.30094466	90.02353885	87.81340101
180912A00011	9/12/2018	3.41	9/11/2026	9/12/2018	111.84503	107.9728719	104.2576642	100.6921645	97.26950992	93.98319275	90.82703949	87.79519173	84.8820881
190326A00004	3/26/2019	2.58	9/26/2023	3/26/2019	101.1173	100.2983014	99.49254015	98.69970169	97.91947696	97.15156669	96.39568102	95.65153913	94.91886888
190618A00002	6/18/2019	2.11	6/18/2025	6/18/2019	104.41126	101.8694352	99.40254726	97.0079415	94.68307596	92.42551466	90.23292248	88.10306022	86.03378002
191008A00031	10/8/2019	1.52	10/8/2024	10/8/2019	101.62584	99.79625384	98.00828961	96.26076213	94.55252619	92.88247626	91.24954477	89.65270064	88.09094773
150319A00013	3/19/2015	3.25	3/19/2030	3/19/2015	120.20518	112.586098	105.5144473	98.94785448	92.8474354	87.17749448	81.90524761	77.00057071	72.43577102
160113A00030	1/13/2016	2.52	1/13/2025	1/13/2016	104.17235	102.0587526	99.99855154	97.99003338	96.03155171	94.12152549	92.25843591	90.44082342	88.66728488
170914A00039	9/14/2017	2.23	9/16/2024	9/14/2017	102.83247	101.0503201	99.30751221	97.60289577	95.93536251	94.30384555	92.70731744	91.1447884	89.61530454
190211A00002	2/11/2019	2.88	2/12/2024	2/11/2019	102.21035	101.0130417	99.84375476	98.70151673	97.58539656	96.4945055	95.42799476	94.38505325	93.36490552
190328A00003	3/28/2019	2.64	9/30/2024	3/28/2019	103.27963	101.4621561	99.68542836	97.94829683	96.24965489	94.58843367	92.96360051	91.37415753	89.8191402
200302A00028	3/2/2020	1.25	2/26/2024	3/2/2020	100.28617	99.06370009	97.8708272	96.70648312	95.56965488	94.45937693	93.3747284	92.31483056	91.27884443
200303A00018	3/3/2020	1.27	3/3/2025	3/3/2020	101.27286	99.06385322	96.9134345	94.81962911	92.78054729	90.79437832	88.85938648	86.97390722	85.13634361
200511A00018	5/11/2020	0.98	2/2/2026	5/11/2020	101.79153	98.69384884	95.70559008	92.82225094	90.03954546	87.35339056	84.75989502	82.25534906	79.83621463
210216A00007	2/16/2021	1.3	2/16/2029	2/16/2021	107.33406	101.1352448	95.3305573	89.89292843	84.79728885	80.0204096	75.5407572	71.33836104	67.39469188
150601A00405	6/1/2015	4.63	1/17/2034	6/1/2015	141.67292	129.2982108	118.1850262	108.1956285	99.20808574	91.11437708	83.81873686	77.23620335	71.2913462
180205A00018	2/5/2018	2.66	2/3/2023	2/5/2018	100.41858	100.2380527	100.0581751	99.87894683	99.70036425	99.52242389	99.34512225	99.16845588	98.99242135
210106A00007	1/8/2021	0.49	7/25/2023	1/8/2021	99.587293	98.94219291	98.30540877	97.67678091	97.05615347	96.44337455	95.83829607	95.24077366	94.65066653
220531A00020	5/31/2022	2.86	5/31/2024	5/31/2022	102.91839	101.4310462	99.97275595	98.54273917	97.14024685	95.76455591	94.41496812	93.09080895	91.79142662
220823A00060	8/23/2022	3.5	8/23/2024	8/23/2022	104.91692	103.1807872	101.4817626	99.81872506	98.19059529	96.59633743	95.03495692	93.50549842	92.00704384
190828A00015	8/28/2019	2.04	8/28/2029	8/28/2019	110.8979	104.1387324	97.83748527	91.96072196	86.47761928	81.35974987	76.58088344	72.11680565	67.94515282
200302A00008	3/2/2020	1.2	3/9/2023	3/2/2020	100.13868	99.86539164	99.59360377	99.32330196	99.05447399	98.78710776	98.52119132	98.25671284	97.99366061
200722A00010	7/22/2020	0.66	7/22/2024	7/22/2020	99.620911	98.02131522	96.45475142	94.92026077	93.416922	91.94384906	90.50018942	89.08512246	87.69785798
200925A00003	9/25/2020	0.59	9/25/2024	9/25/2020	99.517401	97.7484809	96.01909017	94.32810208	92.67442965	91.05702417	89.47487355	87.92700077	86.4124624
210514A00033	5/18/2021	2.8	5/18/2028	5/18/2021	114.07481	108.463036	103.1654021	98.16266945	93.43687307	88.97123247	84.7500677	80.75872167	76.98348841
170427A00047	4/27/2017	3.18	4/27/2029	4/27/2017	117.98953	111.3267044	105.09128	99.25353953	93.7859815	88.66314186	83.86143323	79.35899761	75.13557143
180530A00030	5/30/2018	3.68	5/30/2034	5/30/2018	132.65379	120.4103768	109.4656304	99.6728793	90.90279527	83.04126216	75.98751404	69.65250964	63.95751191
180823A00013	8/23/2018	2.97	8/23/2023	8/23/2018	101.32703	100.5976615	99.87879066	99.17018919	98.47163805	97.78292436	97.10384125	96.43418758	95.77376781
200304A00010	3/4/2020	1.2	3/4/2027	3/4/2020	105.13717	100.897225	96.85046736	92.98704868	89.29768151	85.77360275	82.40654064	79.18868421	76.11265477
190529A00011	5/29/2019	2.36	5/30/2023	5/29/2019	100.68759	100.1894384	99.69620561	99.20781591	98.72419836	98.24528333	97.77100256	97.30128909	96.83607726

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190814A00009	8/14/2019	1.84	8/14/2024	8/14/2019	101.6491	99.97192065	98.33022178	96.72294591	95.14907341	93.60762511	92.09766031	90.61827482	89.16859918
190930A00071	9/30/2019	2.05	9/29/2025	9/30/2019	104.39934	101.5937647	98.87783	96.24820469	93.70170114	91.23526665	88.84597697	86.5310302	84.28774096
210603A00015	6/7/2021	2.71	6/7/2028	6/7/2021	113.67592	108.0210794	102.6858131	97.6503634	92.89629875	88.40641444	84.16464449	80.15598056	76.36639705
180102A00020	1/2/2018	2.5	1/3/2023	1/2/2018	100.21034	100.116014	100.0218708	99.92790886	99.83412767	99.7405267	99.64710544	99.55386335	99.46079993
200429A00035	5/1/2020	1.41	4/30/2024	5/1/2020	100.6744	99.28469254	97.92072304	96.58184335	95.26742272	93.97685105	92.70953808	91.46491256	90.24242149
170915A00001	9/15/2017	2.43	9/16/2024	9/15/2017	102.81645	101.0412098	99.30505248	97.60683394	95.94545586	94.31986084	92.72903049	91.17198358	89.64777439
181128A00031	11/28/2018	3.29	11/28/2023	11/28/2018	102.02164	101.0308708	100.0593456	99.106503	98.17180773	97.25474476	96.35481839	95.47155137	94.60448401
190523A00017	5/23/2019	2.51	3/15/2024	5/23/2019	101.98211	100.7031266	99.45089449	98.22457876	97.02337788	95.84652354	94.69327892	93.5629371	92.45481951
190820A00020	8/20/2019	1.76	8/20/2024	8/20/2019	101.53136	99.83952652	98.18373498	96.56289631	94.97596707	93.42194565	91.89987012	90.40881627	88.94789568
190923A00020	9/23/2019	2.05	9/24/2029	9/23/2019	112.59201	105.6424234	99.16945522	93.13797903	87.51562319	82.27254561	77.38122405	72.8162648	68.55422811
200227A00052	2/27/2020	1.41	2/27/2023	2/27/2020	100.1896	99.9436428	99.69889329	99.45533787	99.21296786	98.97177466	98.73174977	98.49288475	98.25517125
200403A00006	4/3/2020	1.05	4/3/2025	4/3/2020	100.87785	98.59297012	96.37070032	94.20898946	92.1058688	90.05944463	88.06789505	86.1294668	84.24247225
171205A00014	12/5/2017	2.49	12/5/2022	12/5/2017	100.03203	100.0181462	100.0042744	99.99041613	99.97657147	99.96274035	99.94892275	99.93511865	99.92132802
190213A00023	2/13/2019	2.93	2/13/2024	2/13/2019	102.27899	101.0785397	99.90624404	98.76112394	97.642242	96.54870348	95.47965397	94.43427707	93.41179234
190214A00008	2/14/2019	2.64	2/14/2023	2/14/2019	100.47013	100.2591366	100.0490383	99.83983278	99.63151426	99.42407702	99.21751541	99.01182382	98.8069967
200611A00013	6/11/2020	0.59	6/12/2023	6/11/2020	99.76685	99.23636817	98.71151213	98.19219253	97.67832205	97.16981521	96.66658828	96.16855932	95.67564802
150317A00013	3/17/2015	2.58	3/17/2025	3/17/2015	104.83078	102.5340122	100.2989905	98.12366778	96.00608021	93.9443423	91.93664341	89.98124412	88.07647289
180828A00032	8/28/2018	3.49	8/29/2033	8/28/2018	131.89847	120.2683251	109.8077809	100.391587	91.90856408	84.25995891	77.35799434	71.12459604	65.49027282
180910A00028	9/10/2018	3.56	9/9/2033	9/10/2018	132.71117	121.0089005	110.4853015	101.0139296	92.48257311	84.79158009	77.85239185	71.58625455	65.92308643
190603A00003	6/3/2019	2.05	6/3/2024	6/3/2019	102.00969	100.5162901	99.05223116	97.61672646	96.20901401	94.82835849	93.47405004	92.14540315	90.84175564
191105A00018	11/5/2019	1.78	11/6/2023	11/5/2019	100.64074	99.71321102	98.8027092	97.90877211	97.03095092	96.16881288	95.3219406	94.48993143	93.67239672
200312A00017	3/16/2020	1.09	2/15/2023	3/16/2020	100.10799	99.89516994	99.68326069	99.47225935	99.26216007	99.05295703	98.84464447	98.63721666	98.43066795
200429A00018	5/4/2020	0.73	4/17/2023	5/4/2020	99.951706	99.57228149	99.19573863	98.82204508	98.45116851	98.0830771	97.71773947	97.35512474	96.99520248
220726A00059	7/26/2022	3.34	1/26/2024	7/26/2022	102.61803	101.4640556	100.3360424	99.23312362	98.15446807	97.09928098	96.06680197	95.05630318	94.0670876
170120A00008	1/20/2017	3.63	1/20/2034	1/20/2017	131.45898	119.6204083	109.0042599	99.47608874	90.91695156	83.22154311	76.29656675	70.05930716	64.43637923
180914A00029	9/14/2018	3.48	9/14/2028	9/14/2018	118.58668	112.5241507	106.8163429	101.440556	96.37566497	91.6019987	87.10123231	82.85628806	78.85124405
181010A00020	10/10/2018	3.27	12/1/2022	10/10/2018	100.00846	100.005687	100.0029114	100.0001382	99.9973674	99.99459901	99.991833	99.98906938	99.98630815
190620A00056	6/25/2019	2.07	1/17/2023	6/25/2019	100.22199	100.0889527	99.95628356	99.82398098	99.69204336	99.56046917	99.42925687	99.29840495	99.16791187
200228A00067	2/28/2020	1.4	2/28/2025	2/28/2020	101.55442	99.34997814	97.20379533	95.11390586	93.07842422	91.09554456	89.16353652	87.28074138	85.44556836
200506A00005	5/6/2020	0.97	5/6/2025	5/6/2020	100.80314	98.43214128	96.12842552	93.88970916	91.71380348	89.59860647	87.54209886	85.54234032	83.59746591
200922A00041	9/24/2020	2.68	9/23/2024	9/24/2020	103.32866	101.5293681	99.77004169	98.0495394	96.36675728	94.72063074	93.11013284	91.53427271	89.99209393
221028A00056	10/28/2022	4.77	10/28/2024	10/28/2022	107.53471	105.6024957	103.7149969	101.8709142	100.0689909	98.30801485	96.58681676	94.90426815	93.2592798
221122A00015	11/22/2022	4.97	11/22/2024	11/22/2022	108.24255	106.2347259	104.2749098	102.3616547	100.4935676	98.66930645	96.88757845	95.14713749	93.44678231

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
181109A00029	11/9/2018	3.72	11/9/2026	11/9/2018	113.67979	109.6101684	105.7115223	101.9757558	98.39520232	94.96259665	91.67105154	88.51403621	85.48535593
190301A00012	3/1/2019	3.41	3/1/2029	3/1/2019	119.15762	112.6127253	106.4776906	100.7245554	95.32741459	90.26225866	85.5068247	81.04045991	76.84399663
190314A00027	3/22/2019	2.92	3/21/2025	3/22/2019	105.15919	102.857885	100.6184963	98.43898521	96.31739534	94.25184738	92.24053535	90.28172324	88.37374179
190430A00001	4/30/2019	2.47	5/2/2024	4/30/2019	102.47783	101.0649057	99.67829797	98.3173351	96.98136818	95.66976981	94.38193314	93.11727105	91.87521536
200224A00007	2/24/2020	1.59	2/24/2025	2/24/2020	101.96023	99.76270045	97.62298596	95.53914536	93.50931584	91.53171286	89.60462608	87.72641559	85.89550833
200228A00020	2/28/2020	1.32	2/24/2023	2/28/2020	100.16481	99.92714589	99.69061026	99.45519515	99.22089264	98.98769487	98.75559405	98.52458246	98.29465246
200305A00008	3/10/2020	1.01	6/19/2023	3/10/2020	99.9829	99.43289757	98.88893106	98.35090132	97.81871149	97.29226681	96.77147459	96.25624408	95.74648651
200311A00006	3/13/2020	1.12	3/10/2025	3/13/2020	100.95762	98.7341134	96.57002872	94.46338555	92.41228152	90.41489202	88.46946631	86.57432391	84.72785118
200811A00003	8/11/2020	0.57	8/11/2025	8/11/2020	100.63469	97.99943748	95.44560481	92.97015936	90.57020535	88.24297522	85.98582284	83.79621721	81.67173654
220118A00008	1/18/2022	1.36	1/18/2024	1/18/2022	100.26552	99.14771689	98.05469289	96.98563234	95.93975418	94.91631094	93.91458697	92.9338968	91.9735835
150819A00012	8/19/2015	3.04	8/19/2025	8/19/2015	106.8259	104.0973382	101.4527056	98.8888764	96.40286435	93.99181573	91.65300246	89.3838155	87.18175871
170111A00011	1/11/2017	3.24	1/11/2029	1/11/2017	117.81942	111.4551433	105.482313	99.87470956	94.60800386	89.65961317	85.00856693	80.63538336	76.52195616
180222A00027	2/22/2018	3.24	2/22/2028	2/22/2018	117.16306	111.6642397	106.4610641	101.535988	96.87260817	92.45557999	88.27054316	84.30405287	80.54351615
190426A00016	5/1/2019	2.58	4/14/2023	5/1/2019	100.64971	100.2768411	99.90674335	99.5393839	99.17473231	98.81275862	98.45343331	98.09672731	97.74261196
190930A00077	9/30/2019	2.23	9/28/2029	9/30/2019	112.26179	105.3756375	98.96050918	92.98176529	87.40748045	82.20821718	77.3568204	72.82822994	68.59930918
200511A00021	5/11/2020	1.53	2/1/2029	5/11/2020	107.34569	101.2421478	95.52254249	90.16075566	85.13258293	80.4155798	75.98892458	71.83329269	67.93074136
220826A00033	8/26/2022	3.73	8/26/2025	8/26/2022	108.78483	106.0104698	103.3217136	100.7153613	98.18835312	95.73776604	93.36080641	91.05480328	88.81720193
150601A00664	6/1/2015	3.78	1/16/2032	6/1/2015	128.27843	118.5411514	109.6493862	101.524493	94.09555193	87.29857061	81.07577383	75.37496925	70.14898091
150821A00018	8/21/2015	2.6	8/21/2024	8/21/2015	103.33665	101.6199969	99.9400062	98.29556406	96.68560632	95.10911166	93.56509938	92.05262735	90.57079006
170322A00022	3/22/2017	3.89	9/23/2041	3/22/2017	144.36964	124.9037759	108.5515311	94.783258	83.16282822	73.33064037	64.98979434	57.8948257	51.84251589
190606A00023	6/6/2019	2.23	6/6/2024	6/6/2019	101.99704	100.500539	99.03344903	97.59497875	96.18436226	94.80086051	93.44376012	92.11237226	90.80603161
150601A00830	6/1/2015	6.743	7/31/2025	6/1/2015	116.88904	114.0627017	111.3212837	108.6616873	106.0809452	103.5762192	101.1447937	98.78406916	96.49155659
170313A00033	3/13/2017	3.31	3/15/2027	3/13/2017	113.33561	108.9189045	104.7017683	100.674096	96.8263534	93.14953878	89.63514979	86.27515305	83.06195557
170322A00023	3/22/2017	3.82	9/22/2039	3/22/2017	141.59104	123.9877623	108.954219	96.09192198	85.06659015	75.59748745	67.4485772	60.42117749	54.34785637
170728A00031	7/28/2017	2.27	1/27/2023	7/28/2017	100.29062	100.129897	99.96969375	99.81000731	99.65083518	99.49217489	99.334024	99.17638007	99.01924066
180705A00062	7/5/2018	3.04	7/6/2023	7/5/2018	101.18381	100.5840207	99.99133718	99.40563522	98.8267919	98.25468719	97.68920381	97.13022722	96.57764547
181211A00018	12/11/2018	3.14	12/11/2023	12/11/2018	101.96352	100.9381869	99.93347481	98.9487651	97.98346426	97.03700212	96.10883068	95.198423	94.30527223
190724A00024	7/24/2019	2.49	7/24/2029	7/24/2019	115.37924	108.5037143	102.0875146	96.09749143	90.50305912	85.27598293	80.39018617	75.82157437	71.54787463
191105A00014	11/5/2019	1.96	11/6/2023	11/5/2019	100.6445	99.71927789	98.81100365	97.91921938	97.04347914	96.18335294	95.33842604	94.50829828	93.69258342
200228A00026	2/28/2020	2.14	2/28/2035	2/28/2020	115.48873	103.5371833	92.95675151	83.58197734	75.26818024	67.88875423	61.33282722	55.50323378	50.31475822
200506A00010	5/6/2020	0.94	5/6/2026	5/6/2020	102.73803	99.35574434	96.10179731	92.97066517	89.95708726	87.05605626	84.26280459	81.5727916	78.98169155
170613A00032	6/13/2017	2.45	6/13/2025	6/13/2017	105.23971	102.7010081	100.2367963	97.84444739	95.5214463	93.26538223	91.07394358	88.94491322	86.87616395
171026A00009	10/26/2017	2.75	10/27/2025	10/26/2017	106.61418	103.7030714	100.886959	98.16223497	95.52545107	92.97330825	90.50264936	88.11045218	85.79382295

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180620A00014	6/20/2018	3.4	6/20/2028	6/20/2018	117.58435	111.7864597	106.3162982	101.153552	96.27927596	91.67579043	87.32659037	83.21626123	79.33040128
190214A00006	2/14/2019	2.67	2/14/2024	2/14/2019	102.21159	101.0051886	99.82720979	98.67666075	97.55259146	96.45409531	95.38030669	94.33039866	93.30358084
150601A00668	6/1/2015	3.89	1/16/2037	6/1/2015	138.81484	123.758554	110.6010088	99.08764648	88.99948571	80.14797738	72.37062592	65.52726033	59.49685585
180111A00007	1/11/2018	2.66	1/14/2025	1/11/2018	104.4792	102.3595883	100.2935609	98.27939298	96.31543081	94.4000865	92.53183474	90.70920981	88.9308027
180124A00020	1/24/2018	2.53	1/24/2023	1/24/2018	100.34247	100.1896986	100.0374076	99.88559061	99.73424553	99.58337009	99.43296208	99.28301929	99.13353954
180410A00017	4/10/2018	3.02	10/10/2023	4/10/2018	101.53347	100.6753811	99.83178839	99.00232855	98.18664829	97.38440606	96.5952715	95.81892502	95.05505735
190409A00019	4/9/2019	2.91	4/9/2029	4/9/2019	117.6866	111.0256056	104.790886	98.95291023	93.48433352	88.35982928	83.55593048	79.05088425	74.82451869
190620A00027	6/20/2019	2.14	6/20/2024	6/20/2019	101.9252	100.3910932	98.88754942	97.41372739	95.96881353	94.55202358	93.16260133	91.79981726	90.46296741
200127A00016	1/27/2020	1.81	1/27/2025	1/27/2020	102.28285	100.161705	98.09479257	96.08034644	94.11667262	92.2021455	90.33520449	88.51435089	86.73814485
200302A00033	3/2/2020	1.31	3/3/2025	3/2/2020	101.36341	99.15336244	97.00192432	94.90712053	92.8670607	90.87993352	88.94400269	87.05760315	85.21913741
200828A00002	8/28/2020	0.73	8/28/2026	8/28/2020	102.43347	98.75480975	95.22628073	91.84091044	88.59209378	85.47357175	82.47941094	79.60398435	76.84195346
210709A00002	7/9/2021	1.36	7/9/2029	7/9/2021	107.79363	101.2048062	95.05848826	89.32273091	83.96805693	78.96725032	74.29517155	69.92858891	65.84602439
210830A00011	8/30/2021	0.53	8/30/2023	8/30/2021	99.511556	98.77099519	98.04138535	97.32248513	96.6140604	95.9158838	95.22773451	94.549398	93.88066582
220225A00013	2/25/2022	1.92	2/23/2024	2/25/2022	101.10695	99.88714416	98.69663633	97.53438345	96.39938902	95.29070295	94.20741882	93.14867141	92.11363442
180116A00015	1/16/2018	3.06	1/18/2028	1/16/2018	114.72654	109.4303276	104.4140047	99.66125571	95.1568066	90.88635038	86.83648049	82.99462917	79.34901049
191104A00024	11/4/2019	2.26	8/3/2029	11/4/2019	112.31998	105.5789113	99.28962204	93.41944045	87.93822504	82.81815491	78.03353926	73.56064346	69.37753034
140922A00026	9/22/2014	3.02	9/30/2024	9/22/2014	104.36813	102.5333397	100.7397631	98.986233	97.27162743	95.59486272	93.95489208	92.35070411	90.78132132
181130A00037	11/30/2018	3.05	11/30/2023	11/30/2018	101.98074	100.9821673	100.0031334	99.04306444	98.10141343	97.17765406	96.27127994	95.38180364	94.50875579
190918A00007	9/20/2019	1.95	12/15/2022	9/20/2019	100.07441	100.032767	99.99118119	99.94964766	99.90816633	99.86673712	99.82535991	99.7840346	99.7427611
200228A00016	2/28/2020	1.35	2/22/2024	2/28/2020	100.39595	99.18346567	98.00007843	96.84475069	95.71649431	94.61436706	93.53746998	92.48494489	91.45597216
200818A00010	8/18/2020	1.88	8/20/2035	8/18/2020	112.34461	100.184916	89.47385331	80.03044757	71.69720571	64.33696015	57.83015455	52.07250391	46.97297565
140423A00036	4/23/2014	4.03	4/23/2029	4/23/2014	123.41636	116.5941982	110.205896	104.2214488	98.61307576	93.35504632	88.42351895	83.79639333	79.4531749
150601A00512	6/1/2015	3.79	7/16/2029	6/1/2015	122.06261	115.052045	108.5023063	102.3804932	96.6562299	91.30145439	86.29023073	81.59857691	77.20430788
190528A00007	5/28/2019	2.44	11/15/2023	5/28/2019	101.12109	100.1696518	99.2360879	98.31989331	97.4205864	96.53770325	95.6707968	94.81943608	93.98320553
190829A00045	8/29/2019	1.9	8/28/2026	8/29/2019	106.03245	102.3078646	98.73402953	95.30397738	92.01110979	88.84917266	85.81223586	82.89467415	80.09114946
200722A00011	7/22/2020	0.59	7/24/2023	7/22/2020	99.655627	99.0129467	98.37851729	97.75218102	97.13378383	96.52317557	95.92020983	95.32474386	94.73663845
220421A00015	4/21/2022	3.12	9/16/2024	4/21/2022	104.06168	102.2748918	100.5273999	98.81805425	97.14575098	95.50942712	93.90805896	92.34066014	90.80628001
170822A00019	8/22/2017	2.44	8/22/2024	8/22/2017	102.71864	101.0109666	99.33971647	97.70379097	96.10213331	94.53372919	92.99760461	91.49282384	90.0184875
170919A00073	9/19/2017	2.28	9/19/2024	9/19/2017	102.93975	101.1484372	99.39682184	97.68375497	96.0081266	94.36886746	92.76494714	91.19537235	89.65918521
180529A00066	5/29/2018	2.99	5/26/2023	5/29/2018	100.98642	100.4982682	100.0148332	99.53604697	99.0618427	98.5921548	98.12691893	97.66607198	97.20955204
180813A00013	8/13/2018	2.99	12/5/2022	8/13/2018	100.03897	100.0250838	100.0112062	99.99734221	99.98349179	99.96965492	99.95583158	99.94202174	99.92822537
180830A00039	8/30/2018	3.03	8/30/2023	8/30/2018	101.39963	100.6512168	99.91384102	99.18725542	98.47122444	97.76551937	97.06991805	96.38420467	95.7081695
181217A00010	12/17/2018	3.11	12/15/2023	12/17/2018	101.96508	100.9289508	99.91387627	98.91922027	97.94437074	96.98873987	96.05176293	95.13289714	94.23162061

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190524A00032	5/24/2019	2.45	5/24/2023	5/24/2019	100.71592	100.233969	99.75662941	99.28383399	98.81551796	98.35161783	97.8920713	97.43681725	96.98579568
200130A00012	1/30/2020	1.72	1/30/2023	1/30/2020	100.21045	100.0415508	99.87321623	99.70544614	99.53823776	99.3715883	99.205495	99.0399551	98.87496589
200330A00041	4/1/2020	1.09	4/1/2025	4/1/2020	100.96419	98.6836029	96.46535898	94.3074289	92.20785619	90.16475882	88.17632591	86.24081467	84.3565474
220711A00020	7/11/2022	3.25	1/11/2024	7/11/2022	102.57798	101.4619171	100.3701437	99.30187343	98.25635271	97.23285992	96.23070368	95.24922129	94.28777728
170803A00032	8/3/2017	2.12	8/3/2023	8/3/2017	100.78405	100.108945	99.44286457	98.7856273	98.13705797	97.49698595	96.86524506	96.2416734	95.62611327
180518A00014	5/18/2018	3.17	5/18/2023	5/18/2018	101.03639	100.5698463	100.1076215	99.649652	99.19587903	98.74624498	98.3006933	97.85916843	97.42161583
190110A00012	1/10/2019	2.97	1/18/2024	1/10/2019	102.10418	100.9752347	99.87124577	98.79138751	97.73487455	96.70095533	95.68891024	94.69805	93.72771399
190809A00020	8/9/2019	2.44	8/9/2034	8/9/2019	121.47712	109.510981	98.85964164	89.37065633	80.91001726	73.35983795	66.61633903	60.58809474	55.19450518
221130A00081	11/30/2022	4.15	11/30/2027	11/30/2022	121.05361	115.6964111	110.615104	105.7939569	101.2182214	96.87406248	92.74849717	88.82933748	85.10513775
150610A00009	6/10/2015	3.03	6/10/2025	6/10/2015	106.68784	104.1388477	101.6643486	99.26172552	96.9284715	94.662183	92.46055509	90.32137664	88.24252595
150721A00027	7/21/2015	3.74	7/22/2030	7/21/2015	124.6568	116.5380902	109.0236416	102.0649539	95.61767247	89.64121214	84.09841788	78.95525798	74.18054594
170612A00039	6/12/2017	2.29	6/12/2024	6/12/2017	102.42535	100.9039264	99.41265347	97.95070494	96.5172865	95.11163215	93.73300292	92.38068563	91.0539918
180130A00085	1/30/2018	2.79	1/30/2025	1/30/2018	104.89051	102.7236158	100.6122857	98.55470106	96.54911863	94.59386607	92.68733831	90.82799429	89.01435384
181005A00017	10/5/2018	3.27	4/11/2023	10/5/2018	100.89231	100.5270891	100.1645217	99.80457647	99.44722513	99.09243956	98.74019212	98.39045555	98.04320298
190731A00004	7/31/2019	2.18	7/31/2024	7/31/2019	102.17067	100.5256421	98.91485614	97.33730965	95.79203659	94.27810835	92.79463194	91.34074833	89.91563075
200131A00038	1/31/2020	1.73	1/30/2025	1/31/2020	102.12395	99.99669581	97.92398834	95.90404557	93.93515831	92.01568663	90.14405653	88.31875659	86.53833501
200220A00015	2/20/2020	1.57	2/20/2025	2/20/2020	102.35982	100.1599823	98.01793306	95.93173346	93.89952546	91.9195289	89.99003742	88.10941476	86.27609114
200922A00036	9/24/2020	1.55	9/23/2025	9/24/2020	102.94832	100.1796237	97.4990843	94.90341765	92.38947987	89.95426188	87.59488277	85.30858356	83.09272125
050923A00096	9/23/2005	4.86	9/22/2025	9/23/2005	112.89752	109.9764283	107.147444	104.4071373	101.75223	99.17958465	96.68619791	94.26919382	91.92581759
170417A00068	4/17/2019	2.59	4/17/2024	4/17/2019	102.28692	100.9202362	99.57828617	98.26045921	96.96616138	95.6948177	94.44587151	93.2187837	92.01303206
180913A00029	9/13/2018	3.11	9/13/2023	9/13/2018	101.51467	100.7283935	99.95429411	99.19209243	98.44151543	97.70229837	96.97418452	96.25692485	95.55027771
181109A00028	11/9/2018	3.72	11/9/2026	11/9/2018	113.67979	109.6101684	105.7115223	101.9757558	98.39520232	94.96259665	91.67105154	88.51403621	85.48535593
190215A00004	2/15/2019	2.84	2/15/2023	2/15/2019	100.48202	100.2686223	100.0561426	99.84457277	99.63390693	99.42413926	99.21526398	99.00727537	98.80016774
191015A00029	10/15/2019	1.91	10/15/2024	10/15/2019	101.99361	100.1494549	98.34750414	96.5865424	94.86540139	93.18295354	91.53811029	89.92982047	88.3570688
191220A00001	12/20/2019	2.62	12/19/2031	12/20/2019	118.14891	108.9298594	100.5161511	92.83287246	85.81245004	79.3938953	73.52213194	68.1473951	63.22469444
200110A00014	1/10/2020	1.73	1/10/2023	1/10/2020	100.17432	100.0605015	99.94695401	99.83367902	99.72067553	99.60794253	99.49547897	99.38328387	99.27135619
160606A00004	6/6/2016	2.43	6/8/2026	6/6/2016	107.38721	103.8555511	100.4597583	97.19386807	94.05221624	91.02941704	88.12034804	85.32013569	82.62414179
180823A00035	8/23/2018	3.05	8/22/2025	8/23/2018	107.4692	104.7107553	102.0375568	99.44641479	96.93428194	94.49824691	92.13552726	89.84346262	87.61950833
190227A00005	2/27/2019	2.87	2/27/2024	2/27/2019	102.31745	101.0789238	99.87034407	98.6906324	97.5387634	96.41375979	95.31468951	94.24066322	93.19083183
190401A00010	4/1/2019	2.62	4/1/2024	4/1/2019	102.24321	100.9199789	99.62001951	98.34277116	97.08769014	95.85424958	94.64193889	93.45026308	92.27874224
190625A00023	6/25/2019	2.47	6/25/2027	6/25/2019	110.41002	105.7801027	101.3723931	97.17504955	93.17692145	89.36750865	85.73691995	82.2758345	78.9754658
200630A00004	6/30/2020	0.66	7/1/2024	6/30/2020	99.616787	98.07184844	96.55807393	95.07458773	93.62054659	92.19513827	90.79758013	89.42711771	88.08302354
150407A00010	4/7/2015	2.21	4/10/2023	4/7/2015	100.56304	100.2006037	99.84079099	99.48357043	99.12891394	98.77679384	98.42718289	98.0800542	97.7353813

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180403A00005	4/3/2018	2.72	4/3/2023	4/3/2018	100.71906	100.3754625	100.0342133	99.69528549	99.35865522	99.02429919	98.69219437	98.36231804	98.03464779
180813A00059	8/13/2018	3.01	8/11/2023	8/13/2018	101.30839	100.6112711	99.92374573	99.24561585	98.5766896	97.91678033	97.26570642	96.62329109	95.98936227
190701A00009	7/3/2019	2.14	7/2/2024	7/3/2019	101.98047	100.4133988	98.87792469	97.37315836	95.89824378	94.45235651	93.03470219	91.64451516	90.28105717
190826A00056	8/26/2019	1.72	8/26/2024	8/26/2019	101.48088	99.77382675	98.10337998	96.46843066	94.86791103	93.30079651	91.7661035	90.26288726	88.79023999
200709A00004	7/10/2020	1.4	7/10/2025	7/10/2020	102.16418	99.60428085	97.12111315	94.71191275	92.37403171	90.10493499	87.90219474	85.76348502	83.68657671
220601A00038	6/3/2022	3.69	5/28/2032	6/3/2022	128.79143	118.6735463	109.4652528	101.0790856	93.43644555	86.46665392	80.10611678	74.29758107	68.98947219
180104A00013	1/4/2018	2.39	1/4/2023	1/4/2018	100.21879	100.121542	100.0244926	99.92763879	99.83097978	99.73451499	99.63824381	99.54216564	99.44627987
190626A00004	6/26/2019	2.15	6/26/2024	6/26/2019	101.96907	100.4182584	98.89852423	97.4090026	95.94885891	94.51728897	93.11351759	91.7367973	90.38640708
200225A00018	2/25/2020	1.94	2/25/2030	2/25/2020	110.59985	103.3792753	96.6804416	90.46291193	84.68958891	79.32642097	74.34213685	69.70800457	65.39761261
220421A00013	4/21/2022	3.33	9/15/2026	4/21/2022	111.58324	107.7048516	103.9841354	100.4138121	96.98698354	93.69710757	90.53797712	87.50370117	84.58868676
221118A00008	11/18/2022	5.09	11/30/2023	11/18/2022	103.84769	102.8417513	101.8553918	100.8880409	99.9391522	99.00819997	98.09467831	97.19810019	96.31799661
160714A00029	8/10/2016	2.27	8/10/2026	8/10/2016	107.28948	103.5894005	100.037209	96.62615086	93.34982594	90.20216376	87.1774042	84.27007954	81.47499775
171018A00011	10/18/2017	2.68	10/18/2027	10/18/2017	113.33201	108.2854066	103.4954656	98.94780529	94.6289257	90.52614631	86.62755225	82.92194424	79.39879213
180629A00008	6/29/2018	3.02	6/29/2023	6/29/2018	101.14374	100.5629822	99.98887911	99.42131995	98.86019334	98.30539045	97.75680486	97.21433255	96.6778718
180910A00032	9/10/2018	3.22	9/10/2024	9/10/2018	104.21445	102.4422856	100.7087766	99.01277882	97.35318928	95.72894734	94.13903288	92.58246427	91.05829656
190131A00036	1/31/2019	2.69	7/31/2023	1/31/2019	101.16168	100.4932218	99.83357573	99.18257313	98.54004493	97.90582654	97.27975755	96.6616817	96.05144668
200115A00015	1/17/2020	1.88	1/17/2023	1/17/2020	100.19667	100.0636591	99.93101912	99.79874556	99.6668369	99.5352916	99.40410813	99.27328495	99.14282056
200827A00007	8/27/2020	0.77	8/27/2025	8/27/2020	100.66209	97.99750058	95.41601867	92.91451738	90.49001009	88.13964418	85.86069386	83.6505535	81.50673132
171219A00025	12/19/2017	2.33	12/19/2022	12/19/2017	100.11839	100.0655917	100.0128658	99.96021245	99.90763156	99.85512297	99.8026865	99.75032202	99.69802936
180918A00023	9/18/2018	3.17	9/18/2023	9/18/2018	101.57455	100.7747819	99.9876101	99.21273659	98.44987457	97.69874606	96.9590816	96.23061996	95.51310778
191206A00019	12/6/2019	1.96	11/15/2023	12/6/2019	100.65712	99.70810095	98.77691833	97.86307392	96.96608681	96.08549372	95.22084824	94.37172003	93.5376941
200210A00009	2/10/2020	1.57	2/10/2025	2/10/2020	102.29701	100.1270684	98.01355237	95.95459011	93.94838721	91.99322346	90.08744899	88.22948081	86.41779941
200227A00005	2/27/2020	1.43	2/27/2024	2/27/2020	100.51498	99.28833109	98.091429	96.92320089	95.78262677	94.6687345	93.58059701	92.51732974	91.47808817
200309A00046	3/9/2020	0.78	3/11/2025	3/9/2020	100.65816	98.42589922	96.25356122	94.13913945	92.08071266	90.07643809	88.12454756	86.22334387	84.37119725
200417A00016	4/21/2020	2.18	4/21/2025	4/21/2020	103.65362	101.2872543	98.98676218	96.74995197	94.5747156	92.45902711	90.4009389	88.39857824	86.45014394
200511A00019	5/11/2020	1.18	2/1/2027	5/11/2020	103.9899	99.88941424	95.9719793	92.22843783	88.65014787	85.22894619	81.95711884	78.82737374	75.83281504
200615A00005	6/15/2020	0.61	6/15/2023	6/15/2020	99.77013	99.23156688	98.69880169	98.17174149	97.65029495	97.13437267	96.62388716	96.11875273	95.61888554
200922A00040	9/24/2020	2	9/23/2024	9/24/2020	102.08835	100.3006733	98.55274855	96.84343801	95.17164351	93.53630604	91.93640407	90.37095188	88.8389981
220624A00016	6/24/2022	3.34	6/24/2026	6/24/2022	111.55569	107.8852568	104.3570885	100.9648805	97.70264386	94.56468815	91.54560475	88.64025107	85.84373593
180514A00035	5/14/2018	3.07	5/14/2024	5/14/2018	103.41964	101.9680866	100.5441339	99.14706756	97.77619293	96.43083889	95.1103568	93.81411956	92.54152071
180522A00019	5/22/2018	3.16	5/22/2023	5/22/2018	101.05076	100.5732955	100.1003501	99.63185639	99.1677517	98.70797442	98.25246412	97.80116153	97.35400844
190103A00010	1/3/2019	2.7	1/3/2024	1/3/2019	101.88951	100.7993579	99.73248763	98.68816103	97.66566916	96.6643325	95.68349947	94.72254502	93.78086927
190514A00073	5/14/2019	2.53	5/14/2024	5/14/2019	102.33775	100.8991926	99.48794001	98.10327948	96.74452574	95.41101654	94.10211173	92.81719232	91.55565963

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200210A00021	2/10/2020	1.76	2/10/2025	2/10/2020	102.25569	100.0953536	97.99103027	95.94086639	93.94308503	91.9959825	90.09792462	88.24734325	86.442733
160705A00005	7/5/2016	1.49	7/5/2023	7/5/2016	100.34873	99.75322943	99.16478161	98.583259	98.00853982	97.44050515	96.87903883	96.32402739	95.77535994
180802A00006	8/2/2018	2.99	8/2/2023	8/2/2018	101.37241	100.6977598	100.0320842	99.37520157	98.72693835	98.08712571	97.45559917	96.83219847	96.21676747
190926A00015	9/26/2019	2.32	11/26/2030	9/26/2019	114.23021	106.1727877	98.74838234	91.90386868	85.59083692	79.76515313	74.3865615	69.41832554	64.826904
191002A00016	10/2/2019	1.79	10/2/2023	10/2/2019	100.46356	99.63164632	98.81345166	98.00864289	97.21689372	96.43788841	95.6713213	94.91689645	94.17432723
210216A00008	2/16/2021	0.71	2/17/2026	2/16/2021	101.66423	98.50878769	95.46647144	92.53255849	89.70255414	86.97218015	84.33736267	81.79422099	79.33905694
160330A00054	3/30/2016	2.9	3/31/2031	3/30/2016	121.44799	112.6831986	104.6298615	97.2262624	90.41633745	84.14913358	78.378319	73.06174274	68.16103825
170117A00046	1/17/2017	2.55	1/17/2024	1/17/2017	101.61672	100.4934371	99.39494352	98.32042337	97.26909793	96.24022186	95.2330815	94.24699315	93.28130154
170906A00020	9/6/2017	2.14	9/6/2023	9/6/2017	100.72873	99.96458145	99.21199417	98.47071044	97.74047701	97.02104812	96.31218528	95.61365696	94.92523837
190329A00018	3/29/2019	2.6	3/29/2024	3/29/2019	102.19702	100.8817846	99.59017347	98.32159493	97.07547511	95.8512589	94.64840928	93.46640651	92.30474751
190816A00006	8/16/2019	1.77	8/16/2024	8/16/2019	101.53561	99.8541994	98.20844558	96.59727935	95.01967346	93.4746416	91.96123632	90.47854705	89.02569832
200429A00045	5/1/2020	1.54	4/30/2025	5/1/2020	102.16431	99.79202525	97.48651584	95.24553885	93.06693677	90.94863694	88.88864767	86.88505462	84.93601728
210106A00006	1/8/2021	0.48	7/17/2023	1/8/2021	99.604957	98.98116055	98.36514651	97.7567698	97.15588901	96.56236622	95.97606687	95.39685965	94.82461644
221031A00003	10/31/2022	4.89	11/12/2024	10/31/2022	107.95526	105.9778601	104.0471263	102.1616735	100.3201644	98.52131049	96.7638696	95.04664394	93.36847823
140521A00019	5/21/2014	3.43	5/22/2028	5/21/2014	118.86533	113.0694601	107.5979325	102.4308465	97.54962018	92.93690052	88.57647602	84.45319583	80.55289503
180720A00068	7/20/2018	2.89	7/20/2023	7/20/2018	101.25155	100.6124328	99.98138369	99.35825308	98.74289238	98.1351567	97.53490477	96.94199874	96.35630418
180727A00039	7/27/2018	3.48	7/27/2028	7/27/2018	118.27602	112.3571431	106.7776767	101.5162831	96.55307713	91.86952248	87.44833321	83.27338259	79.32961922
200428A00013	4/30/2020	1.49	4/29/2024	4/30/2020	100.78612	99.39824665	98.03604044	96.69884852	95.38604301	94.09701654	92.83118145	91.587969	90.36682858
210129A00013	1/29/2021	0.65	1/9/2025	1/29/2021	99.733677	97.68730761	95.69253942	93.74772393	91.85127798	90.00168085	88.19747119	86.43724426	84.71964924
170609A00026	6/9/2017	2.3	6/9/2023	6/9/2017	100.67944	100.1542391	99.63451505	99.12018091	98.61115303	98.10734953	97.60869019	97.11509641	96.62649123
180827A00010	8/27/2018	2.99	8/25/2023	8/27/2018	101.34965	100.6148365	99.89066932	99.17691973	98.47336401	97.77978481	97.09597091	96.42171702	95.75682358
190523A00020	5/23/2019	2.5	2/9/2024	5/23/2019	101.72954	100.5433885	99.38483725	98.25292847	97.14675087	96.0654343	95.00814743	93.97409565	92.96251907
190826A00065	8/26/2019	2.09	8/28/2029	8/26/2019	111.23544	104.4651282	98.15327634	92.2664144	86.77369023	81.64664933	76.85903601	72.38661214	68.20699183
191004A00002	10/4/2019	2.08	10/4/2029	10/4/2019	111.24907	104.3813666	97.98511728	92.02556231	86.47066733	81.29089947	76.45902043	71.9498977	67.74033206
200327A00036	3/27/2020	0.77	9/27/2023	3/27/2020	99.759506	98.94203389	98.1378786	97.34671718	96.56823697	95.80213522	95.04811878	94.30590367	93.57521476
150601A00490	6/1/2015	3.19	7/2/2024	6/1/2015	103.58317	102.0028814	100.4544216	98.93689667	97.44944442	95.99123451	94.56146688	93.15937037	91.78420143
160830A00038	8/30/2016	2.24	8/28/2026	8/30/2016	107.30802	103.5595978	99.9626315	96.51012742	93.1954617	90.01235592	86.95485669	84.01731655	81.19437619
170518A00034	5/18/2017	2.15	5/18/2023	5/18/2017	100.63716	100.1707902	99.70875305	99.25098373	98.79742316	98.34801334	97.90269729	97.46141913	97.02412394
190402A00004	4/2/2019	2.9	4/2/2029	4/2/2019	117.589	110.950429	104.7355607	98.91511754	93.46198787	88.35105548	83.55904323	79.06436975	74.84701793
190829A00031	8/29/2019	1.54	8/29/2024	8/29/2019	101.52097	99.79955813	98.11529092	96.46702826	94.85368085	93.27420373	91.72759403	90.21288878	88.72916289
200131A00010	2/3/2020	1.68	2/3/2023	2/3/2020	100.21191	100.031975	99.85268687	99.6740424	99.49603819	99.3186708	99.14193683	98.96583289	98.79035563
200221A00004	2/21/2020	1.69	2/21/2025	2/21/2020	102.16681	99.97561048	97.84187062	95.76366773	93.73915664	91.76656937	89.84421118	87.97045682	86.14374702
200224A00021	2/24/2020	1.58	9/24/2024	2/24/2020	101.32542	99.54220288	97.79871878	96.09383213	94.42644791	92.79550988	91.19999894	89.63893155	88.11135817

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200504A00015	5/4/2020	0.68	5/4/2023	5/4/2020	99.899265	99.47377497	99.05189807	98.63358888	98.21880232	97.80749404	97.39962042	96.9951386	96.59400639
220217A00021	2/17/2022	1.85	2/13/2024	2/17/2022	100.96861	99.77654649	98.6125084	97.47551259	96.36462524	95.27895507	94.21765097	93.17989976	92.16492408
220916A00043	9/16/2022	4.07	9/16/2031	9/16/2022	132.68043	122.9810579	114.0963385	105.9527985	98.48397661	91.62971806	85.33554497	79.55209322	74.23460753
170313A00032	3/13/2017	3.69	6/14/2032	3/13/2017	128.89854	118.7295853	109.4786204	101.0570206	93.38517281	86.39151938	80.01170409	74.18781316	68.86769946
171206A00048	12/6/2017	3.04	12/6/2032	12/6/2017	125.88169	115.2688868	105.6664474	96.97204277	89.09422897	81.95123454	75.46989182	69.58469133	64.23694429
190821A00030	8/21/2019	1.8	8/21/2024	8/21/2019	101.60395	99.90885161	98.24990598	96.62601649	95.03613531	93.47925667	91.95441474	90.46068156	88.9971652
200109A00012	1/14/2020	1.94	12/15/2022	1/14/2020	100.07399	100.0323508	99.99076527	99.94923208	99.90775111	99.86632224	99.82494537	99.78362041	99.74234724
200304A00034	3/4/2020	1.12	3/4/2024	3/4/2020	100.14502	98.9056283	97.69527608	96.51295098	95.35768337	94.22854804	93.12466169	92.04518054	90.98929817
200430A00009	4/30/2020	1.16	4/30/2026	4/30/2020	102.7453	99.39688639	96.17454426	93.07288042	90.08676436	87.21131072	84.44186621	81.77399734	79.20347886
210428A00007	4/28/2021	1.74	10/27/2028	4/28/2021	108.5374	102.6497226	97.11774261	91.91818769	87.02942369	82.43132834	78.10517834	74.03354549	70.20020096
211222A00025	12/22/2021	1.2	7/15/2024	12/22/2021	100.5011	98.91227513	97.35598663	95.83129904	94.33731394	92.87316678	91.43802536	90.03108826	88.65158339
221031A00044	10/31/2022	4.89	10/31/2024	10/31/2022	107.80135	105.8585256	103.9608247	102.1069227	100.2955475	98.52547197	96.79551272	95.1045278	93.45141509
150601A01024	6/1/2015	5.33	2/27/2026	6/1/2015	115.79917	112.4014597	109.1239163	105.9615414	102.9095788	99.96350101	97.1189973	94.37196127	91.71847979
170322A00011	3/22/2017	2.48	3/22/2024	3/22/2017	102.25118	100.9488512	99.67187232	98.41951727	97.19109158	95.98592709	94.80338074	93.6428333	92.50368831
170831A00022	8/31/2017	2.27	2/29/2024	8/31/2017	101.57902	100.3399879	99.13107265	97.95118821	96.79929867	95.67441692	94.57560176	93.50195526	92.4526203
180914A00026	9/14/2018	3.15	9/14/2023	9/14/2018	101.55041	100.7613039	99.98446619	99.21960782	98.46645295	97.72473418	96.99419221	96.27457552	95.56564013
190510A00018	5/10/2019	2.54	5/10/2023	5/10/2019	100.71688	100.272966	99.83297078	99.39683954	98.96452143	98.5359665	98.11112565	97.68995067	97.27239414
190620A00057	6/25/2019	2.09	5/15/2023	6/25/2019	100.52505	100.0680712	99.61524477	99.16651874	98.72183751	98.28114644	97.84439188	97.41152115	96.98248249
200227A00026	2/27/2020	1.41	2/27/2023	2/27/2020	100.1896	99.9436428	99.69889329	99.45533787	99.21296786	98.97177466	98.73174977	98.49288475	98.25517125
210917A00008	9/17/2021	1.55	9/15/2028	9/17/2021	107.38162	101.6357978	96.23148117	91.14664624	86.36079809	81.85485912	77.61106372	73.61286147	69.84482786
150317A00012	3/17/2015	2.46	3/18/2024	3/17/2015	102.19611	100.904148	99.63843485	98.39817448	97.18260732	95.99100427	94.82266516	93.67691727	92.55311401
150601A00523	6/1/2015	4.55	7/25/2031	6/1/2015	133.6492	124.1579158	115.4470872	107.447589	100.0967868	93.33789508	87.11940179	81.39455229	76.12088642
150601A00734	6/1/2015	2.92	5/1/2025	6/1/2015	105.41083	102.9961163	100.6491906	98.36777182	96.14967047	93.99278335	91.89508944	89.85464629	87.86958641
150819A00013	8/19/2015	3.51	8/19/2030	8/19/2015	123.08171	114.946389	107.4230549	100.4621229	94.01828202	88.05010766	82.51970832	77.39240647	72.6364499
170110A00020	1/10/2017	2.4	1/10/2024	1/10/2017	101.6145	100.5069125	99.42341129	98.36321529	97.3255785	96.30978646	95.31515461	94.34102674	93.38677354
170203A00012	2/3/2017	3.63	2/2/2035	2/3/2017	133.2134	120.3020189	108.8296307	98.62568501	89.5407686	81.4438826	74.22008393	67.76843968	62.00025142
200302A00036	3/2/2020	1.45	3/2/2026	3/2/2020	103.44826	100.243535	97.1541863	94.17537119	91.30248658	88.53115196	85.85719691	83.27664952	80.78572548
200429A00015	4/29/2020	0.66	4/29/2024	4/29/2020	99.8848	98.49909132	97.13908165	95.80411943	94.49357475	93.20683841	91.943321	90.70245216	89.48367977
200429A00046	5/1/2020	2.07	4/30/2025	5/1/2020	103.44815	101.0601098	98.73919377	96.48314111	94.28978445	92.15704164	90.08291189	88.06547207	86.10287321
180503A00040	5/3/2018	3.3	5/5/2025	5/3/2018	106.47576	104.0373598	101.6676189	99.36421659	97.12492701	94.94761237	92.83021886	90.7707728	88.76737708
190329A00017	3/29/2019	2.59	3/29/2023	3/29/2019	100.59854	100.269546	99.9427	99.61798072	99.2953675	98.97483994	98.65637789	98.33996146	98.02557104
190605A00020	6/5/2019	2.19	2/5/2024	6/5/2019	101.34419	100.1710839	99.02503732	97.90512685	96.81046622	95.74020886	94.69354567	93.66970295	92.66794052
190816A00031	8/16/2019	1.77	8/16/2024	8/16/2019	101.53561	99.8541994	98.20844558	96.59727935	95.01967346	93.4746416	91.96123632	90.47854705	89.02569832

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190826A00058	8/26/2019	1.91	8/26/2026	8/26/2019	106.05738	102.3376255	98.76824035	95.34228238	92.05317773	88.89469503	85.86092522	82.94626265	80.14538748
200227A00016	2/27/2020	1.47	2/27/2025	2/27/2020	101.70696	99.50364607	97.35849877	95.26955233	93.23492654	91.25282051	89.32150854	87.43933629	85.60471708
191122A00018	11/26/2019	3.11	11/22/2039	11/26/2019	130.28441	113.4332353	99.09724518	86.88003555	76.44993359	67.52911927	59.88462317	53.32086825	47.67348419
200303A00010	3/3/2020	1.34	3/3/2025	3/3/2020	101.43132	99.22049435	97.06829168	94.97273909	92.93194575	90.94409991	89.00746486	87.12037509	85.28123276
200414A00016	4/16/2020	1.64	4/15/2024	4/16/2020	100.96226	99.61054172	98.28321171	96.97966831	95.69932822	94.44162676	93.20601709	91.99196956	90.79897102
200922A00030	9/24/2020	2.45	9/25/2023	9/24/2020	101.01556	100.1995598	99.39671853	98.60671694	97.8292488	97.06401757	96.31073599	95.56912576	94.83891715
220927A00071	9/27/2022	4.7	9/26/2024	9/27/2022	107.02953	105.1876255	103.3866683	101.625493	99.90297711	98.21803765	96.56962925	94.95674261	93.37840302
171208A00008	12/8/2017	2.25	12/8/2022	12/8/2017	100.04807	100.0258374	100.0036277	99.98144188	99.95927981	99.93714148	99.91502684	99.89293584	99.87086845
180604A00050	6/4/2018	3.15	6/4/2024	6/4/2018	103.38586	101.8838593	100.4112964	98.96738222	97.55135263	96.16247017	94.80002287	93.46332321	92.151707
191121A00010	11/21/2019	2.59	11/20/2037	11/21/2019	125.51655	110.3911852	97.32112628	86.01269439	76.21569424	67.71678105	60.33386436	53.91138564	48.31632956
191212A00028	12/13/2019	1.93	1/17/2023	12/13/2019	100.20333	100.0703153	99.93766765	99.80538646	99.67347018	99.54191728	99.41072622	99.27989548	99.14942354
220302A00006	3/2/2022	1.52	4/25/2023	3/2/2022	100.2573	99.85536612	99.45665	99.06111314	98.66871765	98.27942621	97.89320208	97.51000913	97.12981177
220815A00006	8/15/2022	3.52	8/15/2024	8/15/2022	104.53769	102.8323237	101.1630016	99.52864418	97.92821552	96.36072069	94.82520389	93.32074649	91.84646516
160628A00050	6/28/2016	1.56	6/28/2023	6/28/2016	100.38765	99.81088944	99.24073762	98.67707999	98.11980609	97.56880797	97.0239801	96.48521932	95.95242473
180102A00021	1/2/2018	2.82	1/2/2026	1/2/2018	107.38388	104.2805333	101.2837031	98.38912585	95.59273274	92.89064194	90.27914884	87.75471675	85.31396819
180619A00021	6/19/2018	3.24	6/19/2028	6/19/2018	118.01061	112.1587737	106.6387751	101.4299925	96.51319507	91.87043973	87.48497861	83.34117311	79.42441474
190924A00035	9/24/2019	1.88	9/13/2024	9/24/2019	101.82983	100.0715052	98.3517681	96.6694828	95.02355612	93.41293632	91.8366111	90.29360577	88.78298146
191122A00020	11/26/2019	3.2	11/23/2037	11/26/2019	130.88774	115.6249945	102.4073579	90.94502756	80.99086464	72.33391092	64.79392019	58.21673996	52.47040794
191212A00019	12/13/2019	1.93	12/19/2022	12/13/2019	100.09319	100.0404543	99.98778953	99.93519679	99.88267598	99.83022695	99.77784954	99.7255436	99.67330898
200515A00001	5/15/2020	0.59	5/15/2023	5/15/2020	99.834834	99.37972831	98.9287675	98.48189483	98.03905479	97.60019289	97.16525562	96.7341904	96.30694563
221130A00075	11/30/2022	4.15	11/30/2027	11/30/2022	121.05361	115.6964111	110.615104	105.7939569	101.2182214	96.87406248	92.74849717	88.82933748	85.10513775
200313A00032	3/18/2020	1.46	3/18/2025	3/18/2020	101.76905	99.51533384	97.32229847	95.1879353	93.11031875	91.08759979	89.11800233	87.19981976	85.33141172
200511A00028	5/13/2020	1.02	5/13/2024	5/13/2020	100.12823	98.70908163	97.31684449	95.95082438	94.61034716	93.29476133	92.00343704	90.7357652	89.49115665
221130A00032	11/30/2022	4.37	11/30/2027	11/30/2022	120.94464	115.6282324	110.5845599	105.7981225	101.2543845	96.93970758	92.84129083	88.9471149	85.24589023
151211A00055	12/11/2015	2.62	12/11/2024	12/11/2015	104.13096	102.1059293	100.1306236	98.20349957	96.32307667	94.48793058	92.69669057	90.94803701	89.24069916
170615A00015	6/15/2017	2.25	6/14/2024	6/15/2017	102.37465	100.8481382	99.35193982	97.88521918	96.44717523	95.03703562	93.6540553	92.29751538	90.96672193
170912A00009	9/12/2017	2.11	12/15/2022	9/12/2017	100.08107	100.0394273	99.99783586	99.9562968	99.91480996	99.87337523	99.83199252	99.79066171	99.7493827
180130A00091	1/30/2018	2.74	1/25/2023	1/30/2018	100.35655	100.2012488	100.0464395	99.89211622	99.73827664	99.5849185	99.43203954	99.2796375	99.12771016
181004A00029	10/4/2018	3.7	10/4/2028	10/4/2018	120.00029	113.8416988	108.0459145	102.5896108	97.45107919	92.61010615	88.04786362	83.74680714	79.69058231
190122A00042	1/22/2019	2.79	1/23/2023	1/22/2019	100.37595	100.2259109	100.0763311	99.92721018	99.77854601	99.63033643	99.48257934	99.33527261	99.18841417
200123A00049	1/23/2020	1.63	1/23/2023	1/23/2020	100.202	100.0521696	99.90280033	99.75388935	99.60543456	99.45743382	99.30988502	99.16278605	99.01613483
200130A00021	1/30/2020	1.54	1/30/2023	1/30/2020	100.20779	100.0385949	99.86997162	99.70191717	99.53442869	99.36750332	99.20113824	99.03533064	98.87007771
180205A00050	2/5/2018	2.81	2/6/2023	2/5/2018	100.43077	100.2422593	100.0544656	99.86738073	99.68100072	99.49532156	99.31033926	99.12604991	98.94244958

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180731A00004	7/31/2018	2.97	7/31/2023	7/31/2018	101.35014	100.680971	100.0206233	99.36892554	98.72570864	98.09080789	97.46406281	96.84531701	96.2344181
190807A00014	8/7/2019	1.75	8/7/2023	8/7/2019	100.42057	99.73760699	99.06391239	98.39929378	97.74356863	97.09655931	96.45809286	95.82800088	95.2061194
190820A00021	8/20/2019	2.13	8/20/2029	8/20/2019	111.48808	104.730133	98.4283596	92.54955348	87.06309881	81.94075205	77.15644584	72.68611019	68.50750929
200806A00002	8/6/2020	0.43	8/6/2024	8/6/2020	99.56576	97.92191028	96.31267437	94.737024	93.1939721	91.68257046	90.20190773	88.75110763	87.32932721
211206A00010	12/6/2021	1.54	12/4/2026	12/6/2021	105.1946	101.2248035	97.42641816	93.79115085	90.31115507	86.97900342	83.78766286	80.73047168	77.80111785
220429A00006	4/29/2022	3.06	4/29/2024	4/29/2022	103.01817	101.6137555	100.2352898	98.88211464	97.55359464	96.24911522	94.96808176	93.70991883	92.47406937
221116A00026	11/16/2022	4.78	11/15/2024	11/16/2022	107.77719	105.7933256	103.8564781	101.9652442	100.1182713	98.31425657	96.55194382	94.83012217	93.14762383
130926A00009	9/26/2013	4	10/2/2028	9/26/2013	123.16706	116.8731671	110.9498285	105.3732104	100.1211304	95.17293584	90.50939093	86.11257253	81.96577441
151116A00025	11/16/2015	3.04	11/14/2025	11/16/2015	107.62218	104.6474436	101.7712081	98.9896807	96.29923166	93.69639107	91.17784078	88.74040682	86.38105236
170918A00007	9/18/2017	2.8	9/20/2027	9/18/2017	112.58028	107.6634734	102.9924233	98.55355268	94.33410674	90.32209727	86.50625265	82.87597127	79.42127818
171212A00024	12/12/2017	2.29	12/12/2022	12/12/2017	100.07344	100.0400904	100.0067807	99.97351033	99.94027934	99.9070876	99.87393506	99.84082162	99.80774721
191004A00032	10/4/2019	2.01	1/3/2028	10/4/2019	109.26071	104.1428432	99.29561076	94.70328849	90.35114618	86.22538156	82.31305691	78.60204032	75.08095127
200429A00058	5/1/2020	1.83	4/30/2025	5/1/2020	102.86679	100.4858829	98.17194339	95.92271744	93.7360421	91.60983951	89.542113	87.53094341	85.57448562
200604A00001	6/4/2020	0.65	6/5/2023	6/4/2020	99.815761	99.30397421	98.79741617	98.29600717	97.79966902	97.30832513	96.82190039	96.34032125	95.86351559
160119A00025	1/19/2016	3.05	1/19/2028	1/19/2016	114.68191	109.3841194	104.3664397	99.6125389	95.10712389	90.8358703	86.7853557	82.94299786	79.29699768
160504A00004	5/4/2016	2.3	5/4/2026	5/4/2016	107.41631	103.9587082	100.6312922	97.4284798	94.34495743	91.37566648	88.51578985	85.76073897	83.10614179
190215A00005	2/15/2019	2.89	2/15/2024	2/15/2019	102.25852	101.052612	99.87511608	98.72504051	97.60143519	96.50339347	95.43004976	94.38057713	93.35418524
190814A00006	8/14/2019	1.84	8/14/2023	8/14/2019	100.48833	99.78640049	99.09425967	98.41169943	97.73852175	97.07453404	96.41954895	95.7733842	95.13586239
190930A00070	9/30/2019	1.93	9/27/2024	9/30/2019	101.95891	100.1619993	98.40525999	96.68755193	95.00777617	93.36487201	91.75781533	90.1856171	88.64732193
200922A00027	9/24/2020	1.65	9/23/2025	9/24/2020	103.23051	100.4578017	97.77334994	95.17386394	92.6561969	90.21733687	87.85440023	85.56462533	83.34536668
180814A00032	8/14/2018	3.1	8/14/2025	8/14/2018	107.52607	104.7884558	102.1349107	99.56230741	97.06766011	94.64811526	92.30094466	90.02353885	87.81340101
190220A00007	2/20/2019	2.87	2/20/2024	2/20/2019	102.27403	101.0545028	99.86403153	98.70158386	97.5661784	96.45687919	95.372793	94.31306699	93.27688639
190225A00026	2/25/2019	3.43	2/27/2034	2/25/2019	132.20006	120.062127	109.195083	99.45742596	90.72416114	82.88479305	75.84157331	69.50796815	63.80731744
190930A00012	9/30/2019	1.93	9/30/2024	9/30/2019	101.97113	100.1660303	98.40144342	96.67622845	94.98928494	93.33955001	91.72599674	90.14763279	88.60349897
191025A00010	10/25/2019	2.24	7/25/2028	10/25/2019	111.23613	105.5186606	100.1318928	95.05494599	90.2683705	85.75403895	81.49504944	77.4756361	73.68108686
130702A00018	7/2/2013	3.17	7/17/2023	7/2/2013	101.41699	100.78538	100.1616436	99.54563494	98.93721095	98.33623188	97.74256142	97.1560666	96.57661765
150720A00011	7/20/2015	2.69	7/20/2023	7/20/2015	101.12301	100.4843567	99.85376867	99.231095	98.61618717	98.00890037	97.40909335	96.81662836	96.231371
190110A00013	1/10/2019	2.97	1/17/2024	1/10/2019	102.09522	100.9690424	99.86770141	98.79037717	97.73628985	96.70469306	95.6948721	94.7061423	93.73784743
191120A00011	11/20/2019	1.88	1/20/2023	11/20/2019	100.20648	100.0651723	99.92427771	99.78379312	99.64371672	99.5040467	99.36478126	99.22591863	99.08745704
200305A00036	3/5/2020	1.36	3/5/2027	3/5/2020	104.91047	100.6994041	96.67969664	92.84162029	89.17599869	85.67417188	82.32796392	79.12965293	76.07194309
160129A00067	1/29/2016	2.53	1/29/2026	1/29/2016	107.376	104.1840751	101.1041154	98.13153737	95.26197063	92.49125129	89.8154105	87.23066398	84.73340211
170821A00038	8/23/2017	2.39	8/23/2024	8/23/2017	102.98292	101.2641443	99.58216488	97.93586415	96.32417126	94.74605856	93.2005394	91.68666607	90.20352776
190110A00009	1/10/2019	2.97	1/16/2024	1/10/2019	102.08626	100.9628502	99.86415728	98.78936737	97.7377061	96.70843227	95.70083607	94.71423743	93.74798447

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190514A00020	5/14/2019	2.66	5/14/2025	5/14/2019	104.98764	102.5439917	100.1699226	97.86305613	95.62111438	93.44191028	91.3233436	89.26339696	87.26013196
190820A00019	8/20/2019	1.76	8/21/2023	8/20/2019	100.43539	99.71498668	99.00489287	98.30488575	97.61475149	96.93428224	96.26327598	95.60153627	94.94887208
210924A00005	9/24/2021	2.37	9/24/2036	9/24/2021	118.75234	105.2840141	93.52516542	83.24775199	74.25529213	66.37835269	59.47070413	53.40603855	48.07516578
150601A00665	6/1/2015	3.82	1/14/2033	6/1/2015	130.89	120.058095	110.2542901	101.3743418	93.32512403	86.0233891	79.39467224	73.37232248	67.89664499
150826A00039	8/26/2015	3.22	8/27/2029	8/26/2015	120.46955	113.334148	106.6779596	100.4661121	94.6664587	89.24934761	84.18741541	79.45539832	75.02996019
160816A00003	8/16/2016	1.63	8/16/2023	8/16/2016	100.4587	99.74999688	99.05127435	98.36231801	97.68292403	97.0128942	96.35203577	95.70016127	95.05708829
171214A00005	12/14/2017	2.29	12/14/2022	12/14/2017	100.08568	100.0467734	100.0079155	99.96910564	99.93034386	99.89163001	99.85296401	99.81434575	99.77577514
091112A00011	11/12/2009	4.77	11/15/2024	11/12/2009	108.18025	106.1844837	104.2361377	102.3337899	100.476073	98.66166972	96.88931069	95.1577721	93.46587394
111216A00001	12/16/2011	3.95	12/30/2031	12/16/2011	130.19034	120.4145592	111.4818977	103.3143673	95.84160197	89.00007448	82.73239828	76.9867043	71.71608375
150603A00017	6/3/2015	2.84	6/3/2025	6/3/2015	106.13714	103.6147266	101.1656878	98.78746218	96.47759448	94.23373002	92.05361001	89.93506687	87.87602004
180406A00014	4/6/2018	2.95	4/6/2023	4/6/2018	100.75334	100.402116	100.0533383	99.70698583	99.36303323	99.0214556	98.68222837	98.3453273	98.01072848
190208A00005	2/8/2019	2.63	2/8/2023	2/8/2019	100.4381	100.2437252	100.050111	99.8572546	99.66515136	99.47379684	99.28318663	99.09331631	98.90418154
190529A00031	5/29/2019	2.36	5/30/2023	5/29/2019	100.68759	100.1894384	99.69620561	99.20781591	98.72419836	98.24528333	97.77100256	97.30128909	96.83607726
190821A00017	8/21/2019	1.8	8/21/2024	8/21/2019	101.60395	99.90885161	98.24990598	96.62601649	95.03613531	93.47925667	91.95441474	90.46068156	88.9971652
191120A00024	11/20/2019	2.23	11/16/2029	11/20/2019	112.3859	105.3694954	98.84159994	92.76565353	87.10801267	81.83770111	76.92618576	72.34717247	68.07641987
200505A00004	5/5/2020	0.77	5/5/2025	5/5/2020	100.81895	98.43969709	96.12808427	93.88181989	91.69869982	89.57660741	87.5135095	85.50745255	83.55655908
200731A00004	7/31/2020	0.38	7/31/2023	7/31/2020	99.606909	98.9442903	98.29043331	97.6451657	97.00831931	96.37973034	95.75923921	95.14669044	94.54193249
210607A00001	6/7/2021	0.46	6/7/2023	6/7/2021	99.711498	99.19464156	98.68312417	98.17686384	97.67577985	97.1797931	96.68882609	96.2028029	95.72164914
210608A00017	6/10/2021	2.67	6/8/2029	6/10/2021	114.85651	108.1817089	101.943895	96.11213035	90.65781872	85.55451999	80.77777716	76.30495793	72.11510969
190517A00005	5/17/2019	2.31	5/17/2024	5/17/2019	102.32063	100.8696092	99.44634729	98.05011328	96.68020563	95.33594658	94.01668118	92.72177633	91.45061984
190528A00006	5/28/2019	2.43	9/15/2023	5/28/2019	100.97112	100.181993	99.40518484	98.6404055	97.88737706	97.14583004	96.41550317	95.69614306	94.9875039
200205A00013	2/5/2020	1.77	2/6/2023	2/5/2020	100.23444	100.0462119	99.85869159	99.67187929	99.48577099	99.30036269	99.11565043	98.93163029	98.74829835
200604A00005	6/4/2020	0.89	6/4/2025	6/4/2020	100.69892	98.25434388	95.88118578	93.57695182	91.33925017	89.16578692	87.05436145	85.00286203	83.00926158
221018A00049	10/18/2022	4.59	10/18/2027	10/18/2022	121.54058	116.33153	111.3835797	106.6822317	102.2138639	97.96567575	93.92563477	90.08242666	86.42540878
190110A00003	1/10/2019	2.97	1/10/2024	1/10/2019	102.04354	100.9365121	99.85348934	98.79369661	97.75639195	96.7408647	95.74643388	94.77244666	93.81827692
190820A00029	8/20/2019	1.76	8/20/2024	8/20/2019	101.53136	99.83952652	98.18373498	96.56289631	94.97596707	93.42194565	91.89987012	90.40881627	88.94789568
210817A00013	8/19/2021	2	8/19/2026	8/19/2021	106.34874	102.6421316	99.08466177	95.66948477	92.39010793	89.24037514	86.21444714	83.30678305	80.51212316
220922A00042	9/22/2022	4.6	3/22/2024	9/22/2022	104.78305	103.4673308	102.1771113	100.9116682	99.6703044	98.45234899	97.25715623	96.08410425	94.93259399
221026A00031	10/26/2022	4.9	4/26/2024	10/26/2022	105.59932	104.1839747	102.7946195	101.4306006	100.0912838	98.7760557	97.48432266	96.21551023	94.96906222
110505A00022	5/5/2011	4.59	5/15/2026	5/5/2011	114.68405	111.090438	107.6315347	104.3015607	101.0950124	98.00665153	95.03149054	92.16477936	89.40199273
170228A00015	2/28/2017	2.87	5/28/2025	2/28/2017	105.62273	103.13438	100.7178583	98.37067661	96.09045042	93.87489212	91.72180628	89.62908537	87.59470566
190805A00011	8/5/2019	1.91	8/5/2024	8/5/2019	101.7363	100.0819227	98.46218847	96.87607631	95.32260216	93.80082051	92.3098224	90.84873371	89.41671341
200227A00012	2/27/2020	1.41	2/27/2023	2/27/2020	100.1896	99.9436428	99.69889329	99.45533787	99.21296786	98.97177466	98.73174977	98.49288475	98.25517125

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200305A00002	3/5/2020	1.14	3/5/2025	3/5/2020	100.98563	98.77474619	96.62264041	94.52733829	92.48694786	90.49965576	88.56372329	86.67748259	84.83933315
210715A00009	7/15/2021	0.54	7/17/2023	7/15/2021	99.643	99.0190673	98.40291851	97.79440824	97.19339507	96.59974105	96.0133116	95.4339754	94.86160432
180126A00028	1/26/2018	2.69	1/26/2023	1/26/2018	100.35276	100.1947217	100.0371869	99.88015328	99.72361863	99.56758054	99.41203665	99.25698462	99.10242212
190819A00026	8/19/2019	1.62	8/19/2024	8/19/2019	101.62774	99.93164513	98.27173707	96.64692126	95.05614928	93.49841477	91.9727513	90.47823035	89.01395941
190823A00005	8/23/2019	1.62	8/23/2024	8/23/2019	101.64131	99.9345812	98.26442594	96.62973542	95.02944468	93.46253178	91.92801555	90.42495353	88.95244003
180918A00011	9/18/2018	3.17	9/18/2023	9/18/2018	101.57455	100.7747819	99.9876101	99.21273659	98.44987457	97.69874606	96.9590816	96.23061996	95.51310778
190328A00019	3/28/2019	2.56	3/28/2024	3/28/2019	102.13666	100.8243259	99.53583618	98.27057853	97.02796271	95.80741823	94.60839367	93.43035577	92.27278878
190529A00023	5/29/2019	2.38	5/29/2024	5/29/2019	102.18501	100.708619	99.26097864	97.84132526	96.44891973	95.08304849	93.74302236	92.42817552	91.13786454
200818A00009	8/18/2020	1.7	8/18/2033	8/18/2020	110.28818	99.94019849	90.65452279	82.31638358	74.82395606	68.08684152	62.02473304	56.566243	51.64787211
151223A00074	12/23/2015	3.01	12/23/2027	12/23/2015	115.48592	110.2030997	105.1970749	100.4518489	95.95243722	91.68479509	87.63575352	83.79296001	80.14482371
160119A00019	1/19/2016	2.95	1/19/2027	1/19/2016	111.27784	107.0615727	103.0303497	99.17502606	95.48696528	91.95800424	88.5804242	85.34692399	82.25059494
160707A00032	7/7/2016	1.52	7/7/2023	7/7/2016	100.36733	99.76638869	99.17262343	98.58591079	98.00612558	97.43314557	96.86685136	96.30712637	95.7538567
190830A00010	9/3/2019	1.75	9/1/2023	9/3/2019	100.4336	99.68388528	98.94531469	98.21764532	97.50063737	96.79405799	96.09768108	95.41128703	94.73466251
200402A00011	4/2/2020	0.8	3/31/2023	4/2/2020	100.00549	99.67224881	99.3412164	99.01237152	98.6856926	98.3611584	98.03874791	97.71844043	97.40021549
201208A00031	12/10/2020	1.43	12/9/2024	12/10/2020	101.26688	99.28507138	97.35184333	95.46570013	93.62520058	91.82895781	90.07563685	88.36395223	86.69266582
210624A00020	6/24/2021	0.78	6/24/2024	6/24/2021	99.801845	98.27416154	96.7770756	95.30973695	93.87132617	92.46105361	91.078158	89.72190516	88.39158682
130405A00006	4/5/2013	2.41	4/7/2025	4/5/2013	104.60097	102.2506835	99.96499294	97.74176884	95.5789689	93.47462928	91.4268612	89.43384755	87.49383979
160119A00029	1/19/2016	3.39	1/20/2032	1/19/2016	125.25472	115.6405291	106.8652413	98.85058853	91.52600784	84.82784496	78.69864446	73.0865161	67.94456902
170328A00015	3/28/2017	2.75	11/29/2024	3/28/2017	103.87855	101.8962069	99.96190869	98.07419076	96.23164481	94.43291489	92.67669504	90.96172706	89.28679845
180918A00041	9/18/2018	3.18	9/18/2024	9/18/2018	104.56646	102.7626968	100.998803	99.27361843	97.58602581	95.93494923	94.3193521	92.73823537	91.19063585
200226A00015	2/26/2020	1.53	2/26/2024	2/26/2020	100.63588	99.41111253	98.21597825	97.04941029	95.91039464	94.79796474	93.71119878	92.64921711	91.61117984
200304A00040	3/4/2020	1.12	3/1/2024	3/4/2020	100.13619	98.90423344	97.70200834	96.52844524	95.38252805	94.2632882	93.1698019	92.10118761	91.0566036
200604A00012	6/4/2020	1.59	6/4/2030	6/4/2020	108.18201	100.7985001	93.96865778	87.64816586	81.79646696	76.3764259	71.35402492	66.69808748	62.38002777
200626A00014	6/26/2020	0.62	6/26/2025	6/26/2020	100.62053	98.10614343	95.66668283	93.29946714	91.00193289	88.77162455	86.6061892	84.50337151	82.46100899
211222A00004	12/22/2021	1.26	10/15/2024	12/22/2021	100.76904	98.93671822	97.14637139	95.39679685	93.68683232	92.01535603	90.38128498	88.78357339	87.22121114
220112A00004	1/12/2022	1.55	1/12/2026	1/12/2022	104.16107	101.0655405	98.07778954	95.19344444	92.40833998	89.71850498	87.12015182	84.60966678	82.18360082
120127A00019	1/27/2012	3.87	1/30/2032	1/27/2012	129.68057	119.8441801	110.8635073	102.6587527	95.15797934	88.29629753	82.01513964	76.26161327	70.98792361
140626A00036	6/26/2014	3.55	6/26/2029	6/26/2014	122.30257	115.2783897	108.7145993	102.5784523	96.83969773	91.47038005	86.44465329	81.73861128	77.33013242
150827A00029	8/27/2015	2.74	8/27/2024	8/27/2015	103.61861	101.8835146	100.185711	98.52406246	96.89747869	95.30491362	93.74536313	92.21786294	90.72148658
180104A00018	1/4/2018	2.97	1/4/2027	1/4/2018	111.22633	107.0517906	103.058982	99.23899916	95.58342621	92.08430391	88.73410242	85.52569562	82.45233712
180530A00025	5/30/2018	3.49	5/30/2030	5/30/2018	122.40363	114.5132186	107.2020939	100.4244311	94.13825826	88.30511707	82.88975196	77.85982789	73.18567447
180718A00026	7/18/2018	3.03	7/18/2023	7/18/2018	101.22577	100.5934906	99.96910904	99.35248035	98.74346061	98.14190942	97.54768982	96.96066819	96.38071414
181005A00016	10/5/2018	3.26	1/10/2023	10/5/2018	100.33089	100.2170807	100.1035468	99.99028343	99.87728946	99.76456394	99.65210587	99.53991427	99.42798817

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190819A00004	8/20/2019	1.81	5/24/2024	8/20/2019	101.31339	99.85674075	98.42823436	97.02712652	95.65269954	94.3042603	92.98113917	91.68268904	90.40828435
200122A00034	1/22/2020	1.87	1/22/2024	1/22/2020	100.87173	99.73946275	98.63251168	97.55003074	96.49121548	95.45529639	94.44153699	93.44923207	92.47770609
200922A00035	9/24/2020	2.94	9/23/2024	9/24/2020	103.8029	101.9991632	100.2354773	98.51069581	96.82371255	95.17346077	93.55891149	91.97907184	90.43298352
220630A00045	6/30/2022	3.39	6/30/2026	6/30/2022	111.011	107.3536901	103.8382667	100.4584336	97.20821213	94.08192182	91.07416392	88.17980562	85.39396535
120709A00016	7/9/2012	3.2	7/15/2027	7/9/2012	113.93055	109.1658017	104.6309246	100.3135683	96.20211789	92.28564215	88.55384975	84.99704809	81.60610507
180618A00026	6/18/2018	3.05	4/13/2023	6/18/2018	100.82104	100.4505146	100.0827183	99.71762264	99.35519781	98.9954145	98.63824382	98.28365729	97.93162683
190131A00019	1/31/2019	3.44	1/30/2034	1/31/2019	132.14721	120.0934695	109.2936549	99.60904001	90.91697611	83.10895248	76.08889881	69.77169909	64.08188983
190211A00016	2/11/2019	3.01	2/11/2025	2/11/2019	105.02321	102.8288807	100.6913383	98.60870033	96.57916592	94.60100827	92.67257112	90.79226517	88.95856474
190521A00043	5/21/2019	2.54	5/22/2023	5/21/2019	100.75347	100.2768445	99.80472923	99.33706004	98.87377422	98.41481026	97.96010781	97.50960764	97.06325161
190808A00052	8/8/2019	1.7	8/8/2024	8/8/2019	101.72651	100.0584821	98.42560269	96.82682274	95.2611381	93.72758418	92.22523403	90.75319644	89.31061421
201208A00029	12/10/2020	1.52	12/9/2025	12/10/2020	103.23878	100.2628943	97.38811011	94.61043959	91.9260732	89.33137322	86.82286491	84.39722817	82.05128974
210527A00026	6/1/2021	2.78	6/1/2028	6/1/2021	114.03252	108.3846619	103.0550286	98.02400141	93.2732719	88.78574695	84.54546178	80.53749986	76.74791887
211222A00030	12/22/2021	1.33	1/15/2025	12/22/2021	101.19708	99.11924083	97.09400383	95.11967917	93.19464347	91.31733789	89.48626495	87.69998561	85.95711654
160606A00005	6/6/2016	2.92	6/6/2031	6/6/2016	119.94467	111.1568381	103.0943641	95.69324277	88.89543865	82.64829757	76.90402233	71.61920177	66.75438763
190206A00013	2/6/2019	2.68	2/6/2023	2/6/2019	100.43757	100.2487199	100.0605891	99.87317218	99.68646507	99.50046367	99.31516397	99.13056193	98.94665358
190808A00025	8/8/2019	1.7	8/8/2024	8/8/2019	101.72651	100.0584821	98.42560269	96.82682274	95.2611381	93.72758418	92.22523403	90.75319644	89.31061421
190816A00022	8/16/2019	1.77	8/16/2024	8/16/2019	101.53561	99.8541994	98.20844558	96.59727935	95.01967346	93.4746416	91.96123632	90.47854705	89.02569832
200103A00009	1/3/2020	1.9	1/3/2024	1/3/2020	100.79183	99.71129934	98.65383799	97.61871256	96.60522134	95.61269173	94.64047877	93.68796369	92.75455264
200309A00004	3/9/2020	0.71	3/8/2024	3/9/2020	99.882903	98.63151845	97.40838692	96.21255315	95.0431044	93.89916857	92.77991186	91.68453678	90.61228007
221110A00084	11/10/2022	4.56	11/6/2025	11/10/2022	112.02203	109.004099	106.0848549	103.2605316	100.5275263	97.88239341	95.32183658	92.84270153	90.44196906
180621A00017	6/21/2018	3.42	6/21/2028	6/21/2018	117.70267	111.8987194	106.4229244	101.25494	96.37579054	91.76776863	87.41434361	83.30007742	79.41054675
180719A00061	7/19/2018	3.07	7/19/2023	7/19/2018	101.25536	100.6202747	99.99316154	99.37386723	98.76224601	98.15815571	97.5614577	96.97201669	96.38970073
180730A00078	7/30/2018	3.14	7/28/2023	7/30/2018	101.33887	100.6792608	100.0282276	99.38560705	98.75123667	98.12495834	97.50661794	96.89606522	96.2931537
191031A00033	10/31/2019	2.2	5/31/2028	10/31/2019	110.82795	105.2697733	100.0260079	95.07723744	90.4053413	85.9934026	81.82562232	77.88723981	74.16445945
191106A00022	11/6/2019	2.34	1/2/2030	11/6/2019	113.30052	106.1305521	99.46715631	93.2718603	87.50930176	82.1469649	77.15493738	72.50568919	68.17387144
191218A00014	12/18/2019	2.04	12/18/2024	12/18/2019	102.55683	100.5378966	98.56876413	96.64787719	94.77374492	92.94493343	91.1600631	89.41780616	87.71688431
201116A00010	11/16/2020	0.57	11/15/2023	11/16/2020	99.313559	98.37152671	97.44723978	96.5402011	95.64993173	94.7759703	93.91787222	93.07520894	92.24756723
220923A00035	9/23/2022	4.7	3/22/2024	9/23/2022	104.9148	103.5981733	102.3070588	101.0407357	99.79850648	98.57969985	97.38366968	96.20979375	95.05747262
170427A00044	4/27/2017	3.02	4/27/2027	4/27/2017	112.46875	107.9524308	103.6455382	99.53727458	95.61745164	91.87645537	88.30521078	84.89514896	81.63817625
180920A00014	9/20/2018	3.59	9/20/2028	9/20/2018	119.26505	113.1663783	107.425159	102.0184971	96.92508145	92.12506713	87.5999671	83.33255243	79.3067604
190807A00021	8/7/2019	2	8/7/2026	8/7/2019	106.27025	102.5969499	99.07039165	95.68388868	92.43109734	89.3060001	86.30288654	83.41633567	80.6411994
191003A00014	10/3/2019	1.71	9/20/2024	10/3/2019	101.53096	99.75689272	98.02213013	96.32553881	94.66602493	93.04253437	91.45405098	89.8995949	88.37822091
200306A00001	3/6/2020	1.11	3/6/2026	3/6/2020	102.35506	99.15780503	96.07616542	93.10528992	90.24056452	87.4775973	84.81220611	82.24040705	79.75840371

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200327A00075	3/31/2020	1.75	3/29/2024	3/31/2020	101.06081	99.75352033	98.4697263	97.20883346	95.97027149	94.75348877	93.5579516	92.38314347	91.22856437
200730A00001	7/30/2020	0.46	7/30/2024	7/30/2020	99.615197	97.98915787	96.3970846	94.83797869	93.31088053	91.8148678	90.34905366	88.91258499	87.50464077
150401A00008	4/1/2015	2.62	4/1/2025	4/1/2015	104.54903	102.2258475	99.96591396	97.7671713	95.62763717	93.5454047	91.51863909	89.54557453	87.62451117
160811A00011	8/11/2016	2.25	8/11/2026	8/11/2016	107.22266	103.5211492	99.9676836	96.55549983	93.2781869	90.12966413	87.10416192	84.19620383	81.4005897
180403A00041	4/3/2018	2.91	4/3/2025	4/3/2018	105.74609	103.3930277	101.1042737	98.87772323	96.71135228	94.60321407	92.5514359	90.55421585	88.60981966
180917A00078	9/17/2018	3.05	9/15/2023	9/17/2018	101.60825	100.8144408	100.0330361	99.26374538	98.50628826	97.76039294	97.02579586	96.30224147	95.58948185
181029A00081	10/29/2018	3.27	4/28/2023	10/29/2018	100.98154	100.5696434	100.1611042	99.75587946	99.35392896	98.95521318	98.55969324	98.16733084	97.77808831
181116A00015	11/19/2018	3.29	2/15/2024	11/19/2018	102.74608	101.537029	100.3564477	99.20333676	98.0767447	96.97576362	95.89952665	94.84720568	93.81800921
191004A00001	10/4/2019	2.47	10/4/2034	10/4/2019	119.20648	107.3929735	96.88833428	87.53957883	79.21235805	71.78860068	65.16446797	59.24857423	53.96043732
200226A00005	2/26/2020	1.53	2/27/2023	2/26/2020	100.21924	99.97323405	99.72843534	99.48483091	99.24241207	99.00117024	98.76109689	98.5221836	98.28442201
211222A00010	12/22/2021	1.06	1/16/2024	12/22/2021	99.91547	98.80515574	97.71935266	96.65725694	95.61809918	94.60114296	93.60568307	92.6310439	91.67657788
160211A00035	2/11/2016	2.25	2/11/2025	2/11/2016	103.3443	101.1688321	99.04976414	96.98522527	94.97342538	93.01264819	91.10124747	89.23764362	87.42032028
180815A00021	8/15/2018	3.01	8/15/2023	8/15/2018	101.32441	100.6164995	99.91847901	99.2301437	98.55129275	97.88173089	97.22126819	96.56971985	95.92690606
180831A00019	8/31/2018	3.21	9/2/2025	8/31/2018	107.42561	104.6511442	101.9629128	99.35767862	96.83234768	94.38396437	92.00970417	89.70686675	87.47286947
190808A00009	8/8/2019	1.89	8/8/2024	8/8/2019	101.71328	100.0512411	98.42412758	96.83090297	95.2705714	93.74217617	92.24479776	90.77755206	89.3395886
191223A00055	12/23/2019	2.46	12/7/2029	12/23/2019	114.06027	106.931676	100.3019733	94.13359365	88.39198422	83.04535019	78.06442118	73.42223878	69.09396286
200511A00016	5/11/2020	0.71	2/1/2024	5/11/2020	99.57263	98.42134785	97.29645586	96.19705608	95.1222909	94.07134078	93.04342214	92.03778542	91.05371325
170120A00011	1/20/2017	3.75	1/20/2037	1/20/2017	137.68488	122.6938505	109.5971323	98.14040477	88.10493193	79.30241031	71.5705861	64.769523	58.77842177
180619A00023	6/19/2018	3.04	6/19/2023	6/19/2018	101.11323	100.559621	100.0120714	99.47048669	98.93476962	98.40482506	97.88055995	97.36188322	96.84870574
181023A00025	10/23/2018	3.27	10/23/2023	10/23/2018	101.80724	100.9133413	100.0351417	99.17222998	98.32420904	97.4906956	96.6713194	95.86572271	95.07355976
200430A00008	4/30/2020	0.94	4/30/2025	4/30/2020	100.71092	98.35645782	96.06838987	93.84447969	91.68258091	89.58063161	87.53665044	85.54873298	83.6150483
211222A00008	12/22/2021	1.13	4/15/2024	12/22/2021	100.25677	98.91015001	97.58783453	96.28922108	95.01372867	93.76079481	92.52987481	91.32044107	90.13198242
160930A00005	9/30/2016	2.03	9/30/2024	9/30/2016	102.15542	100.3485832	98.58228637	96.85539301	95.16680184	93.51544912	91.90030713	90.32038276	88.77471605
170130A00031	1/30/2017	2.96	7/30/2025	1/30/2017	106.42718	103.7575049	101.1687015	98.65780755	96.2219919	93.85854635	91.56487959	89.33851118	87.17706592
200127A00030	1/27/2020	1.8	1/27/2025	1/27/2020	102.26117	100.1402633	98.07358513	96.05936862	94.09591984	92.18161331	90.31488857	88.49424703	86.71824897
200228A00031	2/28/2020	1.35	2/28/2024	2/28/2020	100.41862	99.18993155	97.99110563	96.82106401	95.67878065	94.56327774	93.4736229	92.40892656	91.36833952
200302A00053	3/2/2020	1.31	3/3/2025	3/2/2020	101.36341	99.15336244	97.00192432	94.90712053	92.8670607	90.87993352	88.94400269	87.05760315	85.21913741
210428A00008	4/28/2021	1.93	4/26/2030	4/28/2021	110.65471	103.278648	96.44655959	90.11554934	84.24630673	78.8027912	73.75194503	69.06343284	64.70940489
160706A00010	7/6/2016	1.99	7/7/2025	7/6/2016	103.68873	101.1166061	98.62125369	96.19991673	93.8499548	91.56883969	89.35414966	87.20356426	85.11485929
190326A00032	3/26/2019	2.4	3/26/2024	3/26/2019	102.17365	100.8618831	99.5745486	98.31099676	97.07059933	95.85275024	94.65686457	93.48237763	92.32874408
190328A00046	3/28/2019	2.7	3/4/2025	3/28/2019	104.51782	102.2688738	100.0794165	97.94745517	95.87107593	93.84844465	91.87780284	89.95746382	88.08580915
191121A00004	11/21/2019	1.77	11/21/2024	11/21/2019	102.29112	100.3386579	98.43323246	96.57341738	94.757844	92.98519407	91.25419761	89.5636307	87.91231349
120306A00004	3/6/2012	2.95	3/15/2023	3/6/2012	100.64882	100.3581256	100.0691239	99.78179731	99.49613123	99.2121112	98.92972293	98.64895231	98.36978537

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
171026A00010	10/26/2017	2.84	10/26/2026	10/26/2017	110.07933	106.1185418	102.3234072	98.68613831	95.19935589	91.85606353	88.64962599	85.57374864	82.62245818
190523A00023	5/23/2019	2.48	3/22/2023	5/23/2019	100.53705	100.2273715	99.91960386	99.61373294	99.30974114	99.00761112	98.70732578	98.40886819	98.11222167
190821A00028	8/21/2019	1.8	8/21/2023	8/21/2019	100.46461	99.74408652	99.03387572	98.33375279	97.64350386	96.96292109	96.29180243	95.62995141	94.97717701
200312A00004	3/13/2020	1.23	1/24/2025	3/13/2020	101.0149	98.91556877	96.86983487	94.87596068	92.93227616	91.03717846	89.18912866	87.3866486	85.62831798
210305A00013	3/5/2021	2.41	3/5/2036	3/5/2021	119.12959	106.0989715	94.66333217	84.61723203	75.78272451	68.00555335	61.15189013	55.10553541	49.7655156
210609A00011	6/11/2021	1.32	6/11/2024	6/11/2021	100.62075	99.12159913	97.65207673	96.21138105	94.79873428	93.41338614	92.05461266	90.72171502	89.41401847
180823A00053	8/23/2018	3.2	8/23/2028	8/23/2018	118.20434	112.1660687	106.47945	101.122049	96.07298772	91.31282531	86.82345128	82.58798712	78.59069566
190328A00031	4/25/2019	2.56	4/25/2024	4/25/2019	102.28664	100.8984077	99.53565971	98.19775065	96.88406072	95.59399026	94.32695894	93.082405	91.85978452
190528A00028	5/28/2019	2.42	5/30/2023	5/28/2019	100.71768	100.2194473	99.72612765	99.23765172	98.75394855	98.2749485	97.80058331	97.33078602	96.86549094
190603A00005	6/3/2019	2.25	6/3/2024	6/3/2019	102.01262	100.5241876	99.06492195	97.63404331	96.23079581	94.85444997	93.50430147	92.17967007	90.87989862
190816A00020	8/16/2019	1.79	8/16/2024	8/16/2019	101.57001	99.88829596	98.24224275	96.6307825	95.05288783	93.50757228	91.99388826	90.51092507	89.05780711
190826A00030	8/26/2019	1.72	8/26/2026	8/26/2019	106.14974	102.4067511	98.81556327	95.36915187	92.06086223	88.88438733	85.83374729	82.90327011	80.08757378
191119A00027	11/19/2019	1.8	11/19/2024	11/19/2019	102.34084	100.3932578	98.49246541	96.63704963	94.82565241	93.05696567	91.32972903	89.64272774	87.99479068
200131A00032	1/31/2020	2.1	1/31/2030	1/31/2020	111.67085	104.4831946	97.80941245	91.61006201	85.84892621	80.49273322	75.51090227	70.87531272	66.56009403
220510A00014	5/13/2022	2.72	11/6/2023	5/13/2022	101.36039	100.4315318	99.519669	98.62434188	97.74510351	96.88152295	96.03318455	95.19968726	94.38064399
180222A00025	2/22/2018	3.48	2/22/2033	2/22/2018	130.75678	119.6915337	109.6930619	100.6517183	92.4696999	85.0597125	78.34379034	72.25225368	66.72278785
190906A00012	9/6/2019	1.76	9/6/2024	9/6/2019	101.57123	99.83444727	98.13542216	96.47301977	94.84615054	93.25376786	91.69486597	90.16847786	88.67367344
190429A00004	4/29/2019	2.65	4/15/2024	4/29/2019	102.35941	100.997592	99.66033122	98.34702458	97.0570842	95.78994101	94.54504395	93.32185931	92.11987002
190808A00024	8/8/2019	1.69	2/8/2024	8/8/2019	100.98657	99.80423584	98.64943956	97.52122955	96.41869621	95.34097104	94.28722428	93.25666284	92.24852824
191115A00015	11/18/2019	2.61	11/18/2024	11/18/2019	103.52501	101.5758871	99.67333193	97.81595083	96.00239759	94.23137527	92.50163401	90.811969	89.1612185
200727A00016	7/27/2020	0.43	7/27/2023	7/27/2020	99.651445	98.99936831	98.35578236	97.72052231	97.09342748	96.47434132	95.86311124	95.25958851	94.66362814
200922A00033	9/24/2020	2.37	9/23/2024	9/24/2020	102.76323	100.9692278	99.21509923	97.49969906	95.821926	94.18071801	92.57505061	91.00393527	89.46641789
190712A00018	7/12/2019	2.25	7/12/2024	7/12/2019	102.20161	100.6063396	99.04359173	97.51243521	96.01197612	94.54135407	93.09974066	91.68633798	90.30037718
200224A00024	2/24/2020	1.59	2/24/2025	2/24/2020	101.96023	99.76270045	97.62298596	95.53914536	93.50931584	91.53171286	89.60462608	87.72641559	85.89550833
200227A00030	2/27/2020	1.59	2/27/2026	2/27/2020	103.88823	100.684456	97.59569269	94.61712399	91.7441647	88.97245166	86.29783127	83.71634788	81.22423283
150408A00004	4/8/2015	2.17	4/10/2023	4/8/2015	100.5485	100.1860972	99.82631708	99.46912887	99.11450456	98.76241648	98.41283736	98.06574035	97.72109895
150601A00737	6/1/2015	2.68	12/31/2024	6/1/2015	104.32511	102.2446244	100.2160589	98.23777461	96.30819292	94.42579698	92.58912851	90.7967851	89.04741762
180622A00018	6/22/2018	2.92	6/22/2023	6/22/2018	101.15301	100.5899845	100.0332306	99.48264221	98.93811721	98.39955568	97.86685989	97.33993427	96.81868528
181211A00009	12/11/2018	3.14	12/11/2023	12/11/2018	101.96352	100.9381869	99.93347481	98.9487651	97.98346426	97.03700212	96.10883068	95.198423	94.30527223
190529A00013	5/29/2019	2.38	5/29/2024	5/29/2019	102.18501	100.708619	99.26097864	97.84132526	96.44891973	95.08304849	93.74302236	92.42817552	91.13786454
210507A00008	5/7/2021	1.94	5/7/2031	5/7/2021	111.57695	103.2088332	95.53337618	88.48962398	82.02227655	76.08113642	70.62061454	65.5992863	60.97949221
130424A00004	4/24/2013	2.46	4/24/2025	4/24/2013	104.85795	102.4582674	100.1257025	97.85801121	95.65303451	93.5086979	91.42300769	89.39404727	87.41997373
131217A00024	12/17/2013	4.34	1/2/2029	12/17/2013	124.4906	117.9509379	111.8087169	106.0375199	100.6128258	95.51186285	90.71347469	86.19799747	81.947147

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00666	6/1/2015	3.88	1/16/2035	6/1/2015	135.44569	122.4486778	110.8914825	100.6042652	91.43814546	83.26251493	75.96270647	69.43797078	63.59971929
190826A00057	8/26/2019	1.87	8/26/2025	8/26/2019	103.67877	100.9750403	98.35525526	95.81626423	93.35505822	90.96876295	88.65463166	86.41003841	84.23247177
200214A00002	2/14/2020	1.58	11/15/2024	2/14/2020	101.8869	99.95467288	98.06863751	96.2274075	94.42964901	92.67407693	90.95945279	89.28458266	87.64831527
200228A00014	2/28/2020	1.4	2/28/2025	2/28/2020	101.55442	99.34997814	97.20379533	95.11390586	93.07842422	91.09554456	89.16353652	87.28074138	85.44556836
201204A00016	12/8/2020	1.58	12/8/2023	12/8/2020	100.33257	99.32431194	98.33622437	97.3677059	96.41817973	95.48709154	94.57390839	93.6781177	92.79922632
211222A00020	12/22/2021	0.97	10/16/2023	12/22/2021	99.742685	98.87727032	98.02679405	97.19087179	96.36913251	95.56121769	94.76678081	93.98548685	93.21701181
221116A00027	11/16/2022	4.46	11/14/2025	11/16/2022	111.83148	108.7940454	105.8566728	103.0155136	100.266889	97.6072817	95.03332836	92.54181146	90.12965235
170224A00039	5/24/2017	3.17	5/24/2027	5/24/2017	113.37086	108.7617725	104.3694993	100.1826878	96.19064049	92.38327254	88.75107349	85.28507147	81.97679992
190730A00016	7/30/2019	2	7/30/2024	7/30/2019	102.19696	100.548582	98.93456836	97.35391348	95.80564702	94.28883634	92.80258469	91.34602935	89.91834012
200224A00001	2/24/2020	1.59	2/24/2025	2/24/2020	101.96023	99.76270045	97.62298596	95.53914536	93.50931584	91.53171286	89.60462608	87.72641559	85.89550833
170915A00031	9/15/2017	2.1	9/15/2023	9/15/2017	100.84843	100.0579627	99.27985857	98.51383227	97.75960406	97.01690274	96.28546544	95.56503718	94.85537067
190128A00035	1/28/2019	3.04	1/26/2024	1/28/2019	102.26882	101.1169978	99.99110233	98.89026839	97.81366569	96.76050026	95.73001249	94.72147531	93.73419243
190814A00003	8/14/2019	2.01	8/14/2029	8/14/2019	112.21111	105.3837903	99.01797824	93.08005479	87.53901846	82.36627169	77.53542198	73.02210061	68.8037972
201030A00005	11/2/2020	2.49	10/29/2040	11/2/2020	119.98773	103.2631184	89.18633724	77.31758649	67.29246725	58.80871685	51.61533022	45.50363102	40.29993548
160628A00049	6/28/2016	1.88	6/27/2025	6/28/2016	103.88515	101.3253677	98.84161449	96.43117338	94.09144528	91.81994058	89.61427375	87.47215819	85.39140146
161208A00007	12/8/2016	2.6	12/8/2023	12/8/2016	101.38276	100.3687249	99.37493586	98.40079482	97.44572311	96.50916464	95.59058478	94.68946931	93.80532344
190715A00010	7/15/2019	2.23	7/15/2024	7/15/2019	102.1826	100.5795867	99.00936083	97.47098169	95.96354414	94.48617722	93.0380425	91.61833259	90.22626965
190828A00020	8/28/2019	1.95	5/28/2027	8/28/2019	107.91272	103.4145025	99.12993395	95.04776187	91.15738503	87.44881213	83.91262344	80.53993514	77.32236604
200818A00008	8/18/2020	1.5	8/18/2031	8/18/2020	107.9804	99.50630157	91.75796926	84.66953775	78.18143329	72.23974542	66.79566171	61.80496163	57.22756307
140313A00030	3/13/2014	3.27	3/15/2024	3/13/2014	103.22767	101.9361579	100.6716857	99.43341096	98.2205224	97.03224239	95.86782529	94.72655575	93.60774716
140710A00027	7/10/2014	2.8	7/17/2023	7/10/2014	101.18225	100.5514823	99.9285788	99.31339576	98.70579008	98.10562216	97.5127558	96.92705812	96.34839948
150720A00012	7/20/2015	2.99	7/21/2025	7/20/2015	106.99311	104.3275745	101.7424067	99.23468434	96.80160769	94.44049819	92.14879202	89.92403432	87.76387377
170824A00038	8/24/2017	2.23	8/24/2023	8/24/2017	100.78428	100.0544511	99.33517115	98.62621186	97.92735223	97.23837755	96.55907913	95.88925412	95.22870532
190107A00010	1/7/2019	2.66	1/9/2023	1/7/2019	100.27436	100.1631982	100.0523019	99.94166512	99.8312869	99.72116628	99.61130233	99.50169409	99.39234063
190215A00017	2/15/2019	2.89	2/15/2024	2/15/2019	102.25852	101.052612	99.87511608	98.72504051	97.60143519	96.50339347	95.43004976	94.38057713	93.35418524
190729A00008	7/29/2019	2.18	1/29/2024	7/29/2019	101.28822	100.1343322	99.00664024	97.90425957	96.82634548	95.7720905	94.74072232	93.73150194	92.74372185
200310A00042	3/10/2020	1.41	3/11/2030	3/10/2020	106.77535	99.65443434	93.0534042	86.93170063	81.25212896	75.98056037	71.08566424	66.53866528	62.31312286
200511A00023	5/11/2020	1.7	2/3/2031	5/11/2020	109.40165	101.3593384	93.96615308	87.16635041	80.90924197	75.14871464	69.84279565	64.95326104	60.44528315
150826A00038	8/26/2015	2.94	8/26/2026	8/26/2015	110.73836	106.9094557	103.2349008	99.70757464	96.32073045	93.06797316	89.94323882	86.9407751	84.0551232
160129A00066	1/29/2016	3.04	1/29/2031	1/29/2016	122.24648	113.6203417	105.6806897	98.36897489	91.63194088	85.42111914	79.69237477	74.40549787	69.52383529
160706A00026	7/6/2016	2.19	7/6/2027	7/6/2016	109.19644	104.5641876	100.1558378	95.95937849	91.96350863	88.15759058	84.53160759	81.07612403	77.78224856
170224A00021	2/24/2017	3.4	2/24/2032	2/24/2017	125.55538	115.8317194	106.9642491	98.8723694	91.48348397	84.73216874	78.55942813	72.91203182	67.7419232
180716A00054	7/16/2018	3.59	7/16/2040	7/16/2018	142.54734	123.8608821	108.0349276	94.6055383	83.1868255	73.45743505	65.1494315	58.03914665	51.93963697

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180823A00055	8/23/2018	3.44	8/23/2033	8/23/2018	131.33012	119.7455344	109.3252275	99.94463121	91.49315951	83.87257299	76.99554028	70.78437395	65.1699188
190122A00043	1/22/2019	2.96	1/22/2025	1/22/2019	105.19089	103.0420905	100.9479671	98.90675143	96.91674215	94.97630634	93.08387614	91.23794556	89.43706752
190409A00033	4/9/2019	2.62	6/9/2023	4/9/2019	100.84879	100.3230689	99.80283077	99.28798641	98.77845211	98.27414594	97.77498763	97.28089855	96.79180168
200731A00005	7/31/2020	0.45	7/31/2024	7/31/2020	99.598583	97.97007485	96.37562235	94.81422257	93.28491209	91.78676501	90.31889108	88.88043398	87.47056965
200803A00005	8/3/2020	0.54	6/30/2023	8/3/2020	99.691706	99.11307708	98.54112633	97.97573863	97.4168017	96.86420583	96.31784378	95.77761068	95.24340405
211022A00008	10/22/2021	1.12	10/22/2024	10/22/2021	100.51787	98.67000086	96.86485502	95.10119505	93.3778277	91.69360171	90.04740598	88.43816797	86.86485207
111024A00010	10/24/2011	3.11	10/30/2023	10/24/2011	101.85364	100.9386822	100.0401468	99.15759631	98.29060703	97.43876996	96.60169038	95.77898717	94.97029222
150601A00688	6/1/2015	2.61	2/21/2025	6/1/2015	104.61036	102.3819842	100.2120624	98.09863401	96.03981972	94.03381887	92.07890557	90.17342483	88.31578898
170706A00090	7/6/2017	2.48	7/6/2023	7/6/2017	100.84573	100.2470934	99.65555644	99.07099144	98.49327555	97.92228886	97.35791424	96.80003726	96.24854612
180110A00027	1/10/2018	2.6	1/10/2023	1/10/2018	100.25575	100.1420203	100.0285659	99.91538188	99.80246709	99.68982058	99.57744135	99.46532842	99.35348082
191126A00022	11/26/2019	1.72	5/26/2023	11/26/2019	100.4455	99.95792091	99.47506518	98.99686905	98.52326526	98.05418783	97.58957205	97.12935444	96.67347269
191230A00013	12/30/2019	1.84	12/2/2024	12/30/2019	102.48713	100.5031383	98.56757887	96.67896785	94.83587646	93.03692939	91.2808024	89.56622004	87.89195351
200218A00024	2/20/2020	1.73	7/17/2023	2/20/2020	100.39751	99.77088445	99.15206315	98.54090397	97.93726513	97.34100835	96.7519987	96.17010455	95.59519743
200429A00051	5/1/2020	2.54	4/30/2025	5/1/2020	104.58664	102.1846376	99.85005911	97.58063745	95.37419653	93.22864581	91.14197639	89.11225735	87.13763224
211222A00026	12/22/2021	1.2	7/15/2024	12/22/2021	100.5011	98.91227513	97.35598663	95.83129904	94.33731394	92.87316678	91.43802536	90.03108826	88.65158339
071231A00068	12/31/2007	4.93	12/30/2022	12/31/2007	100.40358	100.3200517	100.2366606	100.1534096	100.0702986	99.98732701	99.90449463	99.82180108	99.73924601
160706A00030	7/6/2016	2.59	7/7/2031	7/6/2016	117.27269	108.5137669	100.4867099	93.12628601	86.37339837	80.17448163	74.48095773	69.24874798	64.43783503
170728A00040	7/28/2017	2.44	1/27/2025	7/28/2017	104.10489	101.9547033	99.85955065	97.8176327	95.82722758	93.8866832	91.9944137	90.14889624	88.34866792
171207A00036	12/7/2017	2.23	12/7/2022	12/7/2017	100.04167	100.0222189	100.0027849	99.98337119	99.96397777	99.94460459	99.92525161	99.90591879	99.88660609
180116A00014	1/16/2018	3.01	1/19/2027	1/16/2018	111.52669	107.305308	103.269126	99.4090009	95.71628994	92.18282398	88.80087856	85.56314704	82.46271557
180604A00048	6/4/2018	3.01	6/5/2023	6/4/2018	101.03864	100.5231877	100.0129883	99.50796464	99.00803822	98.5131321	98.0231709	97.53808072	97.05778915
180910A00013	9/10/2018	3.08	9/11/2023	9/10/2018	101.48328	100.7024689	99.93367338	99.17661458	98.43102501	97.69664524	96.97322362	96.26051598	95.55828536
200214A00020	2/18/2020	1.78	1/15/2025	2/18/2020	102.15797	100.0696795	98.03420197	96.04984102	94.11496738	92.2280166	90.38748578	88.5919307	86.83996298
200226A00006	2/26/2020	1.57	2/26/2025	2/26/2020	101.92661	99.72367347	97.57882084	95.49009111	93.45560896	91.47357811	89.54227714	87.6600557	85.8253309
160307A00028	3/7/2016	2.91	3/7/2028	3/7/2016	114.27598	108.8534077	103.7242229	98.87095825	94.27727942	89.92790706	85.80854296	81.90580153	78.2071466
190104A00033	1/4/2019	3.37	1/31/2029	1/4/2019	118.7247	112.2791692	106.2326362	100.5581905	95.23087811	90.22754985	85.52672095	81.10844277	76.95418501
190110A00014	1/10/2019	2.97	1/17/2024	1/10/2019	102.09522	100.9690424	99.86770141	98.79037717	97.73628985	96.70469306	95.6948721	94.7061423	93.73784743
190627A00009	6/27/2019	1.93	6/27/2023	6/27/2019	100.60136	100.0265983	99.45838867	98.89662052	98.34118478	97.79197484	97.24888645	96.71181768	96.18066886
190628A00004	6/28/2019	2.12	6/28/2023	6/28/2019	100.61609	100.0397724	99.47004261	98.90678419	98.34988744	97.79924508	97.25475228	96.71630649	96.18380746
200709A00008	7/10/2020	1.88	7/10/2026	7/10/2020	105.6529	102.0650512	98.61823866	95.30614007	92.12275685	89.06239267	86.11963628	83.28934547	80.56663202
181227A00028	12/27/2018	3.46	12/27/2028	12/27/2018	119.0827	112.7211958	106.7481065	101.13758	95.86561795	90.90993395	86.2498228	81.86604021	77.74069243
190110A00002	1/10/2019	2.93	1/10/2023	1/10/2019	100.29332	100.1795505	100.0660564	99.95283266	99.83987828	99.72719226	99.61477361	99.50262135	99.39073449
190603A00047	6/3/2019	2.22	6/2/2023	6/3/2019	100.62343	100.1173383	99.61632377	99.12031082	98.62922492	98.14299298	97.66154333	97.18480574	96.7127113

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190617A00027	6/17/2019	2.21	6/16/2023	6/17/2019	100.6453	100.1012804	99.5631427	99.03078764	98.50412223	97.98305549	97.46749837	96.95736372	96.45256621
190816A00035	8/16/2019	1.77	8/16/2023	8/16/2019	100.43973	99.73265423	99.0355126	98.34809425	97.6701967	97.00162306	96.34218183	95.69168676	95.0499566
200311A00040	3/12/2020	1.3	3/11/2025	3/12/2020	101.37251	99.14159736	96.97034024	94.85675157	92.79892395	90.7950277	88.84330696	86.9420761	85.08971634
210818A00007	8/18/2021	0.81	8/18/2025	8/18/2021	101.31164	98.64878575	96.0685891	93.56795483	91.14392738	88.79368297	86.51452258	84.30386541	82.15924273
221018A00006	10/18/2022	4.55	10/18/2027	10/18/2022	121.34477	116.1404457	111.1970531	106.5000971	102.0359631	97.79185752	93.75575468	89.91634656	86.26299655
221028A00043	10/28/2022	4.88	4/24/2024	10/28/2022	105.54799	104.1384891	102.7547837	101.3962264	100.0621899	98.75206704	97.46527056	96.20123184	94.95940037
150220A00021	2/20/2015	2.72	2/20/2024	2/20/2015	102.08914	100.8708148	99.68152545	98.5202403	97.38597852	96.27780467	95.19482601	94.13619015	93.10108279
190318A00021	3/18/2019	2.76	3/18/2024	3/18/2019	102.32902	101.0402099	99.7775106	98.54014044	97.32734502	96.13840012	94.97261018	93.82930688	92.70784775
200131A00015	2/5/2020	1.73	2/5/2025	2/5/2020	102.15915	100.0143864	97.92495227	95.88902689	93.90486481	91.97079201	90.0852023	88.24655392	86.45336641
210226A00012	2/26/2021	2.31	2/26/2036	2/26/2021	117.83343	104.9026545	93.55516635	83.5871165	74.82191944	67.10648387	60.30797944	54.31106258	49.01549431
210528A00003	5/28/2021	0.63	5/28/2024	5/28/2021	99.553603	98.10032455	96.67534301	95.27790606	93.9072877	92.56278693	91.24372664	89.9494526	88.67933253
220323A00008	3/23/2022	2.47	3/25/2024	3/23/2022	101.99666	100.6927453	99.41333388	98.15775908	96.92538158	95.71558495	94.52777463	93.361377	92.21583836
221014A00026	10/14/2022	4.63	10/14/2027	10/14/2022	121.68887	116.4873816	111.5460384	106.8504253	102.3869965	98.14302176	94.10653289	90.26627459	86.61165843
160714A00054	7/14/2016	2.03	7/15/2024	7/14/2016	101.8561	100.2558369	98.68831729	97.15259671	95.64777129	94.17297131	92.72735956	91.31012981	89.92050533
180614A00038	6/14/2018	3.08	6/14/2023	6/14/2018	101.11386	100.5737861	100.0394819	99.51085841	98.98782519	98.47029376	97.95817748	97.45139153	96.94985288
190114A00040	1/14/2019	2.89	1/14/2025	1/14/2019	104.97082	102.8458533	100.7745787	98.75526836	96.78626561	94.86597966	92.99288241	91.16550546	89.38243723
190530A00006	5/30/2019	2.25	5/30/2024	5/30/2019	102.29242	100.8076495	99.35191278	97.92443718	96.52447359	95.15129885	93.80421466	92.48254651	91.18564263
191108A00014	11/8/2019	2.25	11/8/2029	11/8/2019	114.10991	106.9908066	100.3669902	94.20142172	88.46001159	83.11137123	78.12658623	73.47900969	69.14407373
200504A00004	5/4/2020	0.75	5/5/2025	5/4/2020	100.77011	98.39145386	96.08043211	93.83474602	91.65219185	89.53065331	87.46809759	85.46257151	83.51219789
180126A00029	1/26/2018	2.88	1/27/2025	1/26/2018	104.60271	102.4559748	100.3639886	98.32497325	96.33722021	94.39908992	92.50900837	90.66546392	88.86700426
190131A00053	1/31/2019	2.67	1/31/2023	1/31/2019	100.4051	100.2328782	100.0612496	99.89020705	99.71974742	99.54986779	99.38056521	99.21183676	99.04367954
190411A00017	4/15/2019	2.65	4/15/2024	4/15/2019	102.35941	100.997592	99.66033122	98.34702458	97.0570842	95.78994101	94.54504395	93.32185931	92.11987002
190717A00008	7/17/2019	2.22	7/17/2024	7/17/2019	102.17521	100.5669867	98.99173452	97.4485007	95.93637258	94.45447208	93.00195407	91.57800478	90.18184032
200203A00011	2/3/2020	1.7	2/15/2023	2/3/2020	100.23837	100.0253448	99.81323667	99.60203717	99.39174041	99.18234055	98.97383184	98.76620855	98.55946502
200709A00006	7/10/2020	2.58	7/10/2030	7/10/2020	115.75865	108.0021717	100.8276528	94.18826882	88.04119304	82.34723913	77.07053411	72.17822214	67.64019621
200720A00034	7/20/2020	0.77	7/21/2025	7/20/2020	100.54948	97.982355	95.49300673	93.07860111	90.7364267	88.46388911	86.25850504	84.11789667	82.03978634
220406A00007	4/6/2022	2.87	4/8/2024	4/6/2022	102.6216	101.2767803	99.95591737	98.65842151	97.38372611	96.13128241	94.90055881	93.6910402	92.50222737
181227A00022	12/27/2019	2.91	12/27/2022	12/27/2019	100.20156	100.1266156	100.0517901	99.97708313	99.90249432	99.82802344	99.75367022	99.67943439	99.60531568
200922A00034	9/24/2020	2.24	9/23/2026	9/24/2020	107.49886	103.6758859	100.0099838	96.49388687	93.12070052	89.88388394	86.77723018	83.79484723	80.93114037
051003A00009	10/3/2005	5.15	10/15/2025	10/3/2005	113.43373	110.4553611	107.5724149	104.7813161	102.0786458	99.46113115	96.9256385	94.46916647	92.08883976
150601A00404	6/1/2015	4.29	1/17/2029	6/1/2015	123.91966	117.3555703	111.1929764	105.4050355	99.96683949	94.85526776	90.04884981	85.52763874	81.27309531
160122A00029	1/22/2016	2.48	1/22/2025	1/22/2016	104.15437	102.0169612	99.93400667	97.90373535	95.9244524	93.99453112	92.11240962	90.27658767	88.48562373
160628A00038	6/28/2016	1.88	6/27/2025	6/28/2016	103.88515	101.3253677	98.84161449	96.43117338	94.09144528	91.81994058	89.61427375	87.47215819	85.39140146

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200611A00010	6/11/2020	1.08	6/11/2027	6/11/2020	103.9969	99.54995791	95.31688342	91.28629933	87.44749655	83.79038779	80.30546806	76.98377799	73.81686966
171025A00026	10/25/2017	2.64	10/25/2024	10/25/2017	103.42839	101.5443354	99.70388351	97.90577004	96.14877324	94.43171445	92.7534564	91.11290142	89.5089898
181015A00024	10/15/2018	3.29	10/16/2023	10/15/2018	101.79434	100.9190758	100.0588728	99.21334052	98.38210571	97.56480754	96.76109728	95.97063774	95.19310285
190621A00015	6/21/2019	2.2	6/21/2024	6/21/2019	102.02389	100.4862544	98.97928282	97.50212707	96.0539698	94.63402312	93.24152733	91.87574963	90.53598294
190805A00009	8/5/2019	1.91	8/5/2024	8/5/2019	101.7363	100.0819227	98.46218847	96.87607631	95.32260216	93.80082051	92.3098224	90.84873371	89.41671341
190816A00021	8/16/2019	1.77	8/16/2023	8/16/2019	100.43973	99.73265423	99.0355126	98.34809425	97.6701967	97.00162306	96.34218183	95.69168676	95.0499566
200225A00050	2/25/2020	1.57	2/25/2025	2/25/2020	101.92097	99.72099671	97.57896379	95.49292403	93.46100855	91.48142707	89.55246385	87.67247391	85.8398794
220622A00010	6/22/2022	3.43	7/12/2024	6/22/2022	104.1183	102.5069345	100.9283747	99.38168452	97.86596258	96.38034118	94.92398489	93.49608905	92.09587827
190107A00024	1/7/2019	2.91	1/5/2024	1/7/2019	101.92132	100.828747	99.75957934	98.71306621	97.68849289	96.68517448	95.70245434	94.73970265	93.79631503
190211A00017	2/11/2019	3.12	2/11/2026	2/11/2019	108.69773	105.4631474	102.3425819	99.33132731	96.42490558	93.61905198	90.90970331	88.29298688	85.76521025
190607A00018	6/7/2019	2.19	6/7/2024	6/7/2019	101.94083	100.4420386	98.97273939	97.53213081	96.11944379	94.73393628	93.37489205	92.04161956	90.7334509
190801A00010	8/1/2019	1.97	8/1/2023	8/1/2019	100.67867	100.0093362	99.34887617	98.69711362	98.05387764	97.41900178	96.79232393	96.17368612	95.56293445
190816A00011	8/16/2019	1.77	8/16/2024	8/16/2019	101.53561	99.8541994	98.20844558	96.59727935	95.01967346	93.4746416	91.96123632	90.47854705	89.02569832
200326A00028	3/26/2020	1.54	3/26/2025	3/26/2020	101.99042	99.71330557	97.49799039	95.3424485	93.24473435	91.2029776	89.21537978	87.280211	85.39580691
200922A00044	9/24/2020	2.61	9/25/2023	9/24/2020	101.14783	100.3312355	99.52780394	98.73721875	97.95917353	97.19337163	96.43952568	95.69735725	94.9665965
211005A00019	10/5/2021	0.47	10/5/2023	10/5/2021	99.486624	98.64928274	97.82594291	97.01625578	96.21988425	95.43650223	94.6657942	93.90745478	93.16118833
220106A00018	1/10/2022	3.11	1/8/2032	1/10/2022	122.65472	113.1864332	104.5445436	96.65204059	89.43948398	82.84421973	76.80968429	71.2847835	66.22333769
180530A00026	5/30/2018	3.55	5/30/2031	5/30/2018	125.23946	116.2521726	108.0001345	100.4188275	93.44972562	87.03970735	81.14053023	75.70835965	70.70334518
180816A00038	8/16/2018	3.38	8/16/2028	8/16/2018	117.83061	111.8695427	106.2533384	100.9601282	95.9695499	91.26263489	86.82170493	82.6302774	78.67297795
191003A00019	10/3/2019	1.71	9/27/2024	10/3/2019	101.55526	99.76215482	98.00914578	96.29509908	94.61891771	92.97954279	91.37595198	89.80715794	88.27220694
200228A00005	2/28/2020	1.35	2/28/2024	2/28/2020	100.41862	99.18993155	97.99110563	96.82106401	95.67878065	94.56327774	93.4736229	92.40892656	91.36833952
200306A00030	3/6/2020	0.88	3/6/2023	3/6/2020	100.05328	99.78837102	99.52486428	99.26275251	99.00202462	98.74266964	98.48467672	98.2280351	97.97273417
161213A00017	12/13/2016	2.24	12/13/2022	12/13/2016	100.07775	100.0416279	100.0055455	99.9695067	99.93351153	99.89755989	99.86165168	99.82578682	99.78996522
170929A00057	9/29/2017	2.16	9/29/2023	9/29/2017	100.92061	100.0925375	99.27801047	98.47670041	97.68828771	96.91246299	96.1489267	95.39738873	94.65756801
180205A00019	2/5/2018	2.88	2/5/2025	2/5/2018	105.14481	102.9576189	100.8268334	98.75059934	96.72713533	94.75473291	92.831753	90.95662241	89.12783059
200309A00005	3/9/2020	0.77	3/7/2025	3/9/2020	100.62288	98.40144161	96.23938653	94.13471925	92.08552744	90.08997797	88.14631285	86.25284553	84.40795731
081205A00033	12/5/2008	4.77	12/7/2023	12/5/2008	103.61449	102.5907372	101.5873045	100.6035883	99.63901053	98.69301557	97.7650691	96.85465715	95.96128511
190828A00031	8/28/2019	1.71	8/28/2024	8/28/2019	101.46961	99.75743185	98.08205549	96.44235995	94.83726927	93.26575114	91.72681467	90.21950821	88.74291742
200227A00009	2/27/2020	1.47	2/27/2025	2/27/2020	101.70696	99.50364607	97.35849877	95.26955233	93.23492654	91.25282051	89.32150854	87.43933629	85.60471708
200511A00017	5/11/2020	0.83	2/3/2025	5/11/2020	100.17851	98.06157687	95.99926265	93.98977045	92.03137971	90.12244004	88.26136777	86.44664264	84.67680467
151229A00080	12/29/2015	3.49	12/30/2030	12/29/2015	123.77088	115.2516575	107.3998096	100.1591654	93.47857187	87.31141743	81.61520701	76.35117842	71.48395646
180717A00047	7/17/2018	3.3	9/17/2025	7/17/2018	107.82596	105.0045181	102.2719014	99.62480137	97.0600512	94.57462137	92.1656128	89.83025032	87.56587653
180820A00055	8/20/2018	3.37	8/21/2028	8/20/2018	117.80351	111.8295699	106.201958	100.8986706	95.8992204	91.18452504	86.73680306	82.53947808	78.57709054

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190424A00023	4/24/2019	2.43	4/24/2023	4/24/2019	100.69048	100.2894445	99.89160214	99.4969194	99.10535865	98.7168829	98.3314557	97.94904122	97.56960414
190501A00028	5/1/2019	2.42	5/1/2024	5/1/2019	102.40113	100.991401	99.60788147	98.24990458	96.91682523	95.6080196	94.32288425	93.06083536	91.82130786
200115A00017	1/15/2020	1.88	1/17/2023	1/15/2020	100.19667	100.0636591	99.93101912	99.79874556	99.6668369	99.5352916	99.40410813	99.27328495	99.14282056
200415A00035	4/17/2020	2.16	4/16/2025	4/17/2020	103.57206	101.2201249	98.93332683	96.70950797	94.54659435	92.44259232	90.39558491	88.40372843	86.46524925
200429A00010	4/29/2020	0.78	4/29/2025	4/29/2020	100.82327	98.45955437	96.16261582	93.9302022	91.76015122	89.65038582	87.59891029	85.60380656	83.66323072
200429A00043	5/1/2020	1.56	4/30/2025	5/1/2020	102.21276	99.8398775	97.5337867	95.29224082	93.11308197	90.99423711	88.93371425	86.92959867	84.98004958
200819A00007	8/19/2020	0.38	8/21/2023	8/19/2020	99.548284	98.82989169	98.12181469	97.42383218	96.7357295	96.05729805	95.38833506	94.72864342	94.07803143
060808A00022	8/8/2006	5.57	6/15/2026	8/8/2006	118.58582	114.83647	111.2299316	107.7599518	104.4205913	101.2062034	98.11141757	95.13112458	92.26046209
160718A00010	7/18/2016	1.65	7/18/2023	7/18/2016	100.45331	99.82245526	99.19951491	98.58433712	97.97677729	97.37669441	96.78395095	96.19841271	95.61994876
190809A00022	8/9/2019	1.88	8/9/2024	8/9/2019	101.69986	100.0353226	98.40579991	96.81025448	95.24768646	93.71713543	92.21767837	90.74842785	89.30853025
190926A00017	9/26/2019	2.23	9/26/2029	9/26/2019	112.2565	105.3758181	98.96543595	92.99078836	87.42001449	82.22373593	77.37485161	72.84835068	68.62114152
200306A00012	3/6/2020	0.95	3/6/2024	3/6/2020	99.934395	98.69148749	97.47714386	96.29038126	95.13026191	93.99589036	92.8864111	91.80100634	90.73889397
200428A00011	4/30/2020	1.95	4/29/2025	4/30/2020	103.15132	100.769608	98.45478956	96.20462158	94.01694567	91.88968826	89.8208567	87.80853562	85.85088345
200529A00009	5/29/2020	0.42	5/30/2023	5/29/2020	99.798035	99.30146974	98.80982404	98.3230255	97.84100277	97.36368591	96.89100632	96.42289675	95.95929122
200720A00042	7/22/2020	2.04	7/21/2026	7/22/2020	106.30488	102.6760641	99.19072429	95.84238801	92.62491525	89.53247772	86.55954105	83.7008481	80.95140332
200730A00002	7/30/2020	0.67	11/6/2024	7/30/2020	99.674374	97.79587384	95.96170268	94.17055105	92.42115674	90.71230288	89.04281603	87.41156425	85.81745541
200925A00004	9/25/2020	0.53	9/25/2023	9/25/2020	99.428284	98.61945154	97.82369354	97.04069528	96.27015208	95.51176884	94.76525977	94.03034792	93.30676493
170111A00016	1/11/2017	3.51	1/11/2033	1/11/2017	128.32444	117.6250781	107.9437941	99.17725017	91.23313522	84.02893472	77.49084394	71.55280684	66.15566548
180620A00038	6/20/2018	3.4	6/20/2028	6/20/2018	117.58435	111.7864597	106.3162982	101.153552	96.27927596	91.67579043	87.32659037	83.21626123	79.33040128
180917A00032	9/17/2018	3.17	9/15/2023	9/17/2018	101.56251	100.7707934	99.99142126	99.22410599	98.46856912	97.7245407	96.99175898	96.26997008	95.55892774
191129A00012	11/29/2019	1.99	11/29/2024	11/29/2019	102.3533	100.3865975	98.46762912	96.59494502	94.76714522	92.98288179	91.24085647	89.53981848	87.87856248
160922A00014	9/22/2016	2.06	9/22/2026	9/22/2016	107.63026	103.7851947	100.0985252	96.56289654	93.17133801	89.91723788	86.79432311	83.79664002	80.91853634
180801A00015	8/1/2018	3.16	8/1/2023	8/1/2018	101.36965	100.6991617	100.037527	99.38457602	98.74013865	98.10404921	97.47614628	96.8562726	96.2442749
191002A00006	10/2/2019	1.84	10/2/2024	10/2/2019	101.81279	100.0040132	98.23594141	96.50742779	94.81736377	93.16467869	91.54833823	89.96734299	88.42072706
191107A00011	11/8/2019	2.02	2/24/2023	11/8/2019	100.33189	100.0939529	99.85714492	99.62145853	99.38688574	99.15341869	98.92104958	98.6897707	98.4595744
200403A00014	4/3/2020	0.63	4/17/2023	4/3/2020	99.977587	99.59737082	99.22005183	98.84559674	98.47397288	98.10514813	97.73909082	97.37576978	97.01515429
150904A00021	9/4/2015	2.52	9/5/2023	9/4/2015	101.15718	100.3920658	99.63850306	98.89623558	98.1650107	97.44458327	96.73471534	96.03517592	95.34574073
160616A00028	6/16/2016	1.81	6/16/2023	6/16/2016	100.42588	99.88255908	99.34510841	98.81343504	98.28744607	97.76705059	97.25215963	96.74268609	96.2385447
170609A00043	6/9/2017	3.07	6/9/2032	6/9/2017	125.29666	115.1920157	106.0077082	97.65441528	90.05193234	83.12820094	76.81844302	71.06439102	65.81360291
190826A00018	8/26/2019	1.9	8/27/2029	8/26/2019	111.49515	104.6572293	98.28413235	92.34182284	86.79893361	81.6265417	76.79796522	72.28857812	68.07564122
190927A00036	9/27/2019	1.94	9/6/2024	9/27/2019	101.89115	100.1514453	98.44954995	96.78432951	95.154693	93.55959241	91.99802065	90.46900943	88.97162741
200227A00031	2/27/2020	1.43	2/27/2024	2/27/2020	100.51498	99.28833109	98.091429	96.92320089	95.78262677	94.6687345	93.58059701	92.51732974	91.47808817
200302A00034	3/2/2020	1.25	3/1/2024	3/2/2020	100.29998	99.06694048	97.86364821	96.68903575	95.54208651	94.42183143	93.32734628	92.25774907	91.21219766

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200604A00010	6/4/2020	0.89	6/4/2025	6/4/2020	100.69892	98.25434388	95.88118578	93.57695182	91.33925017	89.16578692	87.05436145	85.00286203	83.00926158
220322A00010	3/22/2022	2.34	9/22/2023	3/22/2022	100.91131	100.1038582	99.3092991	98.52732838	97.75764852	96.99997138	96.25401773	95.51951696	94.79620672
220909A00052	9/9/2022	3.95	3/8/2024	9/9/2022	103.77677	102.5031076	101.2579912	100.0404577	98.84958899	97.68450767	96.54437474	95.42838758	94.33577792
190530A00008	5/30/2019	2.38	5/30/2025	5/30/2019	104.94398	102.447741	100.023978	97.67017162	95.38390391	93.16285556	91.00480126	88.90760527	86.86921718
190830A00021	8/30/2019	1.76	8/30/2024	8/30/2019	101.56373	99.8454774	98.16423798	96.51887971	94.908318	93.33151235	91.78746413	90.27521439	88.79384185
191115A00014	11/18/2019	2.45	11/18/2024	11/18/2019	103.20872	101.262789	99.36336936	97.50906373	95.69852764	93.93046575	92.20362976	90.51681637	88.86886528
141208A00008	12/8/2014	3.02	12/16/2024	12/8/2014	104.5582	102.5235683	100.5389342	98.60274478	96.71350748	94.86978641	93.07019996	91.31341824	89.59816078
160620A00015	6/20/2016	1.71	6/20/2023	6/20/2016	100.46684	99.91145228	99.3621944	98.81896944	98.28167826	97.7502239	97.22451152	96.7044483	96.18994343
170110A00022	1/10/2017	2.27	1/10/2023	1/10/2017	100.23581	100.1219246	100.0083119	99.89497188	99.78190351	99.66910575	99.55657759	99.444318	99.33232599
171219A00063	12/19/2017	2.8	12/20/2027	12/19/2017	114.39201	109.1449452	104.1728387	99.45980844	94.9909765	90.75239725	86.73099387	82.91449967	79.29140365
200228A00025	2/28/2020	1.57	3/2/2027	2/28/2020	105.79314	101.5712481	97.54063786	93.6916002	90.01497202	86.50210639	83.14484006	79.93546346	76.86669261
200228A00030	2/28/2020	1.32	2/28/2023	2/28/2020	100.16822	99.91956469	99.67213276	99.42591948	99.18091594	98.93711327	98.69450274	98.45307566	98.21282345
211222A00017	12/22/2021	0.88	7/17/2023	12/22/2021	99.858575	99.2338722	98.61695984	98.00769273	97.40592937	96.8115317	96.22436505	95.64429802	95.07120235
150316A00043	3/16/2015	2.37	3/16/2023	3/16/2015	100.53279	100.239031	99.94700212	99.65668816	99.36807398	99.08114453	98.79588499	98.51228069	98.23031712
170216A00045	2/16/2017	3.73	2/17/2037	2/16/2017	137.52845	122.4755106	109.3343664	97.84708902	87.79201103	78.97845399	71.2422437	64.44189493	58.45536277
190214A00013	2/14/2019	2.64	2/14/2023	2/14/2019	100.47013	100.2591366	100.0490383	99.83983278	99.63151426	99.42407702	99.21751541	99.01182382	98.8069967
191017A00022	10/17/2019	2.25	7/17/2028	10/17/2019	111.26776	105.5705241	100.2017191	95.14067724	90.36814044	85.86615541	81.61797842	77.6079875	73.82160137
200228A00066	2/28/2020	1.35	2/28/2024	2/28/2020	100.41862	99.18993155	97.99110563	96.82106401	95.67878065	94.56327774	93.4736229	92.40892656	91.36833952
200312A00042	3/16/2020	1.38	3/16/2023	3/16/2020	100.19196	99.89939128	99.60854335	99.31939808	99.03194045	98.74615564	98.462029	98.17954606	97.89869249
210507A00009	5/7/2021	2.02	5/7/2032	5/7/2021	113.03497	103.6892261	95.19682474	87.47525585	80.45037597	74.05552495	68.23073689	62.92203771	58.08081956
130513A00007	5/13/2013	2.54	5/15/2023	5/13/2013	100.73212	100.2745741	99.82118796	99.37190592	98.92667232	98.4854325	98.04813276	97.61472037	97.18514355
160706A00028	7/6/2016	2.39	7/6/2029	7/6/2016	113.11142	106.4173595	100.1670201	94.3286418	88.87289672	83.77269175	79.00298721	74.54063103	70.36420713
190603A00033	6/3/2019	2.05	6/3/2024	6/3/2019	102.00969	100.5162901	99.05223116	97.61672646	96.20901401	94.82835849	93.47405004	92.14540315	90.84175564
200122A00035	1/22/2020	1.94	1/22/2025	1/22/2020	102.53758	100.4267656	98.36965328	96.36450864	94.40966294	92.50351434	90.6445247	88.83121643	87.0621696
200305A00009	3/10/2020	1.04	10/18/2023	3/10/2020	99.801085	98.93013315	98.07430447	97.23320734	96.406464	95.59370952	94.79459124	94.00876829	93.23591106
220927A00073	9/27/2022	4.72	9/26/2025	9/27/2022	111.93562	109.0308227	106.2177555	103.4930154	100.8533491	98.29564187	95.8169104	93.41429687	91.08506266
190531A00013	5/31/2019	2.31	12/6/2022	5/31/2019	100.0356	100.0189384	100.0022939	99.98566607	99.96905503	99.95246072	99.9358831	99.91932214	99.90277783
190927A00012	10/1/2019	1.96	10/1/2024	10/1/2019	102.03051	100.2222581	98.45464014	96.72651097	95.03676545	93.38433618	91.76819194	90.18733625	88.64080602
200207A00004	2/7/2020	1.53	2/7/2023	2/7/2020	100.22237	100.0310594	99.8404908	99.65065694	99.46155355	99.27317638	99.08552119	98.89858378	98.71235999
081215A00091	12/15/2008	4.19	12/15/2023	12/15/2008	103.30608	102.2594227	101.2340384	100.2292812	99.24453208	98.27919687	97.33270456	96.40450642	95.49407486
140113A00012	1/13/2014	3.48	1/17/2023	1/13/2014	100.40991	100.2766574	100.1437724	100.0112543	99.87910182	99.74731324	99.61588706	99.48482175	99.35411581
170728A00032	7/28/2017	2.36	7/27/2023	7/28/2017	100.81851	100.1635132	99.51701044	98.87883649	98.24883121	97.62683849	97.01270622	96.40628608	95.80743348
190910A00004	9/11/2019	1.86	9/11/2024	9/11/2019	101.78608	100.0335455	98.31937075	96.64241836	95.001596	93.3958532	91.82417934	90.28560174	88.77918389

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220729A00035	8/3/2022	3.14	8/3/2027	8/3/2022	113.81534	109.0014212	104.4219594	100.0642389	95.91630859	91.96692807	88.20552159	84.62213473	81.20739433
190424A00007	4/24/2019	2.66	4/24/2024	4/24/2019	102.42226	101.0357293	99.67460009	98.33823652	97.02602155	95.7373582	94.4716687	93.22839375	92.00699177
190930A00008	9/30/2019	1.9	10/10/2023	9/30/2019	100.56147	99.70796035	98.86889878	98.04391659	97.23266158	96.43479321	95.64998213	94.87790972	94.11826764
210621A00008	6/21/2021	1.04	6/23/2025	6/21/2021	101.15523	98.6535795	96.22603243	93.86995133	91.58281459	89.3622061	87.20581008	85.11140621	83.07686501
170322A00026	3/22/2017	3.22	3/22/2028	3/22/2017	116.01283	110.5044534	105.2954918	100.3680802	95.70550813	91.29214187	87.11334985	83.15543318	79.40556154
180426A00053	4/26/2018	2.94	4/26/2023	4/26/2018	100.90524	100.498204	100.0944528	99.6939475	99.29664888	98.90251854	98.51151862	98.12361189	97.73876171
180622A00005	6/22/2018	3.5	7/2/2029	6/22/2018	120.42296	113.5033614	107.0373115	100.9925589	95.33930767	90.0500219	85.09924309	80.46342287	76.1207702
190426A00009	4/26/2019	2.63	4/26/2024	4/26/2019	102.39075	100.9990635	99.6329629	98.29180414	96.97496377	95.68183866	94.41184517	93.16441837	91.9390113
190724A00021	7/24/2019	2.33	7/23/2027	7/24/2019	111.0245	106.2720119	101.7514912	97.45036331	93.35680631	89.45970017	85.74858128	82.21359992	78.84548072
200203A00001	2/3/2020	1.7	2/3/2023	2/3/2020	100.21552	100.0355792	99.85628621	99.67763693	99.4996279	99.32225572	99.14551697	98.96940827	98.79392625
200212A00003	2/12/2020	1.63	2/12/2025	2/12/2020	102.4426	100.2651762	98.14448284	96.07863112	94.06581313	92.10429591	90.19241758	88.32858377	86.51126425
200406A00006	4/6/2020	1.13	4/7/2025	4/6/2020	101.08135	98.78341728	96.54870787	94.37514171	92.26072257	90.20353071	88.20171949	86.25351217	84.35719885
200511A00020	5/11/2020	1.4	2/1/2028	5/11/2020	106.21301	101.0961322	96.2545741	91.67208912	87.33347978	83.2245207	79.331891	75.64311184	72.14648859
201028A00003	10/30/2020	1.42	2/27/2026	10/30/2020	103.33538	100.1406041	97.06060301	94.09056571	91.22591493	88.46229515	85.79556006	83.22176098	80.73713599
211103A00007	11/3/2021	0.52	1/4/2023	11/3/2021	100.02291	99.92599428	99.82927437	99.73274768	99.63641361	99.54027157	99.44432098	99.34856126	99.25299183
220601A00022	6/1/2022	2.73	12/1/2023	6/1/2022	101.47662	100.4807732	99.5044375	98.54704198	97.60803946	96.68690372	95.78312841	94.89622618	94.02572775
130107A00002	1/7/2013	3.22	1/18/2028	1/7/2013	115.55028	110.2331781	105.1967588	100.4246749	95.90161693	91.61324442	87.54611897	83.68764277	80.02600139
130508A00013	5/8/2013	2.23	5/15/2023	5/8/2013	100.66672	100.2084383	99.75434032	99.30436463	98.85845511	98.41655664	97.97861511	97.54457738	97.11439125
151002A00081	10/2/2015	2.29	10/2/2023	10/2/2015	101.03599	100.1994092	99.37664408	98.56735589	97.77121558	96.98790474	96.21711519	95.45854853	94.71191577
170613A00033	6/13/2017	2.3	6/13/2024	6/13/2017	102.44647	100.9221357	99.42803268	97.96333704	96.52725093	95.11900501	93.73785712	92.38309106	91.05401549
171204A00020	12/4/2017	2.48	12/5/2022	12/4/2017	100.03189	100.0180074	100.0041357	99.99027761	99.97643306	99.96260206	99.94878457	99.93498059	99.92119007
180511A00035	5/11/2018	2.93	5/11/2023	5/11/2018	100.97065	100.5224549	100.0782512	99.63798211	99.20159535	98.76903955	98.34026424	97.91521986	97.4938577
220823A00056	8/23/2022	3.5	8/23/2024	8/23/2022	104.91692	103.1807872	101.4817626	99.81872506	98.19059529	96.59633743	95.03495692	93.50549842	92.00704384
180627A00027	6/27/2018	2.87	6/27/2023	6/27/2018	101.14583	100.5692679	99.99927578	99.4357397	98.87855034	98.3276009	97.78278692	97.24400631	96.71115921
190328A00083	3/28/2019	2.37	3/28/2024	3/28/2019	102.14759	100.831013	99.53841844	98.26918849	97.02272826	95.79846291	94.59583681	93.41431276	92.25337122
190910A00030	9/10/2019	1.86	9/10/2024	9/10/2019	101.78217	100.0323665	98.32081043	96.64636523	95.00793884	93.40448132	91.83498281	90.29847154	88.7940121
200330A00045	3/30/2020	1.47	3/30/2027	3/30/2020	105.49294	101.2041803	97.11292706	93.20911248	89.48322826	85.92629515	82.52983087	79.28582019	76.18668691
210128A00010	1/28/2021	0.57	7/9/2024	1/28/2021	99.472907	97.9083543	96.3756487	94.87388385	93.40218766	91.95972067	90.54567442	89.15927004	87.79975689
220602A00039	6/2/2022	3.11	6/2/2027	6/2/2022	114.19018	109.508288	105.0483016	100.7985121	96.7478937	92.8860567	89.20320786	85.69011282	82.33806122
051107A00075	11/7/2005	5.29	11/17/2025	11/7/2005	115.00161	111.8932895	108.8875794	105.9805154	103.1683112	100.4473477	97.8141646	95.26545271	92.79804623
180327A00024	3/27/2018	2.79	5/26/2023	3/27/2018	100.97065	100.4815585	99.9972086	99.51752872	99.04245151	98.57191087	98.10584198	97.64418122	97.18686619
200311A00056	3/13/2020	1.27	4/10/2024	3/13/2020	100.44225	99.10764629	97.7969106	96.50945977	95.24472792	94.00216705	92.78124634	91.58145145	90.40228393
180716A00016	7/16/2018	3.03	7/14/2023	7/16/2018	101.20977	100.5883204	99.97450447	99.3681822	98.76921676	98.17747464	97.59282557	97.01514238	96.44430093

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190110A00005	1/10/2019	3.2	1/9/2026	1/10/2019	108.62805	105.4864941	102.4531221	99.52357984	96.69371735	93.95957662	91.31738132	88.76352725	86.29457337
191204A00013	12/4/2019	1.72	12/4/2024	12/4/2019	102.25511	100.2682076	98.32990576	96.43870698	94.59317432	92.79192483	91.03362711	89.31699891	87.64080502
210924A00003	9/24/2021	2.37	9/24/2036	9/24/2021	118.75234	105.2840141	93.52516542	83.24775199	74.25529213	66.37835269	59.47070413	53.40603855	48.07516578
170822A00018	8/22/2017	2.25	8/22/2023	8/22/2017	100.79522	100.0706944	99.35656271	98.65260544	97.95860615	97.27435456	96.59964628	95.93428258	95.27807024
190318A00008	3/18/2019	2.76	3/18/2024	3/18/2019	102.32902	101.0402099	99.7775106	98.54014044	97.32734502	96.13840012	94.97261018	93.82930688	92.70784775
190531A00038	5/31/2019	2.82	5/31/2034	5/31/2019	125.66188	113.6413013	102.9154737	93.33678468	84.77520028	77.11608873	70.25832457	64.11263473	58.60015435
190604A00031	6/4/2019	2.25	6/5/2023	6/4/2019	100.64483	100.1305597	99.62153287	99.11767325	98.61890238	98.12514341	97.63632108	97.15236157	96.67319258
190712A00001	7/12/2019	2.05	7/12/2024	7/12/2019	102.19901	100.5982514	99.0302075	97.49394587	95.98856525	94.51319831	93.06701005	91.6491963	90.25898222
191230A00031	12/30/2019	1.85	12/30/2024	12/30/2019	102.66168	100.6016143	98.59300525	96.63423007	94.72372492	92.85998693	91.04157121	89.26708822	87.53520111
200128A00028	1/28/2020	1.81	1/28/2025	1/28/2020	102.28792	100.1640941	98.09462028	96.07772498	94.11170873	92.19494082	90.32585584	88.50295051	86.72478069
200407A00001	4/8/2020	2.41	4/7/2025	4/8/2020	104.10143	101.7673667	99.49729658	97.2891169	95.14080932	93.05043286	91.01612047	89.03607575	87.10856987
200415A00030	4/15/2020	0.76	3/15/2023	4/15/2020	100.01078	99.72129443	99.43349613	99.14736766	98.86289444	98.58006206	98.29885628	98.01926301	97.74126833
201028A00005	10/30/2020	1.85	10/31/2025	10/30/2020	104.01333	101.1299471	98.34127574	95.64370786	93.03378973	90.50821764	88.06383054	85.69760303	83.40663883
201030A00002	11/2/2020	2.8	10/29/2040	11/2/2020	125.20507	108.0497653	93.59122069	81.38324813	71.05597417	62.30243068	54.86756119	48.53919504	43.1406294
220701A00014	7/1/2022	3.15	7/14/2023	7/1/2022	101.28486	100.663148	100.0490691	99.44248611	98.84326221	98.25126387	97.66636077	97.0884257	96.51733451
150105A00026	1/5/2015	2.54	1/5/2024	1/5/2015	101.72983	100.6351674	99.56400898	98.51560438	97.4892343	96.48420943	95.49986901	94.53557926	93.59073208
160705A00104	7/5/2016	2.1	7/6/2026	7/5/2016	106.42136	102.8302793	99.37987325	96.06385469	92.87625767	89.81141589	86.86394571	84.02873031	81.30090486
180816A00024	8/16/2018	3.01	8/16/2023	8/16/2018	101.32842	100.6178078	99.91716467	99.22627942	98.54494902	97.87297601	97.21016836	96.55633926	95.91130696
190115A00063	1/15/2019	2.96	1/16/2024	1/15/2019	102.07489	100.9515533	99.85292793	98.77820449	97.72660869	96.69739935	95.68986668	94.70333065	93.73713941
190212A00017	2/12/2019	2.86	6/30/2023	2/12/2019	101.05397	100.4707999	99.89435002	99.32450011	98.76113741	98.20415171	97.65343527	97.10888276	96.57039122
190709A00018	7/9/2019	2.24	7/9/2024	7/9/2019	102.1718	100.5846933	99.02982939	97.50629555	96.01320915	94.54972054	93.11501146	91.7082936	90.32880721
210201A00012	2/3/2021	0.75	11/17/2025	2/3/2021	100.84234	97.96065595	95.17548994	92.48310085	89.87990952	87.36249505	84.92758685	82.57205715	80.29291393
220118A00009	1/18/2022	1.65	1/17/2025	1/18/2022	101.88964	99.79902897	97.76140047	95.77505046	93.83834079	91.94969858	90.10761304	88.3106325	86.55736158
190520A00007	5/20/2019	2.52	5/20/2024	5/20/2019	102.35209	100.8978057	99.47140881	98.07216869	96.69937848	95.35235536	94.03043951	92.73299316	91.45939969
200326A00030	3/26/2020	1.13	3/24/2023	3/26/2020	100.11727	99.80294766	99.49060061	99.18021112	98.87176082	98.56523153	98.26060534	97.95786452	97.6569916
210428A00015	4/28/2021	2.02	4/28/2031	4/28/2021	112.22946	103.8569459	96.17495719	89.12292373	82.64587252	76.69388777	71.22162267	66.18786042	61.55511944
150601A00470	6/1/2015	2.98	5/31/2024	6/1/2015	103.33556	101.839991	100.3737032	98.93591039	97.5258561	96.14281003	94.78606703	93.45494603	92.14878899
171018A00003	10/18/2017	2.23	10/18/2023	10/18/2017	101.017	100.1380231	99.27430562	98.42545698	97.59109548	96.77085243	95.96437156	95.17130852	94.39133035
180207A00002	2/7/2018	3.13	2/6/2026	2/7/2018	108.67774	105.4583402	102.3519911	99.35404874	96.4600897	93.66590024	90.96746482	88.36095536	85.84272115
190826A00063	8/26/2019	2.05	8/28/2028	8/26/2019	110.24278	104.4635648	99.02379757	93.90173561	89.07714544	84.53118992	80.24632414	76.20619971	72.39557665
190923A00081	9/23/2019	1.96	9/20/2024	9/23/2019	101.98487	100.2065635	98.46764604	96.76697621	95.10345802	93.47603534	91.88369005	90.32544041	88.80033939
191113A00016	11/15/2019	2.02	8/15/2024	11/15/2019	101.96168	100.2791141	98.63217739	97.01980358	95.44096762	93.89468526	92.38001094	90.89603589	89.44188627
200225A00012	2/25/2020	1.57	2/25/2025	2/25/2020	101.92097	99.72099671	97.57896379	95.49292403	93.46100855	91.48142707	89.55246385	87.67247391	85.8398794

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
100824A00009	8/24/2010	3.91	9/2/2025	8/24/2010	109.36066	106.559248	103.8447073	101.2137807	98.66335449	96.1904544	93.79223791	91.46598741	89.20910363
170215A00041	2/15/2017	2.6	10/16/2023	2/15/2017	101.18415	100.3118147	99.45450452	98.61183042	97.78341971	96.96891228	96.16796005	95.38022648	94.60538612
180820A00054	8/20/2018	3	8/18/2023	8/20/2018	101.32921	100.613233	99.90737446	99.2114194	98.52516022	97.8483951	97.18092779	96.52256744	95.87312837
190523A00016	5/23/2019	2.48	2/15/2023	5/23/2019	100.40508	100.1917978	99.97943547	99.76798258	99.55743329	99.34778177	99.13902225	98.931149	98.72415636
190904A00020	9/4/2019	1.69	9/1/2023	9/4/2019	100.38796	99.63843267	98.90005117	98.17256892	97.45574614	96.74935003	96.05315452	95.36694003	94.69049324
200720A00039	7/22/2020	2.48	7/21/2025	7/22/2020	105.07526	102.4476793	99.89926739	97.42714325	95.0285538	92.7008646	90.44155389	88.24820681	86.11851016
170731A00029	7/31/2017	2.34	7/31/2023	7/31/2017	100.81368	100.1479577	99.49100537	98.84264675	98.2027142	97.57104441	96.94747823	96.33186059	95.72404035
180920A00028	9/20/2018	3.12	9/20/2023	9/20/2018	101.68608	100.8785595	100.0838602	99.30168254	98.53173212	97.77372354	97.02738027	96.2924343	95.56862574
180920A00062	9/20/2018	3.12	9/20/2023	9/20/2018	101.68608	100.8785595	100.0838602	99.30168254	98.53173212	97.77372354	97.02738027	96.2924343	95.56862574
180924A00052	9/24/2018	3.22	9/22/2023	9/24/2018	101.63152	100.8208456	100.0230996	99.23797755	98.46518134	97.70442214	96.95542011	96.21790401	95.49161092
190809A00011	8/9/2019	1.69	8/9/2024	8/9/2019	101.71308	100.0425408	98.4072396	96.8061269	95.2381945	93.70247407	92.19803512	90.72398309	89.27945763
191120A00005	11/20/2019	2.63	11/20/2034	11/20/2019	121.15045	109.1152615	98.42284541	88.91495896	80.45280326	72.91454295	66.19315542	60.19456216	54.83600392
191217A00012	12/20/2019	2.03	12/20/2024	12/20/2019	102.54709	100.5229917	98.54890378	96.623262	94.74456608	92.91137319	91.12229526	89.37599653	87.67119112
200204A00020	2/4/2020	1.6	2/4/2025	2/4/2020	102.32518	100.1724389	98.07532921	96.03201794	94.04074791	92.09983396	90.20765928	88.36267202	86.56338209
200226A00009	2/26/2020	1.75	2/26/2030	2/26/2020	110.87629	103.5735104	96.80090017	90.51721692	84.68463354	79.26843935	74.23676751	69.56034766	65.2122814
150601A00689	6/1/2015	2.81	2/28/2025	6/1/2015	104.64035	102.400586	100.2198191	98.09605639	96.0273916	94.01199898	92.048129	90.13410446	88.26831681
160329A00006	3/29/2016	2.12	3/29/2023	3/29/2016	100.44338	100.1147047	99.78817674	99.46377395	99.14147568	98.82126154	98.5031114	98.18700539	97.87292388
160701A00039	7/1/2016	1.92	7/1/2026	7/1/2016	106.51331	102.9137396	99.45520226	96.13139608	92.93634183	89.86436025	86.91005516	84.06829762	81.33421108
170728A00033	7/28/2017	2.46	1/29/2024	7/28/2017	101.61645	100.46053	99.33083562	98.22648377	97.14662897	96.09046294	95.05721266	94.04613836	93.05653185
190327A00031	3/27/2019	2.53	3/27/2024	3/27/2019	102.08983	100.7803033	99.4948415	98.23281313	96.99361145	95.77665065	94.58136487	93.40720737	92.2536497
191004A00012	10/4/2019	1.78	10/4/2024	10/4/2019	101.70909	99.89611915	98.12406254	96.39176008	94.69809476	93.04198784	91.42239737	89.8383166	88.28877265
200127A00013	1/27/2020	1.56	1/27/2023	1/27/2020	100.20275	100.0418517	99.88148124	99.72163135	99.56229948	99.4034831	99.2451797	99.08738678	98.93010186
200205A00011	2/7/2020	2.31	2/7/2024	2/7/2020	101.50005	100.3205677	99.16841566	98.04265232	96.94237885	95.86673684	94.81490606	93.78610234	92.77957561
200214A00007	2/14/2020	1.59	2/14/2025	2/14/2020	102.36659	100.1841829	98.05875964	95.98841665	93.97133392	92.00576709	90.09004356	88.22255887	86.40177325
200226A00025	2/26/2020	1.38	2/26/2025	2/26/2020	101.96896	99.75609171	97.60174038	95.50392465	93.46075067	91.47040458	89.53114836	87.64131591	85.7993094
200429A00050	5/1/2020	2.61	4/30/2025	5/1/2020	104.7562	102.3521205	100.0155071	97.74409435	95.53570472	93.38824643	91.2997094	89.26816154	87.29174529
221103A00050	11/3/2022	5.14	11/4/2024	11/3/2022	108.3373	106.3781423	104.46471	102.5956577	100.7696893	98.98555508	97.24204978	95.5380108	93.87231628
180118A00004	1/18/2018	2.88	1/17/2025	1/18/2018	104.52279	102.4034732	100.3377153	98.32379749	96.36006572	94.44493159	92.57686943	90.75441324	88.97615382
180730A00004	7/30/2018	3.14	7/28/2023	7/30/2018	101.33887	100.6792608	100.0282276	99.38560705	98.75123667	98.12495834	97.50661794	96.89606522	96.2931537
181227A00027	12/27/2018	3.24	12/26/2025	12/27/2018	108.61809	105.514431	102.5166519	99.62053352	96.82205347	94.11737287	91.50282704	88.97491639	86.53029793
200203A00005	2/3/2020	1.7	5/3/2023	2/3/2020	100.33688	99.91298356	99.49266143	99.07586724	98.66255672	98.25268634	97.84621331	97.44309553	97.04329161
200221A00013	2/21/2020	1.69	2/21/2025	2/21/2020	102.16681	99.97561048	97.84187062	95.76366773	93.73915664	91.76656937	89.84421118	87.97045682	86.14374702
200922A00039	9/24/2020	3	9/23/2025	9/24/2020	107.04003	104.2132053	101.475936	98.8248888	96.25687668	93.76884923	91.35788581	89.02118927	86.75607994

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190522A00019	5/23/2019	2.55	5/15/2024	5/23/2019	102.37191	100.930494	99.51647814	98.12915228	96.76782741	95.43183775	94.12053981	92.83331139	91.56955073
190524A00026	5/28/2019	2.45	6/15/2023	5/28/2019	100.77435	100.2326353	99.69673905	99.16657193	98.64204227	98.12306037	97.60953841	97.10139045	96.59853232
200224A00029	2/24/2020	1.56	2/24/2023	2/24/2020	100.22209	99.98433686	99.74770786	99.51219974	99.27780456	99.04451447	98.81232166	98.58121843	98.35119713
140131A00025	1/31/2014	3.28	1/30/2023	1/31/2014	100.47465	100.305414	100.136746	99.96864347	99.80110355	99.63412348	99.46770049	99.30183183	99.13651476
160727A00002	7/27/2016	1.87	7/27/2023	7/27/2016	100.49432	99.84052287	99.1952087	98.55821246	97.92937416	97.30853786	96.69555158	96.09026719	95.49254023
171030A00023	10/30/2017	2.9	11/1/2027	10/30/2017	113.36707	108.3179713	103.5264592	98.97805077	94.65915014	90.55698989	86.65957656	82.95563983	79.43458537
180529A00043	5/29/2018	2.99	5/30/2023	5/29/2018	101.0036	100.5045317	100.010387	99.5210919	99.03657535	98.55676765	98.08160048	97.61100679	97.14492086
190522A00017	5/23/2019	2.53	3/1/2023	5/23/2019	100.4742	100.2222794	99.97162251	99.72221544	99.47404886	99.22711357	98.98140047	98.73690052	98.49360479
190710A00022	7/10/2019	2.22	7/10/2024	7/10/2019	102.14395	100.5544338	98.99725254	97.47148283	95.97623845	94.51066631	93.07394492	91.66528291	90.28391763
190910A00017	9/16/2019	1.86	9/16/2024	9/16/2019	101.78778	100.0220811	98.29528726	96.60626064	94.95390772	93.33717566	91.75505045	90.20655511	88.69074801
191114A00009	11/18/2019	1.94	8/16/2023	11/18/2019	100.56156	99.85400593	99.15638425	98.46849061	97.79012242	97.12108274	96.46117999	95.81022783	95.16804495
200429A00003	4/29/2020	0.74	4/28/2023	4/29/2020	99.936263	99.526956	99.12098903	98.71832116	98.31891234	97.92272321	97.529715	97.13984959	96.75308944
221110A00039	11/10/2022	4.34	11/10/2027	11/10/2022	120.57194	115.3217405	110.3381769	105.6062534	101.1118963	96.84189135	92.78382723	88.92604228	85.25757567
170622A00037	6/22/2017	3.27	6/22/2033	6/22/2017	126.64517	115.6032411	105.6557185	96.68718708	88.59500108	81.28780733	74.68424928	68.71182589	63.30588586
181114A00021	11/14/2018	3.17	11/14/2023	11/14/2018	102.00143	101.0455406	100.1075695	99.18701439	98.28339296	97.39624072	96.52511003	95.66956933	94.82920247
190828A00019	8/28/2019	2	3/28/2028	8/28/2019	109.5368	104.1823931	99.12240176	94.33915847	89.81613866	85.53788491	81.48993284	77.65874247	74.03163477
191106A00012	11/6/2019	2.02	10/11/2024	11/6/2019	102.18381	100.3481879	98.55434444	96.80109057	95.08727537	93.41178778	91.77355497	90.17154078	88.60474422
211222A00018	12/22/2021	0.88	7/17/2023	12/22/2021	99.858575	99.2338722	98.61695984	98.00769273	97.40592937	96.8115317	96.22436505	95.64429802	95.07120235
221014A00043	10/14/2022	4.49	10/14/2027	10/14/2022	122.19223	116.9420246	111.9552806	107.2173514	102.7144804	98.43374189	94.36298616	90.49078927	86.80640606
221130A00076	11/30/2022	4.15	11/30/2027	11/30/2022	121.05361	115.6964111	110.615104	105.7939569	101.2182214	96.87406248	92.74849717	88.82933748	85.10513775
190904A00019	9/4/2019	1.69	9/4/2024	9/4/2019	101.45747	99.72679423	98.03365155	96.37690427	94.75546336	93.16828319	91.61435938	90.09272669	88.6024571
200224A00015	2/24/2020	1.57	1/10/2024	2/24/2020	100.47533	99.37763399	98.30380072	97.25305993	96.22467307	95.21793279	94.23216133	93.26670893	92.32095245
200604A00014	6/4/2020	2.42	6/4/2040	6/4/2020	118.9621	102.6114264	88.8042367	77.12563777	67.23060724	58.83191203	51.69016626	45.60564117	40.41151107
210604A00005	6/4/2021	0.3	12/2/2022	6/4/2021	100.00119	99.99563527	99.99009039	99.98455054	99.97901571	99.97348589	99.96796107	99.96244125	99.95692641
180625A00041	6/25/2018	3.06	6/20/2023	6/25/2018	101.12865	100.5722755	100.0220291	99.47780515	98.93950506	98.40703238	97.88029272	97.35919373	96.84364506
181023A00021	10/23/2018	3.28	10/23/2023	10/23/2018	101.81628	100.9223326	100.0440894	99.18113452	98.333071	97.4995155	96.68009774	95.87445997	95.08225643
190122A00007	1/22/2019	3.03	1/22/2024	1/22/2019	102.20919	101.068761	99.95376623	98.86336533	97.79675067	96.75314967	95.7318229	94.73206231	93.75318962
200303A00034	3/3/2020	1.21	3/3/2025	3/3/2020	101.13703	98.92958939	96.78069978	94.68839199	92.65077718	90.66604553	88.73246215	86.84836333	85.01215291
200810A00004	8/10/2020	0.43	8/9/2024	8/10/2020	99.56614	97.91447649	96.29770944	94.71479856	93.16474484	91.64658871	90.15940814	88.70231674	87.27446196
170123A00039	1/23/2017	2.79	1/23/2026	1/23/2017	108.14951	104.9614813	101.8847203	98.91468851	96.04706284	93.27772331	90.60274191	88.01837237	85.52104043
190626A00010	6/26/2019	2.1	6/26/2023	6/26/2019	100.6012	100.030332	99.46592641	98.90787561	98.35607272	97.81041325	97.27079507	96.73711826	96.20928512
190808A00023	8/8/2019	1.68	11/8/2023	8/8/2019	100.55082	99.61842313	98.70325083	97.80482675	96.92269439	96.05641373	95.20556046	94.36972529	93.54851332
150601A00650	6/1/2015	2.75	3/31/2023	6/1/2015	100.6474	100.3128182	99.98045222	99.65028036	99.32228102	98.99643287	98.67271489	98.3511063	98.03158659

	Parallel-Shift Sensitivity Analysis												
11/30/2022					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	104.4032	102.3037654	100.2570541	98.26138597	96.31514462	94.41677745	92.56479253	90.75775574	88.99428802
180719A00063	7/19/2018	3.21	7/19/2024	7/19/2018	103.81117	102.1837962	100.5898141	99.02826476	97.49822145	95.99879258	94.52912015	93.08837809	91.6757708
190606A00026	6/6/2019	2.23	6/6/2023	6/6/2019	100.63645	100.1194967	99.60784618	99.10141794	98.60013227	98.10391107	97.61267784	97.12635761	96.64487689
190711A00022	7/11/2019	2	7/11/2023	7/11/2019	100.66505	100.0522963	99.44699475	98.84901007	98.25821004	97.67446556	97.09765065	96.52764228	95.96432034
190830A00002	8/30/2019	1.93	8/28/2026	8/30/2019	106.145	102.4183116	98.84243559	95.41040239	92.11561142	88.95180648	85.91305535	82.99373083	80.188493
190930A00035	9/30/2019	1.93	9/30/2024	9/30/2019	101.97113	100.1660303	98.40144342	96.67622845	94.98928494	93.33955001	91.72599674	90.14763279	88.60349897
191105A00007	11/5/2019	1.98	11/5/2026	11/5/2019	107.6295	103.6661738	99.87081893	96.23544946	92.75250364	89.41481641	86.21559647	83.14840476	80.20713438
200709A00002	7/10/2020	1.66	7/10/2025	7/10/2020	102.84449	100.2755956	97.78364488	95.36585997	93.01958678	90.74228438	88.53151929	86.38496012	84.30037255
220317A00012	3/17/2022	1.99	9/15/2023	3/17/2022	100.61948	99.83189548	99.05661183	98.29334035	97.5418034	96.8017318	96.07286457	95.35494861	94.64773837
170608A00020	6/8/2017	2.27	6/10/2024	6/8/2017	102.38326	100.8676704	99.38205591	97.92560036	96.49751648	95.09704495	93.72345312	92.37603385	91.05410438
180223A00022	2/23/2018	2.93	2/23/2023	2/23/2018	100.54378	100.3082481	100.0738238	99.84049819	99.60826348	99.37711205	99.14703634	98.91802885	98.69008215
190702A00002	7/2/2019	2.16	7/2/2024	7/2/2019	102.01241	100.4450739	98.90934058	97.40431955	95.92915469	94.48302144	93.06512532	91.67470057	90.31100881
200304A00053	3/6/2020	2.33	3/6/2025	3/6/2020	103.69279	101.4480807	99.26293105	97.13534518	95.06341059	93.04529394	91.07923701	89.16355297	87.29662284
220830A00055	8/30/2022	3.7	8/30/2029	8/30/2022	122.11695	114.9820094	108.3235451	102.1070117	96.30055465	90.87478448	85.80257347	81.05886941	76.62052605
160630A00012	6/30/2016	2.11	6/30/2025	6/30/2016	103.9546	101.3974799	98.91623641	96.50816328	94.1706671	91.90126365	89.69757259	87.55731231	85.47829518
200123A00013	1/27/2020	1.89	1/27/2025	1/27/2020	102.4563	100.3332392	98.26445209	96.24816901	94.28269487	92.36640302	90.49773189	88.67518177	86.89731191
200928A00002	9/28/2020	0.35	9/28/2023	9/28/2020	99.406459	98.58794968	97.78282293	96.99075337	96.21142577	95.44453498	94.68978552	93.94689118	93.21557472
160119A00030	1/19/2016	3.44	1/18/2033	1/19/2016	127.6579	116.9728417	107.3070192	98.55676633	90.6294989	83.44247661	76.92170907	71.00098852	65.62103394
170803A00020	8/3/2017	2.84	8/3/2027	8/3/2017	112.40948	107.6281226	103.0800717	98.75266054	94.63398595	90.71285312	86.97872948	83.42170168	80.03243556
211222A00022	12/22/2021	1.06	1/16/2024	12/22/2021	99.91547	98.80515574	97.71935266	96.65725694	95.61809918	94.60114296	93.60568307	92.6310439	91.67657788
170327A00072	3/29/2017	3.09	3/29/2027	3/29/2017	113.48216	108.9962612	104.7153569	100.6290188	96.72740132	93.00120674	89.44165224	86.04043864	82.78972133
180116A00010	1/16/2018	2.58	1/17/2023	1/16/2018	100.28996	100.1568459	100.0240987	99.89171815	99.7597028	99.62805107	99.49676141	99.3658323	99.23526223
180719A00065	7/19/2018	3.36	7/20/2026	7/19/2018	111.10901	107.3955373	103.8278789	100.3994795	97.10412134	93.93590144	90.88921377	87.95873241	85.13939575
190430A00003	4/30/2019	2.43	8/2/2023	4/30/2019	100.9924	100.3191971	99.65494767	98.99947773	98.35261405	97.71418794	97.08403513	96.46199555	95.84791327
150601A00733	6/1/2015	2.72	5/1/2025	6/1/2015	105.44903	103.0231243	100.6655183	98.37391231	96.14609436	93.97993984	91.87340748	89.82453558	87.83143835
151109A00020	11/9/2015	2.79	11/9/2023	11/9/2015	101.43119	100.4941062	99.57432157	98.67135652	97.78475261	96.91406789	96.05887621	95.21876651	94.39334218
191206A00044	12/10/2019	2.01	10/31/2024	12/10/2019	102.24967	100.3616186	98.51764524	96.71645657	94.95680851	93.23750129	91.55737754	89.91532052	88.31025242
200114A00006	1/15/2020	1.99	1/15/2025	1/15/2020	102.60639	100.5132175	98.4729611	96.48391655	94.54445187	92.65299999	90.8080555	89.00817174	87.25195799
200220A00025	2/20/2020	1.72	2/21/2023	2/20/2020	100.2544	100.0248443	99.79634179	99.56888831	99.34247656	99.11709941	98.89274974	98.66942055	98.44710485
200318A00043	3/18/2020	1.06	3/20/2023	3/18/2020	100.14783	99.84382882	99.54168448	99.24137906	98.94289569	98.64621772	98.35132871	98.05821241	97.76685277
200925A00008	9/25/2020	0.74	9/25/2025	9/25/2020	100.6688	97.92715534	95.27321949	92.70371957	90.21552646	87.80564469	85.47120591	83.20946282	81.01778325
210608A00005	6/8/2021	0.51	6/7/2024	6/8/2021	99.672029	98.18624199	96.72980418	95.30191997	93.90182234	92.52877128	91.18205263	89.86097689	88.56487818
221031A00004	10/31/2022	4.79	10/28/2025	10/31/2022	112.57446	109.5733049	106.6694537	103.8592239	101.1390912	98.50568364	95.95577424	93.48627384	91.09422449

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
120113A00013	1/13/2012	3.87	1/15/2032	1/13/2012	129.57801	119.7862378	110.843108	102.6697778	95.19513854	88.35502179	82.0914883	76.35219285	71.08981696
170623A00028	6/23/2017	2.79	6/23/2027	6/23/2017	111.85891	107.2017626	102.7674797	98.54420354	94.52077132	90.68667029	87.03199647	83.54741599	80.22412923
180103A00019	1/3/2018	2.51	1/3/2023	1/3/2018	100.21128	100.1169573	100.0228132	99.92885043	99.83506837	99.74146653	99.64804439	99.55480144	99.46173714
190122A00045	1/22/2019	3.17	1/22/2027	1/22/2019	113.14235	108.8534938	104.75338	100.8326498	97.08246578	93.49447669	90.06078769	86.7739327	83.62684855
190326A00024	3/26/2019	2.59	3/26/2024	3/26/2019	102.16272	100.8551756	99.57192176	98.31231654	97.07573654	95.86158025	94.66926711	93.49823657	92.34794721
200224A00020	2/24/2020	1.59	2/24/2025	2/24/2020	101.96023	99.76270045	97.62298596	95.53914536	93.50931584	91.53171286	89.60462608	87.72641559	85.89550833
200302A00035	3/2/2020	1.22	7/3/2023	3/2/2020	100.08801	99.5000163	98.91890107	98.34454727	97.77683749	97.21565701	96.66089375	96.11243818	95.57018325
220916A00042	9/16/2022	4.07	9/16/2030	9/16/2022	129.5488	121.009711	113.1166615	105.8169446	99.06242336	92.8091148	87.01681131	81.64873789	76.67124232
150601A00522	6/1/2015	4.52	7/25/2030	6/1/2015	130.13847	121.8073635	114.0926749	106.9450613	100.3193938	94.17437346	88.47218663	83.17819336	78.26064512
170216A00044	2/16/2017	3.52	2/17/2032	2/16/2017	126.61031	116.8593036	107.9640918	99.8443162	92.427584	85.64863811	79.44861856	73.77440398	68.57802416
180116A00046	1/16/2018	2.58	1/11/2023	1/16/2018	100.25868	100.1421879	100.0259785	99.91005272	99.79440943	99.67904759	99.56396614	99.44916403	99.33464019
180917A00054	9/17/2018	3.17	9/15/2023	9/17/2018	101.56251	100.7707934	99.99142126	99.22410599	98.46856912	97.7245407	96.99175898	96.26997008	95.55892774
190827A00001	8/27/2019	1.74	8/27/2024	8/27/2019	101.51902	99.80900263	98.13570383	96.49800111	94.89482242	93.32513914	91.78796383	90.28234814	88.80738083
191212A00029	12/13/2019	1.94	5/16/2023	12/13/2019	100.45742	99.9979098	99.54260118	99.09144012	98.64437001	98.20133529	97.76228137	97.32715466	96.89590255
200228A00063	2/28/2020	1.32	2/28/2023	2/28/2020	100.16822	99.91956469	99.67213276	99.42591948	99.18091594	98.93711327	98.69450274	98.45307566	98.21282345
150422A00019	4/22/2015	2.62	4/22/2025	4/22/2015	104.7166	102.3346121	100.0189246	97.76732611	95.57769385	93.44798774	91.37624668	89.36058506	87.39918938
160706A00027	7/6/2016	2.29	7/6/2028	7/6/2016	111.45794	105.784519	100.4365883	95.39375881	90.63702606	86.14866711	81.91214744	77.91203507	74.1339214
180206A00013	2/6/2018	2.72	2/6/2024	2/6/2018	102.20748	101.0228218	99.86557379	98.73479477	97.62958422	96.54908203	95.49246632	94.45895129	93.4477853
180412A00034	4/12/2018	3.23	4/15/2030	4/12/2018	121.97751	114.1488012	106.8892093	100.1542103	93.9029866	88.09809773	82.70518475	77.69270223	73.03167466
180622A00004	6/22/2018	3.47	12/22/2028	6/22/2018	119.11441	112.7655693	106.8036352	101.2028995	95.93949699	90.99126171	86.33759752	81.95935892	77.8387416
190321A00003	3/21/2019	2.67	3/21/2024	3/21/2019	102.23302	100.937409	99.66722278	98.42173035	97.2002262	96.00203192	94.82649485	93.67298684	92.54090313
190710A00012	7/10/2019	2.18	7/10/2023	7/10/2019	100.67124	100.0624399	99.46099852	98.86677819	98.2796493	97.69948535	97.12616283	96.55956114	95.9995625
200825A00007	8/27/2020	4.79	8/27/2026	8/27/2020	116.86059	112.9364439	109.1688342	105.5505821	102.0748856	98.73529623	95.52569741	92.44028565	89.47355217
170524A00011	5/24/2017	2.54	5/24/2024	5/24/2017	102.40121	100.9361357	99.4993491	98.09010326	96.70767667	95.35137251	94.02051756	92.71446129	91.43257481
191025A00013	10/25/2019	1.98	10/25/2024	10/25/2019	102.16695	100.2952443	98.46690531	96.68067683	94.9353434	93.22973246	91.56271261	89.93319185	88.34011594
221130A00069	11/30/2022	4.15	11/30/2027	11/30/2022	121.05361	115.6964111	110.615104	105.7939569	101.2182214	96.87406248	92.74849717	88.82933748	85.10513775
120112A00014	1/12/2012	3.43	1/15/2032	1/12/2012	127.81143	117.9902536	109.0268025	100.8409755	93.36056452	86.52043862	80.26181598	74.53161425	69.28187043
170822A00020	8/22/2017	2.59	8/22/2025	8/22/2017	105.62324	102.9032343	100.2672146	97.71204213	95.23471936	92.83238233	90.50229356	88.24183546	86.04850403
180619A00020	6/19/2018	3.1	6/19/2025	6/19/2018	106.9594	104.3817627	101.8799451	99.4512619	97.09314226	94.80312258	92.5788413	90.41803393	88.31852838
190806A00027	8/6/2019	1.71	8/7/2023	8/6/2019	100.5082	99.82341669	99.14794397	98.48158998	97.8241709	97.17550785	96.5354267	95.9037579	95.28033635
140815A00030	8/15/2014	2.96	10/16/2023	8/15/2014	101.50251	100.6286466	99.76982708	98.92566177	98.09577762	97.27981416	96.47742295	95.68826714	94.91202093
180904A00014	9/4/2018	3.37	9/1/2028	9/4/2018	117.86983	111.863978	106.20786	100.8791587	95.85710409	91.12235662	86.65690062	82.44394632	78.46783977
190814A00010	8/14/2019	1.84	4/5/2023	8/14/2019	100.36103	100.0133916	99.66815793	99.32530645	98.98481248	98.64665177	98.31080036	97.97723463	97.6459313

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200204A00001	2/4/2020	1.79	2/4/2025	2/4/2020	102.28448	100.1412165	98.05318147	96.01855744	94.03560433	92.10265312	90.21810234	88.38041467	86.58811381
200626A00015	6/26/2020	0.43	6/26/2023	6/26/2020	99.735055	99.16584574	98.60310663	98.04672784	97.49660203	96.95262427	96.41469197	95.88270481	95.35656468
170130A00008	1/30/2017	2.58	1/30/2023	1/30/2017	100.3561	100.1870139	100.0184955	99.85054211	99.68315095	99.51631923	99.35004418	99.18432304	99.01915309
191220A00002	12/20/2019	3.02	12/20/2038	12/20/2019	128.73109	112.7352126	99.020224	87.24287283	77.11346215	68.38724475	60.85723546	54.34820403	48.71164975
200131A00048	1/31/2020	1.69	1/31/2024	1/31/2020	100.72477	99.56898154	98.43957578	97.33565583	96.25636717	95.20089308	94.16845259	93.15829853	92.16971571
201030A00003	11/2/2020	2.58	10/29/2040	11/2/2020	121.50244	104.65279	90.46517437	78.49793987	68.38509829	59.82302087	52.55952631	46.3849238	41.12465307
160119A00026	1/19/2016	3.14	1/19/2029	1/19/2016	117.24469	110.876192	104.9008942	99.2923707	94.02610707	89.0793545	84.43099354	80.06140902	75.95237515
160726A00005	7/26/2016	2.28	7/27/2026	7/26/2016	107.22414	103.5626121	100.0462033	96.66834495	93.42280839	90.30368237	87.3053549	84.42249618	81.6500426
180814A00033	8/14/2018	3.25	8/13/2027	8/14/2018	115.52918	110.614139	105.9400561	101.4937738	97.26292865	93.23589831	89.40175281	85.7502091	82.27158905
190208A00009	2/8/2019	2.67	2/8/2024	2/8/2019	102.16367	100.9738608	99.81170794	98.67625909	97.56660152	96.48186369	95.42121295	94.38385338	93.3690238
200131A00007	1/31/2020	1.68	1/31/2023	1/31/2020	100.20637	100.0347066	99.86363035	99.69313488	99.52321729	99.35387469	99.1851042	99.01690297	98.84926816
200207A00016	2/7/2020	1.74	2/7/2024	2/7/2020	100.81779	99.64262508	98.49471859	97.37313312	96.27697167	95.20537756	94.15753222	93.13265308	92.12999164
200402A00021	4/2/2020	0.77	10/2/2024	4/2/2020	100.21601	98.41542088	96.65553183	94.93518777	93.25327749	91.60872787	90.00050237	88.4275995	86.88905143
200430A00016	4/30/2020	0.82	4/30/2024	4/30/2020	99.833989	98.45051725	97.09268033	95.7598293	94.45133622	93.1665937	91.90501407	90.66602859	89.44908668
210924A00011	9/24/2021	2.19	9/25/2034	9/24/2021	115.94605	104.3376738	94.01887374	84.83882802	76.66507895	69.38121717	62.88486566	57.08592576	51.90504991
160328A00045	3/28/2016	2.49	3/27/2026	3/28/2016	107.74884	104.3894998	101.1530383	98.03432213	95.02845633	92.13077569	89.33683284	86.64238681	84.04339233
171026A00007	10/26/2017	2.47	10/26/2023	10/26/2017	101.09093	100.1926042	99.31021244	98.44333129	97.59155441	96.75448957	95.93175801	95.12299386	94.32784363
190523A00014	5/23/2019	2.5	11/15/2023	5/23/2019	101.17908	100.2273456	99.2934841	98.37699574	97.47739885	96.59422944	95.72704037	94.87540059	94.03889446
190814A00005	8/14/2019	1.65	8/14/2024	8/14/2019	101.6623	99.97905108	98.33150977	96.71860605	95.13931175	93.59263964	92.07764137	90.59340551	89.1390557
190930A00075	9/30/2019	2.19	9/29/2027	9/30/2019	109.69292	104.8202036	100.1931474	95.79812794	91.62234538	87.65376874	83.88108571	80.2936563	76.88146966
160815A00006	8/15/2016	2.23	8/17/2026	8/15/2016	107.1916	103.4746629	99.90693822	96.48158169	93.19210888	90.03237088	86.99653471	84.07906495	81.27470658
171129A00020	11/29/2017	2.89	11/30/2026	11/29/2017	110.58755	106.5208552	102.6281093	98.90094388	95.33143947	91.91209765	88.63581641	85.49586704	82.48587244
190404A00003	4/4/2019	2.47	4/4/2024	4/4/2019	102.32471	100.9885577	99.67609249	98.38674058	97.11994436	95.87516371	94.65187531	93.44957208	92.26776246
190925A00004	9/25/2019	1.7	9/24/2024	9/25/2019	101.90638	100.1111706	98.35605201	96.63987342	94.96152751	93.3199463	91.71409948	90.14299278	88.60566645
200214A00014	2/18/2020	1.8	2/18/2025	2/18/2020	102.39404	100.2089469	98.08097131	96.00820129	93.98880906	92.02104301	90.1032238	88.23374065	86.41104794
200227A00027	2/27/2020	1.47	2/27/2025	2/27/2020	101.70696	99.50364607	97.35849877	95.26955233	93.23492654	91.25282051	89.32150854	87.43933629	85.60471708
210924A00004	9/24/2021	2.37	9/24/2036	9/24/2021	118.75234	105.2840141	93.52516542	83.24775199	74.25529213	66.37835269	59.47070413	53.40603855	48.07516578
180611A00030	6/11/2018	2.91	6/12/2023	6/11/2018	101.10408	100.5683572	100.0383173	99.51387037	98.99492798	98.48140363	97.97321259	97.47027191	96.97250035
181018A00011	10/18/2018	3.35	10/18/2023	10/18/2018	101.85657	100.9757043	100.1100777	99.25930094	98.42299394	97.60078942	96.79233248	95.99728003	95.21530034
190531A00037	5/31/2019	2.61	5/31/2029	5/31/2019	115.95934	109.2126556	102.9077222	97.01326199	91.50036736	86.3423102	81.51436693	76.99365838	72.75900329
190829A00050	8/29/2019	1.73	8/29/2024	8/29/2019	101.50782	99.79268867	98.11445978	96.47201061	94.86426093	93.29017435	91.74875614	90.23905102	88.76014121
200228A00012	3/3/2020	1.4	3/3/2025	3/3/2020	101.56715	99.35475818	97.2010264	95.10397622	93.06171586	91.07243271	89.13438918	87.24591898	85.40542345
210428A00006	4/28/2021	1.23	4/28/2026	4/28/2021	102.97596	99.6289329	96.40769129	93.30687008	90.32135799	87.44628753	84.6770221	82.00914377	79.43844179

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220310A00005	3/10/2022	2.06	3/8/2024	3/10/2022	101.3592	100.1017935	98.87265937	97.67084128	96.49542849	95.34555066	94.22037565	93.11910739	92.04098395
140307A00011	3/7/2014	3.19	3/15/2023	3/7/2014	100.76802	100.4765675	100.1868122	99.89874223	99.61234295	99.32759967	99.04449793	98.76302345	98.48316209
160830A00037	8/30/2016	2.16	8/29/2025	8/30/2016	104.4954	101.7724502	99.1341583	96.57733732	94.09894701	91.69608356	89.36597236	87.10596113	84.91351355
190409A00031	4/9/2019	2.64	4/9/2024	4/9/2019	102.31324	100.9679235	99.64661772	98.34873056	97.07369322	95.8209549	94.58998205	93.38025771	92.19128086
190711A00019	7/11/2019	2.19	7/11/2023	7/11/2019	100.67907	100.0675555	99.46346415	98.86665797	98.27700557	97.69437877	97.11865243	96.54970436	95.98741527
200513A00003	5/13/2020	0.68	5/13/2025	5/13/2020	100.62345	98.22595591	95.89721838	93.63488323	91.43669117	89.30047345	87.22414763	85.2057136	83.24324977
200818A00004	8/18/2020	0.92	8/18/2026	8/18/2020	102.32007	98.69086784	95.20841414	91.86595109	88.6570775	85.5757243	82.61613511	79.77284798	77.04067842
210601A00002	6/1/2021	0.9	6/2/2025	6/1/2021	100.71659	98.27717864	95.90892166	93.60934247	91.37606211	89.20679882	87.09936341	85.05165492	83.06165642
220429A00007	4/29/2022	3.14	10/29/2024	4/29/2022	104.4133	102.5091374	100.6492295	98.83228107	97.05704639	95.32232408	93.62695514	91.96982111	90.34984248
161215A00014	12/15/2016	2.66	12/15/2022	12/15/2016	100.10398	100.0623217	100.0207113	99.97915325	99.93764743	99.89619374	99.85479209	99.81344237	99.77214448
190820A00005	8/21/2019	1.76	2/27/2023	8/21/2019	100.27605	100.0299506	99.78505761	99.54135924	99.29884682	99.05751176	98.81734554	98.57833973	98.34048597
210125A00007	1/27/2021	2.98	1/27/2031	1/27/2021	119.79897	111.3626909	103.5961576	96.44239687	89.84957424	83.7705023	78.16220118	72.98550285	68.20469462
221130A00078	11/30/2022	4.15	11/30/2027	11/30/2022	121.05361	115.6964111	110.615104	105.7939569	101.2182214	96.87406248	92.74849717	88.82933748	85.10513775
160815A00005	8/15/2016	2.23	8/17/2026	8/15/2016	107.1916	103.4746629	99.90693822	96.48158169	93.19210888	90.03237088	86.99653471	84.07906495	81.27470658
180130A00070	1/30/2018	3.14	1/29/2027	1/30/2018	112.1602	107.8985786	103.8247864	99.92950037	96.20391347	92.63970411	89.2290063	85.96438192	82.83879492
190215A00046	2/15/2019	2.7	2/15/2024	2/15/2019	102.25619	101.0467851	99.86593708	98.71264401	97.58594951	96.48494099	95.40874718	94.35653588	93.32751171
191114A00008	11/18/2019	1.93	4/17/2023	11/18/2019	100.41096	100.0304607	99.65284815	99.27809092	98.9061566	98.53701329	98.17062959	97.80697454	97.44601768
191206A00021	12/6/2019	2.02	12/6/2024	12/6/2019	102.45088	100.4646797	98.52698841	96.63631667	94.79123066	92.99035043	91.23234741	89.51594213	87.839902
221018A00046	10/18/2022	4.9	4/30/2024	10/18/2022	105.64567	104.2190515	102.8188062	101.4442654	100.0947818	98.76972929	97.46850215	96.19051434	94.93519855
221026A00032	10/26/2022	4.81	10/25/2024	10/26/2022	107.57585	105.6511957	103.7709179	101.933728	100.1383835	98.38368555	96.66847764	94.99164346	93.35210536
180620A00044	6/20/2018	2.89	6/20/2023	6/20/2018	101.1275	100.5699855	100.0186213	99.47330662	98.93394215	98.4004307	97.87267721	97.35058866	96.83407405
180926A00031	9/26/2018	3.24	9/26/2023	9/26/2018	101.66472	100.8432387	100.0350283	99.23976825	98.45714917	97.68687122	96.92864405	96.18218636	95.44722552
190102A00058	1/2/2019	2.91	1/2/2024	1/2/2019	101.89493	100.8106601	99.74943815	98.71053459	97.69325069	96.69691664	95.72089003	94.7645545	93.82731841
190523A00015	5/23/2019	2.51	4/1/2024	5/23/2019	102.09527	100.7730758	99.4741402	98.19789848	96.94380739	95.71134051	94.49998767	93.30925431	92.13866092
200710A00006	7/10/2020	0.4	7/10/2023	7/10/2020	99.679267	99.07264307	98.47337605	97.88133252	97.29638241	96.71839872	96.14725751	95.58283775	95.02502123
210722A00001	7/22/2021	1.1	7/22/2026	7/22/2021	102.88051	99.31136519	95.88407995	92.59223759	89.42975034	86.39084019	83.47002108	80.66208235	77.96207316
080909A00042	9/9/2008	4.74	9/11/2023	9/9/2008	102.92461	102.1357912	101.3591095	100.594282	99.84103824	99.09911602	98.36826093	97.64822615	96.93877217
160422A00026	4/22/2016	2.62	4/22/2026	4/22/2016	107.67558	104.2646512	100.9805445	97.81788573	94.77155753	91.83668522	89.00862389	86.2829464	83.65543197
161222A00030	12/22/2016	3.09	12/22/2026	12/22/2016	112.49897	108.3088949	104.3003046	100.4643534	96.79267393	93.27735056	89.91089241	86.68620816	83.59658251
180109A00028	1/9/2018	2.6	1/9/2025	1/9/2018	104.31186	102.2074213	100.1559489	98.15574582	96.20518616	94.30270818	92.44681131	90.63605317	88.86904688
180727A00028	7/27/2018	3.25	7/27/2026	7/27/2018	111.58572	107.8234405	104.2099297	100.7384531	97.40262475	94.19638451	91.11397947	88.14994632	85.29909487
190530A00004	5/30/2019	2.24	5/30/2023	5/30/2019	100.71141	100.2121803	99.7178943	99.22847426	98.74384866	98.26394733	97.78870146	97.31804356	96.85190747
191120A00006	11/20/2019	2.67	11/20/2035	11/20/2019	122.30156	109.3243452	97.89846319	87.82828274	78.94383544	71.09733422	64.1601772	58.02036912	52.58030055

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200305A00020	3/5/2020	0.95	3/5/2025	3/5/2020	101.02616	98.80526137	96.64358496	94.53913144	92.48998997	90.49432937	88.55039404	86.6565001	84.81103185
110805A00014	8/5/2011	4.06	8/17/2026	8/5/2011	114.00186	110.1586344	106.4683378	102.923986	99.51896098	96.24698644	93.10210754	90.07867241	87.17131471
160307A00026	3/7/2016	2.2	3/7/2023	3/7/2016	100.40776	100.1394773	99.87263341	99.60721709	99.34321684	99.08062129	98.81941922	98.55959949	98.30115113
170228A00014	2/28/2017	2.89	3/1/2027	2/28/2017	112.35701	107.9719344	103.7843757	99.7843218	95.96232623	92.30947469	88.81735186	85.47801022	82.2839411
170322A00024	3/22/2017	3.72	9/22/2036	3/22/2017	136.82727	122.1862455	109.3600139	98.10962537	88.22892356	79.53988804	71.88865866	65.14213916	59.18509355
170808A00037	8/8/2017	2.19	12/15/2022	8/8/2017	100.0844	100.0427574	100.0011632	99.95962138	99.91813177	99.87669429	99.83530882	99.79397526	99.75269351
171127A00016	11/27/2017	2.28	11/27/2023	11/27/2017	101.19251	100.2061918	99.23904056	98.29050507	97.36005189	96.44716776	95.55135865	94.67214893	93.80908047
180110A00029	1/10/2018	3.13	1/10/2028	1/10/2018	115.0303	109.7481502	104.7440314	100.0017987	95.50633248	91.24346668	87.19992333	83.36325204	79.72177407
190606A00027	6/6/2019	2.51	6/5/2026	6/6/2019	107.64464	104.116754	100.7242954	97.46133524	94.3222384	91.30164612	88.39446107	85.59583303	82.90114549
191105A00008	11/5/2019	1.83	11/5/2024	11/5/2019	102.3295	100.4197442	98.55500582	96.73395261	94.95530199	93.21781759	91.5203072	89.86162092	88.24064935
200303A00001	3/3/2020	1.15	3/3/2025	3/3/2020	101.47284	99.25201078	97.09024536	94.98554778	92.9360084	90.9397977	88.99516212	87.1004202	85.25395895
180831A00016	8/31/2018	2.99	8/31/2023	8/31/2018	101.37337	100.6223824	99.88250784	99.15349684	98.43511151	97.72712085	97.02930052	96.34143261	95.66330537
200130A00016	1/30/2020	1.58	1/30/2025	1/30/2020	102.25103	100.1134331	98.03080668	96.00134568	94.02332354	92.095084	90.21503747	88.38165782	86.59347921
200226A00016	2/26/2020	1.57	2/26/2025	2/26/2020	101.92661	99.72367347	97.57882084	95.49009111	93.45560896	91.47357811	89.54227714	87.6600557	85.8253309
200227A00013	2/27/2020	1.43	2/27/2024	2/27/2020	100.51498	99.28833109	98.091429	96.92320089	95.78262677	94.6687345	93.58059701	92.51732974	91.47808817
211222A00005	12/22/2021	1.2	7/15/2024	12/22/2021	100.5011	98.91227513	97.35598663	95.83129904	94.33731394	92.87316678	91.43802536	90.03108826	88.65158339
221006A00033	10/6/2022	4.56	10/7/2024	10/6/2022	106.89648	105.0262086	103.1981147	101.4109992	99.66370673	97.95512157	96.28416635	94.64980031	93.0510179
160616A00034	6/16/2016	1.97	6/17/2024	6/16/2016	101.64667	100.1229843	98.62957258	97.16560371	95.73027557	94.32281473	92.94247526	91.58853742	90.26030654
190114A00042	1/14/2019	2.92	1/13/2023	1/14/2019	100.31065	100.1885668	100.0667977	99.94533943	99.82419074	99.70335039	99.58281719	99.46258992	99.34266739
190917A00029	9/17/2019	2.02	12/6/2022	9/17/2019	100.03077	100.0141098	99.99746926	99.98084548	99.96423845	99.94764814	99.93107452	99.91451756	99.89797723
200115A00024	1/15/2020	1.88	1/17/2023	1/15/2020	100.19667	100.0636591	99.93101912	99.79874556	99.6668369	99.5352916	99.40410813	99.27328495	99.14282056
221014A00050	10/14/2022	4.49	10/14/2027	10/14/2022	122.19223	116.9420246	111.9552806	107.2173514	102.7144804	98.43374189	94.36298616	90.49078927	86.80640606
130405A00007	4/5/2013	2.91	4/17/2028	4/5/2013	115.78195	110.1657264	104.8599161	99.84573995	95.10564904	90.62323737	86.38316173	82.37106773	78.57352128
170224A00044	5/24/2017	3.29	5/24/2029	5/24/2017	118.82825	112.0672437	105.7440672	99.82797108	94.29052218	89.10541599	84.24830661	79.69665147	75.42956899
180103A00011	1/3/2018	2.35	1/3/2023	1/3/2018	100.2099	100.1154301	100.0211484	99.92704976	99.83313369	99.73939962	99.645847	99.55247528	99.45928392
191104A00009	11/4/2019	1.91	11/6/2023	11/4/2019	100.59741	99.67241908	98.76438093	97.87282974	96.99731964	96.1374207	95.29271825	94.46281216	93.64731628
200221A00014	2/21/2020	1.49	2/21/2023	2/21/2020	100.24025	100.0102966	99.78141023	99.55357936	99.32679661	99.10105471	98.87634648	98.65266476	98.4300025
180402A00005	4/2/2018	2.94	4/3/2023	4/2/2018	100.73682	100.393839	100.0531897	99.71484972	99.37879576	99.04500466	98.71345364	98.38412019	98.05698214
190507A00006	5/7/2019	2.57	5/8/2023	5/7/2019	100.724	100.2855152	99.85084498	99.41994382	98.9927628	98.56925381	98.14936956	97.73306359	97.32029021
190530A00034	5/30/2019	2.44	5/30/2024	5/30/2019	102.27985	100.8001204	99.34925245	97.92647853	96.53105563	95.16226636	93.81941794	92.50184104	91.20888892
190809A00008	8/9/2019	1.87	8/3/2023	8/9/2019	100.50013	99.82756349	99.16396881	98.50916883	97.86298966	97.22526195	96.59582077	95.97450543	95.3611594
190819A00030	8/19/2019	2.01	8/20/2029	8/19/2019	112.22584	105.382175	99.00210503	93.05178085	87.50000268	82.31799511	77.47920618	72.95912415	68.73511031
190826A00060	8/26/2019	2.02	8/26/2027	8/26/2019	108.68951	103.9330796	99.4125615	95.11497117	91.02811498	87.14053523	83.44146129	79.92076431	76.56891515

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220112A00005	1/12/2022	1.55	1/12/2026	1/12/2022	104.16107	101.0655405	98.07778954	95.19344444	92.40833998	89.71850498	87.12015183	84.60966678	82.18360082
140827A00038	8/27/2014	3.07	8/30/2024	8/27/2014	103.86719	102.1281052	100.4264143	98.76097516	97.13069304	95.53451754	93.97144055	92.44049397	90.94074774
151229A00079	12/29/2015	3	12/30/2025	12/29/2015	107.91473	104.8112013	101.813908	98.91860996	96.12125862	93.41799109	90.80512025	88.2791257	85.8366451
190522A00003	5/22/2019	2.55	5/22/2024	5/22/2019	102.40629	100.9463808	99.51456392	98.11009943	96.73227304	95.38039484	94.05379825	92.75183901	91.4738943
191218A00013	12/18/2019	1.94	12/19/2022	12/18/2019	100.09372	100.0409816	99.98831636	99.93572318	99.88320194	99.83075247	99.77837462	99.72606824	99.67383319
191223A00056	12/23/2019	2.46	12/14/2029	12/23/2019	114.0849	106.9372015	100.2908559	94.10802651	88.35392185	82.9965335	78.00639997	73.35639175	69.02151557
200225A00015	2/25/2020	1.54	2/26/2024	2/25/2020	100.64837	99.42352011	98.22830507	97.06165769	95.92256391	94.81005716	93.72321558	92.66115949	91.62304897
170602A00023	6/2/2017	2.09	6/2/2023	6/2/2017	100.6425	100.1353281	99.63325494	99.13620678	98.64410849	98.1568864	97.67446829	97.19678337	96.72376222
170622A00038	6/22/2017	3.32	6/22/2034	6/22/2017	128.68201	116.5968015	105.8060347	96.16244002	87.53627438	79.81315119	72.89215021	66.68416836	61.11047999
171206A00038	12/6/2017	2.69	12/6/2027	12/6/2017	113.73426	108.5422101	103.6208049	98.95449938	94.52872392	90.32981625	86.34496022	82.562129	78.97003243
180530A00072	5/30/2018	3.06	5/30/2024	5/30/2018	103.21394	101.7269058	100.2688586	98.83902914	97.43667102	96.06106363	94.71151107	93.38734104	92.08790391
210216A00006	2/16/2021	1.44	2/15/2030	2/16/2021	108.58766	101.3974059	94.72876634	88.54125536	82.79772941	77.46409613	72.50904839	67.90382288	63.62198085
220920A00050	9/20/2022	4.37	9/20/2024	9/20/2022	106.3605	104.5413896	102.7624195	101.0224327	99.32031302	97.65498468	96.0254107	94.43059115	92.8695615
130212A00017	2/12/2013	2.29	2/15/2023	2/12/2013	100.36447	100.1512516	99.93895114	99.72755998	99.51707221	99.30748199	99.09878356	98.8909712	98.68403924
161020A00002	10/20/2016	1.96	8/15/2023	10/20/2016	100.57478	99.86984341	99.1747667	98.48934616	97.81338145	97.14667778	96.48904566	95.84030075	95.20026368
180104A00017	1/4/2018	2.77	1/3/2025	1/4/2018	104.17963	102.1011848	100.0746109	98.09826828	96.17057858	94.29002514	92.45514997	90.66455102	88.91687958
180530A00024	5/30/2018	3.44	5/30/2029	5/30/2018	119.83368	113.0247984	106.6572872	100.7001036	95.12454151	89.90404765	85.01404978	80.43179918	76.13622639
190403A00006	4/3/2019	2.48	4/3/2024	4/3/2019	102.33275	100.9992492	99.68934804	98.40247337	97.13807063	95.89560263	94.67454892	93.47440509	92.29468221
190701A00023	7/1/2019	1.95	7/1/2024	7/1/2019	101.98936	100.4194811	98.88130556	97.37393887	95.89652173	94.44822649	93.02825578	91.63584104	90.27024124
200221A00016	2/21/2020	1.69	2/21/2025	2/21/2020	102.16681	99.97561048	97.84187062	95.76366773	93.73915664	91.76656937	89.84421118	87.97045682	86.14374702
160921A00020	9/21/2016	1.97	9/21/2023	9/21/2016	100.60778	99.80433654	99.01368816	98.23553252	97.46957523	96.71553111	95.97312378	95.2420854	94.52215624
170622A00040	6/22/2017	3.41	6/23/2036	6/22/2017	132.38393	118.2541139	105.8577933	94.96948654	85.39427184	76.96349817	69.5311192	62.97055495	57.17200312
180719A00064	7/19/2018	3.3	7/21/2025	7/19/2018	107.24551	104.5889459	102.0122111	99.51240907	97.08676679	94.73263063	92.44746035	90.22882338	88.07438942
181218A00072	12/18/2018	3.04	12/19/2022	12/18/2018	100.15177	100.098981	100.0462675	99.99362621	99.9410569	99.88855942	99.83613364	99.78377939	99.73149654
190326A00003	3/26/2019	2.57	3/27/2023	3/26/2019	100.58425	100.2607625	99.93935906	99.62001591	99.3027133	98.98743173	98.67415193	98.3628549	98.05352185
190730A00007	7/30/2019	2.19	7/30/2024	7/30/2019	102.18305	100.5405494	98.93220172	97.35700784	95.81400539	94.30226935	92.82091014	91.36907188	89.94593085
200309A00019	3/9/2020	0.89	3/11/2024	3/9/2020	99.869551	98.61479473	97.38745634	96.18663748	95.01147937	93.86116034	92.73489383	91.63192654	90.55153663
201116A00011	11/16/2020	0.71	11/15/2024	11/16/2020	99.76479	97.86159997	96.00387329	94.19024949	92.41941839	90.69011749	89.00112993	87.35128249	85.73944374
160615A00031	6/15/2016	2.51	6/17/2030	6/15/2016	116.90174	109.0882005	101.8586418	95.16625901	88.9682336	83.22537153	77.90177911	72.96456927	68.38359532
170531A00080	5/31/2017	2.3	5/31/2024	5/31/2017	102.37264	100.8846202	99.42574689	97.99524082	96.59234891	95.21634421	93.86652479	92.54221266	91.24275274
200226A00008	2/26/2020	1.38	2/26/2025	2/26/2020	101.96896	99.75609171	97.60174038	95.50392465	93.46075067	91.47040458	89.53114836	87.64131591	85.7993094
200304A00021	3/4/2020	0.94	3/4/2024	3/4/2020	100.16553	98.92213047	97.7079284	96.5219034	95.36307891	94.23052317	93.12334671	92.04069992	90.98177087
200325A00029	3/25/2020	1.15	3/24/2023	3/25/2020	100.17676	99.86172368	99.5486798	99.23760459	98.92847945	98.62128603	98.31600619	98.01262201	97.71111581

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180914A00013	9/14/2018	3.48	9/14/2028	9/14/2018	118.58668	112.5241507	106.8163429	101.440556	96.37566497	91.6019987	87.10123231	82.85628806	78.85124405
190328A00079	3/28/2019	2.37	3/28/2024	3/28/2019	102.14759	100.831013	99.53841844	98.26918849	97.02272826	95.79846291	94.59583681	93.41431276	92.25337122
190524A00040	5/24/2019	2.47	5/24/2024	5/24/2019	102.2969	100.8326321	99.39663947	97.98817398	96.60651448	95.25096449	93.92085114	92.61552422	91.33435518
190820A00038	8/20/2019	1.76	8/20/2024	8/20/2019	101.53136	99.83952652	98.18373498	96.56289631	94.97596707	93.42194565	91.89987012	90.40881627	88.94789568
160714A00023	8/10/2016	2.49	8/10/2028	8/10/2016	112.7118	106.9106648	101.4466085	96.29823019	91.44560551	86.87017315	82.55463416	78.48285936	74.63980388
190111A00026	1/11/2019	3.48	1/11/2034	1/11/2019	132.49565	120.4733521	109.6961494	100.0268568	91.34412991	83.54055625	76.52098892	70.20108708	64.50603692
190913A00014	9/13/2019	2.08	9/13/2024	9/13/2019	102.18916	100.4275161	98.70452169	97.01903867	95.36997217	93.75626886	92.17691492	90.63093418	89.11738636
191125A00036	11/25/2019	2.29	11/23/2029	11/25/2019	112.82445	105.7747542	99.21686713	93.11389831	87.4319057	82.13964486	77.20834167	72.61148531	68.32463957
200221A00003	2/25/2020	1.69	2/25/2025	2/25/2020	102.19066	99.98760023	97.84255156	95.75355798	93.71874879	91.73633199	89.80459016	87.92187672	86.08661226
200309A00033	3/9/2020	1.06	3/9/2026	3/9/2020	102.20256	99.00003273	95.91358928	92.93836304	90.06972208	87.30325656	84.63476656	82.06025061	79.57589498
200327A00074	3/31/2020	1.76	3/29/2024	3/31/2020	101.07417	99.76679403	98.48290803	97.22192477	95.98327389	94.76640372	93.57078051	92.39588774	91.24122535
081219A00069	12/19/2008	4.26	12/22/2023	12/19/2008	103.26108	102.1985504	101.1579538	100.138618	99.13989514	98.16116365	97.20182662	96.26131075	95.33906517
170120A00010	1/20/2017	3.71	1/22/2036	1/20/2017	135.71094	121.7520436	109.4522003	98.60183164	89.01898981	80.54558415	73.04413728	66.3949967	60.4939364
180727A00037	7/27/2018	3.13	7/27/2023	7/27/2018	101.32795	100.6710695	100.0226989	99.38267425	98.75083514	98.12702521	97.51109208	96.9028872	96.30226573
190625A00012	6/25/2019	2.12	6/25/2024	6/25/2019	101.91703	100.3693693	98.85269201	97.36613882	95.90887883	94.48011136	93.07906455	91.70499408	90.35718194
190819A00005	8/19/2019	1.62	8/21/2023	8/19/2019	100.45466	99.73259593	99.02088302	98.31930127	97.6276354	96.94567621	96.27322034	95.61007009	94.95603322
200430A00007	4/30/2020	0.72	4/28/2023	4/30/2020	99.928	99.51871341	99.11276678	98.71011911	98.31073039	97.91456123	97.52157288	97.13172721	96.74498668
210304A00004	3/4/2021	0.58	3/4/2024	3/4/2021	99.460213	98.22538415	97.019522	95.84161204	94.69068673	93.56582286	92.46613903	91.39079332	90.33898108
150817A00077	8/17/2015	2.49	8/17/2023	8/17/2015	101.07848	100.3646293	99.66084999	98.96693411	98.2826751	97.60787216	96.94233006	96.28585891	95.63827398
170818A00003	8/18/2017	2.23	8/20/2024	8/18/2017	102.68894	100.9807327	99.30897965	97.67257945	96.07047489	94.50165126	92.96513419	91.45998754	89.98531153
210114A00009	1/19/2021	2.66	1/17/2030	1/19/2021	115.63017	108.3403345	101.5664482	95.26919787	89.4124648	83.96304902	78.89041892	74.16648357	69.76538569
210623A00011	6/23/2021	0.56	6/23/2023	6/23/2021	99.721827	99.16190625	98.6082489	98.06075036	97.51930834	96.98382277	96.45419579	95.93033167	95.41213675
130821A00019	8/21/2013	3.81	8/29/2025	8/21/2013	109.63722	106.829708	104.1092179	101.4724725	98.91634747	96.43785894	94.03415593	91.70251326	89.44032498
150512A00029	5/12/2015	3.03	5/12/2025	5/12/2015	105.88028	103.4307837	101.0508119	98.73799911	96.49007454	94.30485785	92.18025507	90.11425458	88.10492341
180116A00031	1/16/2018	2.58	1/17/2023	1/16/2018	100.28996	100.1568459	100.0240987	99.89171815	99.7597028	99.62805107	99.49676141	99.3658323	99.23526223
180118A00037	1/18/2018	2.88	1/21/2025	1/18/2018	104.55476	102.4244729	100.3482211	98.32426016	96.35091429	94.42657475	92.54969662	90.71879571	88.93244568
180813A00026	8/13/2018	2.87	8/11/2023	8/13/2018	101.32762	100.6289075	99.93983053	99.26019065	98.58979467	97.92845468	97.27598785	96.63221625	95.99696669
190222A00021	2/22/2019	2.95	8/21/2024	2/22/2019	103.59776	101.8848615	100.2084368	98.56738341	96.96064471	95.3872066	93.84609519	92.33637479	90.85714599
191202A00005	12/2/2019	2.03	12/2/2024	12/2/2019	102.44944	100.4738016	98.54625319	96.66532646	94.82960624	93.03773016	91.28838629	89.58031087	87.91228624
210210A00005	2/10/2021	0.52	2/13/2024	2/10/2021	99.354887	98.17316595	97.01929691	95.89230602	94.79126386	93.7152834	92.66351765	91.63515733	90.62942891
150610A00017	6/10/2015	2.9	6/15/2023	6/10/2015	101.01995	100.4774618	99.94079981	99.40987286	98.88458917	98.36485899	97.85059442	97.34170945	96.83811985
180730A00041	7/30/2018	3.14	7/31/2023	7/30/2018	101.35179	100.6840486	100.0250963	99.37475631	98.73286076	98.099246	97.47375262	96.85622528	96.24651258
180910A00007	9/10/2018	2.96	9/8/2023	9/10/2018	101.50877	100.734123	99.97129607	99.2200183	98.48002863	97.75107384	97.03290823	96.32529337	95.62799778

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180914A00008	9/14/2018	3.15	9/14/2023	9/14/2018	101.55041	100.7613039	99.98446619	99.21960782	98.46645296	97.72473418	96.99419221	96.27457552	95.56564013
190802A00032	8/2/2019	2.01	8/2/2024	8/2/2019	101.89354	100.2456588	98.63216596	97.05204974	95.50433735	93.98809382	92.50242022	91.04645184	89.61935662
191007A00029	10/7/2019	1.88	10/9/2029	10/7/2019	111.4556	104.5048317	98.03415218	92.00797789	86.39353209	81.16061006	76.28136524	71.73011431	67.48315917
200429A00044	5/1/2020	1.86	4/30/2025	5/1/2020	102.93946	100.5576612	98.24284968	95.9927704	93.80525989	91.67823978	89.60971286	87.59775949	85.64053407
161212A00040	12/12/2016	2.45	12/12/2023	12/12/2016	101.45841	100.4302306	99.42284603	98.43563088	97.46798377	96.51932698	95.58910533	94.67678514	93.78185313
180719A00004	7/19/2018	3.07	7/19/2023	7/19/2018	101.25536	100.6202747	99.99316154	99.37386723	98.76224601	98.15815571	97.5614577	96.97201669	96.38970073
190909A00025	9/9/2019	1.88	9/9/2024	9/9/2019	101.81397	100.0665739	98.35731496	96.68506136	95.04872117	93.44724483	91.87962305	90.34488485	88.84209571
200302A00054	3/2/2020	1.31	3/3/2025	3/2/2020	101.36341	99.15336244	97.00192432	94.90712053	92.8670607	90.87993352	88.94400269	87.05760315	85.21913741
201022A00012	10/26/2020	2.25	10/24/2030	10/26/2020	113.57318	105.6258652	98.29689048	91.53488202	85.29298364	79.52843506	74.20219492	69.27860034	64.72505914
150601A00696	6/1/2015	2.83	3/13/2025	6/1/2015	104.78936	102.5135455	100.2984816	98.14215213	96.04262177	93.99803338	92.00660424	90.06662243	88.17644346
160628A00040	6/28/2016	1.56	6/28/2023	6/28/2016	100.38765	99.81088944	99.24073762	98.67707999	98.11980609	97.56880797	97.0239801	96.48521932	95.95242473
170313A00034	3/13/2017	3.31	3/15/2027	3/13/2017	113.33561	108.9189045	104.7017683	100.674096	96.8263534	93.14953878	89.63514979	86.27515305	83.06195557
181120A00024	11/20/2018	3.25	11/20/2023	11/20/2018	101.9435	100.9743194	100.0235743	99.09073754	98.1753062	97.27679603	96.39474063	95.52869063	94.67821287
190620A00055	6/25/2019	2.08	4/17/2023	6/25/2019	100.46837	100.0877331	99.70998684	99.33509665	98.96303011	98.59375532	98.22724085	97.86345577	97.50236958
191104A00023	11/4/2019	2.24	8/4/2028	11/4/2019	111.26648	105.5217625	100.110674	95.01206906	90.20625229	85.67487309	81.40082655	77.36816226	73.5620002
220902A00042	9/2/2022	3.89	9/5/2023	9/2/2022	102.07802	101.3107942	100.5551175	99.81072558	99.07736684	98.35479706	97.64277919	96.9410831	96.24948531
151223A00070	12/23/2015	2.57	12/26/2023	12/23/2015	101.68478	100.6175033	99.5725818	98.54932003	97.54704962	96.56512952	95.60294452	94.65990403	93.73544078
160804A00014	8/4/2016	1.99	8/5/2024	8/4/2016	101.8715	100.2159433	98.59505194	97.0078033	95.45321275	93.93033423	92.43825828	90.97611024	89.54304862
180222A00026	2/22/2018	2.98	2/21/2025	2/22/2018	105.52705	103.2881933	101.1080067	98.98452444	96.91586089	94.90020955	92.93583884	91.02108831	89.15436499
180713A00013	7/13/2018	2.88	7/13/2023	7/13/2018	101.21685	100.5967621	99.98427434	99.37924889	98.78154973	98.19104412	97.60760254	97.03109856	96.46140875
190513A00013	5/13/2019	2.52	5/13/2024	5/13/2019	102.31829	100.8824888	99.47388908	98.09178555	96.73549657	95.40436334	94.09774901	92.81503776	91.55563393
191003A00022	10/3/2019	1.72	2/3/2023	10/3/2019	100.21913	100.0391834	99.85988556	99.68123145	99.50321762	99.32584064	99.14909711	98.97298364	98.79749688
200224A00025	2/24/2020	1.59	1/23/2025	2/24/2020	101.788	99.68278392	97.63122466	95.63158188	93.68218611	91.78143495	89.92778977	88.11977263	86.35596336
190208A00008	2/8/2019	2.86	2/8/2024	2/8/2019	102.15447	100.9683201	99.80969071	98.67762708	97.57122295	96.4896128	95.43196967	94.39750305	93.38545684
190328A00065	3/28/2019	2.56	3/28/2024	3/28/2019	102.13666	100.8243259	99.53583618	98.27057853	97.02796271	95.80741823	94.60839367	93.43035577	92.27278878
200224A00002	2/24/2020	1.56	2/24/2023	2/24/2020	100.22209	99.98433686	99.74770786	99.51219974	99.27780456	99.04451447	98.81232166	98.58121843	98.35119713
200309A00020	3/9/2020	0.96	3/10/2025	3/9/2020	100.59236	98.37308475	96.2131457	94.11056232	92.06343474	90.06994077	88.12833199	86.23693015	84.39412378
121116A00006	11/16/2012	2.64	11/13/2025	11/16/2012	106.42849	103.4742478	100.6178889	97.85564387	95.18390654	92.59922953	90.09831611	87.67801273	85.33530198
131217A00023	12/17/2013	3.74	1/2/2024	12/17/2013	102.80639	101.7167998	100.6503366	99.60626866	98.58389551	97.58254549	96.60157443	95.64036426	94.69832171
150727A00013	7/27/2015	3.04	7/28/2025	7/27/2015	106.62233	103.9553708	101.3690541	98.86043432	96.42669297	94.06513388	91.77317695	89.54835226	87.38829447
181108A00025	11/8/2018	3.44	7/31/2023	11/8/2018	101.55358	100.8850827	100.2253804	99.5742974	98.93166571	98.29732159	97.67110551	97.05286204	96.44243966
190115A00034	1/15/2019	2.91	1/17/2023	1/15/2019	100.33394	100.2007768	100.067979	99.93554809	99.80348244	99.67178053	99.54044081	99.40946177	99.27884188
200325A00030	3/25/2020	1.5	3/25/2025	3/25/2020	102.37921	100.0901747	97.86335859	95.69671243	93.58827077	91.53614467	89.53851821	87.59364516	85.69984586

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170111A00014	1/11/2017	3.47	1/12/2032	1/11/2017	125.93465	116.3114646	107.5254984	99.49883556	92.16121111	85.44922365	79.30563189	73.67872637	68.52176831
181010A00021	10/10/2018	3.29	3/15/2023	10/10/2018	100.74787	100.4569943	100.1678058	99.88029323	99.59444196	99.31023755	99.0276657	98.74671229	98.46736336
190807A00020	8/7/2019	1.57	2/7/2024	8/7/2019	100.83747	99.65878188	98.50748809	97.38264649	96.28335403	95.20874834	94.15800545	93.13033773	92.12499182
200130A00005	1/30/2020	1.73	1/30/2024	1/30/2020	100.76629	99.61294296	98.48586101	97.38415463	96.30697483	95.25351009	94.22298435	93.21465503	92.22781132
120113A00012	1/13/2012	3.62	1/15/2027	1/13/2012	114.01375	109.7521431	105.6765004	101.7776678	98.04699879	94.47631902	91.05789747	87.78441998	84.64896419
200310A00073	3/12/2020	2.12	3/11/2027	3/12/2020	108.19458	103.8980439	99.79653697	95.88015619	92.13956034	88.56593163	85.15094332	81.88672946	78.76585675
200511A00022	5/11/2020	1.6	2/1/2030	5/11/2020	108.08785	101.0228744	94.46577667	88.37746115	82.72203264	77.46652085	72.58062763	68.03649728	63.80850774
160830A00034	8/30/2016	1.9	8/30/2023	8/30/2016	100.54622	99.80135661	99.06749105	98.34437925	97.6317863	96.9294841	96.23725109	95.55487206	94.88213784
190429A00003	4/29/2019	2.62	10/13/2023	4/29/2019	101.19408	100.3296427	99.47995639	98.64464501	97.82334577	97.01570803	96.22139278	95.44007216	94.671429
190724A00025	7/24/2019	1.96	7/24/2023	7/24/2019	100.65984	100.0120953	99.37267263	98.7414118	98.11815718	97.5027571	96.89506367	96.29493272	95.70222365
190917A00035	9/19/2019	2.02	10/16/2023	9/19/2019	100.67123	99.80136332	98.94648484	98.10621324	97.28017641	96.46801482	95.66938093	94.88393876	94.11136336
200818A00005	8/18/2020	1.05	8/18/2027	8/18/2020	104.06115	99.43412702	95.03718888	90.85767949	86.88371273	83.10411824	79.50839409	76.08666285	72.8296308
190807A00012	8/7/2019	1.76	2/7/2023	8/7/2019	100.23463	100.0436392	99.8533855	99.66386157	99.47506314	99.28698602	99.09962608	98.91297918	98.72704124
190923A00017	9/23/2019	1.74	9/23/2024	9/23/2019	101.97544	100.1822942	98.42913318	96.7148105	95.03821896	93.39829095	91.79399677	90.22434294	88.68837065
200224A00046	2/24/2020	1.59	2/24/2025	2/24/2020	101.96023	99.76270045	97.62298596	95.53914536	93.50931584	91.53171286	89.60462608	87.72641559	85.89550833
081211A00029	12/11/2008	4.57	12/15/2023	12/11/2008	103.49632	102.4516135	101.4280841	100.4250922	99.442023	98.47828593	97.53331367	96.6065609	95.69750329
100930A00008	9/30/2010	3.82	9/30/2025	9/30/2010	109.43464	106.5543754	103.765648	101.065067	98.44938644	95.91549717	93.4604206	91.08130237	88.77540651
111006A00023	10/6/2011	3.81	10/15/2026	10/6/2011	113.75185	109.7494063	105.9124046	102.2331383	98.70430151	95.31896443	92.0705519	88.9528235	85.9598548
121116A00022	11/16/2012	2.78	11/16/2029	11/16/2012	117.85839	110.5895975	103.8254567	97.52821378	91.66312502	86.19820359	81.10398737	76.35332769	71.92119662
130904A00039	9/4/2013	4.19	9/15/2028	9/4/2013	124.1356	117.8628864	111.9563276	106.3924909	101.1495714	96.20726623	91.54666312	87.15013797	83.00126038
180323A00013	3/23/2018	3.18	3/23/2028	3/23/2018	117.06909	111.4885444	106.2123032	101.2221541	96.50106815	92.03311681	87.80339501	83.79795037	80.00371742
220927A00024	9/27/2022	4.7	9/27/2024	9/27/2022	107.04117	105.1964045	103.392698	101.62889	99.90385772	98.21651718	96.56582206	94.95076188	93.37036058
190802A00003	8/2/2019	2.01	8/2/2024	8/2/2019	101.89354	100.2456588	98.63216596	97.05204974	95.50433735	93.98809382	92.50242022	91.04645184	89.61935662
191104A00018	11/5/2019	1.96	11/5/2024	11/5/2019	102.17739	100.2766658	98.42062369	96.60794536	94.83736099	93.10764631	91.41762065	89.76614508	88.15212068
191104A00025	11/4/2019	2.33	8/2/2030	11/4/2019	113.93339	106.185696	99.02491927	92.40344704	86.27776355	80.60808104	75.3580021	70.49421412	65.98621291
200305A00040	3/10/2020	0.99	3/10/2023	3/10/2020	100.08045	99.8045326	99.53014085	99.25726516	98.98589294	98.71601171	98.44760913	98.18067303	97.91519133
200310A00025	3/10/2020	0.87	3/11/2024	3/10/2020	100.09624	98.83600339	97.60336226	96.39740852	95.21727644	94.06213784	92.93119995	91.82370361	90.73892142
200403A00016	4/3/2020	0.63	4/17/2023	4/3/2020	99.977587	99.59737082	99.22005183	98.84559674	98.47397288	98.10514813	97.73909082	97.37576978	97.01515429
150601A00530	6/1/2015	3.08	7/24/2024	6/1/2015	103.88862	102.2416173	100.6286929	99.04885028	97.50113541	95.98463098	94.4984546	93.04175708	91.61372087
160212A00044	2/12/2016	1.93	2/13/2023	2/12/2016	100.28244	100.0748573	99.86814287	99.66229163	99.45729818	99.25315711	99.04986309	98.84741081	98.64579501
181010A00023	10/10/2018	3.41	4/1/2024	10/10/2018	103.30572	101.9750104	100.6676982	99.38322039	98.12102988	96.88059656	95.66140673	94.4629624	93.28478076
190122A00046	1/22/2019	3.29	1/22/2029	1/22/2019	119.65264	113.149707	107.0492253	101.3240659	95.9490702	90.90089764	86.15788489	81.69991653	77.50830641
190729A00007	7/29/2019	2.17	7/28/2023	7/29/2019	100.69443	100.0372153	99.38855263	98.74828063	98.11623737	97.492265	96.87620971	96.26792159	95.66725446

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190814A00008	8/14/2019	1.84	8/14/2024	8/14/2019	101.6491	99.97192065	98.33022178	96.72294591	95.14907341	93.60762511	92.09766031	90.61827482	89.16859918
190820A00008	8/20/2019	1.76	8/20/2024	8/20/2019	101.53136	99.83952652	98.18373498	96.56289631	94.97596707	93.42194565	91.89987012	90.40881627	88.94789568
200302A00011	3/2/2020	1.31	2/27/2025	3/2/2020	101.34651	99.14731935	97.00621184	94.9212221	92.89047236	90.91216406	88.98457374	87.10604922	85.2750059
200312A00016	3/16/2020	1.09	2/15/2023	3/16/2020	100.10799	99.89516994	99.68326069	99.47225935	99.26216007	99.05295703	98.84464447	98.63721666	98.43066795
200429A00053	5/1/2020	2.18	4/30/2025	5/1/2020	103.7146	101.3232972	98.99918353	96.74000195	94.54358302	92.40784262	90.33077805	88.31046437	86.34505085
210312A00005	3/12/2021	0.53	3/12/2024	3/12/2021	99.659807	98.40006821	97.16764412	95.9616476	94.78123029	93.62558019	92.49391978	91.38550415	90.29961929
220518A00008	5/18/2022	3.01	5/20/2024	5/18/2022	103.0769	101.6170417	100.1851642	98.78053741	97.40245187	96.05022233	94.72318664	93.42070475	92.14215782
170111A00009	1/11/2017	3.16	1/11/2028	1/11/2017	115.19125	109.9023135	104.8918283	100.1436226	95.64254922	91.37441645	87.32592266	83.48459565	79.83873645
171206A00041	12/6/2017	2.44	12/6/2024	12/6/2017	103.72735	101.7198763	99.76151353	97.85074523	95.98611692	94.16622889	92.3897337	90.65533387	88.96177957
180530A00014	5/30/2018	2.93	5/30/2023	5/30/2018	100.9735	100.4745229	99.98046497	99.49125609	99.00682516	98.52710248	98.05201972	97.58150987	97.11550718
200110A00022	1/13/2020	2	1/6/2025	1/13/2020	102.57745	100.508275	98.49097133	96.52389143	94.60545083	92.7341272	90.90845742	89.12703473	87.38850614
210212A00016	2/17/2021	1.32	2/18/2025	2/17/2021	101.32449	99.15151407	97.0354041	94.97425733	92.96625304	91.00964638	89.10276453	87.24400298	85.43182215
210903A00002	9/8/2021	1.22	9/8/2023	9/8/2021	100.02116	99.25462194	98.49978543	97.75638105	97.02415065	96.30284377	95.59221741	94.89203573	94.20206978
080910A00065	9/10/2008	5.03	9/15/2023	9/10/2008	103.04898	102.2507512	101.4649344	100.691245	99.92940322	99.17913779	98.44018576	97.71229207	96.99520929
170119A00006	1/19/2017	2.85	1/21/2025	1/19/2017	104.49021	102.360629	100.28507	98.26178804	96.28910768	94.36542053	92.48918207	90.65890847	88.8731737
180703A00015	7/3/2018	3.06	7/3/2023	7/3/2018	101.18364	100.5919471	100.007164	99.42917281	98.85785574	98.29309767	97.7347861	97.18281108	96.63706519
200228A00015	3/3/2020	1.34	10/16/2023	3/3/2020	100.06989	99.20290309	98.35087557	97.51342068	96.69016703	95.88075573	95.0848399	94.30208419	93.53216426
200601A00009	6/1/2020	0.84	6/2/2025	6/1/2020	100.56584	98.12833943	95.7619553	93.46420775	91.23271907	89.0652087	86.95948861	84.91345892	82.9251038
200911A00006	9/11/2020	0.37	9/11/2023	9/11/2020	99.477575	98.70371269	97.94182091	97.19162328	96.45285225	95.72524838	95.00856002	94.30254306	93.60696061
170316A00018	3/16/2017	2.8	3/18/2024	3/16/2017	102.38129	101.0921139	99.82906223	98.5913456	97.37820945	96.1889294	95.02280975	93.87918202	92.75740361
180214A00004	2/14/2018	2.71	2/14/2023	2/14/2018	100.4849	100.2738847	100.0637641	99.85453628	99.64619553	99.43873615	99.23215247	99.02643889	98.82158985
180328A00010	3/28/2018	3.1	3/28/2025	3/28/2018	105.63774	103.3122827	101.0498043	98.84824898	96.70564036	94.6200779	92.5897336	90.61284871	88.68773074
190923A00012	9/23/2019	2.43	9/25/2034	9/23/2019	121.46468	109.3809125	98.6379168	89.07882345	80.56588504	72.97806093	66.20891546	60.16478972	54.76321008
191206A00009	12/6/2019	2.87	12/4/2037	12/6/2019	126.14815	111.1932956	98.25807835	87.05484748	77.33845934	68.89980077	61.56032527	55.16744149	49.59061733
191219A00036	12/20/2019	2.1	12/20/2024	12/20/2019	102.69159	100.6659691	98.69038944	96.76328515	94.88315512	93.0485557	91.25809806	89.51044571	87.80431205
200305A00012	3/5/2020	1.14	3/5/2025	3/5/2020	100.98563	98.77474619	96.62264041	94.52733829	92.48694786	90.49965576	88.56372329	86.67748259	84.83933315
180705A00003	7/5/2018	3.04	7/5/2023	7/5/2018	101.17979	100.5827061	99.99266885	99.40954974	98.83322755	98.26358386	97.70050301	97.143872	96.59358039
200110A00013	1/10/2020	1.76	1/10/2024	1/10/2020	100.8968	99.7934899	98.71420339	97.65815884	96.62461183	95.61284944	94.62218858	93.65197447	92.70157917
200214A00005	2/14/2020	1.59	2/14/2025	2/14/2020	102.36659	100.1841829	98.05875964	95.98841665	93.97133392	92.00576709	90.09004356	88.22255887	86.40177325
220401A00009	4/1/2022	2.98	4/1/2027	4/1/2022	112.06426	107.6286901	103.395815	99.35533061	95.49751246	91.81317611	88.29364427	84.93071639	81.71664008
150610A00008	6/10/2015	3.58	6/10/2030	6/10/2015	124.98066	116.8885297	109.3935035	102.448093	96.00882796	90.03589769	84.49282473	79.34616969	74.56526349
161003A00004	10/3/2016	1.91	10/3/2023	10/3/2016	100.56571	99.73067431	98.90946046	98.10172349	97.30713381	96.52537251	95.75613093	94.99911022	94.25402099
190620A00026	6/20/2019	2.09	6/20/2023	6/20/2019	100.58586	100.0312285	99.48270951	98.94019943	98.40359979	97.8728143	97.34774876	96.828311	96.3144108

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200513A00002	5/13/2020	0.56	5/13/2024	5/13/2020	99.742494	98.3215893	96.9277081	95.56014791	94.21823049	92.90130043	91.6087242	90.33988922	89.09420303
221011A00037	10/11/2022	4.68	10/7/2024	10/11/2022	107.11993	105.2475244	103.4173363	101.6281656	99.87885569	98.16828986	96.49538974	94.85911361	93.258455
130211A00017	2/11/2013	3.27	2/15/2028	2/11/2013	116.02159	110.6133246	105.4941156	100.6469134	96.05576677	91.70574813	87.58288142	83.67407632	79.96706709
160628A00031	6/28/2016	1.77	6/28/2023	6/28/2016	100.41251	99.83686511	99.26780298	98.70520678	98.14896688	97.59897609	97.05512962	96.51732501	95.98546208
160801A00001	8/1/2016	1.97	8/1/2024	8/1/2016	101.82246	100.1778158	98.56745732	96.99037516	95.44560074	93.93220312	92.44928714	90.9959917	89.57148813
180521A00025	5/21/2018	3.24	5/21/2025	5/21/2018	107.01285	104.5142966	102.0874518	99.72984224	97.43909922	95.21294985	93.04921238	90.94579199	88.90067676
200131A00016	1/31/2020	1.73	1/31/2025	1/31/2020	102.1288	99.99886804	97.92360017	95.90120897	93.9299798	92.00826767	90.1344937	88.30714196	86.52475634
200228A00019	2/28/2020	1.21	2/20/2025	2/28/2020	101.55376	99.36309725	97.23003563	95.1526393	93.12905562	91.15750957	89.23629979	87.36379477	85.53842937
200429A00052	5/1/2020	1.43	4/30/2024	5/1/2020	100.70289	99.31296967	97.94879228	96.60970823	95.29508667	94.00431741	92.73681008	91.49199337	90.26931419
211222A00027	12/22/2021	1.26	10/15/2024	12/22/2021	100.76904	98.93671822	97.14637139	95.39679685	93.68683232	92.01535603	90.38128498	88.78357339	87.22121114
180627A00026	6/27/2018	2.87	6/27/2023	6/27/2018	101.14583	100.5692679	99.99927578	99.4357397	98.87855034	98.3276009	97.78278692	97.24400631	96.71115921
190315A00014	3/15/2019	2.74	3/15/2024	3/15/2019	102.28073	100.9997072	99.7454733	98.51718929	97.3140527	96.13529432	94.98017649	93.84799145	92.73805984
190816A00036	8/16/2019	1.77	8/16/2024	8/16/2019	101.53561	99.8541994	98.20844558	96.59727935	95.01967346	93.4746416	91.96123632	90.47854705	89.02569832
191108A00013	11/8/2019	2.25	11/8/2029	11/8/2019	114.10991	106.9908066	100.3669902	94.20142172	88.46001159	83.11137123	78.12658623	73.47900969	69.14407373
191210A00011	12/10/2019	1.92	12/12/2022	12/10/2019	100.05852	100.0252127	99.99194027	99.95870691	99.92551258	99.8923572	99.85924069	99.82616298	99.793124
221007A00003	10/7/2022	4.67	10/7/2025	10/7/2022	111.94322	109.0081214	106.1665829	103.4151233	100.7504095	98.16924994	95.66858785	93.24549469	90.89716406
221110A00037	11/10/2022	4.45	11/10/2026	11/10/2022	116.57825	112.4488342	108.4923825	104.7007163	101.0660881	97.58115586	94.23895949	91.03289896	87.95671375
151223A00072	12/23/2015	2.81	12/23/2025	12/23/2015	107.9318	104.8311572	101.8365177	98.94365135	96.14852641	93.44729543	90.83628558	88.31198961	85.87105734
170417A00057	4/17/2017	2.32	4/17/2023	4/17/2017	100.56022	100.1793689	99.80140874	99.42630582	99.05402772	98.68454256	98.31781888	97.95382573	97.59253262
180913A00030	9/13/2018	3.33	9/12/2025	9/13/2018	107.8592	105.0510762	102.3309731	99.69559698	97.14180405	94.66658813	92.26707378	89.9405096	87.68426197
181219A00006	12/19/2018	3.06	12/19/2023	12/19/2018	101.95523	100.908223	99.88271049	98.878039	97.89357751	96.92872021	95.98288534	95.05551393	94.14606877
190625A00024	6/25/2019	2.26	6/25/2025	6/25/2019	104.30561	101.7575829	99.28484698	96.88473055	94.55467112	92.29221356	90.09500482	87.96078897	85.88740249
190813A00016	8/13/2019	1.88	8/13/2024	8/13/2019	101.71412	100.0389831	98.39924281	96.79384465	95.22177273	93.68205142	92.17374336	90.69594751	89.24779738
160613A00047	6/15/2016	2.18	6/16/2025	6/15/2016	104.03427	101.5143834	99.06848121	96.69395564	94.38830736	92.14914072	89.97415871	87.86115825	85.80802569
200429A00009	4/29/2020	0.78	4/29/2025	4/29/2020	100.82327	98.45955437	96.16261582	93.9302022	91.76015122	89.65038582	87.59891029	85.60380656	83.66323072
220125A00010	1/25/2022	1.89	1/25/2027	1/25/2022	106.91729	102.7748839	98.81594159	95.03134194	91.41247164	87.95119186	84.63980927	81.47104899	78.43802931
170815A00006	8/15/2017	2.5	8/15/2024	8/15/2017	102.786	101.0961412	99.44204112	97.82263257	96.23688695	94.68381659	93.16247268	91.67194328	90.21135151
180426A00011	4/26/2018	2.94	4/26/2023	4/26/2018	100.90524	100.498204	100.0944528	99.6939475	99.29664888	98.90251854	98.51151862	98.12361189	97.73876171
190807A00005	8/7/2019	1.77	8/7/2024	8/7/2019	101.50623	99.84862368	98.22581277	96.63676878	95.08050069	93.55605638	92.06252072	90.59901372	89.16468885
200709A00005	7/10/2020	2.23	7/10/2030	7/10/2020	113.09919	105.4412934	98.36008419	91.8090681	85.74573041	80.1311747	74.92979743	70.1089933	65.63888841
220406A00006	4/6/2022	2.65	10/6/2023	4/6/2022	101.2017	100.3557759	99.5239718	98.7059363	97.90132956	97.1098228	96.3310979	95.56484697	94.81077195
221130A00033	11/30/2022	4.37	11/30/2027	11/30/2022	120.94464	115.6282324	110.5845599	105.7981225	101.2543845	96.93970758	92.84129083	88.9471149	85.24589023
180111A00016	1/11/2018	2.57	1/11/2023	1/11/2018	100.25752	100.1410229	100.0248148	99.90889023	99.79324819	99.6778876	99.56280739	99.44800651	99.33348391

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191025A00009	10/25/2019	2.26	5/25/2029	10/25/2019	112.14417	105.5929545	99.4700085	93.74510184	88.39028899	83.37972325	78.68948894	74.29744786	70.18309872
191122A00021	11/26/2019	3.4	11/22/2038	11/26/2019	134.51059	118.1463371	104.089233	91.99484529	81.57213829	72.57493585	64.79478916	58.05500989	52.20567345
191226A00020	12/26/2019	2.44	12/21/2029	12/26/2019	113.96833	106.8064101	100.1480656	93.95520551	88.19281226	82.82867579	77.83315461	73.17895862	68.84095125
081217A00076	12/17/2008	3.86	12/22/2023	12/17/2008	103.03508	101.9709046	100.9287515	99.90794369	98.90782961	97.92778383	96.96720594	96.02551932	95.10216993
180727A00038	7/27/2018	3.36	7/25/2025	7/27/2018	107.44493	104.7749574	102.1854538	99.67348568	97.23624887	94.87106053	92.57535293	90.34666757	88.18264978
190606A00028	6/6/2019	2.74	6/6/2029	6/6/2019	115.30574	108.6220392	102.3753336	96.53470905	91.07159567	85.95957598	81.17421212	76.69288787	72.49466406
190816A00007	8/16/2019	1.77	8/16/2023	8/16/2019	100.43973	99.73265423	99.0355126	98.34809425	97.6701967	97.00162306	96.34218183	95.69168676	95.0499566
200204A00016	2/4/2020	1.72	2/6/2023	2/4/2020	100.22501	100.0367866	99.84927938	99.66248018	99.47638494	99.29098967	99.10629039	98.92228319	98.73896416
200227A00004	2/27/2020	1.65	2/27/2030	2/27/2020	110.1494	102.8695804	96.11900266	89.85645913	84.04415793	78.64742286	73.6344207	68.97591377	64.64503542
200306A00014	3/6/2020	1.38	3/6/2030	3/6/2020	106.55459	99.45386817	92.87085126	86.76519179	81.09988827	75.84098794	70.95732051	66.42025645	62.20348761
200529A00004	5/29/2020	0.56	5/29/2024	5/29/2020	99.742297	98.28009712	96.8464875	95.44070486	94.06201295	92.70970098	91.3830825	90.08149442	88.80429594
180910A00033	9/10/2018	3.43	9/8/2028	9/10/2018	118.2593	112.2228587	106.5388295	101.1846958	96.13949689	91.38371506	86.89916846	82.66891256	78.67714936
190805A00008	8/5/2019	1.88	8/4/2023	8/5/2019	100.50783	99.83256129	99.16633591	98.50897637	97.86030661	97.2201552	96.58835521	95.96474402	95.34916322
150817A00099	8/17/2015	3.19	8/17/2027	8/17/2015	114.16944	109.3090173	104.6868402	100.2899043	96.10598956	92.12360812	88.33195624	84.72086942	81.28078084
180223A00026	2/23/2018	2.92	12/15/2022	2/23/2018	100.11482	100.0731446	100.0315252	99.98995812	99.94844332	99.90698067	99.86557007	99.82421141	99.78290459
190808A00050	8/8/2019	1.7	8/8/2024	8/8/2019	101.72651	100.0584821	98.42560269	96.82682274	95.2611381	93.72758418	92.22523403	90.75319644	89.31061421
200720A00037	7/22/2020	2.1	7/21/2025	7/22/2020	104.06953	101.455385	98.92009835	96.46080055	94.07474777	91.75931449	89.51198748	87.33036011	85.21212709
221012A00051	10/12/2022	4.7	10/11/2024	10/12/2022	107.20349	105.3196507	103.4785007	101.6788212	99.91943687	98.19921319	96.51705467	94.87190334	93.26273719
170629A00073	6/29/2017	2.2	6/29/2023	6/29/2017	100.76248	100.181778	99.60774929	99.04028344	98.47926839	97.92459465	97.37615519	96.83384537	96.29756291
190809A00021	8/9/2019	2.12	8/9/2029	8/9/2019	112.94129	106.1031531	99.72597019	93.77623755	88.2230551	83.03791377	78.19449816	73.66850659	69.43748676
191108A00011	11/8/2019	2.08	10/18/2024	11/8/2019	102.32714	100.471991	98.65944594	96.88827511	95.15729478	93.46536266	91.81137612	90.19427058	88.61301796
191230A00012	12/30/2019	1.77	12/1/2023	12/30/2019	100.69458	99.7002656	98.72550125	97.76971139	96.83234647	95.91287797	95.01079742	94.12561543	93.25686082
200227A00006	2/27/2020	1.47	2/27/2025	2/27/2020	101.70696	99.50364607	97.35849877	95.26955233	93.23492654	91.25282051	89.32150854	87.43933629	85.60471708
200814A00009	8/18/2020	1.36	8/16/2028	8/18/2020	106.26203	100.6263049	95.32183091	90.32743401	85.62340372	81.19138538	77.01427942	73.07614884	69.36213394
131106A00003	11/6/2013	3.57	11/15/2023	11/6/2013	102.21333	101.2562193	100.3170496	99.39532229	98.4905542	97.60227985	96.73005069	95.8734343	95.03201371
151229A00081	12/29/2015	3.76	12/31/2035	12/29/2015	136.25867	122.3204669	110.0313139	99.1837604	89.59760347	81.11617421	73.60315022	66.93981417	61.02269407
180530A00027	5/30/2018	3.61	6/1/2032	5/30/2018	128.06131	117.9663713	108.7807228	100.4168043	92.79593424	85.8473708	79.50747265	73.71895257	68.43021284
181218A00077	12/18/2018	3.09	12/18/2023	12/18/2018	101.97888	100.9344334	99.91137576	98.90905631	97.92684869	96.96415151	96.0203872	95.09500077	94.18745877
190107A00023	1/7/2019	2.87	1/6/2023	1/7/2019	100.26241	100.159746	100.0572978	99.95506818	99.85305632	99.75126153	99.64968311	99.54832033	99.44717251
210804A00008	8/6/2021	2.28	8/4/2028	8/6/2021	111.49425	105.743161	100.3259681	95.2215104	90.41007996	85.87331425	81.59409714	77.55646761	73.74553565
160714A00020	9/6/2016	2.28	9/4/2026	9/6/2016	107.50988	103.7387191	100.1205744	96.64836574	93.31538838	90.11528686	87.04203439	84.08991367	81.25349897
181026A00002	10/26/2018	3.28	10/26/2023	10/26/2018	101.82947	100.9275083	100.0415224	99.17109152	98.31580839	97.47527988	96.64912635	95.83698113	95.03848988
190726A00017	7/26/2019	2.44	7/24/2026	7/26/2019	107.78707	104.1232755	100.6043204	97.22366182	93.97509623	90.85273561	87.85098932	84.96454717	82.18836361

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191004A00005	10/4/2019	1.54	10/4/2024	10/4/2019	101.64916	99.82975016	98.05151426	96.31328684	94.61394078	92.95238773	91.32757657	89.73849183	88.18415232
191008A00033	10/8/2019	1.71	10/8/2024	10/8/2019	101.59295	99.77075142	97.98988946	96.24919048	94.54752003	92.88378276	91.25692087	89.66591252	88.10977044
120517A00007	5/17/2012	2.42	5/31/2023	5/17/2012	100.80491	100.3026843	99.80545346	99.31314128	98.82567502	98.34298346	97.86499674	97.39164636	96.92286515
160701A00019	7/1/2016	1.73	7/3/2023	7/1/2016	100.39169	99.80267105	99.22053916	98.64517717	98.07646755	97.51429545	96.9585487	96.40911763	95.86589509
180403A00006	4/3/2018	3.07	4/3/2028	4/3/2018	116.55492	110.9574859	105.6670527	100.6651774	95.93461886	91.45925102	87.22398524	83.21469865	79.41816768
180529A00056	5/29/2018	3	5/26/2023	5/29/2018	100.99133	100.5031597	100.0197107	99.54091068	99.06669267	98.59699112	98.1317417	97.67088129	97.21434798
181005A00012	10/5/2018	3.33	10/4/2024	10/5/2018	104.97428	103.1231574	101.3138101	99.54504907	97.81573133	96.12475308	94.47104832	92.85358731	91.27137503
190619A00009	6/19/2019	2.26	6/19/2024	6/19/2019	102.10789	100.5750255	99.07267023	97.59998163	96.15614894	94.74039055	93.3519527	91.99010821	90.65415535
191002A00017	10/2/2019	1.84	10/2/2024	10/2/2019	101.81279	100.0040132	98.23594141	96.50742779	94.81736377	93.16467869	91.54833823	89.96734299	88.42072706
200716A00015	7/20/2020	1.54	7/19/2024	7/20/2020	101.06658	99.46250375	97.89141166	96.35234763	94.8443959	93.36667554	91.91833875	90.49856934	89.10658118
210216A00009	2/16/2021	0.92	2/16/2027	2/16/2021	103.86354	99.69620246	95.71728783	91.91725592	88.28710785	84.81834987	81.5029618	78.33336769	75.30240844
090429A00044	4/29/2009	4.1	4/29/2024	4/29/2014	100.32864	100.2317033	100.1008569	99.78490043	99.25185622	98.61001927	97.93453739	97.25284699	96.57792961
130416A00025	4/16/2013	2.27	4/18/2028	4/16/2018	99.852824	99.39448953	98.39401983	96.85664891	94.89574369	92.69633223	90.4331244	88.20813483	86.06001677
140508A00011	5/8/2014	2.32	5/8/2024	5/8/2019	100.11084	99.90277149	99.43668653	98.78670148	98.07297622	97.34371718	96.61934729	95.90591787	95.20411914
140723A00038	7/23/2014	2.3	7/23/2024	7/23/2019	100.09738	99.86560755	99.36207006	98.65899417	97.87722004	97.07278528	96.27270157	95.48506648	94.71076674
141119A00005	11/19/2014	2.53	11/19/2024	11/19/2019	100.08279	99.82152267	99.26669191	98.47467502	97.5689423	96.62486921	95.68227769	94.75481393	93.84432868
150202A00006	2/2/2015	1.92	2/3/2025	2/3/2020	99.930587	99.55785925	98.84836253	97.91540431	96.88189849	95.82326597	94.77532896	93.74693313	92.73875077
151223A00007	12/23/2015	3.76	12/23/2030	12/23/2022	100.11667	99.80236188	98.84861382	96.87776729	93.76182874	89.70688847	85.14466856	80.5197786	76.10649584
161012A00020	10/11/2016	2.96	10/14/2031	10/11/2023	100.98601	99.64626923	97.6108645	94.54944502	90.37119772	85.48690112	80.44592873	75.60525829	71.09864602
170515A00052	5/15/2017	3.78	5/15/2042	5/15/2024	103.54889	101.7606476	99.40795436	96.04812487	91.29002048	85.40656895	79.32901904	73.72035231	68.69431882
170519A00006	5/19/2017	3	5/19/2032	5/19/2022	99.992594	99.62734698	98.59624097	96.69507832	93.94430949	90.59215554	87.02000044	83.51001625	80.18434502
170705A00037	7/5/2017	2.85	7/6/2032	7/6/2027	109.12801	105.293798	101.4754365	97.65709837	93.83822934	90.06215894	86.39435049	82.89514667	79.59421812
170802A00074	8/2/2017	2.92	8/2/2027	8/2/2022	99.807015	99.53584338	98.64370188	97.05133357	94.86140116	92.23548577	89.4101416	86.56516049	83.80670457
170809A00042	8/9/2017	2.35	8/9/2027	8/9/2022	99.912372	99.51891963	98.63270785	97.2599874	95.51894579	93.5631352	91.54452943	89.55029901	87.61619476
171004A00022	10/4/2017	2.74	10/4/2027	10/4/2022	99.953991	99.59780333	98.67838215	97.08768048	94.88180707	92.21997503	89.34389151	86.44249111	83.62996562
171005A00047	10/5/2017	3.29	10/5/2032	10/5/2022	100.06484	99.62457231	98.44415538	96.12975621	92.66473699	88.35316809	83.73852124	79.23725635	75.02434765
180105A00005	1/5/2018	3.07	1/5/2028	1/5/2023	100.34806	100.0005854	99.32700239	98.21522972	96.65515339	94.74562778	92.65188848	90.50618662	88.39975271
180105A00006	1/5/2018	3.07	1/5/2028	1/5/2023	100.34806	100.0005854	99.32700239	98.21522971	96.65515337	94.74562775	92.65188844	90.50618656	88.39975263
180130A00087	1/30/2018	2.92	1/31/2028	1/30/2023	100.28292	99.91167866	99.18519328	98.0042921	96.37540833	94.42018083	92.30282858	90.15359635	88.0530123
180302A00003	3/2/2018	3.89	3/2/2033	3/2/2023	100.6568	100.1942619	99.18265504	97.24017345	94.02100411	89.65981099	84.65526218	79.57290693	74.75903795
180315A00030	3/15/2018	3.76	3/15/2033	3/17/2025	106.77021	104.0366448	101.0136181	97.48644762	93.27550323	88.40064319	83.17803545	78.00665211	73.15525841
180504A00024	5/4/2018	3.62	5/4/2028	5/4/2023	101.13766	100.4681347	99.50086295	98.04740918	95.90937043	93.05676202	89.69631176	86.0898001	82.4936516
180627A00005	6/27/2018	3.63	6/30/2033	6/30/2023	101.13578	100.4526451	99.42175942	97.79497777	95.33081641	92.05072947	88.3013126	84.46731613	80.79814182

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180703A00033	7/3/2018	3.4	7/3/2028	7/3/2023	101.24482	100.4874816	99.53941467	98.29762703	96.6649772	94.65550345	92.42176346	90.11313863	87.8433412
190111A00040	1/11/2019	3.74	1/11/2034	1/11/2024	102.88085	101.4196744	99.55032355	96.96578486	93.38854109	88.87497282	83.91016235	79.00603445	74.42423145
190116A00015	1/16/2019	3.61	1/17/2034	1/16/2024	102.56743	101.2005506	99.51598429	97.29828467	94.33646546	90.696375	86.71579814	82.76016477	79.02223878
190204A00054	2/4/2019	3.98	2/6/2034	2/2/2024	102.87896	101.4405166	99.53594162	96.82449711	93.02256626	88.1844885	82.84540898	77.57067959	72.65216961
190222A00023	2/22/2019	3.66	2/22/2034	2/22/2026	109.45509	105.6346201	101.4923724	96.87050958	91.64434564	85.93812813	80.0836682	74.45052805	69.25072578
190301A00015	3/1/2019	3.86	3/1/2034	3/2/2026	109.37153	105.6856619	101.6826295	97.20551454	92.13499326	86.57684375	80.84796515	75.31595178	70.19890961
190409A00016	4/9/2019	2.91	4/9/2029	4/9/2024	102.5788	100.9867182	99.12739185	96.85182314	94.04649473	90.77653365	87.28257558	83.8062956	80.48202374
190409A00017	4/9/2019	3.01	4/9/2029	4/9/2024	102.65805	101.0699422	99.14513445	96.74063584	93.73483799	90.18348553	86.35648833	82.53053904	78.87210635
190430A00020	4/30/2019	3.41	4/28/2034	4/28/2026	108.74145	104.7639323	100.4281751	95.55037415	90.08614681	84.19998403	78.28575187	72.68741702	67.55558973
190520A00018	5/20/2019	3.7	5/20/2044	5/20/2024	103.3025	101.1291326	98.15408349	93.78209521	87.83151241	81.09383591	74.67176153	68.93923179	63.86488656
190530A00044	5/30/2019	2.85	5/30/2034	5/30/2024	102.50967	100.6855659	98.442954	95.57514544	91.97604164	87.88910676	83.7173251	79.73538072	76.02013472
190807A00041	8/7/2019	2.27	8/7/2034	7/7/2024	101.7011	99.51260883	96.77797756	93.31158393	89.20832885	84.87891135	80.6873875	76.76741104	73.12739201
190807A00044	8/7/2019	2.27	8/7/2034	8/7/2024	101.85287	99.59425267	96.81121067	93.31952117	89.20915888	84.87893023	80.68738727	76.76741074	73.12739166
190827A00044	8/27/2019	1.9	8/27/2029	8/27/2024	101.56296	99.76440857	97.75241445	95.43547439	92.82697627	90.07456363	87.34150419	84.7098468	82.19603945
190930A00079	9/30/2019	2.04	10/1/2029	9/30/2024	101.80757	100.0184361	98.02889457	95.7373863	93.14486164	90.38156371	87.61767765	84.94964029	82.40121691
190930A00083	9/30/2019	2.04	10/1/2029	9/30/2024	101.80757	100.0184359	98.02889402	95.73738532	93.1448601	90.38156157	87.61767493	84.94963703	82.40121316
191007A00012	10/7/2019	2	10/5/2029	10/7/2024	101.59001	99.65211263	97.50314448	95.06760785	92.36412989	89.54851254	86.77584814	84.11516385	81.57639236
191007A00013	10/7/2019	2	10/5/2029	10/7/2024	101.59001	99.65211256	97.50314406	95.06760703	92.3641286	89.54851075	86.77584587	84.11516111	81.57638919
191028A00015	10/28/2019	2.49	10/27/2034	10/28/2024	102.65684	100.3141734	97.53822809	94.1092276	90.06370587	85.72169554	81.45937935	77.45893119	73.74503481
191031A00036	10/31/2019	2.9	10/31/2039	10/31/2024	102.55455	99.94006431	96.53152863	92.05504005	86.65307017	81.00417038	75.68318752	70.84889533	66.47725734
191031A00037	10/31/2019	2.59	10/30/2034	10/31/2024	102.23082	99.93351678	97.15970335	93.69621863	89.61471679	85.27473757	81.04987991	77.09356784	73.42097255
191220A00029	12/20/2019	2.57	12/19/2031	12/20/2024	102.91832	100.6998932	98.22620151	95.38290406	92.13633578	88.66251435	85.19744958	81.88531771	78.75986499
200108A00009	1/8/2020	2.4	1/8/2035	1/8/2025	102.81058	100.1770147	97.07320841	93.33118994	89.01975079	84.51105166	80.16018005	76.10823091	72.3628895
200108A00040	1/8/2020	2.52	1/8/2030	1/8/2025	102.88543	100.3609964	97.45426937	94.03734461	90.11039336	85.90591166	81.7262821	77.74415139	74.00406941
200110A00012	1/10/2020	2.57	1/10/2035	1/10/2025	102.83792	100.2259797	97.17433599	93.50738811	89.29159537	84.86908642	80.58709659	76.58646686	72.87814958
200115A00023	1/15/2020	2.16	1/15/2030	1/15/2025	102.30058	100.1851449	97.9016809	95.36996527	92.59243489	89.69840786	86.83756312	84.09018154	81.47176253
200115A00025	1/15/2020	2.1	1/15/2025	1/15/2023	99.816211	99.25965747	98.28289855	96.96345226	95.44264967	93.86227595	92.29484432	90.76121403	89.26389524
200306A00021	3/6/2020	1.16	3/6/2030	3/6/2025	100.29893	97.88059526	95.20058883	92.26626423	89.23406311	86.26777137	83.43306473	80.73651635	78.17107644
200309A00013	3/9/2020	1.1	3/8/2030	3/9/2025	100.15953	97.72490429	95.02557113	92.07448063	89.03862543	86.07613348	83.24739531	80.55678476	77.9970054
200316A00030	3/16/2020	1.35	3/15/2030	3/16/2025	101.23522	98.88562833	96.322908	93.49667668	90.5009083	87.50651603	84.62163623	81.87400878	79.26025568
200316A00032	3/16/2020	1.35	3/15/2030	3/16/2025	101.23522	98.88562825	96.32290779	93.4966763	90.50090773	87.50651527	84.62163529	81.87400767	79.26025441
200318A00015	3/18/2020	1.69	3/18/2030	3/18/2023	99.486367	98.45407859	96.68578784	94.20026429	91.25485231	88.17864121	85.17542227	82.31031388	79.58718539
200326A00035	3/26/2020	1.68	3/26/2030	3/26/2025	101.49496	99.17469651	96.65778799	93.87708271	90.91449459	87.93176532	85.04853635	82.30003541	79.68490368

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200423A00008	4/23/2020	1.59	4/23/2030	4/23/2025	101.2797	98.06144898	94.33070185	90.00071028	85.31550195	80.63236123	76.17758093	72.01019906	68.12268479
200423A00009	4/23/2020	1.59	4/23/2030	4/23/2025	101.2797	98.06144911	94.33070214	90.00071075	85.31550262	80.63236211	76.177582	72.0102003	68.12268619
200423A00010	4/23/2020	1.59	4/23/2030	4/23/2025	101.2797	98.06144924	94.33070234	90.00071107	85.31550308	80.6323627	76.17758271	72.01020114	68.12268713
200430A00021	4/30/2020	1.2	4/30/2030	4/30/2025	100.37624	97.95020066	95.25849665	92.30565024	89.24644442	86.25020088	83.38697567	80.66451482	78.07571111
200505A00010	5/5/2020	0.89	5/6/2030	5/5/2025	100.30403	97.73610952	94.92347873	91.8805273	88.76847766	85.73883025	82.85001912	80.10546417	77.49735007
200512A00023	5/12/2020	1.78	5/11/2035	5/12/2025	101.12155	97.2913133	92.63253007	87.17713767	81.42286237	75.8892564	70.80169577	66.17608094	61.97290582
200609A00003	6/9/2020	1.66	6/8/2035	6/9/2025	100.33372	96.08945344	90.85638478	84.81326386	78.57629757	72.67953583	67.31148312	62.46891094	58.10155033
200612A00001	6/12/2020	0.75	6/12/2030	6/12/2025	100.01509	97.3496024	94.44025414	91.32687375	88.17749971	85.13219525	82.23459594	79.48349473	76.87045207
201022A00008	10/22/2020	1.02	10/22/2035	10/22/2025	99.675995	95.73494801	91.22510185	86.36173894	81.55200034	77.04502697	72.88904669	69.06192441	65.53354222
201029A00008	10/29/2020	0.92	10/29/2030	10/29/2025	100.09684	97.19947182	94.09509711	90.83438097	87.57665185	84.44465843	81.47176272	78.65437296	75.98306585
201030A00025	10/30/2020	2.02	10/28/2050	10/30/2025	100.73768	94.91110542	87.36100982	78.89175666	70.89828278	63.9410389	57.97956057	52.8664545	48.46097412
201116A00019	11/16/2020	1.32	11/15/2030	11/16/2025	100.38068	96.599134	92.34599838	87.70007018	82.96564921	78.41526108	74.1534646	70.18593205	66.49328202
201118A00015	11/18/2020	1.66	11/18/2036	11/18/2027	102.28504	95.94698569	89.08122795	81.93594525	74.96829747	68.55337858	62.80919124	57.69872016	53.149969
201118A00017	11/18/2020	1.66	11/18/2036	11/18/2027	102.28505	95.94698772	89.08123098	81.9359494	74.96830268	68.55338472	62.80919812	57.69872764	53.14997694
201118A00018	11/18/2020	1.85	11/18/2036	11/18/2027	102.1572	95.85375803	89.02872155	81.9332716	75.02296939	68.66439862	62.96939253	57.89968093	53.38409471
201202A00016	12/2/2020	1.32	12/3/2035	12/2/2025	100.10944	96.11494246	91.59188697	86.71875449	81.88427472	77.34446453	73.15797065	69.30454789	65.75366126
201202A00017	12/2/2020	1.32	12/3/2035	12/2/2025	100.10944	96.11494313	91.59188817	86.71875634	81.88427727	77.34446772	73.15797444	69.3045522	65.75366605
201229A00003	12/29/2020	1.28	12/30/2030	12/30/2025	100.27322	96.38945894	92.04531559	87.32612324	82.54492618	77.96375138	73.68009342	69.69618861	65.99156825
201230A00018	12/30/2020	1.52	12/28/2035	12/28/2027	101.85524	95.56384055	88.82142162	81.86090214	75.08986608	68.84043377	63.21821519	58.19081499	53.69372559
210108A00007	1/8/2021	1.65	1/8/2036	1/8/2026	100.82469	96.03925136	90.36521418	84.02709723	77.61176445	71.60166776	66.16022982	61.27166603	56.87917559
210225A00010	2/25/2021	2.02	2/25/2041	2/25/2026	101.90117	97.26548017	91.8069058	85.69135604	79.52407769	73.80249182	68.65595642	64.04176694	59.89644666
210405A00013	4/5/2021	1.82	4/7/2036	4/5/2026	102.29754	98.29989102	93.86794717	89.04088345	84.10887754	79.38227098	75.0015664	70.97284984	67.26672807
210622A00004	6/22/2021	2.42	6/20/2036	6/22/2026	103.90277	99.1563082	93.72543222	87.59692389	81.16185622	74.93991893	69.23792337	64.10809402	59.50506915
210910A00009	9/10/2021	1.77	9/10/2036	9/10/2026	103.40199	99.12296861	94.46876106	89.47419184	84.385282	79.50063709	74.97372851	70.81953818	67.00775743
210924A00016	9/24/2021	1.91	9/24/2036	9/24/2026	103.99092	99.76615407	95.17006676	90.23223965	85.16030684	80.25090528	75.68488634	71.49164334	67.64380917
211019A00005	10/19/2021	2.49	10/20/2036	10/19/2026	105.72715	100.8306371	95.30757725	89.14382811	82.61756725	76.21789872	70.31099039	64.99490776	60.23443254
211110A00017	11/10/2021	2.01	11/10/2036	11/10/2026	104.62052	100.2985546	95.63047887	90.6457172	85.52807914	80.56165531	75.9364251	71.69018058	67.7968934
211116A00012	11/16/2021	2.22	12/18/2034	11/16/2026	104.91371	100.9122969	96.70816087	92.27377693	87.73024472	83.27792616	79.07388516	75.16716116	71.54668728
211124A00008	11/24/2021	2.62	11/22/2041	11/24/2026	106.65886	101.8437699	96.45553646	90.44375536	84.08119075	77.89543884	72.25015832	67.19856612	62.68024958
211215A00020	12/15/2021	1.85	12/15/2031	12/15/2026	104.00015	100.451733	96.83820018	93.15839156	89.47963831	85.90155339	82.4955142	79.28254349	76.25584744
211227A00012	12/27/2021	2.39	12/29/2036	12/27/2028	108.35391	101.5908538	94.59210269	87.4028521	80.26074102	73.49158004	67.32924092	61.82412075	56.92471886
220217A00024	2/17/2022	2.43	2/17/2027	2/17/2025	103.26915	101.1335486	98.92960507	96.59363537	94.09343952	91.46540167	88.80329594	86.19200202	83.67481696
220617A00069	6/17/2022	4.06	6/17/2027	6/17/2025	108.03645	105.6190234	103.2203128	100.8112767	98.35260664	95.80774339	93.17008173	90.45253292	87.71834184

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220831A00108	8/31/2022	4.07	8/31/2027	9/2/2025	109.14179	106.373619	103.6368053	100.8994471	98.12205531	95.27029134	92.34085406	89.35077893	86.36686546
210611A00010	6/11/2021	1.02	6/11/2026	6/11/2021	102.18503	98.95858413	95.85480529	92.86833907	89.99409436	87.22723008	84.56314145	81.99744705	79.52597666
160608A00029	6/8/2016	2.36	6/8/2026	6/8/2016	106.50666	103.2487906	100.1133633	97.09506999	94.18886088	91.38993311	88.69371708	86.09586378	83.59223283
210915A00018	9/15/2021	0.74	9/16/2024	9/15/2021	99.764583	98.07476168	96.42200595	94.80523416	93.22340543	91.67551765	90.16060566	88.67773957	87.22602312
160212A00047	2/12/2016	1.94	2/12/2026	2/12/2016	102.06902	100.4059286	98.78701998	97.21076378	95.67569179	94.18039768	92.72353395	91.30380899	89.91998433
170711A00010	7/11/2017	2.38	7/12/2027	7/11/2017	105.14439	102.7050224	100.3520597	98.081707	95.89036433	93.77461509	91.73121551	89.75708465	87.84929512
200514A00008	5/14/2020	1.23	5/14/2030	5/14/2020	104.5597	98.71940383	93.28249992	88.2181951	83.49822927	79.09664961	74.9896102	71.1551899	67.57322695
170504A00049	5/4/2017	2.63	5/6/2024	5/4/2017	102.3901	100.9996372	99.63514422	98.29595196	96.98141633	95.69091471	94.423845	93.17962481	91.95769065
171207A00025	12/7/2017	2.91	12/7/2027	12/7/2017	112.24555	107.5881317	103.1650957	98.96323969	94.97017563	91.17427707	87.56462847	84.1309779	80.86369315
200421A00026	4/21/2020	1.34	4/19/2030	4/21/2020	105.21572	99.3883509	93.96012971	88.90084703	84.18275005	79.78033314	75.67014424	71.83060889	68.24187022
120807A00026	8/7/2012	2.42	8/9/2027	8/7/2012	104.80655	102.3425411	99.96680668	97.67542839	95.46469404	93.33108217	91.27125094	89.28202766	87.36039915
190205A00020	2/5/2019	3.32	2/5/2029	2/5/2019	116.46956	110.7131772	105.3012109	100.2108279	95.42083919	90.91157232	86.66475483	82.66340677	78.89174227
190305A00017	3/5/2019	3.12	3/5/2026	3/5/2019	108.14602	105.1017224	102.163975	99.32837336	96.59072894	93.94705311	91.39354615	88.92658697	86.54272336
151120A00019	11/20/2015	2.72	11/20/2030	11/20/2015	110.64093	106.3182881	102.2382154	98.38457193	94.74242541	91.29794939	88.03833372	84.95170275	82.0270406
180402A00013	4/2/2018	2.99	4/3/2028	4/2/2018	112.19659	107.9060018	103.830278	99.9571346	96.27505891	92.77326037	89.44162144	86.27065203	83.25144709
180713A00031	7/13/2018	3.06	7/14/2025	7/13/2018	103.10426	101.7154994	100.3588047	99.03317556	97.73764711	96.47129213	95.23321953	94.02257252	92.83852709
160908A00025	9/8/2016	2.21	9/8/2026	9/8/2016	106.57679	103.1084636	99.77771418	96.57825767	93.5041367	90.54970091	87.70958908	84.97871246	82.35223916
170407A00001	4/6/2017	2.97	4/6/2027	4/6/2017	110.38905	106.4994042	102.7806879	99.22437026	95.82239381	92.56714449	89.45142477	86.46842871	83.61171863
181003A00019	10/3/2018	3.44	10/3/2025	10/3/2018	108.06777	105.2933641	102.6066457	100.0043684	97.48342501	95.04083968	92.6737617	90.37945942	88.15531465
220308A00012	3/8/2022	2.51	3/8/2032	3/8/2022	114.30045	106.782464	99.88293364	93.54576392	87.72030519	82.36079225	77.4258463	72.87803005	68.68345046
150320A00019	3/20/2015	2.25	3/20/2025	3/20/2015	103.42942	101.4592031	99.54007099	97.67035996	95.84847293	94.07287585	92.34209469	90.65471259	89.00936724
150803A00038	8/3/2015	3.41	8/2/2030	8/3/2015	118.60229	111.9362163	105.737893	99.9709394	94.60202152	89.60058403	84.93860328	80.59036357	76.53225437
160608A00019	6/8/2016	2.36	6/8/2026	6/8/2016	106.50666	103.2487906	100.1133633	97.09507	94.18886092	91.38993317	88.69371716	86.09586389	83.59223295
190826A00032	8/26/2019	1.72	8/24/2029	8/26/2019	105.45256	101.9536472	98.62412555	95.45416234	92.43457085	89.55676464	86.81271409	84.19490649	81.69630924
191008A00007	10/8/2019	1.67	10/9/2029	10/8/2019	105.39426	101.8144582	98.41162035	95.17527277	92.09564719	89.16362448	86.37068706	83.70887504	81.17074595
200319A00035	3/19/2020	1.72	3/18/2033	3/19/2020	108.67321	102.3157646	96.46716012	91.08077738	86.11465245	81.53097883	77.2956675	73.3779562	69.75006216
200910A00006	9/10/2020	0.96	9/10/2027	9/10/2020	103.30813	98.97956794	94.86364133	90.94869591	87.22378538	83.67862055	80.30352612	77.08940055	74.02767878
190227A00033	2/27/2019	2.65	2/27/2026	2/27/2019	103.64639	101.9511561	100.3011328	98.69474451	97.13048347	95.60690565	94.12262773	92.67632401	91.26672355
190403A00010	4/3/2019	3.08	4/3/2029	4/3/2019	115.81972	109.7929046	104.1389726	98.83259518	93.85029951	89.17032072	84.772469	80.63800788	76.74954258
160524A00028	5/24/2016	2.06	5/24/2023	5/24/2016	100.5242	100.0459869	99.57234031	99.10319187	98.63847759	98.17813469	97.72210159	97.27031786	96.82272417
160908A00035	9/8/2016	2.3	9/8/2031	9/8/2016	108.55987	103.9206006	99.56421501	95.47037405	91.62036798	87.9969773	84.58434344	81.36785148	78.33402374
161229A00018	12/29/2016	2.46	12/29/2026	12/29/2016	104.49224	102.3614796	100.2984968	98.3005721	96.36511796	94.48966902	92.6718753	90.90949599	89.20039361
181129A00005	11/29/2018	3.21	11/29/2023	11/29/2018	101.92033	100.9425174	99.98363631	99.0431392	98.1204995	97.21521063	96.32678502	95.45475326	94.59866323

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191112A00024	11/12/2019	2.09	11/12/2024	11/12/2019	102.39287	100.5205004	98.69230713	96.90697317	95.16323311	93.45986744	91.79570058	90.16959894	88.58046915
180716A00062	7/16/2018	2.91	7/16/2025	7/16/2018	103.18759	101.7934137	100.431522	99.10090422	97.80058629	96.52963244	95.28714338	94.07225463	92.8841348
160824A00019	8/24/2016	1.98	8/25/2031	8/24/2016	108.0365	103.4363413	99.11545288	95.05383918	91.23310347	87.63630839	84.24784985	81.05334246	78.0395157
170713A00021	7/13/2017	3.25	7/13/2037	7/13/2017	128.74562	116.559212	105.8347188	96.37959219	88.02813687	80.63760014	74.08485346	68.26357148	63.08183195
181115A00044	11/15/2018	3.26	11/15/2023	11/15/2018	101.88617	100.935494	100.0025624	99.08688095	98.18797301	97.30537939	96.43865754	95.58738085	94.7511379
200317A00043	3/17/2020	1.29	3/15/2030	3/17/2020	104.21427	100.4688247	96.91819489	93.55030099	90.35390782	87.31855996	84.43452217	81.69272488	79.084714
190708A00032	7/8/2019	2.58	7/2/2029	7/8/2019	113.08278	106.9682327	101.2454957	95.88703435	90.86740068	86.16306225	81.75224821	77.61480832	73.7320839
210217A00005	2/17/2021	0.83	2/14/2031	2/17/2021	102.64249	98.51097366	94.61765431	90.94628014	87.48184318	84.21047345	81.1193446	78.19658806	75.43121473
210212A00006	2/12/2021	0.77	2/12/2026	2/12/2021	101.05031	98.0888781	95.23140505	92.473608	89.8114103	87.24092932	84.75846581	82.36049389	80.04365166
160705A00010	7/5/2016	1.68	7/5/2023	7/5/2016	100.36073	99.77169828	99.18959572	98.61430361	98.04570273	97.48367667	96.92811168	96.37889663	95.83592292
190708A00026	7/8/2019	2.21	7/1/2024	7/8/2019	102.03889	100.5061392	99.00416796	97.53210948	96.08913166	94.67443305	93.28724141	91.92681234	90.59242803
210423A00003	4/23/2021	1.31	4/23/2031	4/23/2021	104.78422	100.4849686	96.43798094	92.62576136	89.03217316	85.64232192	82.44245115	79.4198473	76.56275332
160307A00024	3/7/2016	2.17	3/6/2026	3/7/2016	102.5516	100.8398511	99.17442238	97.5536814	95.97606716	94.44008528	92.94430469	91.48735437	90.06792044
200501A00009	5/4/2020	0.67	5/1/2025	5/4/2020	99.724706	98.46294477	97.22906745	96.02222671	94.84160845	93.68642984	92.5559378	91.44940768	90.36614186
151223A00036	12/23/2015	2.64	12/23/2025	12/23/2015	103.91059	101.9731273	100.0947485	98.27322092	96.50641522	94.79229654	93.12891958	91.51442401	89.94703016
190605A00023	6/5/2019	2.64	6/5/2029	6/5/2019	113.36559	107.3002734	101.6199182	96.29772253	91.30889212	86.63048192	82.24124878	78.12151653	74.25305253
141015A00029	10/15/2014	2.32	10/15/2024	10/15/2014	102.73971	101.1021894	99.50119218	97.93567376	96.40462414	94.90706894	93.44206791	92.00871346	90.60612932
200406A00029	4/6/2020	1.61	4/5/2030	4/6/2020	107.43249	100.9856493	94.99417243	89.42307067	84.24022733	79.41614721	74.92372985	70.73806352	66.83623783
210809A00013	8/9/2021	1.05	8/7/2026	8/9/2021	102.40441	99.11368201	95.95138111	92.91172341	89.98921918	87.17865885	84.47509681	81.87383632	79.37041529
150414A00037	4/14/2015	2.34	4/14/2025	4/14/2015	101.82752	100.5792352	99.35797468	98.16292649	96.99331052	95.84837654	94.72740272	93.62969429	92.55458233
180717A00021	7/17/2018	3.34	7/17/2028	7/17/2018	114.77918	109.7764522	105.0452598	100.5690567	96.3324006	92.32087452	88.52101292	84.92023358	81.50677473
150604A00039	6/4/2015	2.82	6/4/2030	6/4/2015	110.53997	106.4382617	102.5561677	98.87970457	95.39588808	92.0926576	88.95880384	85.98390288	83.1582557
200406A00032	4/6/2020	1.09	4/4/2025	4/6/2020	100.91919	98.71179898	96.56439897	94.47503587	92.44182651	90.46295962	88.53669263	86.6613487	84.83531385
221018A00007	10/18/2022	4.68	10/18/2027	10/18/2022	111.01341	108.3149615	105.7159987	103.2119943	100.7986649	98.47195159	96.22800715	94.06318309	91.97401824
131018A00006	10/18/2013	3.28	10/20/2025	10/18/2013	107.65218	105.0419318	102.5136068	100.0641524	97.69064809	95.39029856	93.16042755	90.99847207	88.90197692
140821A00030	8/21/2014	2.27	8/21/2024	8/21/2014	101.34858	100.4311765	99.53057729	98.64631114	97.77792662	96.92498936	96.0870812	95.26379945	94.45475617
170201A00016	2/1/2017	2.49	2/1/2024	2/1/2017	101.86281	100.7129271	99.58920055	98.49074213	97.41670446	96.36627772	95.33868763	94.33319344	93.34908618
150617A00018	6/17/2015	2.45	6/17/2025	6/17/2015	102.1509	100.8158809	99.51106269	98.23551261	96.98833474	95.76866792	94.57568411	93.40858682	92.26660967
170322A00033	3/22/2017	3.61	3/24/2042	3/22/2017	127.80777	116.3412357	106.2776333	97.42024668	89.60231902	82.68221561	76.53940277	71.071101	66.18949546
190315A00017	3/15/2019	2.88	3/15/2034	3/15/2019	115.4059	109.1224817	103.3182653	97.95068913	92.98136438	88.37563393	84.10218111	80.13268215	76.44149717
150617A00030	6/17/2015	2.91	6/16/2025	6/17/2015	105.34586	103.0140551	100.7489717	98.54828788	96.4097734	94.33129024	92.31078796	90.34629949	88.43593718
160413A00021	4/13/2016	2.48	4/13/2026	4/13/2016	106.52882	103.3980593	100.3804759	97.47134999	94.66618707	91.96070325	89.3508142	86.83262479	84.40241927
170619A00096	6/16/2017	2.79	6/16/2027	6/16/2017	110.65989	106.4419268	102.4193498	98.58195314	94.920119	91.42478251	88.08739712	84.899902	81.85469185

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191004A00023	10/4/2019	2.02	10/4/2029	10/4/2019	109.80566	103.6316609	97.86730653	92.48292311	87.45114184	82.74670755	78.34630522	74.22840141	70.37309958
210611A00007	6/11/2021	0.61	6/11/2024	6/11/2021	99.534477	98.0862689	96.6665953	95.27467983	93.9097735	92.57115387	91.25812389	89.97001071	88.7061647
160608A00024	6/8/2016	2.36	6/8/2026	6/8/2016	106.50666	103.2487907	100.1133634	97.09506995	94.18886078	91.38993295	88.69371686	86.09586351	83.5922325
170317A00044	3/17/2017	3.11	3/17/2027	3/17/2017	110.79137	106.9335009	103.243289	99.7124175	96.33303026	93.09770399	89.99942188	87.031549	84.18780928
191101A00004	11/1/2019	1.91	11/1/2029	11/1/2019	109.71101	103.9471946	98.55784063	93.51599301	88.79678949	84.37728878	80.23631203	76.35429824	72.71317226
160810A00029	8/10/2016	2.17	8/10/2026	8/10/2016	106.26113	102.8661635	99.60358024	96.46741249	93.45199908	90.55196812	87.76222025	85.07791297	82.49444602
180925A00116	9/25/2018	3.28	9/25/2028	9/25/2018	109.5698	106.4132498	103.3915281	100.497648	97.72503747	95.06751201	92.51924896	90.07476387	87.72888857
190529A00061	5/29/2019	2.46	5/29/2026	5/29/2019	103.27523	101.4668022	99.70923221	98.00067418	96.33936614	94.72362272	93.15183121	91.62244787	90.13399451
150825A00008	8/25/2015	2.82	8/25/2025	8/25/2015	105.64475	103.1517021	100.7337963	98.38825713	96.11242966	93.90377668	91.75987245	89.6783969	87.65713008
180206A00048	2/6/2018	2.72	2/6/2023	2/6/2018	100.4131	100.2250131	100.0376385	99.85097033	99.66500465	99.47973746	99.29516479	99.11128273	98.92808739
200330A00047	3/30/2020	1.5	3/30/2035	3/30/2020	105.80777	99.60800362	93.91570609	88.68263344	83.86558881	79.42585591	75.32869927	71.54292361	68.04048495
210913A00014	9/13/2021	1.15	9/13/2028	9/13/2021	102.27523	99.34097655	96.53162889	93.84073329	91.26221971	88.79037485	86.41981867	84.14548275	81.96259005
110701A00011	7/1/2011	3.87	7/1/2026	7/1/2011	106.23136	104.2878609	102.4009152	100.5684211	98.78836724	97.05883128	95.3779757	93.74404328	92.15535302
190131A00023	1/31/2019	3.02	1/30/2034	1/31/2019	116.08927	109.8563162	104.092571	98.75686858	93.81203518	89.22446838	84.96376707	81.00240206	77.31542277
210714A00012	7/14/2021	1.12	7/14/2026	7/14/2021	102.64358	99.32962812	96.1440828	93.08122629	90.13562721	87.30212732	84.57582598	81.95206567	79.42641842
160104A00020	1/4/2016	2.47	1/4/2023	1/4/2016	100.2124	100.115357	100.0185058	99.92184799	99.82538294	99.72911006	99.63302878	99.53713851	99.44143867
191009A00009	10/9/2019	1.8	10/9/2026	10/9/2019	102.45526	100.45644	98.51888433	96.64021752	94.81817008	93.05057674	91.33537091	89.67057949	88.05431794
151229A00026	12/29/2015	2.28	12/29/2025	12/29/2015	102.80182	101.2035918	99.64637831	98.1287951	96.64951391	95.20726138	93.8008163	92.42900702	91.09070913
160412A00029	4/12/2016	2.48	4/14/2031	4/12/2016	109.02768	104.5784063	100.3891895	96.44205627	92.72042279	89.20897807	85.89357711	82.76114394	79.79958325
160923A00009	9/23/2016	2.24	9/23/2031	9/23/2016	108.27675	103.6491301	99.30372938	95.22025198	91.38002893	87.76587852	84.36197721	81.1537426	78.12772722
191112A00022	11/12/2019	2.36	11/13/2029	11/12/2019	112.05499	105.6960621	99.76427262	94.22826826	89.05916662	84.23034639	79.71725909	75.49725729	71.54943805
171204A00024	12/4/2017	2.71	12/4/2024	12/4/2017	103.71952	101.7787824	99.88500368	98.0367511	96.23264288	94.47134893	92.75158854	91.07212816	89.43177931
200309A00081	3/9/2020	1.18	3/8/2030	3/9/2020	104.59134	98.33798567	92.52322808	87.11356987	82.07825468	77.38902792	73.01992024	68.94705091	65.14844907
150803A00033	8/3/2015	3.41	8/2/2030	8/3/2015	118.60229	111.9362162	105.737893	99.9709394	94.60202154	89.60058405	84.93860332	80.59036362	76.53225443
151125A00037	11/25/2015	2.41	11/25/2025	11/25/2015	102.57496	101.0267594	99.51739461	98.0455769	96.61007005	95.20968815	93.84329317	92.50979263	91.20813745
160328A00038	3/28/2016	2.54	3/30/2026	3/28/2016	106.33906	103.352796	100.4721442	97.69276681	95.01052939	92.42148905	89.92188445	87.50812647	85.17678939
181010A00025	10/10/2018	3.48	10/10/2030	10/10/2018	113.84454	109.4420679	105.2843373	101.3552114	97.63974499	94.12409103	90.79541195	87.64179907	84.65219893
190905A00021	9/5/2019	2.08	9/5/2029	9/5/2019	110.12885	104.0029514	98.27923671	92.9287983	87.92496634	83.24312325	78.86053475	74.75619585	70.9106901
200612A00004	6/12/2020	1.42	6/12/2040	6/12/2020	105.06163	96.26807172	88.47806601	81.5601057	75.40143022	69.90518951	64.98805492	60.5782068	56.61363686
160126A00004	1/26/2016	2.52	1/26/2026	1/26/2016	106.91425	103.8863048	100.9628949	98.13977415	95.41289732	92.77840889	90.23263284	87.77206295	85.39335381
181119A00008	11/19/2018	3.23	11/17/2023	11/19/2018	101.84886	100.9201722	100.0087784	99.11419703	98.23596261	97.37362694	96.52675807	95.69493965	94.87777017
190708A00029	7/8/2019	2.57	7/2/2029	7/8/2019	113.02111	106.9092052	101.1889552	95.83283913	90.81541823	86.11316869	81.70432769	77.56875239	73.687791
160713A00015	7/13/2016	1.57	7/13/2026	7/13/2016	102.17382	100.2972366	98.47545474	96.70642856	94.98820241	93.31890784	91.69675899	90.12004839	88.58714293

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
220211A00010	2/11/2022	1.99	2/11/2025	2/11/2022	101.97935	100.3344066	98.72900026	97.16186578	95.63179149	94.13761453	92.67821847	91.25253103	89.85952193
180322A00044	3/22/2018	3.18	3/22/2033	3/22/2018	115.98015	110.1944703	104.8154361	99.80962674	95.14666203	90.79890604	86.74119866	82.95061541	79.40625209
200605A00018	6/5/2020	0.91	6/5/2025	6/5/2020	100.69555	98.34274285	96.05799477	93.83893961	91.68330558	89.58891388	87.55367424	85.57558074	83.65270781
210512A00011	5/12/2021	1.16	5/12/2026	5/12/2021	102.54144	99.37476858	96.32608515	93.39034002	90.56273208	87.83869075	85.21386363	82.68410481	80.24546396
171204A00009	12/4/2017	2.23	12/4/2024	12/4/2017	101.53919	100.4952223	99.47163517	98.46785423	97.48332253	96.51750389	95.56988195	94.6399592	93.72725615
181226A00030	12/26/2018	2.91	12/26/2028	12/26/2018	108.78585	105.5218527	102.4023653	99.41965205	96.56645189	93.8359441	91.2217188	88.7177493	86.31836664
200103A00002	1/3/2020	2.07	1/3/2030	1/3/2020	110.79953	104.8686052	99.33068284	94.15690068	89.32068362	84.79755225	80.56494624	76.60206354	72.88971382
170707A00007	7/7/2017	2.65	7/8/2024	7/7/2017	102.76045	101.2056295	99.68225217	98.1894232	96.72628403	95.29200813	93.8857995	92.50689119	91.15454401
180925A00013	9/25/2018	3.41	9/25/2028	9/25/2018	109.27049	106.1359029	103.1347704	100.2601942	97.50568755	94.86514526	92.33281814	89.90329003	87.57145624
190829A00039	8/29/2019	1.85	8/29/2034	8/29/2019	109.25171	103.0957568	97.42461151	92.19387626	87.36363508	82.89796662	78.76451366	74.9341018	71.38040163
191206A00005	12/6/2019	2.18	12/7/2026	12/6/2019	107.2847	103.4782852	99.83312809	96.34149335	92.99606	89.7898965	86.71643784	83.7694641	80.9430804
200430A00027	4/30/2020	1.31	4/30/2035	4/30/2020	104.59374	98.42613901	92.76639474	87.56595201	82.78136123	78.37370417	74.30808587	70.55318701	67.08086908
200512A00013	5/12/2020	1.17	5/12/2027	5/12/2020	103.94953	99.87269851	95.98448822	92.27514372	88.73546162	85.35676039	82.13084799	79.04999171	76.10689009
200716A00004	7/16/2020	0.97	7/16/2027	7/16/2020	103.23202	99.03120897	95.03125359	91.22141635	87.59158991	84.13226069	80.83447055	77.68978117	74.690241
181218A00040	12/18/2018	3.23	6/18/2030	12/18/2018	111.30482	107.1944665	103.303455	99.61785264	96.12472655	92.81206118	89.6686869	86.6842146	83.84897576
190905A00025	9/5/2019	2.08	9/5/2029	9/5/2019	110.12885	104.0029504	98.27923694	92.92879973	87.92496889	83.24312683	78.86053928	74.75620125	70.91069632
200327A00084	3/27/2020	1.1	3/27/2025	3/27/2020	100.87789	98.74370311	96.66668343	94.64496608	92.67676138	90.76034853	88.89407263	87.07634161	85.30562354
220801A00066	8/1/2022	2.93	7/30/2027	8/1/2022	112.8782	108.3657551	104.0689339	99.97615661	96.07653182	92.35981227	88.81635299	85.4370723	82.21341564
150729A00028	7/29/2015	2.25	7/29/2025	7/29/2015	102.25892	100.8761065	99.52535672	98.20565817	96.91604237	95.65557903	94.4233742	93.21856854	92.04033571
180305A00030	3/5/2018	3.12	3/5/2025	3/5/2018	105.30417	103.1073496	100.9682348	98.88490063	96.855499	94.87825855	92.95148055	91.07353529	89.24285867
180612A00012	6/12/2018	2.94	6/12/2023	6/12/2018	100.68962	100.360979	100.0349574	99.7115172	99.39062477	99.07224693	98.75635114	98.44290546	98.13187852
200413A00009	4/13/2020	0.77	4/13/2027	4/13/2020	101.05799	98.83488901	96.68707001	94.6113484	92.60470206	90.66425776	88.78728283	86.97117724	85.21346631
221012A00053	10/12/2022	4.66	10/11/2024	10/12/2022	103.73321	102.7139621	101.7140725	100.7329991	99.77022008	98.82523305	97.89755411	96.98671695	96.09227202
160523A00086	5/23/2016	2.2	5/26/2026	5/23/2016	106.29675	103.1774236	100.1732789	97.27937493	94.49101525	91.80373079	89.21326743	86.71557434	84.30679312
170921A00055	9/21/2017	2.82	9/21/2027	9/21/2017	111.37055	106.9140355	102.6736196	98.63754477	94.79476147	91.13487781	87.64811704	84.32527776	81.15769702
180104A00041	1/4/2018	3.08	1/4/2033	1/4/2018	122.69282	113.5054294	105.1526842	97.55200284	90.62947542	84.31890838	78.5609777	73.30247927	68.49566488
160210A00054	2/10/2016	1.78	2/10/2026	2/10/2016	102.15045	100.4809085	98.85584157	97.2737027	95.73301059	94.23234658	92.77035148	91.34572263	89.95721111
151013A00033	10/13/2015	2.23	10/14/2025	10/13/2015	102.19842	100.697965	99.23436256	97.8064036	96.41293283	95.05284152	93.7250652	92.42858156	91.16240847
160603A00029	6/3/2016	2.18	6/3/2031	6/3/2016	108.82881	104.2802169	100.0030737	95.97825777	92.18815032	88.61650926	85.24835168	82.06984734	79.06822179
190813A00057	8/13/2019	1.9	8/13/2024	8/13/2019	101.70096	100.0646621	98.4628048	96.89436418	95.35835339	93.8538247	92.37986749	90.93560641	89.52019963
191203A00010	12/3/2019	2.21	12/3/2029	12/3/2019	111.13812	104.7769003	98.84628399	93.31442517	88.15200727	83.33202606	78.8295955	74.621771	70.68738819
200406A00014	4/6/2020	1.33	4/6/2035	4/6/2020	106.14635	99.84647406	94.06753377	88.75955055	83.87782246	79.38232321	75.23717653	71.41019314	67.87246256
160115A00011	1/15/2016	2.18	1/15/2026	1/15/2016	102.38796	100.7608475	99.17614906	97.6324197	96.12827048	94.66237032	93.23344306	91.84026479	90.4816613

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170124A00017	1/24/2017	2.82	1/23/2032	1/24/2017	112.53244	107.5237201	102.8317456	98.43295474	94.30573589	90.43025448	86.78829402	83.36311253	80.13931249
151201A00004	12/1/2015	2.44	12/1/2022	12/1/2015	100.00616	100.0033837	100.0006101	99.9978388	99.99506993	99.99230344	99.98953934	99.98677763	99.9840183
160608A00034	6/8/2016	2.44	6/9/2031	6/8/2016	108.99826	104.4662319	100.2036854	96.1916898	92.41280479	88.85094871	85.49128311	82.32010779	79.32476547
190131A00013	1/31/2019	3.48	1/31/2034	1/31/2019	125.66807	115.5603704	106.4455209	98.21725991	90.78137431	84.05426924	77.96171346	72.43773904	67.42367607
200406A00035	4/6/2020	1.05	4/4/2025	4/6/2020	100.75379	98.66189138	96.6260548	94.64446158	92.71535978	90.83706433	89.00795409	87.22646905	85.49110763
160203A00017	2/3/2016	2.07	2/3/2023	2/3/2016	100.28192	100.1021929	99.92310753	99.74466446	99.56686028	99.38969157	99.21315494	99.03724702	98.86196445
161116A00006	11/16/2016	2.39	11/16/2026	11/16/2016	103.77742	101.7108369	99.70869032	97.76844314	95.88767557	94.06408022	92.29545611	90.57970293	88.91481581
171219A00009	12/19/2017	2.3	12/19/2024	12/19/2017	101.69209	100.6066177	99.5427791	98.49995033	97.47753479	96.47495823	95.49166768	94.52713045	93.5808332
180717A00026	7/17/2018	3.24	7/16/2025	7/17/2018	106.53207	104.0632535	101.6670474	99.34084399	97.08215147	94.88858418	92.75785746	90.68778251	88.6762617
200110A00037	1/10/2020	2.32	1/10/2030	1/10/2020	111.95078	105.472358	99.4374505	93.81288611	88.56815787	83.67519291	79.10814564	74.84320955	70.85844591
161014A00026	10/14/2016	2.16	10/14/2031	10/14/2016	109.02634	104.2999065	99.86517333	95.70093103	91.78769129	88.10753395	84.64396965	81.38181533	78.3070814
170804A00005	8/4/2017	1.94	8/5/2024	8/4/2017	101.03769	100.1251342	99.22925233	98.34958279	97.48567861	96.6371097	95.80346198	94.98433666	94.17934946
191004A00019	10/4/2019	2.02	10/4/2029	10/4/2019	109.80566	103.6316611	97.86730638	92.48292264	87.45114108	82.74670653	78.34630396	74.22839994	70.37309792
170309A00042	3/9/2017	2.18	3/11/2024	3/9/2017	100.91338	100.2065541	99.51208453	98.82961846	98.15881356	97.49934115	96.85088548	96.21314311	95.58582223
200512A00021	5/12/2020	0.86	5/12/2025	5/12/2020	100.50539	98.2131532	95.98572448	93.82090613	91.71658427	89.67072922	87.68139166	85.74669894	83.86485151
140730A00037	7/30/2014	2.83	1/30/2024	7/30/2014	101.20458	100.5752421	99.95587451	99.34621761	98.74601759	98.15502997	97.57301916	96.99975804	96.43502757
141017A00022	10/17/2014	2.78	10/17/2024	10/17/2014	103.38938	101.6445359	99.93911909	98.27199459	96.64207061	95.04829365	93.48964687	91.96514866	90.4738511
170619A00095	6/16/2017	2.79	6/16/2027	6/16/2017	110.6599	106.4419295	102.4193511	98.58195319	94.92011785	91.42478024	88.08739378	84.89989769	81.8546866
191004A00022	10/4/2019	2.02	10/4/2029	10/4/2019	109.80566	103.6316622	97.86730548	92.48291991	87.45113668	82.74670062	78.34629668	74.22839143	70.37308829
210611A00012	6/11/2021	1.02	6/11/2026	6/11/2021	102.18503	98.95858414	95.85480487	92.86833826	89.99409317	87.22722853	84.56313956	81.99744484	79.52597413
170406A00024	4/6/2017	2.61	4/8/2024	4/6/2017	102.20375	100.8954659	99.61044892	98.34813247	97.10796425	95.8894095	94.6919503	93.51508491	92.35832715
200323A00090	3/23/2020	1.55	3/23/2027	3/23/2020	102.61881	100.2288039	97.9231671	95.69821992	93.55047266	91.47661155	89.47348874	87.53811283	85.66764005
170524A00037	5/24/2017	2.46	5/24/2024	5/24/2017	102.18029	100.7752482	99.39720416	98.04544064	96.71926831	95.41802153	94.14105727	92.88775424	91.65751193
200303A00028	3/3/2020	1.54	3/4/2030	3/3/2020	106.39147	100.5854765	95.17129301	90.11963579	85.40358652	80.998386	76.88124904	73.03119619	69.42890065
160414A00042	4/13/2016	2.48	4/13/2026	4/13/2016	106.52882	103.3980593	100.3804759	97.47134998	94.66618705	91.96070322	89.35081416	86.83262474	84.40241921
190802A00011	8/2/2019	2.01	8/2/2029	8/2/2019	106.49248	102.959971	99.59841569	96.39789404	93.34913899	90.44348853	87.67284208	85.02962024	82.50672765
160629A00066	6/29/2016	2.61	6/30/2036	6/29/2016	120.6156	109.7605193	100.1363772	91.59011218	83.98881901	77.21697801	71.17407725	65.77257219	60.93613338
200206A00027	2/6/2020	2.15	2/6/2030	2/6/2020	110.90101	104.4130497	98.37349493	92.74850329	87.50697566	82.62031694	78.06222126	73.80847669	69.83678763
140703A00026	7/3/2014	3.11	7/3/2024	7/3/2014	103.33009	101.8335094	100.3668662	98.92931779	97.52005354	96.13829263	94.78328282	93.45429912	92.15064254
160608A00023	6/8/2016	2.36	6/8/2026	6/8/2016	106.50666	103.2487906	100.1133633	97.09506999	94.1888609	91.38993315	88.69371714	86.09586385	83.59223291
170224A00009	2/24/2017	2.39	2/24/2023	2/24/2017	100.41912	100.1818051	99.94561967	99.71055099	99.47659112	99.24373223	99.01196658	98.78128648	98.55168431
180913A00033	9/13/2018	3.31	9/13/2033	9/13/2018	117.44002	111.3134278	105.6357792	100.3686838	95.47738364	90.93037984	86.69910263	82.75761684	79.08235891
150729A00041	7/29/2015	2.44	7/29/2025	7/29/2015	102.23389	100.8555088	99.50899776	98.19335701	96.90762607	95.65088227	94.42223887	93.22084335	92.04587585

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180907A00013	9/7/2018	3.27	9/8/2025	9/7/2018	107.25503	104.5916685	102.010453	99.50832508	97.08236239	94.72977123	92.44787996	90.23413264	88.08608317
160908A00016	9/8/2016	1.87	9/8/2023	9/8/2016	100.52314	99.76620234	99.02074315	98.28649853	97.56321609	96.85065097	96.14856559	95.45672932	94.7749183
190620A00033	6/20/2019	2.1	6/20/2029	6/20/2019	106.65422	103.2001376	99.90970022	96.7735935	93.78310589	90.9300846	88.20689601	85.60638898	83.12186111
200309A00082	3/9/2020	1.18	3/8/2030	3/9/2020	104.59134	98.33798582	92.52322871	87.11357095	82.07825615	77.38902974	73.01992239	68.94705336	65.14845179
200309A00084	3/9/2020	1.06	3/9/2027	3/9/2020	103.30018	99.3877687	95.65009406	92.07835678	88.6642507	85.39993343	82.27799761	79.29144415	76.4336573
210212A00007	2/12/2021	0.76	2/12/2026	2/12/2021	100.99319	98.06953927	95.24812991	92.52476292	89.89543596	87.35633697	84.90383373	82.53446405	80.24492657
210512A00012	5/12/2021	1.16	5/12/2026	5/12/2021	102.54143	99.37476854	96.32608538	93.39034051	90.56273282	87.83869173	85.21386483	82.68410623	80.24546558
160908A00023	9/8/2016	2.21	9/8/2026	9/8/2016	106.57679	103.1084634	99.77771414	96.57825775	93.5041369	90.54970122	87.70958949	84.97871297	82.35223977
190403A00014	4/3/2019	3.05	4/3/2029	4/3/2019	115.1562	109.3251019	103.8509085	98.70952106	93.87859616	89.33740998	85.06673291	81.04871431	77.26677678
190712A00016	7/12/2019	2.39	7/12/2029	7/12/2019	106.9765	103.4859251	100.161926	96.99496317	93.97611308	91.09702798	88.34989484	85.72739744	83.22268139
200512A00001	5/12/2020	1.17	5/12/2027	5/12/2020	103.94953	99.87269857	95.9844882	92.27514363	88.73546147	85.35676017	82.13084771	79.04999139	76.10688971
201110A00003	11/10/2020	1.12	11/10/2027	11/10/2020	104.15485	99.6620895	95.39674619	91.34605521	87.49803204	83.84142339	80.36565885	77.06080593	73.91752838
120806A00015	8/6/2012	2.38	8/6/2027	8/6/2012	104.70571	102.2442111	99.87088606	97.58182407	95.37331745	93.24184902	91.18408097	89.19684443	87.27712979
160606A00018	6/6/2016	1.74	6/5/2026	6/6/2016	102.41402	100.5749313	98.78859047	97.05305553	95.36647119	93.72706376	92.133137	90.58306816	89.07530424
191113A00013	11/13/2019	2.17	11/13/2026	11/13/2019	107.09561	103.3517182	99.76416629	96.32556335	93.02891008	89.86757368	86.83526666	83.92602696	81.1341994
150603A00032	6/3/2015	2.21	6/3/2025	6/3/2015	102.10305	100.7660132	99.45927324	98.18189079	96.93296625	95.71163496	94.51706555	93.34845838	92.20504406
160511A00016	5/11/2016	2.48	5/12/2031	5/11/2016	109.10543	104.6109622	100.3814631	96.39847406	92.64497236	89.10525128	85.76480935	82.61024926	79.62918597
190910A00044	9/10/2019	2.02	9/10/2026	9/10/2019	106.14986	102.5820724	99.15745913	95.86945071	92.71181475	89.67864055	86.76432044	83.96353231	81.27122331
160211A00038	2/11/2016	1.83	2/11/2026	2/11/2016	101.88153	100.2215571	98.60568069	97.03237423	95.50017244	94.00767184	92.55352762	91.13645076	89.75520525
200318A00012	3/18/2020	1.68	3/18/2033	3/18/2020	108.41452	102.0731636	96.2393785	90.86666557	85.91316389	81.3411598	77.11664808	73.20894222	69.59032793
220310A00008	3/10/2022	2.22	3/10/2025	3/10/2022	103.32972	101.1549756	99.03770426	96.97599127	94.96800529	93.01198969	91.10625881	89.24919446	87.43924267
160908A00030	9/8/2016	2.21	9/8/2026	9/8/2016	106.57679	103.1084634	99.77771414	96.57825775	93.50413689	90.54970121	87.70958948	84.97871295	82.35223975
160908A00028	9/8/2016	2.21	9/8/2026	9/8/2016	106.57679	103.1084636	99.77771417	96.57825768	93.50413673	90.54970096	87.70958915	84.97871254	82.35223926
200221A00012	2/21/2020	2.14	2/21/2040	2/21/2020	111.59646	102.5160018	94.45580085	87.28422134	80.88812464	75.17010244	70.04614737	65.44368608	61.29991603
210331A00007	3/31/2021	1.25	3/31/2031	3/31/2021	103.52875	99.34255714	95.39899539	91.68142139	88.17447415	84.86396307	81.73677052	78.78076312	75.984711
210915A00025	9/15/2021	1.09	9/15/2026	9/15/2021	102.67326	99.29080045	96.04345573	92.92504729	89.9297128	87.05189076	84.28630316	81.62793935	79.07204085
190905A00024	9/5/2019	2.08	9/5/2029	9/5/2019	110.12885	104.0029498	98.27923723	92.92880077	87.9249706	83.24312914	78.86054215	74.75620461	70.91070013
130206A00009	2/6/2013	2.83	2/7/2028	2/6/2013	110.30509	106.200728	102.2965526	98.58134914	95.04460476	91.6764578	88.46765334	85.40950222	82.49384306
160401A00005	4/1/2016	2.02	4/3/2023	4/1/2016	100.41897	100.0781543	99.73965006	99.40343746	99.0694933	98.73779465	98.40831892	98.08104382	97.75594733
170106A00030	1/6/2017	2.39	1/6/2027	1/6/2017	104.45472	102.2839409	100.1832661	98.14985163	96.18098876	94.27409781	92.4267211	90.63651636	88.90125045
200206A00008	2/6/2020	1.64	2/6/2025	2/6/2020	102.27061	100.2258753	98.23340602	96.29148141	94.39845638	92.55275323	90.75285822	88.99731837	87.2847385
200406A00027	4/6/2020	1.31	4/5/2030	4/6/2020	106.36038	100.4655849	94.97405901	89.85533094	85.08140405	80.62654451	76.46708676	72.58125658	68.94901016
150714A00003	7/14/2015	3.76	7/12/2030	7/14/2015	114.65221	110.3449347	106.2707088	102.4145506	98.7625602	95.30183466	92.02038995	88.90708901	85.951576

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170619A00089	6/16/2017	2.79	6/16/2027	6/16/2017	110.6599	106.4419287	102.4193507	98.58195318	94.9201182	91.42478093	88.08739481	84.89989901	81.85468821
200206A00038	2/6/2020	1.78	2/6/2023	2/6/2020	100.23607	100.0481404	99.86091786	99.67440162	99.48858764	99.30347193	99.11905055	98.93531957	98.75227512
151001A00023	10/1/2015	2.02	10/1/2025	10/1/2015	102.19258	100.6886322	99.22168665	97.79052776	96.39399401	95.03097076	93.70038795	92.40121799	91.13247372
170105A00012	1/5/2017	2.68	1/5/2024	1/5/2017	101.64253	100.5678549	99.51608238	98.4864817	97.47835518	96.49103424	95.52387781	94.57627097	93.6476236
201221A00022	12/21/2020	0.51	12/19/2025	12/21/2020	100.68805	97.94173226	95.2876907	92.72228376	90.24203399	87.84362181	85.52387722	83.27977218	81.10841326
150929A00076	9/29/2015	2.28	9/29/2025	9/29/2015	102.18736	100.7270419	99.30190575	97.91081764	96.55268727	95.22646806	93.93115501	92.66578267	91.42942329
151029A00008	10/29/2015	2.28	10/29/2025	10/29/2015	102.27816	100.7753911	99.30956635	97.87948136	96.48397608	95.12193728	93.79229627	92.49402675	91.2261428
200110A00043	1/10/2020	2.32	1/10/2030	1/10/2020	111.95078	105.4723575	99.4374507	93.81288695	88.56815928	83.67519484	79.10814803	74.84321236	70.85844908
200414A00009	4/14/2020	0.82	4/14/2025	4/14/2020	99.900544	98.67577126	97.47751457	96.30497755	95.15739477	94.03403009	92.93417521	91.85714842	90.80229335
210714A00016	7/14/2021	0.75	7/12/2024	7/14/2021	99.764192	98.2493042	96.7651696	95.31091071	93.88568314	92.48867418	91.11910133	89.77621087	88.45927652
210809A00015	8/9/2021	1.06	8/7/2026	8/9/2021	102.52178	99.15648531	95.92345605	92.81671336	89.83058403	86.95968499	84.19890656	81.54339672	78.98854645
170802A00013	8/2/2017	2.5	8/2/2024	8/2/2017	102.64748	101.0312204	99.44854073	97.89845752	96.38002227	94.8923234	93.4344844	92.00566214	90.60504522
160329A00017	3/29/2016	2.48	3/30/2026	3/29/2016	106.15684	103.174704	100.2980473	97.52253616	94.84404133	92.25862465	89.76252939	87.35217081	85.02412739
171207A00026	12/7/2017	2.93	12/7/2027	12/7/2017	112.7147	107.9239273	103.3764197	99.0584059	94.95697041	91.0599941	87.35610109	83.83460916	80.48548379
200311A00015	3/11/2020	1.26	3/11/2027	3/11/2020	104.11623	100.1753504	96.41057306	92.8130254	89.37433616	86.08660102	82.94235372	79.93453916	77.05648838
161102A00014	11/2/2016	1.99	11/2/2023	11/2/2016	100.65667	99.75443868	98.86846116	97.99829986	97.14353326	96.30375469	95.47857174	94.66760557	93.87049036
170309A00014	3/9/2017	2.58	3/9/2027	3/9/2017	105.12993	102.8602568	100.6662388	98.54471928	96.49269787	94.50732059	92.58587176	90.72576635	88.92454269
190506A00026	5/6/2019	3.03	5/4/2029	5/6/2019	115.63934	109.5493929	103.8407863	98.48731107	93.46469546	88.75045489	84.32375155	80.16526552	76.25707668
190913A00018	9/13/2019	2.11	9/11/2026	9/13/2019	102.99786	101.0297405	99.12094114	97.26918575	95.47230394	93.72822417	92.03496855	90.39064789	88.79345708
170727A00003	7/27/2017	1.97	7/29/2024	7/27/2017	101.00881	100.1344831	99.27590128	98.4326279	97.60424409	96.79034671	95.99054756	95.20447267	94.43176163
160210A00051	2/10/2016	2.28	2/10/2031	2/10/2016	108.97473	104.5895639	100.4571754	96.5603195	92.88307179	89.41071509	86.12963949	83.02725118	80.0918895
200109A00008	1/9/2020	1.95	1/9/2030	1/9/2020	106.63646	102.8884985	99.33160737	95.95415474	92.74531054	89.69498347	86.79376548	84.03288083	81.40413922
200220A00026	2/20/2020	2.22	2/21/2040	2/20/2020	112.3387	103.1940413	95.0768361	87.85452544	81.41317299	75.65468354	70.4944572	65.8594087	61.68629243
200724A00011	7/24/2020	1.41	7/26/2038	7/24/2020	107.44566	96.25760315	86.52147685	78.03214551	70.61499326	64.12120457	58.42379765	53.41428822	48.99988039
160908A00019	9/8/2016	1.87	9/8/2023	9/8/2016	100.52314	99.76620234	99.02074315	98.28649852	97.56321608	96.85065097	96.14856558	95.45672932	94.77491829
181116A00006	11/16/2018	3.18	11/17/2025	11/16/2018	103.79483	102.2289298	100.7022831	99.21358791	97.76159577	96.34510889	94.96297784	93.61409913	92.29741309
160812A00006	8/12/2016	2.16	8/12/2026	8/12/2016	106.65325	103.3566021	100.187321	97.1396768	94.20823935	91.38785575	88.67363448	86.06093034	83.54533034
210408A00007	4/8/2021	1.05	4/8/2031	4/8/2021	103.63696	99.38496717	95.38243154	91.61205355	88.05787921	84.7051825	81.54036216	78.55084784	75.72501465
220310A00010	3/10/2022	2.31	3/10/2027	3/10/2022	108.30797	104.2863379	100.4431787	96.76953089	93.25693846	89.8974162	86.68342073	83.6078234	80.66388497
150929A00087	9/29/2015	2.09	9/29/2025	9/29/2015	102.21399	100.7488702	99.3191457	97.92367202	96.56134962	95.23112316	93.93197935	92.66294489	91.42308458
170313A00045	3/13/2017	3.22	3/15/2032	3/13/2017	113.62582	108.509263	103.7201576	99.23386375	95.02780211	91.08127022	87.37527311	83.89237001	80.616536
160802A00026	8/2/2016	1.84	8/2/2023	8/2/2016	100.47597	99.81278823	99.15838052	98.51257727	97.87520942	97.24611228	96.62512545	96.01209263	95.40686153
170317A00040	3/17/2017	2.74	3/18/2024	3/17/2017	102.25869	100.9928919	99.75266558	98.53724098	97.34588001	96.17787416	95.03254295	93.90923251	92.8073143

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190205A00021	2/5/2019	3.32	2/5/2029	2/5/2019	116.46956	110.7131766	105.3012106	100.2108279	95.42083943	90.9115728	86.66475553	82.66340769	78.89174339
180206A00046	2/6/2018	2.72	2/6/2023	2/6/2018	100.4131	100.2250131	100.0376385	99.85097033	99.66500466	99.47973746	99.29516479	99.11128273	98.9280874
210809A00016	8/9/2021	0.66	8/9/2024	8/9/2021	99.639054	98.21731359	96.82476666	95.46055402	94.12385055	92.81386339	91.52983039	90.27101852	89.03672255
150701A00056	7/1/2015	2.34	7/1/2025	7/1/2015	102.37862	100.9966068	99.64656656	98.32749199	97.03842005	95.77842551	94.54661917	93.34214612	92.16418418
190813A00064	8/13/2019	1.9	8/13/2024	8/13/2019	101.70096	100.0646621	98.46280485	96.89436429	95.35835356	93.85382492	92.37986777	90.93560674	89.52020002
201029A00004	10/29/2020	1.49	10/29/2038	10/29/2020	108.28003	96.90103368	87.0159745	78.41118127	70.90516565	64.34358314	58.59501027	53.54740047	49.1051063
210714A00009	7/14/2021	0.75	7/12/2024	7/14/2021	99.764407	98.23596272	96.73858931	95.27139972	93.8335405	92.42419028	91.04255817	89.68788242	88.35942899
190329A00067	3/29/2019	2.61	3/29/2024	3/29/2019	102.09498	100.8420201	99.61150034	98.40285142	97.21552526	96.04899199	94.90273916	93.77627099	92.6691077
160201A00016	2/1/2016	2.1	2/2/2026	2/1/2016	102.33984	100.6731284	99.05066859	97.47092676	95.93243365	94.4337819	92.97362294	91.55066409	90.16366578
160908A00024	9/8/2016	2.21	9/8/2026	9/8/2016	106.57679	103.1084634	99.77771413	96.57825773	93.50413685	90.54970115	87.7095894	84.97871285	82.35223963
181218A00089	12/18/2018	3.05	6/19/2023	12/18/2018	101.10153	100.5578611	100.0201038	99.48816232	98.96194223	98.44135111	97.92629857	97.41669613	96.91245719
200522A00009	5/22/2020	0.96	5/22/2030	5/22/2020	102.22563	98.28707817	94.56190298	91.03638774	87.69780988	84.53435813	81.53506111	78.68972181	75.98885771
200512A00018	5/12/2020	0.85	5/12/2025	5/12/2020	100.45198	98.2186407	96.04800794	93.93795457	91.88644084	89.89150822	87.95127565	86.06393595	84.22775245
150219A00016	2/19/2015	2.68	2/19/2025	2/19/2015	103.94242	101.8984464	99.90749759	97.96778771	96.07761102	94.23533353	92.43938927	90.68827682	88.98055604
161229A00019	12/29/2016	2.46	12/29/2026	12/29/2016	104.49224	102.3614796	100.2984968	98.30057212	96.36511801	94.4896691	92.6718754	90.90949611	89.20039376
190205A00022	2/5/2019	3.32	2/5/2029	2/5/2019	116.46956	110.7131784	105.3012115	100.2108281	95.42083883	90.91157151	86.66475361	82.66340518	78.89174034
110719A00017	7/19/2011	3.68	7/20/2026	7/19/2011	105.86377	103.9256977	102.0440819	100.2168144	98.44188507	96.71737322	95.04144282	93.41233826	91.82838019
180302A00014	3/2/2018	2.69	3/2/2023	3/2/2018	100.3671	100.1979396	100.0294339	99.86157801	99.69436802	99.52779985	99.36186949	99.19657297	99.03190635
160908A00032	9/8/2016	2.17	9/8/2026	9/8/2016	106.13124	102.8035669	99.60618546	96.53318026	93.57894585	90.73816449	88.00578946	85.37702941	82.84733385
200512A00020	5/12/2020	0.86	5/12/2025	5/12/2020	100.50539	98.213153	95.98572388	93.82090515	91.71658291	89.6707275	87.6813896	85.74669653	83.86484878
201103A00005	11/3/2020	0.89	11/4/2030	11/3/2020	101.93934	97.97573112	94.23372884	90.69864179	87.35686955	84.19581574	81.20380687	78.37001829	75.68440656
190104A00034	1/4/2019	3.18	1/4/2029	1/4/2019	113.1715	108.3796663	103.8538366	99.57719898	95.53411266	91.71001691	88.09135006	84.66547522	81.42061194
191112A00023	11/12/2019	2.36	11/13/2029	11/12/2019	112.05499	105.6960632	99.76427252	94.2282671	89.05916451	84.23034342	79.71725533	75.49725283	71.54943295
160106A00042	1/6/2016	2.43	1/6/2026	1/6/2016	102.80275	101.1697295	99.57925299	98.02987203	96.52019446	95.04888597	93.61466726	92.21631138	90.85264115
180906A00032	9/6/2018	3.24	9/5/2025	9/6/2018	107.25041	104.5620453	101.9566846	99.43122387	96.98270197	94.60828902	92.30527959	90.07108621	87.90323326
191008A00014	10/8/2019	1.85	10/8/2026	10/8/2019	105.68641	102.0639364	98.58949122	95.2562365	92.05768347	88.98767525	86.04036806	83.21021379	80.49194342
110909A00006	9/9/2011	2.26	9/9/2026	9/9/2011	103.29983	101.3260947	99.41183916	97.55478443	95.75275428	94.00367159	92.30555313	90.65650466	89.05471621
150824A00050	8/24/2015	2.03	8/25/2025	8/24/2015	102.03503	100.6142165	99.22701718	97.87236077	96.54921658	95.25659505	93.99354581	92.75915574	91.55254722
200115A00013	1/15/2020	2.18	1/15/2030	1/15/2020	109.11987	103.8664123	98.94420268	94.32960907	90.00083801	85.93778204	82.12187935	78.53598605	75.16425957
160301A00012	3/1/2016	2.02	3/1/2023	3/1/2016	100.34463	100.0936253	99.84387862	99.59537585	99.34810772	99.10206507	98.85723883	98.61362005	98.37119982
161214A00034	12/14/2016	2.65	12/14/2026	12/14/2016	104.44576	102.3241784	100.2698432	98.28006897	96.3522969	94.48408839	92.67311855	90.91717014	89.21412778
210512A00008	5/12/2021	0.66	5/10/2024	5/12/2021	99.608043	98.23796484	96.89366787	95.57448571	94.27977495	93.00891372	91.76130079	90.53635473	89.33351305
120517A00021	5/17/2012	1.85	5/17/2024	5/17/2012	100.78856	99.99974783	99.22464643	98.46288063	97.71409043	96.97792926	96.25406333	95.542171	94.84194227

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180322A00040	3/22/2018	3.16	3/21/2031	3/22/2018	115.36655	109.8434197	104.6852355	99.8641346	95.35459473	91.13322234	87.17856137	83.47092014	79.99221479
210714A00011	7/14/2021	0.75	7/12/2024	7/14/2021	99.764407	98.23596272	96.73858931	95.27139972	93.8335405	92.42419027	91.04255817	89.68788241	88.35942898
160908A00027	9/8/2016	2.21	9/8/2026	9/8/2016	106.57679	103.1084637	99.7777142	96.57825764	93.50413662	90.54970078	87.7095889	84.97871223	82.3522389
190605A00024	6/5/2019	2.64	6/5/2029	6/5/2019	113.36559	107.3002719	101.6199177	96.29772308	91.3088936	86.63048426	82.24125191	78.1215204	74.25305708
150227A00011	2/27/2015	2.33	2/27/2025	2/27/2015	103.47118	101.5433578	99.66453278	97.83307496	96.04742707	94.30609687	92.60765374	90.9507256	89.33399594
190308A00016	3/8/2019	3.18	3/8/2034	3/8/2019	123.94039	114.3171275	105.6261159	97.76802254	90.65477885	84.20823572	78.35898926	73.04535173	68.21244899
190813A00052	8/13/2019	2.24	8/13/2029	8/13/2019	111.07907	104.9613201	99.24177351	93.89202828	88.88586552	84.19907007	79.80926662	75.69577003	71.83944873
220104A00006	1/4/2022	1.76	1/4/2029	1/4/2022	108.69862	103.38094	98.3783635	93.670196	89.23722013	85.06158074	81.12668098	77.41708692	73.91843979
190515A00035	5/15/2019	2.82	2/15/2029	5/15/2019	114.10866	108.2540211	102.7556996	97.58981272	92.73420935	88.16833812	83.87312292	79.83084894	76.02505816
200330A00058	3/30/2020	1.49	3/29/2030	3/30/2020	106.10427	100.273889	94.83993351	89.77260602	85.04451953	80.63048985	76.50734704	72.65376393	69.05010003
210107A00008	1/7/2021	0.54	1/5/2024	1/7/2021	99.314746	98.25959627	97.22697165	96.21615472	95.22645867	94.2572253	93.30782352	92.37764799	91.46611779
191209A00005	12/9/2019	2.22	12/10/2029	12/9/2019	110.30189	104.473638	99.02745458	93.93555987	89.17235625	84.71424451	80.5394572	76.62790673	72.96104681
180104A00024	1/4/2018	2.98	1/4/2028	1/4/2018	112.7315	107.9981048	103.5056144	99.24030397	95.1893053	91.34055126	87.68272143	84.20519183	80.89798817
200309A00034	3/9/2020	0.96	3/9/2035	3/9/2020	103.74607	97.62682434	92.01060478	86.84942086	82.10032299	77.72483006	73.68842954	69.96013698	66.51210737
191004A00025	10/4/2019	1.74	10/4/2024	10/4/2019	101.58468	99.81915924	98.09327934	96.40591981	94.75599872	93.14247132	91.56432848	90.02059532	88.51032975
200406A00037	4/6/2020	0.9	4/6/2023	4/6/2020	100.03148	99.68334314	99.33763086	98.99432065	98.65338748	98.3148067	97.97855395	97.64460524	97.3129369
150311A00003	3/11/2015	2.72	3/31/2025	3/11/2015	104.3546	102.2139148	100.1302441	98.10174451	96.12664281	94.20323301	92.32987359	90.50498467	88.72704527
190605A00007	6/5/2019	2.47	6/5/2026	6/5/2019	107.09414	103.735787	100.5045685	97.39495659	94.40169502	91.5197846	88.74446907	86.07122185	83.49573365
200110A00039	1/10/2020	2.32	1/10/2030	1/10/2020	111.95078	105.4723573	99.43745075	93.81288727	88.56815984	83.67519561	79.108149	74.8432135	70.85845039
210714A00013	7/14/2021	1.12	7/14/2026	7/14/2021	102.64358	99.32962826	96.14408196	93.08122451	90.13562454	87.30212381	84.57582167	81.9520606	79.42641262
210809A00012	8/9/2021	1.06	8/7/2026	8/9/2021	102.52178	99.15648534	95.92345587	92.81671297	89.83058344	86.95968421	84.19890561	81.5433956	78.98854517
150224A00010	2/24/2015	2.34	2/24/2025	2/24/2015	101.91855	100.6528852	99.41794233	98.21267235	97.03607152	95.88718001	94.76507957	93.66889125	92.59777336
180718A00008	7/18/2018	3.37	7/18/2028	7/18/2018	116.3152	110.7655913	105.5261729	100.5777158	95.90228873	91.48316511	87.30473546	83.35242675	79.61262791
190103A00020	1/3/2019	3.12	1/5/2026	1/3/2019	107.98052	104.975658	102.0728915	99.26814933	96.55754503	93.9373706	91.4040872	88.95431629	86.5848313
200818A00012	8/18/2020	0.97	8/18/2027	8/18/2020	103.30428	99.02778118	94.95899675	91.08663556	87.40008947	83.88938444	80.54513877	77.35852439	74.3212309
180813A00045	8/13/2018	2.89	8/13/2025	8/13/2018	103.28294	101.8458427	100.4427096	99.07246156	97.73405833	96.42650109	95.14883051	93.90012481	92.67949799
160209A00006	2/9/2016	1.91	2/9/2026	2/9/2016	102.01736	100.3553324	98.7374559	97.16219634	95.62808709	94.13372335	92.67775902	91.25890384	89.87592062
190205A00023	2/5/2019	3.32	2/5/2029	2/5/2019	116.46956	110.7131767	105.3012106	100.2108279	95.4208394	90.91157274	86.66475544	82.66340756	78.89174323
150617A00017	6/17/2015	2.27	6/17/2025	6/17/2015	102.18862	100.8491834	99.54013405	98.26052685	97.00945828	95.78606002	94.58949723	93.418967	92.27369685
191203A00011	12/3/2019	2.21	12/3/2029	12/3/2019	111.13812	104.7769005	98.84628389	93.31442477	88.1520066	83.33202514	78.82959436	74.62176966	70.68738665
160413A00020	4/13/2016	2.48	4/13/2026	4/13/2016	106.52882	103.3980594	100.3804759	97.47134998	94.66618702	91.96070316	89.35081409	86.83262465	84.4024191
210611A00008	6/11/2021	0.61	6/11/2024	6/11/2021	99.533214	98.07708125	96.64966129	95.25017214	93.87786017	92.53199844	91.21188553	89.91684441	88.64622137
170309A00016	3/9/2017	2.39	3/8/2024	3/9/2017	101.06257	100.3551739	99.66020247	98.97729225	98.30609734	97.64628577	96.99753869	96.35954975	95.73202441

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180905A00017	9/5/2018	3.43	9/6/2033	9/5/2018	127.152	117.2545031	108.3012924	100.1941483	92.84568537	86.17809972	80.12206615	74.61576776	69.60404159
171013A00024	10/13/2017	2.47	10/15/2024	10/13/2017	102.87927	101.1181921	99.39695855	97.71442372	96.06948627	94.46108338	92.88818914	91.34981302	89.84499836
190702A00071	7/2/2019	2.69	7/1/2039	7/2/2019	122.92246	110.0692205	98.92636228	89.24406184	80.81106292	73.44847492	67.00460449	61.35064072	56.37704866
190702A00068	7/2/2019	2.69	7/1/2039	7/2/2019	122.92247	110.0692247	98.92635933	89.24405291	80.81104904	73.44845697	67.0045832	61.35061672	56.37702246
151209A00024	12/9/2015	2.22	12/9/2025	12/9/2015	102.7	101.1048462	99.55058107	98.03582327	96.55925072	95.11959587	93.71564295	92.34622551	91.01022398
160603A00014	6/3/2016	1.74	6/3/2026	6/3/2016	102.41369	100.574743	98.78853105	97.05311648	95.36664446	93.72734181	92.13351275	90.58353497	89.07585589
160608A00025	6/8/2016	2.36	6/8/2026	6/8/2016	106.50666	103.2487905	100.1133633	97.09507005	94.18886103	91.38993336	88.69371742	86.0958642	83.59223333
160908A00031	9/8/2016	2.21	9/8/2026	9/8/2016	106.57679	103.1084635	99.77771415	96.57825772	93.50413683	90.54970111	87.70958934	84.97871278	82.35223955
191105A00012	11/5/2019	2.07	11/3/2034	11/5/2019	110.79947	104.4321531	98.57562727	93.18229215	88.20942828	83.61866309	79.37549492	75.44887237	71.81082221
120330A00013	3/30/2012	2.98	4/2/2024	3/30/2012	102.55959	101.3083407	100.0790758	98.87125995	97.68437343	96.51791316	95.37139183	94.24433737	93.13629231
140730A00035	7/30/2014	2.67	1/30/2023	7/30/2014	100.31092	100.1830761	100.0555915	99.92846542	99.8016962	99.67528223	99.54922191	99.42351365	99.29815586
190813A00067	8/13/2019	1.9	8/13/2024	8/13/2019	101.70096	100.0646621	98.4628048	96.89436418	95.35835339	93.8538247	92.37986749	90.93560641	89.52019963
191015A00025	10/15/2019	2.01	10/15/2029	10/15/2019	105.8289	102.2508642	98.84910974	95.61323538	92.53353723	89.60095439	86.80702198	84.14382784	81.60397272
220310A00009	3/10/2022	2.31	3/10/2027	3/10/2022	108.30797	104.2863384	100.4431788	96.76953067	93.25693792	89.89741536	86.6834196	83.60782199	80.6638833
150410A00021	4/10/2015	2.27	4/10/2025	4/10/2015	101.73729	100.4904877	99.27066617	98.07701468	96.90875474	95.76513767	94.64544311	93.54897771	92.47507388
150803A00041	8/3/2015	3.01	8/2/2030	8/3/2015	110.60808	106.4378213	102.4943007	98.76287127	95.22994703	91.88292135	88.7100895	85.7005778	82.84427894
190308A00026	3/8/2019	3.18	3/8/2034	3/8/2019	123.94039	114.3171274	105.6261159	97.76802255	90.65477892	84.20823584	78.35898942	73.04535193	68.21244922
170406A00026	4/6/2017	2.61	4/8/2024	4/6/2017	102.20375	100.8954658	99.61044892	98.34813248	97.10796427	95.88940953	94.69195034	93.51508497	92.35832722
170615A00006	6/15/2017	2.15	6/17/2024	6/15/2017	100.87466	100.085046	99.30916259	98.54663726	97.79710933	97.06023152	96.33566933	95.6231005	94.92221433
181214A00030	12/14/2018	3.47	12/14/2033	12/14/2018	127.66316	117.4477322	108.2298854	99.9035587	92.3746367	85.55953863	79.38398243	73.78189983	68.69448342
190708A00028	7/8/2019	2.57	7/2/2029	7/8/2019	113.02111	106.9092045	101.188955	95.83283953	90.81541914	86.11317009	81.70432954	77.56875466	73.68779366
200130A00046	1/30/2020	1.81	1/29/2027	1/30/2020	102.72443	100.5956124	98.5354121	96.54104653	94.60986827	92.739356	90.92710745	89.17083299	87.46834956
160801A00002	8/1/2016	1.58	8/3/2026	8/1/2016	102.2708	100.3517298	98.48966098	96.68243236	94.92798232	93.22434229	91.56963181	89.96205392	88.39989088
170406A00034	4/6/2017	3.01	4/6/2027	4/6/2017	111.08034	107.0097376	103.1206404	99.40392386	95.85097025	92.45363792	89.2042326	86.09548057	83.12050347
210412A00008	4/12/2021	0.66	4/12/2024	4/12/2021	99.611173	98.3107843	97.03370546	95.77936203	94.54719804	93.33667521	92.14727229	90.97848436	89.82982225
140924A00057	9/24/2014	3.25	9/25/2028	9/24/2014	116.71276	111.2125969	106.026025	101.1332205	96.51572161	92.1563269	88.03900231	84.14879609	80.4717602
170511A00011	5/11/2017	2.41	5/11/2027	5/11/2017	104.97874	102.6276937	100.3574681	98.16460745	96.04582672	93.9980045	92.01817374	90.10351296	88.2513382
191224A00002	12/24/2019	2.17	12/24/2029	12/24/2019	106.5587	102.8723548	99.37143282	96.04478703	92.88202546	89.87345706	87.01003964	84.28333194	81.68544958
151030A00026	10/30/2015	3.29	10/30/2030	10/30/2015	118.18072	111.371969	105.0534474	99.18609028	93.73418096	88.66504393	83.9487697	79.55796602	75.46753271
160908A00026	9/8/2016	2.21	9/8/2026	9/8/2016	106.57679	103.1084635	99.77771417	96.5782577	93.50413677	90.54970101	87.70958921	84.97871262	82.35223935
180410A00002	4/10/2018	3.14	4/11/2033	4/10/2018	115.85999	110.0362889	104.6247923	99.59139605	94.90512026	90.53780067	86.46381177	82.65981914	79.10455739
161012A00011	10/12/2016	1.53	10/12/2023	10/12/2016	100.36124	99.71986177	99.08760908	98.46426765	97.84963464	97.24351363	96.64571436	96.0560525	95.47434938
170619A00092	6/16/2017	2.79	6/16/2027	6/16/2017	110.65989	106.441928	102.4193504	98.58195319	94.92011854	91.42478157	88.08739572	84.89990018	81.85468963

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180628A00068	6/28/2018	3.12	6/28/2028	6/28/2018	113.13641	108.6673307	104.42977	100.4100199	96.59526971	92.97354171	89.53363218	86.26505683	83.15800048
190718A00012	7/18/2019	2.55	7/18/2029	7/18/2019	111.87609	106.253133	100.9809078	96.03507442	91.39312593	87.03423948	82.93914099	79.08998148	75.47022394
210714A00018	7/14/2021	0.75	7/12/2024	7/14/2021	99.764192	98.24930419	96.76516959	95.3109107	93.88568313	92.48867417	91.11910131	89.77621085	88.4592765
170105A00010	1/5/2017	2.61	1/5/2027	1/5/2017	104.47601	102.3124065	100.2184739	98.19138921	96.22846782	94.32715252	92.48500671	90.69970789	88.96904146
200306A00058	3/6/2020	1.06	3/6/2030	3/6/2020	102.49423	98.82821578	95.35219819	92.05443526	88.92400243	85.95073101	83.12515062	80.43843649	77.8823609
160608A00033	6/8/2016	2.44	6/9/2031	6/8/2016	108.99826	104.4662327	100.2036854	96.19168911	92.41280346	88.85094682	85.4912807	82.32010491	79.32476217
161202A00001	12/2/2016	2.65	12/1/2023	12/2/2016	101.37918	100.3973825	99.43472242	98.49064512	97.56461512	96.65611736	95.76465625	94.88975472	94.0309534
170207A00055	2/7/2017	2.36	2/8/2027	2/7/2017	104.50609	102.2919519	100.1504696	98.07865567	96.07366523	94.13279071	92.25345421	90.43320034	88.66968958
200317A00009	3/17/2020	1.61	3/16/2035	3/17/2020	106.51839	100.2773781	94.54717059	89.27920967	84.43001844	79.96062921	75.83608051	72.02497374	68.49908179
150925A00034	9/25/2015	2.36	9/25/2025	9/25/2015	102.3059	100.8442198	99.41774817	98.02534436	96.66591739	95.33842007	94.04184685	92.77523175	91.53764655
161004A00070	10/4/2016	1.92	10/4/2023	10/4/2016	100.57038	99.74316369	98.92961791	98.1294029	97.34219234	96.56767052	95.80553187	95.05548057	94.31723019
140618A00019	6/18/2014	3.08	6/18/2024	6/18/2014	101.71857	100.88299	100.0621473	99.25563955	98.46307917	97.68409302	96.91832163	96.16541858	95.42504993
191122A00003	11/22/2019	2.32	11/22/2039	11/22/2019	117.26088	105.6978124	95.61077216	86.78902151	79.05398073	72.25408211	66.2604802	60.96346989	56.26949175
171207A00024	12/7/2017	2.93	12/7/2027	12/7/2017	112.7147	107.9239275	103.3764197	99.05840586	94.95697026	91.05999386	87.35610076	83.83460874	80.48548328
180104A00023	1/4/2018	2.91	1/4/2028	1/4/2018	110.8082	106.6441952	102.6826798	98.91240578	95.32281396	91.90399198	88.64663092	85.54198508	82.58183469
200206A00034	2/6/2020	1.84	2/6/2025	2/6/2020	102.31973	100.2338702	98.2014795	96.22080068	94.29015056	92.40791478	90.57254433	88.78255231	87.03651091
200327A00094	3/27/2020	1.6	3/27/2030	3/27/2020	106.76681	100.9081877	95.44752656	90.35493079	85.60292519	81.16624373	77.02164035	73.14771703	69.52476722
150929A00083	9/29/2015	2.09	9/29/2025	9/29/2015	102.21399	100.7488702	99.3191457	97.92367202	96.56134962	95.23112316	93.93197935	92.66294489	91.42308458
160608A00030	6/8/2016	2.36	6/8/2026	6/8/2016	106.50666	103.2487906	100.1133633	97.09507	94.18886091	91.38993316	88.69371716	86.09586388	83.59223294
180628A00078	6/28/2018	2.73	6/28/2023	6/28/2018	100.68443	100.3489621	100.0162627	99.6862895	99.35900511	99.03437303	98.71235742	98.39292312	98.07603565
181128A00011	11/28/2018	3.27	11/28/2023	11/28/2018	101.97406	100.9984486	100.0416726	99.10319268	98.18248603	97.27904971	96.3923996	95.52206954	94.66761053
151228A00013	12/28/2015	2.27	12/29/2025	12/28/2015	102.78554	101.1875578	99.63059022	98.11324662	96.63419901	95.19217422	93.78595123	92.4143586	91.07627206
160908A00036	9/8/2016	2.3	9/8/2031	9/8/2016	108.55987	103.9206007	99.564215	95.47037393	91.62036777	87.996977	84.58434306	81.36785102	78.33402321
201207A00009	12/7/2020	1.01	12/7/2027	12/7/2020	103.68874	99.1511438	94.84637614	90.7611901	86.88315941	83.20062675	79.70265208	76.37896476	73.21991909
190605A00027	6/5/2019	2.64	6/5/2029	6/5/2019	113.3656	107.3002757	101.6199187	96.29772137	91.30888946	86.63047789	82.24124349	78.1215101	74.25304506
210611A00011	6/11/2021	1.02	6/11/2026	6/11/2021	102.18503	98.95858415	95.85480481	92.86833813	89.99409297	87.22722827	84.56313924	81.99744446	79.5259737
160810A00025	8/10/2016	2.17	8/10/2026	8/10/2016	106.26113	102.8661635	99.60358024	96.46741252	93.45199914	90.55196821	87.76222037	85.07791312	82.4944462
200109A00006	1/9/2020	1.95	1/9/2030	1/9/2020	106.63646	102.8885004	99.33160732	95.95415285	92.74530694	89.69497829	86.79375883	84.03287282	81.40412996
150722A00033	7/22/2015	2.47	7/22/2025	7/22/2015	102.27438	100.8960524	99.54957804	98.23395565	96.94822601	95.69146764	94.46279487	93.26135626	92.08633287
160810A00030	8/10/2016	2.24	8/11/2031	8/10/2016	108.21082	103.6279836	99.32228648	95.27395477	91.46478909	87.87802908	84.49822944	81.31114733	78.30364026
160908A00017	9/8/2016	1.87	9/8/2023	9/8/2016	100.52314	99.76620234	99.02074314	98.28649852	97.56321607	96.85065095	96.14856557	95.4567293	94.77491827
171109A00016	11/9/2017	2.94	11/9/2032	11/9/2017	121.7028	112.5294132	104.1800551	96.57418779	89.63962542	83.31162494	77.53207982	72.24880512	67.41490302
180215A00034	2/15/2018	2.9	2/15/2023	2/15/2018	100.49385	100.2809945	100.069053	99.85801778	99.64788302	99.4386429	99.23029169	99.02282369	98.81623325

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180517A00024	5/17/2018	3.46	5/17/2033	5/17/2018	117.85506	111.8863284	106.3430601	101.189815	96.39442192	91.92765257	87.76293003	83.87606857	80.24504059
150803A00042	8/3/2015	3.01	8/2/2030	8/3/2015	110.60808	106.4378213	102.4943007	98.76287131	95.22994713	91.88292152	88.71008971	85.70057807	82.84427925
160428A00028	4/28/2016	2	4/28/2026	4/28/2016	102.71707	100.9539905	99.23972578	97.57252362	95.95071205	94.37269125	92.83692983	91.34196139	89.88638126
170619A00101	6/16/2017	2.74	6/16/2027	6/16/2017	109.92369	105.9002412	102.0603431	98.39448146	94.89369104	91.5495195	88.35399533	85.2995978	82.37922889
170406A00032	4/6/2017	3.01	4/6/2027	4/6/2017	111.08034	107.0097378	103.1206405	99.40392388	95.85097022	92.45363783	89.20423246	86.09548039	83.12050324
200414A00024	4/14/2020	1.37	4/14/2027	4/14/2020	104.69044	100.6550386	96.80332572	93.12595312	89.61409332	86.25941115	83.05403377	79.99052268	77.06184755
200623A00028	6/23/2020	1.23	6/23/2038	6/23/2020	105.65136	97.94509897	91.01390131	84.76801293	79.12902855	74.02836336	69.40593934	65.20905681	61.39142381
160608A00020	6/8/2016	2.36	6/8/2026	6/8/2016	106.50666	103.2487903	100.1133632	97.09507009	94.18886116	91.38993356	88.6937177	86.09586456	83.59223375
161014A00029	10/14/2016	2.51	10/15/2031	10/14/2016	110.71595	105.9165393	101.4133215	97.18476589	93.21108357	89.47407819	85.95700623	82.64445059	79.52220606
200330A00079	3/30/2020	1.51	3/30/2035	3/30/2020	105.87224	99.66871057	93.97295602	88.73670476	83.91673374	79.47430324	75.37465675	71.58658009	68.08201229
180420A00011	4/20/2018	2.74	4/20/2023	4/20/2018	100.54513	100.2980126	100.0523438	99.80811103	99.56530059	99.32389877	99.0838921	98.84526727	98.60801116
180605A00031	6/5/2018	3.37	6/5/2030	6/5/2018	111.88379	107.7525864	103.8417929	100.1374158	96.6264617	93.29685866	90.13738444	87.13760075	84.28779311
181128A00004	11/28/2018	3.08	11/28/2023	11/28/2018	101.97086	100.9929499	100.0339633	99.09335226	98.17059084	97.26517296	96.37661152	95.50443756	94.64819939
190104A00038	1/4/2019	3.25	1/4/2029	1/4/2019	115.92741	110.2629836	104.9336109	99.91733719	95.19376685	90.74394662	86.55025599	82.59630634	78.86684825
200309A00083	3/9/2020	0.82	3/9/2023	3/9/2020	100.03443	99.76219652	99.49145468	99.22219117	98.95439386	98.68805071	98.42314985	98.15967951	97.89762806
130614A00018	6/14/2013	2.83	6/14/2023	6/14/2013	100.65432	100.32502	99.99834911	99.67427503	99.35276364	99.03378142	98.71729549	98.40327355	98.09168391
150803A00037	8/3/2015	3.41	8/2/2030	8/3/2015	118.60229	111.9362162	105.737893	99.9709394	94.60202154	89.60058406	84.93860332	80.59036363	76.53225443
180809A00034	8/9/2018	3.08	8/9/2023	8/9/2018	101.33695	100.652374	99.97710368	99.31095166	98.65373359	98.00527011	97.36538662	96.73391315	96.11068418
201203A00007	12/3/2020	0.58	12/1/2023	12/3/2020	99.320581	98.35463442	97.40754812	96.4787731	95.56778129	94.67406477	93.79713479	92.93652091	92.09177013
170526A00017	5/26/2017	2.16	5/28/2024	5/26/2017	100.82417	100.0757004	99.34006029	98.61689614	97.90587019	97.20665736	96.51894468	95.8424307	95.17682492
190905A00019	9/5/2019	2.08	9/5/2029	9/5/2019	110.12885	104.0029504	98.27923691	92.92879966	87.92496878	83.24312667	78.86053908	74.75620102	70.91069605
181218A00086	12/18/2018	3.06	10/18/2023	12/18/2018	101.55659	100.7037845	99.86556987	99.04157322	98.23143267	97.43479858	96.65133305	95.88070937	95.12261162
190403A00013	4/3/2019	3.05	4/3/2029	4/3/2019	115.1562	109.3251013	103.8509082	98.70952112	93.87859648	89.33741055	85.06673369	81.0487153	77.26677796
220407A00017	4/7/2022	3.16	4/6/2029	4/7/2022	115.18978	109.5593197	104.2687247	99.29520894	94.61764019	90.21641185	86.07332495	82.17147991	78.49517715
160907A00041	9/7/2016	1.83	9/7/2023	9/7/2016	100.48567	99.72871397	98.98320865	98.24889513	97.52552228	96.81284643	96.11063109	95.41864673	94.73667048
180809A00032	8/9/2018	3.08	8/9/2023	8/9/2018	101.33695	100.652374	99.97710368	99.31095166	98.6537336	98.00527013	97.36538664	96.73391316	96.1106842
151223A00078	12/23/2015	2.28	12/23/2025	12/23/2015	102.80055	101.2027946	99.64602469	98.12885918	96.64997134	95.20808918	93.8019928	92.4305118	91.09252289
200413A00013	4/13/2020	1.19	4/12/2030	4/13/2020	103.01476	99.28981438	95.75984223	92.41268308	89.23703097	86.22236862	83.35890695	80.63752967	78.04974238
150213A00014	2/13/2015	2.41	2/13/2025	2/13/2015	101.99243	100.821382	99.67467455	98.55159255	97.45144635	96.37357261	95.31733309	94.28211345	93.2673221
200709A00018	7/9/2020	0.59	7/7/2023	7/9/2020	99.705987	99.11373525	98.52852797	97.95023938	97.37874715	96.81393182	96.2556767	95.70386784	95.15839388
201228A00013	12/28/2020	0.84	12/30/2030	12/28/2020	101.74027	97.74427121	93.97379204	90.41374951	87.05018904	83.87019493	80.8618057	78.01393698	75.31631098
160511A00015	5/11/2016	2.42	5/11/2026	5/11/2016	106.52195	103.3272368	100.250355	97.28629497	94.43028577	91.67778471	89.02446527	86.46620556	83.99907746
161207A00014	12/7/2016	2.75	12/8/2031	12/7/2016	112.08124	107.1362879	102.5015062	98.15399833	94.07275069	90.23846484	86.63340529	83.24126169	80.04702404

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200512A00017	5/12/2020	0.85	5/12/2025	5/12/2020	100.45198	98.21864087	96.04800837	93.93795526	91.88644178	89.89150941	87.95127707	86.06393759	84.22775432
150722A00035	7/22/2015	2.92	7/22/2025	7/22/2015	105.64427	103.2262493	100.8792721	98.60078879	96.38835518	94.23963185	92.1523788	90.12445049	88.15379109
150814A00029	8/14/2015	2.39	8/14/2025	8/14/2015	102.25324	100.8345604	99.44933061	98.09648162	96.77499153	95.4838791	94.22220174	92.98905366	91.78356414
160413A00016	4/13/2016	2.55	4/14/2031	4/13/2016	109.34461	104.8824559	100.6811082	96.72254348	92.99013033	89.46851347	86.14350707	83.0019974	80.03185426
200306A00048	3/6/2020	1.04	3/6/2035	3/6/2020	104.25866	98.10935897	92.46553927	87.2789801	82.50652301	78.10949958	74.05322922	70.30657651	66.84156066
200306A00050	3/6/2020	0.87	3/6/2030	3/6/2020	102.60413	98.91656222	95.42078176	92.10489804	88.95785175	85.96935108	83.12981309	80.43030999	77.8625198
190205A00019	2/5/2019	2.94	2/5/2024	2/5/2019	102.19429	101.0377377	99.90764843	98.80311637	97.72327854	96.66731055	95.63442437	94.62386639	93.63491557
210412A00007	4/12/2021	0.66	4/12/2024	4/12/2021	99.611173	98.31078429	97.03370544	95.77936201	94.54719801	93.33667517	92.14727224	90.97848431	89.82982219
190708A00025	7/8/2019	2.21	7/1/2024	7/8/2019	102.03889	100.5061392	99.00416797	97.53210949	96.08913168	94.67443308	93.28724144	91.92681237	90.59242807
191031A00025	10/31/2019	1.91	10/31/2024	10/31/2019	100.9266	99.93249923	98.95733646	98.00058092	97.06172079	96.14026326	95.23573369	94.34767472	93.47564547
200206A00033	2/6/2020	2.15	2/6/2030	2/6/2020	110.901	104.4130487	98.37349555	92.74850542	87.50697914	82.62032164	78.06222706	73.80848348	69.8367953
190104A00006	1/4/2019	2.83	1/5/2026	1/4/2019	103.47099	101.8274714	100.2267747	98.66743452	97.14804988	95.66727816	94.22383203	92.81647686	91.44402805
190501A00015	5/1/2019	2.78	5/1/2029	5/1/2019	108.16166	104.7180327	101.4351649	98.30402764	95.3161714	92.46368186	89.73914221	87.13559856	84.64652791
170921A00057	9/21/2017	2.79	9/21/2027	9/21/2017	110.66011	106.4138223	102.3701625	98.51819899	94.84765482	91.34886187	88.01272116	84.83066635	81.79462961
200311A00026	3/11/2020	1.34	3/11/2030	3/11/2020	105.46571	99.36888061	93.6942178	88.40970109	83.48591521	78.89582676	74.61457881	70.61930425	66.88895618
151118A00037	11/18/2015	2.75	11/18/2025	11/18/2015	105.5081	103.0302775	100.6304266	98.30560484	96.05299852	93.86991681	91.75378554	89.70214143	87.71262659
150812A00052	8/14/2015	2.13	8/14/2025	8/14/2015	102.17755	100.7556734	99.36740865	98.01168379	96.6874694	95.39377705	94.12965737	92.89419818	91.68652268
190404A00015	4/4/2019	2.88	4/3/2026	4/4/2019	107.98378	104.7574791	101.6478634	98.6500847	95.75952555	92.97178345	90.28265984	87.68814952	85.18443075
210714A00015	7/14/2021	1.11	7/14/2026	7/14/2021	102.52561	99.28424383	96.16760437	93.17015719	90.28664416	87.51207098	84.84169225	82.27099751	79.79569809
161222A00013	12/22/2016	2.93	12/22/2026	12/22/2016	110.26885	106.5961996	103.0765779	99.70266735	96.46754532	93.36465865	90.38780163	87.53109563	84.78896983
170406A00029	4/6/2017	3.01	4/6/2027	4/6/2017	111.08034	107.0097392	103.1206412	99.40392399	95.85096974	92.4536368	89.20423091	86.09547834	83.12050073
190930A00026	9/30/2019	1.95	9/30/2024	9/30/2019	101.90542	100.1798212	98.49261026	96.84270786	95.2290717	93.6506952	92.10660598	90.59586452	89.11756279
150603A00012	6/3/2015	2.77	6/3/2030	6/3/2015	110.33347	106.2394212	102.3645785	98.69498071	95.2176682	91.92060311	88.79259733	85.8232466	83.0028702
190930A00028	9/30/2019	1.95	9/30/2024	9/30/2019	101.90542	100.1798212	98.49261038	96.8427081	95.22907207	93.65069569	92.10660659	90.59586523	89.11756362
210107A00010	1/7/2021	0.54	1/5/2024	1/7/2021	99.314746	98.2595964	97.22697184	96.21615497	95.22645899	94.25722569	93.30782397	92.3776485	91.46611836
160421A00016	4/21/2016	2.26	4/21/2026	4/21/2016	106.27189	103.2272007	100.2922158	97.46234799	94.73322937	92.10069778	89.56078617	87.10971225	84.74386892
160810A00028	8/10/2016	2.19	8/10/2026	8/10/2016	106.4999	103.0270268	99.69050456	96.48416532	93.40215858	90.43893349	87.58922139	84.84801963	82.21057635
190402A00005	4/2/2019	2.77	4/2/2032	4/2/2019	114.68214	108.4298232	102.6400744	97.27364721	92.29492876	87.67158171	83.37422187	79.37612942	75.65298995
160608A00027	6/8/2016	2.36	6/8/2026	6/8/2016	106.50666	103.2487905	100.1133633	97.09507003	94.18886098	91.38993327	88.69371731	86.09586407	83.59223316
160908A00037	9/8/2016	1.4	9/8/2023	9/8/2016	100.26789	99.69556479	99.13086294	98.57362004	98.02368001	97.48089118	96.94510621	96.41618188	95.89397896
181003A00032	10/3/2018	3.23	10/3/2025	10/3/2018	103.73646	102.2144094	100.7296985	99.2811129	97.8674829	96.48768585	95.1406439	93.82532185	92.54072512
190829A00032	8/29/2019	1.69	8/28/2026	8/29/2019	102.49063	100.5659201	98.69844967	96.88604252	95.12662551	93.41821923	91.75893302	90.14696038	88.58057455
160616A00029	6/16/2016	1.58	6/16/2026	6/16/2016	102.11511	100.2806401	98.49881213	96.76768939	95.08541892	93.45022939	91.86042688	90.31439091	88.81057074

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180517A00018	5/17/2018	3.46	5/17/2033	5/17/2018	117.85506	111.8863309	106.3430613	101.1898149	96.39442075	91.92765044	87.76292706	83.87606486	80.24503622
191004A00017	10/4/2019	2.02	10/4/2029	10/4/2019	109.80567	103.631663	97.86730482	92.48291799	87.45113361	82.74669653	78.34629165	74.22838556	70.37308166
191101A00005	11/1/2019	1.83	11/2/2026	11/1/2019	106.54278	102.8238059	99.25954196	95.84271204	92.56641806	89.42412142	86.40962229	83.51704032	80.74079638
200610A00006	6/10/2020	1.11	6/10/2027	6/10/2020	103.73801	99.60305783	95.6623739	91.90575091	88.32357143	84.90677232	81.64680976	78.5356267	75.5656225
150203A00027	2/3/2015	2.26	2/4/2030	2/3/2015	107.90917	104.0743082	100.4369006	96.98481601	93.70676648	90.59224063	87.63144485	84.81524937	82.13513865
160906A00027	9/6/2016	2.03	9/8/2031	9/6/2016	108.33687	103.6823659	99.31274587	95.20745715	91.34760197	87.7157924	84.29601887	81.07353103	78.03472972
190315A00029	3/15/2019	2.88	3/15/2034	3/15/2019	115.40591	109.1224864	103.3182671	97.95068826	92.98136105	88.37562832	84.1021734	80.1326725	76.44148573
220407A00014	4/7/2022	3.14	4/6/2029	4/7/2022	114.0827	108.8337507	103.8932559	99.24085001	94.85762943	90.72604173	86.82978205	83.1536978	79.68370106
180615A00021	6/15/2018	3.02	6/15/2023	6/15/2018	101.06817	100.535568	100.0086436	99.48730718	98.97146983	98.46104438	97.95594555	97.45608983	96.96139547
190104A00035	1/4/2019	3.1	1/5/2026	1/4/2019	107.79461	104.8333759	101.9723576	99.2075586	96.53517149	93.95156344	91.45326718	89.03697232	86.69951721
170602A00019	6/2/2017	2.42	6/3/2024	6/2/2017	102.21699	100.7583431	99.32819703	97.92578804	96.55037742	95.20125219	93.87772403	92.57912818	91.30482246
190305A00015	3/5/2019	3.32	3/5/2029	3/5/2019	116.611	110.7830962	105.3077329	100.1612949	95.32188468	90.76918748	86.48434831	82.44985884	78.6494539
210913A00015	9/13/2021	1.08	9/14/2026	9/13/2021	102.47839	99.23280886	96.11505724	93.11933033	90.24011878	87.47219497	84.81059687	82.2506129	79.78776774
150803A00036	8/3/2015	3.41	8/2/2030	8/3/2015	118.60229	111.9362163	105.737893	99.9709394	94.6020215	89.60058398	84.93860321	80.59036348	76.53225426
160210A00049	2/10/2016	1.78	2/10/2026	2/10/2016	102.15045	100.4809076	98.85584204	97.27370453	95.73301372	94.23235096	92.77035707	91.34572939	89.95721899
140917A00030	9/17/2014	3.23	9/17/2029	9/17/2014	116.80911	111.0040881	105.563778	100.4625631	95.67677888	91.18455473	86.96566805	83.00141097	79.27446859
160711A00004	7/11/2016	1.51	7/13/2026	7/11/2016	102.05861	100.1841274	98.36439053	96.59735021	94.88105305	93.21363266	91.5933052	90.0183651	88.48718107
200608A00001	6/8/2020	1.34	6/7/2030	6/8/2020	105.24143	99.32542261	93.82091759	88.69628217	83.92249651	79.47292781	75.32312126	71.45061044	67.83474509
210423A00001	4/23/2021	1.72	4/23/2036	4/23/2021	109.08014	102.1201001	95.77638505	89.9858546	84.69246425	79.84641126	75.4033892	71.32393669	67.57286789
160427A00004	4/27/2016	2.09	4/27/2026	4/27/2016	102.50396	100.7502662	99.04498436	97.38638483	95.77281363	94.20268794	92.67449243	91.18677589	89.73814802
180309A00011	3/9/2018	3.19	3/10/2025	3/9/2018	105.50353	103.2911936	101.1372659	99.03980407	96.99694753	95.00691169	93.06798403	91.17852057	89.33694252
200110A00053	1/10/2020	1.99	1/10/2025	1/10/2020	102.49274	100.472214	98.50219477	96.58107259	94.70730205	92.87939857	91.09593556	89.35554163	87.65689804
221014A00032	10/14/2022	4.67	10/14/2027	10/14/2022	119.08913	114.5263681	110.1826584	106.0461191	102.1055754	98.3505166	94.77105314	91.35787675	88.10222316
160908A00033	9/8/2016	2.17	9/8/2026	9/8/2016	106.13124	102.8035668	99.60618545	96.53318029	93.57894593	90.73816462	88.00578962	85.37702961	82.84733409
210319A00009	3/19/2021	1.1	3/19/2026	3/19/2021	102.15706	99.12363542	96.19892552	93.37841883	90.65781706	88.03302457	85.50013752	83.05543369	80.69536291
201207A00021	12/7/2020	1.85	12/7/2050	12/7/2020	109.2407	95.89749925	84.78725933	75.48395716	67.64932591	61.01380432	55.36178704	50.5201756	46.34946644
200227A00046	2/27/2020	1.52	3/1/2027	2/27/2020	102.16317	100.0048632	97.91724362	95.89740282	93.94257752	92.05013755	90.2175785	88.44251487	86.72267352
200806A00004	8/6/2020	0.3	3/6/2024	8/6/2020	99.571318	98.87459551	98.19014192	97.5176001	96.85662727	96.20689443	95.56808563	94.93989738	94.3220379
140318A00003	3/17/2014	3.08	3/18/2024	3/17/2014	102.94209	101.6710139	100.4256448	99.20521207	98.00897268	96.83621316	95.68624841	94.55842017	93.45209576
170829A00066	8/29/2017	2.11	8/29/2024	8/29/2017	102.45095	100.7650942	99.11542091	97.50082556	95.92024958	94.37267744	92.85713447	91.37268466	89.91842875
190911A00016	9/11/2019	1.9	9/11/2029	9/11/2019	106.16849	102.6043701	99.21460126	95.98896339	92.91791724	89.99255219	87.20454044	84.54609497	82.00993062
180126A00011	1/26/2018	2.72	1/26/2028	1/26/2018	106.78871	104.0534591	101.4236796	98.89437765	96.46083744	94.11859931	91.86344429	89.69137939	87.59862397
200512A00014	5/12/2020	1.17	5/12/2027	5/12/2020	103.94953	99.87269861	95.9844881	92.27514339	88.7354611	85.35675969	82.13084712	79.04999069	76.10688891

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210915A00023	9/15/2021	0.74	9/16/2024	9/15/2021	99.764583	98.07476153	96.42200564	94.8052337	93.22340483	91.6755169	90.16060478	88.67773855	87.22602196
151204A00011	12/4/2015	2.28	12/4/2025	12/4/2015	102.79654	101.2002689	99.64490275	98.12906001	96.65141859	95.21071089	93.80572106	92.43528254	91.09827564
200709A00019	7/9/2020	0.77	7/9/2025	7/9/2020	100.45897	98.02748604	95.66816413	93.37841574	91.15576267	88.99783203	86.90235095	84.8671416	82.89011658
150824A00033	8/24/2015	2.22	8/25/2025	8/24/2015	102.00948	100.5932592	99.2104589	97.86001039	96.54089161	95.25212118	93.99275641	92.76189151	91.55865577
210512A00009	5/12/2021	0.66	5/10/2024	5/12/2021	99.608043	98.23796482	96.89366784	95.57448567	94.2797749	93.00891366	91.76130072	90.53635464	89.33351296
161014A00019	10/14/2016	2.39	10/15/2031	10/14/2016	109.05833	104.3557389	99.9422913	95.7970289	91.9006913	88.23556331	84.78533999	81.53500424	78.47071594
190708A00030	7/8/2019	2.57	7/2/2029	7/8/2019	113.02111	106.9092052	101.1889552	95.83283915	90.81541827	86.11316876	81.70432778	77.56875249	73.68779113
190510A00049	5/10/2019	2.58	5/8/2026	5/10/2019	103.3863	101.6173627	99.89726892	98.22427089	96.59669969	95.01295811	93.4715171	91.97091231	90.5097409
200424A00022	4/24/2020	1.39	4/24/2030	4/24/2020	105.52023	99.67070648	94.22237884	89.14483909	84.41015503	79.99265956	75.86875531	72.01673691	68.41662959
160608A00021	6/8/2016	1.91	6/8/2023	6/8/2016	100.46875	99.95206493	99.44071596	98.93462281	98.43370452	97.93788181	97.447077	96.961214	96.48021824
190605A00025	6/5/2019	2.64	6/5/2029	6/5/2019	113.36559	107.3002735	101.6199182	96.29772248	91.30889201	86.63048177	82.24124859	78.12151631	74.25305228
180125A00027	1/25/2018	2.69	1/24/2025	1/25/2018	102.28696	101.021398	99.78304669	98.57109273	97.3847531	96.22327485	95.08593368	93.97203257	92.88090053
210714A00010	7/14/2021	0.75	7/12/2024	7/14/2021	99.764407	98.23596259	96.73858906	95.27139935	93.83354001	92.42418967	91.04255745	89.68788159	88.35942804
190118A00006	1/18/2019	3.14	1/18/2034	1/18/2019	116.83764	110.5649224	104.7643623	99.39454307	94.41806055	89.80110369	85.5130822	81.52629522	77.81563627
160504A00022	5/4/2016	2	5/4/2023	5/4/2016	100.46456	100.0400797	99.61919039	99.20184864	98.78800972	98.37762961	97.97066501	97.56707337	97.16681282
190813A00051	8/13/2019	2.19	8/13/2029	8/13/2019	110.76843	104.6642944	98.95756668	93.61989564	88.62511198	83.9490465	79.56936648	75.4654263	71.61813108
191004A00026	10/4/2019	1.74	10/4/2024	10/4/2019	101.58468	99.81915925	98.09327925	96.40591964	94.75599846	93.14247097	91.56432806	90.02059481	88.51032917
210107A00009	1/7/2021	0.54	1/5/2024	1/7/2021	99.314746	98.25959636	97.22697178	96.21615489	95.22645889	94.25722556	93.30782382	92.37764833	91.46611817
170406A00036	4/6/2017	3.07	4/6/2032	4/6/2017	112.95829	107.8287131	103.02998	98.53701206	94.32684458	90.37843474	86.6724869	83.19129483	79.91859936
200406A00030	4/6/2020	1.61	4/5/2030	4/6/2020	107.43249	100.9856493	94.9941719	89.42306961	84.24022579	79.41614523	74.92372749	70.7380608	66.83623479
200406A00036	4/6/2020	1.09	4/4/2025	4/6/2020	100.91919	98.71179906	96.56439928	94.47503641	92.44182728	90.4629606	88.53669381	86.66135009	84.83531542
140428A00015	4/28/2014	2.35	4/29/2024	4/28/2014	101.11844	100.36615	99.6267796	98.89997515	98.18539578	97.48271351	96.79161255	96.11178877	95.4429491
160413A00033	4/13/2016	2.32	4/13/2026	4/13/2016	105.18298	102.4302732	99.77304005	97.20737863	94.72956992	92.33606747	90.02348834	87.78860463	85.62833553
171207A00022	12/7/2017	2.45	12/7/2022	12/7/2017	100.04444	100.0250012	100.0055792	99.98617737	99.96679564	99.94743398	99.92809234	99.90877071	99.88946903
200206A00032	2/6/2020	2.15	2/6/2030	2/6/2020	110.90101	104.4130502	98.37349472	92.74850243	87.5069742	82.62031493	78.06221876	73.80847375	69.83678428
210714A00014	7/14/2021	1.12	7/14/2026	7/14/2021	102.64358	99.32962813	96.1440828	93.08122625	90.13562715	87.30212724	84.57582589	81.95206556	79.42641829
161227A00073	12/27/2016	2.83	12/28/2026	12/27/2016	108.90223	105.5683643	102.3690476	99.2979448	96.34906176	93.51672133	90.79554491	88.18043488	85.66655818
190926A00002	9/30/2019	2.01	9/29/2034	9/30/2019	110.31292	104.0558633	98.29466233	92.98363444	88.08173679	83.55205728	79.36136684	75.47972342	71.88012111
200110A00038	1/10/2020	2.32	1/10/2030	1/10/2020	111.95078	105.4723572	99.43745073	93.8128873	88.56815993	83.67519575	79.10814919	74.84321374	70.85845067
200116A00012	1/16/2020	2.16	1/19/2027	1/16/2020	107.46868	103.5564864	99.8137397	96.23212429	92.803782	89.5212835	86.37760226	83.36609031	80.48045556
200406A00033	4/6/2020	1.09	4/4/2025	4/6/2020	100.91919	98.71179905	96.56439927	94.47503639	92.44182725	90.46296056	88.53669377	86.66135004	84.83531537
171219A00067	12/19/2017	2.72	12/20/2027	12/19/2017	111.84166	107.3498755	103.0822752	99.02623965	95.16993173	91.50224444	88.0127517	84.69166279	81.52978017
180913A00062	9/13/2018	3.05	9/13/2023	9/13/2018	101.44508	100.6727239	99.91225051	99.1633884	98.42587201	97.69944388	96.98385425	96.27886087	95.58422865

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190322A00008	3/22/2019	2.64	3/20/2026	3/22/2019	103.37947	101.6530023	99.97329066	98.33868921	96.74762185	95.19857978	93.69011796	92.22085198	90.78945503
150615A00024	6/15/2015	2.26	6/16/2025	6/15/2015	102.1747	100.83554	99.52675485	98.24740353	96.9965829	95.77342495	94.57709516	93.40679093	92.26174003
160209A00008	2/9/2016	2.45	2/10/2031	2/9/2016	108.73768	104.3843533	100.2810524	96.41077549	92.75781745	89.30766021	86.04687476	82.96303174	80.04462005
190315A00019	3/15/2019	2.88	3/15/2034	3/15/2019	115.4059	109.1224827	103.3182657	97.95068894	92.98136365	88.3756327	84.10217942	80.13268003	76.44149465
191011A00027	10/11/2019	1.84	10/11/2029	10/11/2019	106.0181	102.4171383	98.99418788	95.7387148	92.6408926	89.69154778	86.88211202	84.20457804	81.65145906
200616A00005	6/16/2020	0.74	6/17/2030	6/16/2020	102.15449	98.36227381	94.77317095	91.37424306	88.15347803	85.09971835	82.20259442	79.45246343	76.84035336
210611A00009	6/11/2021	0.61	6/11/2024	6/11/2021	99.534477	98.08626893	96.66659535	95.2746799	93.90977359	92.57115399	91.25812403	89.97001087	88.70616488
140717A00027	7/17/2014	3.14	7/17/2026	7/17/2014	108.76904	105.5675259	102.4862789	99.52001517	96.66372055	93.9126311	91.26221885	88.7081786	86.2464155
200512A00011	5/12/2020	1.48	5/10/2030	5/12/2020	106.59753	100.1209287	94.10732841	88.52072933	83.3281213	78.4992207	74.00623166	69.82362953	65.92796411
200428A00009	4/28/2020	1.08	4/29/2030	4/28/2020	102.59117	98.88097253	95.36503028	92.03121876	88.86827047	85.86570421	83.0137648	80.30336777	77.72604861
160303A00035	3/3/2016	2.14	3/3/2026	3/3/2016	102.52046	100.8080588	99.14239108	97.52180832	95.94473505	94.40966262	92.91514578	91.45979962	90.04229654
160810A00027	8/10/2016	2.13	8/10/2026	8/10/2016	105.83565	102.5764864	99.44279698	96.42895933	93.52964197	90.73978476	88.05458321	85.46947384	82.98012045
180206A00045	2/6/2018	2.71	2/6/2023	2/6/2018	100.41091	100.2229859	100.0357711	99.84926187	99.66345415	99.47834399	99.29392746	99.11020064	98.92715964
181105A00015	11/5/2018	3.57	11/5/2025	11/5/2018	108.75211	105.8835427	103.1081269	100.4223187	97.82272934	95.30611735	92.86938158	90.50955417	88.22379407
160119A00072	1/19/2016	2.77	1/21/2031	1/19/2016	110.13792	105.647508	101.4249414	97.45138581	93.70948369	90.18323134	86.85786379	83.71975009	80.75629807
160908A00034	9/8/2016	2.17	9/8/2026	9/8/2016	106.13124	102.8035668	99.60618545	96.5331803	93.57894595	90.73816464	88.00578965	85.37702965	82.84733414
200212A00013	2/12/2020	1.98	2/12/2027	2/12/2020	106.89568	102.9404215	99.15885224	95.54232912	92.08269166	88.77223158	85.60366492	82.57010598	79.6650431
210319A00008	3/19/2021	0.63	3/19/2024	3/19/2021	99.554077	98.31249677	97.09576254	95.90313677	94.73391126	93.58740575	92.46296656	91.35996527	90.27779749
140908A00080	9/8/2014	2.51	3/8/2024	9/8/2014	101.94236	100.8077155	99.69778175	98.61174006	97.54880623	96.50823052	95.48929583	94.49131586	93.51363348
170524A00027	5/24/2017	2.32	5/24/2027	5/24/2017	104.76561	102.4186303	100.1523767	97.96339032	95.84838826	93.80425114	91.82801398	89.91685738	88.06809943
160404A00019	4/4/2016	2.48	4/4/2031	4/4/2016	109.02728	104.5783101	100.3893457	96.44242392	92.72096628	89.20966643	85.89438347	82.762045	79.8005589
160608A00022	6/8/2016	1.91	6/8/2023	6/8/2016	100.46875	99.95206493	99.44071598	98.93462283	98.43370455	97.93788185	97.44707705	96.96121406	96.48021831
160908A00022	9/8/2016	2.21	9/8/2026	9/8/2016	106.57679	103.1084634	99.77771415	96.57825775	93.5041369	90.54970121	87.70958947	84.97871294	82.35223974
150427A00014	4/27/2015	2.98	4/27/2035	4/27/2015	115.69766	108.8779073	102.6195998	96.86906113	91.57826374	86.70418816	82.20826171	78.05586376	74.21588934
150803A00039	8/3/2015	3.01	8/2/2030	8/3/2015	110.60808	106.4378188	102.4942996	98.76287141	95.22994838	91.88292383	88.71009302	85.70058231	82.84428437
190129A00073	1/29/2019	3.11	1/29/2029	1/29/2019	108.83193	105.5376139	102.3903699	99.38226776	96.50586425	93.7541707	91.12062222	88.59904907	86.18365022
211007A00005	10/7/2021	0.86	10/7/2024	10/7/2021	99.996247	98.25172492	96.5465202	94.87951687	93.24963784	91.65584314	90.09712848	88.57252374	87.08109159
160719A00026	7/19/2016	1.87	7/20/2026	7/19/2016	102.35082	100.476789	98.65734684	96.89046105	95.1741877	93.50666932	91.88613037	90.31087304	88.77927329
210212A00004	2/12/2021	1.1	2/12/2036	2/12/2021	104.69124	98.08777739	92.06266053	86.55726707	81.51949367	76.90298113	72.66643515	68.773032	65.18989806
120808A00006	8/8/2012	2.06	8/9/2027	8/8/2012	104.45646	101.9911278	99.61439179	97.32231155	95.11115088	92.97736616	90.91759501	88.92864581	87.0074878
160608A00028	6/8/2016	2.36	6/8/2026	6/8/2016	106.50666	103.2487906	100.1133633	97.09507	94.1888609	91.38993315	88.69371714	86.09586386	83.59223292
180403A00014	4/3/2018	3.11	4/3/2025	4/3/2018	105.52724	103.2550132	101.0442408	98.89292323	96.79913591	94.76102746	92.77681673	90.84478966	88.96329634
190502A00016	5/2/2019	2.87	5/1/2026	5/2/2019	108.1811	104.881193	101.7030863	98.64161491	95.69186398	92.84915274	90.10902177	87.46722142	84.91970075

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210915A00026	9/15/2021	1.1	9/15/2026	9/15/2021	102.80066	99.33964715	96.01790129	92.82902356	89.7669508	86.8259316	84.00050837	81.28550057	78.67598895
180913A00012	9/13/2018	3.31	9/13/2033	9/13/2018	117.44001	111.3134257	105.6357784	100.3686841	95.47738481	90.93038183	86.69910537	82.75762022	79.08236285
160413A00014	4/13/2016	2.55	4/14/2031	4/13/2016	109.34461	104.882456	100.6811082	96.72254344	92.99013023	89.46851331	86.14350685	83.00199714	80.03185395
170301A00031	3/1/2017	2.11	3/1/2024	3/1/2017	100.80703	100.1387156	99.48171497	98.83570657	98.20038393	97.57545267	96.96062978	96.35564307	95.76023066
170317A00039	3/17/2017	2.73	3/18/2024	3/17/2017	102.2301	100.9725575	99.7403887	98.53283099	97.3491523	96.18864983	95.05064856	93.93449991	92.83958041
170406A00033	4/6/2017	3.01	4/6/2027	4/6/2017	111.08034	107.0097369	103.12064	99.40392378	95.85097049	92.45363845	89.20423342	86.09548165	83.12050479
190905A00023	9/5/2019	2.08	9/5/2029	9/5/2019	110.12885	104.0029502	98.27923698	92.92879994	87.92496924	83.24312731	78.86053988	74.75620196	70.91069713
191203A00009	12/3/2019	2.21	12/3/2029	12/3/2019	111.13812	104.7769011	98.8462837	93.31442385	88.15200502	83.33202296	78.82959164	74.62176645	70.68738301
170112A00015	1/12/2017	2.32	1/12/2027	1/12/2017	104.30121	102.1332633	100.0353481	98.00462061	96.03837427	94.13403141	92.28913638	90.50134884	88.76843754
200326A00032	3/26/2020	1.49	3/26/2030	3/26/2020	104.13702	100.4119101	96.87991082	93.52908117	90.34831465	87.32727337	84.45632963	81.72651213	79.12945675
160212A00006	2/12/2016	1.57	2/13/2023	2/12/2016	100.16954	100.0144907	99.85997041	99.70597995	99.55251637	99.3995768	99.24715837	99.09525825	98.94387364
161005A00016	10/5/2016	2.32	10/6/2031	10/5/2016	108.72326	104.0352958	99.63554674	95.50312963	91.61884754	87.96504343	84.52546565	81.28514606	78.23028949
200306A00057	3/6/2020	0.92	3/8/2027	3/6/2020	103.33843	99.59239767	96.01133551	92.58698165	89.31153937	86.17764639	83.17834793	80.3070716	77.55760406
190205A00017	2/5/2019	3.36	2/5/2029	2/5/2019	116.6991	110.9335517	105.5129202	100.4143369	95.61658372	91.09996151	86.84617277	82.83821425	79.06027834
190925A00009	9/25/2019	2	9/25/2026	9/25/2019	105.83494	102.3913467	99.08528353	95.91047416	92.86096368	89.93110004	87.11551695	84.40911786	81.80706092
200512A00010	5/12/2020	1.48	5/10/2030	5/12/2020	106.59753	100.1209288	94.10732956	88.52073143	83.32812427	78.49922443	74.00623609	69.82363458	65.92796972
210915A00024	9/15/2021	1.1	9/15/2026	9/15/2021	102.80066	99.33964706	96.01790132	92.8290237	89.76695105	86.82593194	84.0005088	81.28550108	78.67598954
140219A00005	2/19/2014	3.13	2/20/2029	2/19/2014	109.78315	106.4022231	103.1744661	100.0915089	97.14550224	94.32908221	91.635337	89.057776	86.59030122
190315A00023	3/15/2019	2.88	3/15/2034	3/15/2019	115.40589	109.1224784	103.3182646	97.95069066	92.98136789	88.37563916	84.10218784	80.13269019	76.44150634
200520A00009	5/20/2020	1.63	5/20/2038	5/20/2020	110.05193	98.88163281	89.13469175	80.61300493	73.14755665	66.5939737	60.82878289	55.74625633	51.25574961
210714A00017	7/14/2021	0.73	7/12/2024	7/14/2021	99.73332	98.2929116	96.88151419	95.49830113	94.14247758	92.81327853	91.50996739	90.23183463	88.97819656
200206A00031	2/6/2020	2.15	2/6/2030	2/6/2020	110.90101	104.4130504	98.37349463	92.74850207	87.5069736	82.62031411	78.06221774	73.80847254	69.8367829
170303A00004	3/3/2017	2.8	3/4/2024	3/3/2017	102.23417	101.0019147	99.79829355	98.62230369	97.47299341	96.34945445	95.25081958	94.17626027	93.12498458
200501A00002	5/1/2020	1.3	5/1/2035	5/1/2020	104.53506	98.33275426	92.64411872	87.4197689	82.61554501	78.19191645	74.1134602	70.34840158	66.86820941
210420A00035	4/20/2021	1.92	4/20/2034	4/20/2021	108.96237	102.0416817	95.71912887	89.93559327	84.63830953	79.78013884	75.3189298	71.21695577	67.44041906
180914A00049	9/14/2018	3.37	9/14/2033	9/14/2018	117.80571	111.6600856	105.9647971	100.6813377	95.77484126	91.21371092	86.96928802	83.01555666	79.32888002
200814A00003	8/14/2020	0.96	8/14/2035	8/14/2020	103.74419	97.43136113	91.65295246	86.35653006	81.49531106	77.0275123	72.91577641	69.12666782	65.63022948
211208A00013	12/8/2021	1.63	12/8/2026	12/8/2021	105.20099	101.4298625	97.81910162	94.36099578	91.04824968	87.87395666	84.83157585	81.91491071	79.11808903
170406A00027	4/6/2017	2.61	4/8/2024	4/6/2017	102.20375	100.8954658	99.61044892	98.3481325	97.1079643	95.88940957	94.69195039	93.51508503	92.35832729
210809A00014	8/9/2021	1.06	8/7/2026	8/9/2021	102.52178	99.15648535	95.92345597	92.81671317	89.83058373	86.95968459	84.19890606	81.54339614	78.98854578
200429A00030	4/29/2020	1.41	4/29/2030	4/29/2020	105.93679	99.72664986	93.95315855	88.58272558	83.58452955	78.93027391	74.59396739	70.55172473	66.78158546
150601A00396	6/1/2015	3.61	1/3/2029	6/1/2015	109.69062	106.5502552	103.5466517	100.6725651	97.92119039	95.28613226	92.76137769	90.34127046	88.02048753
150601A00739	6/1/2015	2.35	5/6/2025	6/1/2015	101.7429	100.5352992	99.35393308	98.19801284	97.06677864	95.95949977	94.87547328	93.8140226	92.77449642

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A01051	6/1/2015	4.91	2/7/2025	6/1/2015	108.9548	106.8319547	104.7630868	102.7464284	100.7802833	98.86302434	96.99309048	95.16898329	93.38926392
150601A00477	6/1/2015	3.21	6/1/2029	6/1/2015	111.17383	107.3650737	103.7408142	100.2904505	97.00407089	93.87240203	90.88676334	88.03902532	85.32157088
160928A00033	9/28/2016	2.46	9/29/2036	9/28/2016	112.91283	105.4904638	98.74230685	92.59698851	86.9914504	81.86990798	77.18295018	72.88675689	68.94241811
150601A00919	6/1/2015	7.41	6/7/2030	6/1/2015	130.03229	125.2109817	120.6473952	116.3251811	112.2291521	108.3451967	104.6601952	101.1619432	97.83908176
220610A00068	6/10/2022	3.09	6/10/2025	6/10/2022	103.26319	101.926923	100.6208199	99.34395261	98.09542622	96.87438056	95.67998858	94.51145479	93.36801381
150601A00871	6/1/2015	6.74	7/31/2028	6/1/2015	120.00881	116.6390605	113.409712	110.3136755	107.3442705	104.4952007	101.7605293	99.13465577	96.61229509
200225A00049	2/25/2020	1.79	2/24/2040	2/25/2020	110.21781	101.7450994	94.18711178	87.42948514	81.3734961	75.93378076	71.03640371	66.61722093	62.62048979
150601A00950	6/1/2015	6.76	12/18/2031	6/1/2015	132.47161	126.6504435	121.1933425	116.0735368	111.2664507	106.7495062	102.5019457	98.50467275	94.74010689
150601A00966	6/1/2015	4.84	2/3/2023	6/1/2015	100.42454	100.3302339	100.2362086	100.1424622	100.0489933	99.95580062	99.86288283	99.77023861	99.67786668
080423A00066	4/23/2008	4.41	4/24/2023	4/23/2008	101.48694	101.0839566	100.6841873	100.2875888	99.89412347	99.50375422	99.11644449	98.7321583	98.35086028
150601A00864	6/1/2015	7.37	3/31/2028	6/1/2015	120.70732	117.4986386	114.417959	111.4590539	108.6160451	105.8833818	103.2558198	100.7284026	98.29644388
970806A00018	8/1/1997	6.7	10/23/2026	8/1/1997	112.45682	110.3445219	108.2959949	106.3087845	104.3805453	102.5090389	100.6921289	98.92777528	97.21402899
200401A00011	4/1/2020	0.68	4/3/2023	4/1/2020	100.00083	99.76479663	99.53005783	99.29660521	99.06442737	98.83351303	98.60385106	98.37543045	98.14824034
150601A00953	6/1/2015	6.6	6/10/2032	6/1/2015	134.08702	127.7752025	121.8807475	116.3714051	111.2176894	106.3926222	101.8715018	97.63169474	93.6524475
150601A00964	6/1/2015	5.25	1/6/2033	6/1/2015	124.91796	119.267226	113.9924971	109.0640915	104.4549408	100.1403434	96.09773871	92.30650561	88.74778051
110414A00007	4/14/2011	3.95	1/21/2025	4/14/2011	104.10899	102.750707	101.4212855	100.1198701	98.84564105	97.59780987	96.37561758	95.17833347	94.00525376
191231A00027	12/31/2019	1.9	4/28/2023	12/31/2019	100.14196	100.0560236	99.97022839	99.88457817	99.79907263	99.71371143	99.62849423	99.54342067	99.45849042
200210A00007	2/10/2020	1.78	2/10/2025	2/10/2023	102.28706	100.428556	98.61646959	96.84929253	95.12557488	93.44392596	91.80301133	90.20155002	88.63831184
150601A00906	6/1/2015	6.2	11/1/2029	6/1/2015	122.71884	118.5088048	114.5086527	110.7058998	107.0888998	103.6467834	100.3694014	97.24727185	94.27153161
150601A00261	6/1/2015	3.19	2/11/2033	6/1/2015	120.72948	112.7649552	105.4828003	98.8177496	92.71125098	87.11073425	81.96896355	77.24346335	72.89600951
150601A00459	6/1/2015	2.42	5/16/2024	6/1/2015	100.9743	100.2466699	99.53156392	98.8286432	98.13757906	97.4580551	96.78976663	96.13242008	95.48573249
190102A00015	1/2/2019	2.97	1/3/2034	1/2/2019	115.00203	109.1140457	103.6589947	98.59944207	93.90154608	89.53468361	85.47111881	81.68570837	78.15563875
160928A00042	9/28/2016	3.05	9/29/2036	9/28/2021	117.17417	109.5385248	102.5928116	96.26423977	90.48847596	85.20859003	80.37414049	75.94037921	71.86755939
150601A00736	6/1/2015	2.87	5/1/2030	6/1/2015	109.04248	105.2518505	101.6571213	98.2461573	95.00767287	91.93116645	89.00686059	86.22564697	83.57903592
200130A00027	1/31/2020	1.79	1/31/2025	1/31/2020	100.95053	99.84057946	98.75314947	97.68758944	96.64327094	95.61958926	94.61596227	93.63182933	92.66665036
150601A01013	6/1/2015	5.21	9/29/2023	6/1/2015	103.34088	102.5212836	101.7149403	100.9215325	100.1407492	99.3722894	98.61586146	97.87118302	97.13798046
150601A00897	6/1/2015	6.15	5/28/2029	6/1/2015	120.83147	116.9769917	113.3027355	109.7985887	106.4550844	103.2633543	100.2150871	97.30248951	94.51825067
150601A01048	6/1/2015	5.27	1/3/2025	6/1/2015	109.21252	107.175816	105.1892598	103.251265	101.3603116	99.51493888	97.71374285	95.9553733	94.23853137
160928A00032	9/28/2016	2.52	9/29/2036	9/28/2016	113.34619	105.902131	99.1338836	92.96992932	87.34708011	82.20943496	77.50747801	73.19729476	69.23989011
170130A00043	1/30/2017	2.64	1/29/2027	1/30/2017	104.60492	102.4197068	100.3071875	98.2643053	96.28815843	94.37598877	92.52517349	90.73321744	88.99774594
190823A00009	8/23/2019	1.8	8/23/2029	8/23/2019	105.61079	102.1718576	98.89798508	95.77964042	92.80791535	89.97448159	87.27154907	84.69182743	82.22849053
191115A00029	11/15/2019	2.07	11/15/2029	11/15/2019	105.95722	102.4130314	99.04347933	95.83822338	92.78762014	89.88266821	87.11496099	84.47664333	81.96037148
050823A00088	8/23/2005	4.78	8/25/2025	8/23/2005	111.14858	108.5562942	106.0416606	103.6018027	101.2339766	98.93556046	96.70404804	94.53704254	92.43225098

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00270	6/1/2015	3.12	3/21/2031	6/1/2015	119.52899	112.1110803	105.2589473	98.92519272	93.0666715	87.64408392	82.62161246	77.96659495	73.64922997
110824A00006	8/24/2011	2.69	8/24/2026	8/24/2011	105.28145	102.9831432	100.7579408	98.60286924	96.51510045	94.49194354	92.53083723	90.62934252	88.7851358
070518A00023	5/18/2007	5.46	5/18/2027	5/18/2007	112.54363	109.9205553	107.3917292	104.9529464	102.6002169	100.3297559	98.13797259	96.02145858	93.97697745
160930A00032	9/30/2016	2.15	9/30/2031	9/30/2016	107.61188	103.143178	98.94329821	94.99306203	91.27482483	87.77233974	84.47063682	81.35591344	78.41543486
150601A01041	6/1/2015	5.99	10/2/2036	6/1/2015	142.73494	133.377405	124.8719214	117.1288381	110.0688426	103.6216832	97.72506042	92.32366131	87.36831787
190520A00020	5/20/2019	2.39	5/20/2026	5/20/2019	103.47458	101.680858	99.93743523	98.24249211	96.59428696	94.99115389	93.43149886	91.91379608	90.43658455
130207A00012	2/7/2013	2.9	2/7/2033	2/7/2013	112.48006	107.0317609	101.9679706	97.2567477	92.86910027	88.7786909	84.96157309	81.39595567	78.06199205
050812A00050	8/12/2005	4.97	8/12/2025	8/12/2005	107.34386	105.5742619	103.8492471	102.1673016	100.5269804	98.92689978	97.36573401	95.84221239	94.35511651
120410A00005	4/10/2012	2.35	4/12/2027	4/10/2012	105.10333	102.6458624	100.2759976	97.98987344	95.78382113	93.65435793	91.59817673	89.61213605	87.69325074
150601A00690	6/1/2015	2.34	2/28/2025	6/1/2015	101.54516	100.4352729	99.34830718	98.28359267	97.24048189	96.21835202	95.21660379	94.23466027	93.27196591
170130A00046	1/30/2017	2.52	1/30/2026	1/30/2017	103.05593	101.3865692	99.76272487	98.18276017	96.64511208	95.14828615	93.69085293	92.27144459	90.8887518
150601A00448	6/1/2015	2.61	4/26/2024	6/1/2015	101.07005	100.365499	99.67298314	98.99217057	98.32274481	97.66440131	97.01684685	96.37979897	95.75298549
160928A00041	9/28/2016	3.26	9/29/2036	9/30/2019	118.69092	110.9793601	103.9633302	97.56953259	91.73317998	86.39693449	81.50998789	77.02726174	72.90871137
150601A00943	6/1/2015	6.44	5/9/2031	6/1/2015	129.14996	123.7635448	118.6965909	113.926793	109.4335843	105.1979894	101.2024896	97.43090105	93.86826386
050823A00085	8/23/2005	4.78	8/25/2025	8/23/2005	111.14855	108.5562755	106.0416468	103.6017937	101.2339722	98.9355605	96.70405232	94.53705089	92.43226323
170130A00039	1/30/2017	2.74	1/31/2028	1/30/2017	106.20773	103.4978646	100.8945757	98.39269423	95.98734327	93.67391817	91.44806947	89.30568691	87.24288454
200310A00067	3/10/2020	0.94	3/10/2025	3/10/2020	100.02683	98.84546685	97.68909303	96.55695985	95.44835202	94.36258173	93.29898736	92.25693223	91.23580341
150601A00905	6/1/2015	6.14	10/29/2029	6/1/2015	122.23168	118.0818526	114.1369744	110.3849541	106.8145112	103.415112	100.176915	97.09072082	94.14792571
150601A00993	6/1/2015	5.37	6/9/2034	6/1/2015	131.93327	124.5883984	117.815141	111.5618178	105.7818993	100.4334522	95.478651	90.88334374	86.61666716
181220A00006	12/20/2018	2.93	12/20/2022	12/20/2018	100.15364	100.0980863	100.0426061	99.98720338	99.93187794	99.87662963	99.82145829	99.76636375	99.71134586
150601A00473	6/1/2015	2.22	5/31/2024	6/1/2015	101.01098	100.2583842	99.51889534	98.79215983	98.07783289	97.3755826	96.68508932	96.00604503	95.33815287
150601A00527	6/1/2015	2.5	7/26/2024	6/1/2015	101.19976	100.373866	99.56275711	98.76602451	97.98327634	97.2141354	96.45823839	95.7152353	94.98478874
150601A00893	6/1/2015	6.49	4/6/2029	6/1/2015	121.90572	118.0489345	114.3707412	110.861214	107.5110543	104.3115467	101.2545182	98.33230065	95.53769655
190327A00030	3/27/2019	2.9	3/27/2036	3/27/2019	115.11962	108.2537295	101.9734321	96.22026706	90.94221467	86.09293377	81.63109433	77.51979358	73.72604416
200317A00024	3/17/2020	1.09	3/17/2025	3/17/2020	100.20971	99.0261988	97.86773161	96.73356416	95.6229799	94.53528972	93.46983068	92.42596477	91.40307776
150601A00030	6/1/2015	5.28	11/26/2027	6/1/2015	123.13858	118.3133774	113.72546	109.3616408	105.2095393	101.2575287	97.49468671	93.91074851	90.49606381
140911A00033	9/11/2014	3.02	9/13/2027	9/11/2014	109.09828	105.5980759	102.2485418	99.04203663	95.97135451	93.02970008	90.21066277	87.50819253	84.91657733
150601A01040	6/1/2015	5.4	10/2/2026	6/1/2015	118.19772	114.4946296	110.938198	107.5217564	104.2389746	101.0838431	98.05065531	95.13399052	92.32869812
150601A00928	6/1/2015	5.94	8/21/2030	6/1/2015	122.04935	117.7521058	113.6819037	109.8243202	106.1659705	102.694424	99.39812896	96.2663445	93.28907765
130624A00019	6/24/2013	3.4	6/26/2023	6/24/2013	101.33477	100.7483339	100.1685473	99.59530154	99.02848663	98.46799487	97.91372103	97.36556217	96.82341764
150601A00931	6/1/2015	7.13	9/20/2030	6/1/2015	129.77377	124.8063865	120.1122925	115.6736791	111.4740374	107.4980571	103.7315313	100.1612689	96.77501568
130206A00004	2/6/2013	2.14	2/7/2028	2/6/2013	105.38104	102.5972697	99.92474646	97.35799004	94.89183781	92.52142001	90.24214097	88.04966164	85.93988337
170130A00036	1/30/2017	3.11	1/31/2033	1/30/2017	113.45248	108.0840132	103.0841385	98.42296526	94.07329971	90.0103837	86.21165777	82.65654894	79.32628045

Classification | Public

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00946	6/1/2015	6.28	8/22/2031	6/1/2015	129.30799	123.7430128	118.5172502	113.6064146	108.9881553	104.6418919	100.5486611	96.69097884	93.05271396
160928A00044	9/28/2016	2.89	9/29/2036	9/28/2023	116.01855	108.4407455	101.5486069	95.26973095	89.54013005	84.30318473	79.50873295	75.11227825	71.07430074
210514A00010	5/14/2021	1.34	5/14/2031	5/14/2021	104.85883	100.5921386	96.57585726	92.79256882	89.22621298	85.86197075	82.6861598	79.68613908	76.85022216
150601A00875	6/1/2015	7.14	9/29/2028	6/1/2015	121.83915	118.3397827	114.9894899	111.7805836	108.7058296	105.7584181	102.9319357	100.2203396	97.61793362
150601A00900	6/1/2015	6.06	6/28/2024	6/1/2015	104.00333	103.213587	102.4376764	101.6752173	100.9258452	100.1892091	99.46497118	98.75280575	98.05239902
181211A00042	12/11/2018	3.7	12/11/2028	12/11/2023	116.20069	111.0698418	106.2310339	101.6655944	97.35615922	93.28656908	89.44177963	85.8077783	82.37150799
970806A00059	8/1/1997	8.25	9/22/2025	8/1/1997	110.58392	109.0750561	107.601893	106.1632925	104.7581609	103.3854484	102.0441467	100.7332866	99.45193676
150601A00883	6/1/2015	6.21	11/30/2028	6/1/2015	119.27467	115.764718	112.4077758	109.1957883	106.1211814	103.1768335	100.3560453	97.6525122	95.06029793
150601A00899	6/1/2015	7.07	6/14/2029	6/1/2015	121.598	117.9745699	114.5163564	111.2141968	108.0595071	105.0442434	102.1608641	99.40229497	96.76189702
150601A00976	6/1/2015	6.8	9/22/2033	6/1/2015	138.49437	131.3747312	124.7735722	118.6467536	112.9542929	107.6599442	102.7308205	98.137057	93.85151056
200331A00056	3/31/2020	0.96	3/29/2030	3/31/2020	102.90716	99.24898828	95.78016585	92.48898419	89.36455238	86.39673398	83.57608948	80.89382353	78.34173654
150601A00939	6/1/2015	5.79	1/17/2031	6/1/2015	124.46491	119.5384239	114.8922998	110.5076648	106.3670675	102.4543625	98.75460414	95.25394836	91.93956422
171206A00020	12/6/2017	2.62	12/6/2027	12/6/2017	105.63598	103.037733	100.5370775	98.12949378	95.8107033	93.57665597	91.42351638	89.3476509	87.34561573
150601A00929	6/1/2015	5.91	8/30/2030	6/1/2015	124.27669	119.5055569	114.9972763	110.7347091	106.701967	102.8843156	99.2680826	95.84057402	92.58999727
210409A00010	4/9/2021	1.05	4/9/2031	4/9/2021	103.58159	99.39038052	95.44346912	91.72398412	88.21635808	84.90621864	81.78028827	78.82629306	76.03287976
150601A00678	6/1/2015	2.12	1/30/2025	6/1/2015	101.25614	100.1753157	99.11650509	98.07906456	97.06237875	96.06585551	95.08892483	94.13103779	93.19166561
181029A00097	10/29/2018	3.53	10/27/2028	10/29/2018	115.53488	110.4954351	105.736523	101.240565	96.99118638	92.97312661	89.17215753	85.57500809	82.16929485
190102A00020	1/2/2019	2.97	1/3/2034	1/2/2019	115.00192	109.1139919	103.658986	98.59947213	93.90160958	89.53477581	85.47123557	81.68584606	78.1557942
200428A00018	4/28/2020	1.33	4/27/2035	4/28/2020	104.62956	98.61434855	93.08833765	88.00510683	83.32309293	79.0050448	75.0175416	71.33056829	67.91714106
120827A00052	8/27/2012	2.01	8/27/2027	8/27/2012	104.9614	102.1967449	99.53756324	96.97886045	94.51591801	92.14427674	89.85972052	87.65826124	85.53612471
970806A00017	8/1/1997	7.02	7/23/2026	8/1/1997	112.16425	110.1894761	108.2713058	106.4076446	104.5964934	102.8359418	101.1241633	99.45941088	97.84001322
150601A00038	6/1/2015	5.77	6/2/2023	6/1/2015	102.45232	101.9455708	101.4438881	100.9471952	100.4554179	99.96848314	99.48631944	99.00885673	98.53602628
191114A00014	11/14/2019	1.9	11/14/2023	11/14/2019	100.42835	99.8924191	99.36371931	98.84208354	98.32735483	97.81938109	97.31801494	96.82311352	96.33453828
150601A00018	6/1/2015	4.91	9/5/2025	6/1/2015	111.73667	109.0515252	106.4484515	103.9243902	101.476424	99.10176462	96.79774642	94.56181975	92.39154507
200402A00050	4/6/2020	0.73	4/5/2024	4/6/2020	99.739055	99.00371084	98.28089353	97.57026105	96.87148478	96.18424844	95.50824747	94.84318849	94.18878876
150601A01016	6/1/2015	5.73	10/28/2025	6/1/2015	114.38312	111.5731311	108.8521972	106.216972	103.6642566	101.1909906	98.79424473	96.47121449	94.21921428
150601A00971	6/1/2015	6.42	6/20/2033	6/1/2015	134.86907	127.9304247	121.4918459	115.5113578	109.9508812	104.7758402	99.95481415	95.45922623	91.26306528
150601A00888	6/1/2015	5.92	3/1/2029	6/1/2015	119.35533	115.6581866	112.1296994	108.7606095	105.5422381	102.4664448	99.52559052	96.71250311	94.0204458
121120A00010	11/20/2012	1.93	11/22/2027	11/20/2012	105.19283	102.1552816	99.24011026	96.44136016	93.7534099	91.17094971	88.68896214	86.30270411	84.00769005
150601A00023	6/1/2015	5.46	10/30/2037	6/1/2015	141.38603	131.3592054	122.3123858	114.1353541	106.7314289	100.0156947	93.91347195	88.35899671	83.29428052
120217A00007	2/17/2012	2.25	2/20/2024	2/17/2012	101.4739	100.4357228	99.42141329	98.43013375	97.46108149	96.51349105	95.58663198	94.67980686	93.79234946
130925A00035	9/25/2013	1.53	6/25/2025	9/25/2013	101.54484	99.96989779	98.4331555	96.93337435	95.46936429	94.03998306	92.64413389	91.28076329	89.94885904
180529A00057	5/29/2018	3.09	5/30/2028	5/29/2018	110.44369	106.8257021	103.3771296	100.0885842	96.9512656	93.95691821	91.09779413	88.36661871	85.75655878

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
210514A00007	5/14/2021	0.95	5/15/2028	5/14/2021	102.12738	99.37087337	96.72596243	94.18712856	91.7491692	89.40717587	87.15651546	84.99281294	82.91193522
150601A01005	6/1/2015	5.82	3/10/2025	6/1/2015	111.14862	108.9486225	106.8059849	104.7188089	102.6852747	100.7036363	98.77221847	96.88941275	95.05367456
191231A00021	12/31/2019	1.9	2/28/2023	12/31/2019	100.14196	100.0560185	99.97021921	99.88456495	99.79905538	99.71369016	99.62846895	99.54339142	99.4584572
150601A00948	6/1/2015	6.04	10/22/2031	6/1/2015	124.5157	119.5619956	114.9018129	110.5143726	106.3805449	102.4827098	98.8046267	95.33131608	92.04895241
150601A00395	6/1/2015	2.86	1/3/2024	6/1/2015	100.93888	100.3913476	99.851934	99.32043834	98.79666656	98.28043131	97.77155161	97.26985264	96.7751654
121220A00023	12/20/2012	1.82	12/20/2022	12/20/2012	100.09621	100.0397162	99.98330306	99.92696919	99.87071438	99.81453848	99.75844129	99.70242266	99.64648241
150601A00001	6/1/2015	5.43	6/15/2037	6/1/2015	140.18353	130.4726101	121.6897526	113.7328192	106.511957	99.94802251	93.97121709	88.51990542	83.53959211
150601A00425	6/1/2015	2.64	2/21/2024	6/1/2015	100.92907	100.3140547	99.70923785	99.1143354	98.52907627	97.95319987	97.38645547	96.82860177	96.27940643
150601A00426	6/1/2015	3.37	2/21/2029	6/1/2015	109.17522	105.9764694	102.9197883	99.99751496	97.20246171	94.52788088	91.96743465	89.51516735	87.16547981
121120A00011	11/20/2012	2.22	11/22/2027	11/20/2012	108.6696	104.5698881	100.665377	96.945438	93.40008249	90.01992191	86.79612828	83.72039762	80.78491588
120621A00009	6/21/2012	3.18	6/21/2032	6/21/2012	117.15743	110.3306179	104.0392304	98.23559123	92.87662342	87.92338062	83.34062544	79.09645302	75.16195489
180126A00018	1/26/2018	2.34	1/26/2023	1/26/2018	100.25871	100.1364897	100.0146018	99.89303993	99.77180279	99.65088896	99.53029706	99.41002568	99.29007347
150601A00927	6/1/2015	6.08	8/7/2030	6/1/2015	122.48114	118.1930968	114.1305348	110.2791976	106.6258442	103.1581736	99.86475154	96.73494312	93.75885112
200316A00008	3/16/2020	1.31	3/15/2030	3/16/2020	103.38443	99.74167755	96.28643267	93.00715053	89.89309074	86.93425408	84.12132615	81.44562572	78.89905729
150601A00872	6/1/2015	7.42	7/31/2028	6/1/2015	121.88368	118.5032493	115.2629033	112.1555899	109.1746636	106.3138605	103.5672734	100.9293295	98.39476865
150601A00558	6/1/2015	2.51	8/30/2024	6/1/2015	101.29147	100.4176288	99.55976508	98.71743127	97.89019834	97.07765347	96.27939925	95.49505294	94.72424582
120119A00015	1/19/2012	2.27	1/19/2024	1/19/2012	101.28834	100.3375074	99.40718958	98.49670674	97.60541245	96.73268818	95.87794186	95.04060644	94.22013858
160928A00029	9/28/2016	2.52	9/29/2036	9/28/2016	113.34619	105.902131	99.1338836	92.96992932	87.34708011	82.20943496	77.50747801	73.19729476	69.23989011
140414A00009	4/14/2014	2.32	4/30/2024	4/14/2014	101.45117	100.5269513	99.61767612	98.72298401	97.8425306	96.9759825	96.12301684	95.28332084	94.4565914
030605A00010	6/5/2003	3.97	6/5/2023	6/5/2003	101.62334	101.1050748	100.5921076	100.0843528	99.58173098	99.08416447	98.59157716	98.10389446	97.62104325
150601A00952	6/1/2015	6.34	2/13/2032	6/1/2015	131.41842	125.4395252	119.8437859	114.6024538	109.6891792	105.0797921	100.7521067	96.685744	92.86197201
190102A00022	1/2/2019	2.97	1/3/2034	1/2/2019	115.00182	109.1139413	103.6589777	98.59950046	93.90166941	89.53486268	85.47134558	81.68597579	78.15594065
150601A00865	6/1/2015	6	4/3/2028	6/1/2015	115.37417	112.4936445	109.7250763	107.0630998	104.5026466	102.0389276	99.66741614	97.38383121	95.1841228
160928A00030	9/28/2016	2.52	9/29/2036	9/28/2016	113.34619	105.902131	99.1338836	92.96992932	87.34708011	82.20943496	77.50747801	73.19729476	69.23989011
150601A00035	6/1/2015	5.73	4/1/2038	6/1/2015	139.27603	130.2477497	122.0709194	114.6511578	107.9056347	101.7615541	96.1548477	91.0290474	86.33431264
120827A00048	8/27/2012	2.01	8/27/2027	8/27/2012	104.9614	102.1967432	99.53756275	96.97886106	94.51591964	92.14427932	89.85972399	87.65826554	85.53612978
121217A00009	12/17/2012	2.02	12/17/2027	12/17/2012	104.73623	102.1151013	99.60041307	97.18692386	94.86968461	92.64402457	90.50553377	88.45004671	86.47362713
150601A00033	6/1/2015	5.96	12/24/2025	6/1/2015	116.14003	113.1161032	110.1925437	107.3654	104.6309048	101.9854618	99.42563658	96.94814867	94.54986329
200311A00028	3/11/2020	1.04	3/12/2024	3/11/2020	99.970116	99.2782147	98.59839058	97.93029933	97.27361051	96.6280066	95.99318232	95.36884407	94.7547093
200326A00037	3/26/2020	1.78	3/26/2035	3/26/2020	107.39856	101.3101395	95.71203717	90.55809953	85.80696962	81.42155082	77.36853396	73.61798025	70.14295292
150601A00509	6/1/2015	2.52	7/8/2024	6/1/2015	101.17021	100.3705978	99.58514558	98.81346253	98.05517534	97.30992463	96.57736421	95.85716052	95.14899199
150601A00832	6/1/2015	7.17	8/28/2025	6/1/2015	108.61431	107.190353	105.7996227	104.4410624	103.1136612	101.8164483	100.5484911	99.30889334	98.09679338
150601A00475	6/1/2015	3.04	6/1/2029	6/1/2015	108.52142	105.1989769	102.0298032	99.00535133	96.11761351	93.35908714	90.7227396	88.20197558	85.79060686

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A01012	6/1/2015	5.43	9/15/2023	6/1/2015	103.37726	102.5936615	101.822181	101.0625405	100.3144674	99.57769726	98.85197383	98.13704851	97.43268018
170929A00046	9/29/2017	2.49	9/30/2027	9/29/2017	104.98004	102.5152192	100.1393167	97.84835787	95.63857287	93.506387	91.44840942	89.46142239	87.54237123
150601A00955	6/1/2015	5.84	7/15/2032	6/1/2015	126.6603	121.2077445	116.1023141	111.3177109	106.829867	102.6167392	98.65812285	94.93548473	91.43181211
160930A00033	9/30/2016	1.8	9/30/2026	9/30/2016	102.34295	100.4070718	98.52934763	96.70755149	94.9395593	93.22334354	91.55696816	89.93858378	88.36642313
150601A00851	6/1/2015	7.12	4/30/2027	6/1/2015	116.00882	113.4580847	110.9942253	108.6135569	106.3125771	104.0879567	101.93653	99.85528559	97.84135771
150601A01047	6/1/2015	5.35	12/30/2024	6/1/2015	109.31663	107.2886202	105.3103624	103.3802968	101.4969211	99.65879174	97.86452043	96.11277202	94.40226187
220629A00034	6/29/2022	3.51	6/29/2027	6/29/2022	107.04187	104.6687403	102.3773677	100.1642366	98.02600787	95.95950984	93.96172841	92.02979827	90.16099446
150601A00868	6/1/2015	7.08	6/5/2028	6/1/2015	120.58191	117.2693225	114.0925454	111.0448081	108.1197314	105.3112985	102.6138323	100.0219738	97.53066164
111007A00007	10/7/2011	3.92	10/7/2031	10/7/2011	123.39504	115.8136534	108.8180044	102.3576567	96.3868434	90.86401013	85.75140418	81.01470551	76.62269547
150601A00005	6/1/2015	4.84	6/9/2025	6/1/2015	110.39955	107.9516632	105.5738376	103.2636321	101.0187105	98.83683216	96.71584822	94.65369677	92.64839883
130624A00017	6/24/2013	3.4	6/26/2023	6/24/2013	101.33477	100.7483339	100.1685473	99.59530154	99.02848663	98.46799487	97.91372103	97.36556217	96.82341764
150601A00410	6/1/2015	2.68	1/24/2024	6/1/2015	100.88456	100.3097135	99.7438029	99.18659484	98.637866	98.09740112	97.56499265	97.04044034	96.52355097
150601A00988	6/1/2015	4.57	3/22/2024	6/1/2015	102.26418	101.6022121	100.9515213	100.3117896	99.68271281	99.06399842	98.45536521	97.85654262	97.26727026
170313A00041	3/13/2017	3.21	3/15/2032	3/13/2017	112.94374	108.0741156	103.5096512	99.22767535	95.20739689	91.42973788	87.8771798	84.53362455	81.38426874
150601A00889	6/1/2015	6.55	3/2/2029	6/1/2015	122.01068	118.1722486	114.5101175	111.0145674	107.6764905	104.4873459	101.4391199	98.52429043	95.73579295
200203A00046	2/3/2020	1.98	2/3/2040	2/3/2020	111.84833	103.2866312	95.64717208	88.81481586	82.69015803	77.18723117	72.23156435	67.75853768	63.7119851
150601A01015	6/1/2015	5.61	10/28/2025	6/1/2015	114.06495	111.2595041	108.5430036	105.9121047	103.3636122	100.8944687	98.50174821	96.18264936	93.93448948
150601A00935	6/1/2015	6.46	11/21/2030	6/1/2015	127.30476	122.3261294	117.6267135	113.1879925	108.9928223	105.0253237	101.2707805	97.71554622	94.34695863
150601A00022	6/1/2015	5.43	10/26/2037	6/1/2015	136.166	127.5173026	119.6668541	112.5280848	106.0247944	100.0898175	94.66387048	89.6945558	85.13549829
150601A00918	6/1/2015	5.62	4/28/2025	6/1/2015	105.90942	104.6689814	103.4550972	102.2669771	101.1038577	99.96500473	98.84971183	97.75729921	96.68711237
150601A00496	6/1/2015	2.27	6/27/2024	6/1/2015	101.107	100.3198735	99.5466434	98.78692599	98.04035491	97.30657745	96.5852539	95.87605693	95.17867102
200521A00005	5/21/2020	0.75	5/21/2030	5/21/2020	102.15373	98.43492888	94.91260195	91.57436908	88.40873329	85.40500758	82.55325218	79.84421711	77.26928956
140311A00039	3/11/2014	3.06	3/11/2024	3/11/2014	102.37574	101.217192	100.0831339	98.97276748	97.88533304	96.82010378	95.77638385	94.75350671	93.7508336
190628A00007	6/28/2019	2.28	6/28/2034	6/28/2019	111.40277	105.44575	99.94322551	94.85454992	90.14310025	85.77584773	81.72297688	77.95754755	74.45519481
130913A00018	9/13/2013	3.72	9/13/2028	9/13/2013	111.09157	107.5918597	104.2475745	101.0503964	97.99251289	95.06658471	92.26571407	89.58341517	87.01358685
150601A00912	6/1/2015	5.96	11/30/2029	6/1/2015	121.84008	117.6466299	113.6626524	109.8756668	106.2740335	102.8468904	99.58409584	96.47617571	93.51427512
150601A00411	6/1/2015	3.38	1/24/2029	6/1/2015	109.08321	105.9270161	102.9094547	100.0231309	97.26109706	94.61682675	92.08418631	89.65740853	87.33106819
190102A00024	1/2/2019	2.97	1/3/2034	1/2/2019	115.00187	109.1139642	103.6589815	98.59948763	93.90164229	89.53482331	85.47129572	81.68591699	78.15587427
150601A00960	6/1/2015	6.49	12/16/2032	6/1/2015	130.96953	125.1492822	119.7118414	114.6272519	109.8681824	105.4096731	101.2289119	97.30503274	93.61893486
150601A00978	6/1/2015	6.32	11/24/2033	6/1/2015	132.69432	126.2984078	120.3565886	114.8306359	109.6859078	104.8909855	100.4173469	96.23907747	92.33261032
160210A00041	2/10/2016	1.97	2/10/2023	2/10/2016	100.28281	100.0834879	99.88496756	99.68724313	99.49030981	99.29416282	99.09879741	98.90420889	98.7103926
160520A00017	9/20/2017	2.34	9/20/2024	9/20/2017	102.6748	100.890063	99.14483023	97.43796105	95.76835632	94.13495681	92.53674144	90.97272559	89.44195947
180518A00046	5/25/2018	3.62	5/18/2027	5/25/2018	115.33181	110.6954369	106.2758599	102.0617808	98.04255055	94.20812758	90.54903968	87.05634879	83.72161814

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191002A00038	1/13/2020	1.76	1/13/2023	1/13/2020	100.16892	100.0469998	99.92538675	99.80408413	99.68309073	99.56240534	99.44202674	99.32195373	99.20218511
191002A00044	2/3/2020	1.75	2/3/2023	2/3/2020	100.22454	100.0445897	99.86528457	99.68662323	99.50860219	99.33121802	99.15446732	98.9783467	98.80285281
190329A00012	3/29/2019	2.61	3/29/2024	3/29/2019	102.21039	100.8950583	99.6033552	98.33468624	97.0884775	95.86417384	94.66123819	93.47915078	92.31740848
130211A00016	2/11/2013	2.27	2/15/2023	2/11/2013	100.36019	100.1469835	99.93468964	99.72330497	99.51282367	99.30323991	99.09454791	98.88674196	98.67981638
190829A00080	8/29/2019	1.8	12/29/2023	8/29/2019	100.65532	99.58903779	98.54524205	97.5232278	96.52231904	95.54186749	94.58125118	93.63987312	92.71716003
141215A00062	12/15/2014	2.65	12/16/2024	12/15/2014	104.23082	102.1913813	100.2022187	98.26176849	96.36852562	94.52104262	92.7179268	90.95783781	89.23948523
160212A00037	2/12/2016	3.03	2/12/2031	2/12/2016	120.29773	111.7965804	103.9732621	96.76985348	90.13368074	84.01681439	78.37561847	73.17034479	68.36476751
160712A00019	7/12/2017	2.32	7/12/2027	7/12/2017	109.83368	105.1708399	100.7338516	96.5105696	92.48956726	88.6600909	85.01201629	81.5358083	78.22248335
180618A00036	6/18/2018	3.89	6/18/2048	6/18/2018	156.06693	130.3118134	109.7674595	93.30342297	80.04393198	69.30900026	60.56944195	53.41244591	47.51518544
180621A00068	6/21/2018	3.32	6/23/2025	6/21/2018	107.0149	104.4371604	101.9352357	99.5064385	97.14819643	94.85804458	92.63362023	90.47265793	88.37298476
170412A00019	4/12/2017	2.56	4/12/2024	4/12/2017	102.2194	100.8666734	99.53821545	98.23342934	96.95173717	95.6925794	94.4554141	93.2397163	92.04497734
180726A00046	7/26/2018	3.2	12/26/2023	7/26/2018	102.1521	101.085254	100.0406845	99.01770301	98.01564498	97.03387291	96.07177498	95.12876375	94.204275
190829A00078	8/29/2019	1.8	12/15/2023	8/29/2019	100.59116	99.56272605	98.55523774	97.56806119	96.60058686	95.65222936	94.72242631	93.81063719	92.91634232
190515A00032	5/15/2019	2.49	5/15/2024	5/15/2019	102.28398	100.8432339	99.42987727	98.04319939	96.68251154	95.34714825	94.03646629	92.74984374	91.48667911
190501A00014	5/1/2019	2.62	5/1/2024	5/1/2019	102.40307	100.9979131	99.61881518	98.26511268	96.93616563	95.63135508	94.35008226	93.09176775	91.85585071
190621A00035	6/21/2019	2.19	12/15/2023	6/21/2019	101.00019	99.96946472	98.95971791	97.97031466	97.00064466	96.0501218	95.11818301	94.2042871	93.30791372
160210A00053	2/10/2016	1.99	2/10/2023	2/10/2016	100.28681	100.0874793	99.88895316	99.69122294	99.49428384	99.29813108	99.10275993	98.90816569	98.71434369
180911A00007	9/11/2018	3.12	9/8/2023	9/11/2018	101.5031	100.7302129	99.96909028	99.21946697	98.48108362	97.75368863	97.03703785	96.33089432	95.63502801
081219A00006	12/19/2008	3.88	12/22/2023	12/19/2008	103.05647	101.9921665	100.9498931	99.92896681	98.92873589	97.94857492	96.98788344	96.0460848	95.12262491
160830A00068	11/30/2016	1.95	11/30/2023	11/30/2016	100.68343	99.69456096	98.72503217	97.77428402	96.84177517	95.92698491	95.02941217	94.14857461	93.28400774
171110A00019	5/4/2018	2.46	5/4/2023	5/4/2018	100.66421	100.2367597	99.81293551	99.39269106	98.97598115	98.56276131	98.15298781	97.74661766	97.34360858
200131A00031	1/31/2020	1.74	1/31/2024	1/31/2020	100.78365	99.62750215	98.4977356	97.39346051	96.31382222	95.25800388	94.22522437	93.21473638	92.22582461
170822A00023	8/23/2017	3.95	8/23/2028	8/23/2017	121.14836	115.0745907	109.3517162	103.9574684	98.87111889	94.07336013	89.54620007	85.27286519	81.2377113
160819A00015	10/12/2016	2.3	10/13/2026	10/12/2016	107.87338	103.9897933	100.2677698	96.69976325	93.27862254	89.99756485	86.85015482	83.83028495	80.93215724
170614A00019	6/14/2017	2.48	6/13/2025	6/14/2017	104.7753	102.2541007	99.8066869	97.4304701	95.12296471	92.88178794	90.70465482	88.58937344	86.53384058
160225A00024	2/25/2016	2.22	2/26/2024	2/25/2016	101.49767	100.267236	99.06652905	97.89448081	96.75007474	95.63234185	94.54035794	93.47324109	92.43014925
180925A00033	9/25/2018	3.26	9/25/2023	9/25/2018	101.68519	100.8661679	100.0603384	99.26738233	98.48699273	97.7188725	96.96273378	96.21829767	95.48529387
180821A00029	8/21/2018	3.01	8/21/2023	8/21/2018	101.34845	100.6243569	99.91060701	99.20698062	98.51326323	97.82924642	97.15472756	96.48950965	95.83340108
190829A00075	8/29/2019	1.8	6/15/2023	8/29/2019	100.4196	99.87899697	99.34420683	98.81513727	98.29169675	97.77379569	97.26134639	96.75426299	96.25246145
180328A00042	3/28/2018	2.95	3/28/2023	3/28/2018	100.71249	100.3860012	100.0616291	99.73935158	99.4191485	99.10099987	98.78488598	98.47078737	98.15868484
160223A00012	2/23/2016	1.89	2/23/2023	2/23/2016	100.33829	100.102665	99.86815573	99.63475065	99.40244194	99.17122187	98.94108276	98.71201701	98.4840171
181206A00018	12/6/2018	3.13	12/6/2023	12/6/2018	101.92209	100.910331	99.91865567	98.94646718	97.99319492	97.0582904	96.14122615	95.24149475	94.35860787
190830A00020	8/31/2020	1.67	8/31/2023	8/31/2020	100.37283	99.62602367	98.89027943	98.16535577	97.45101556	96.74702854	96.05317107	95.36922594	94.69498207

	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150731A00016	7/31/2015	3.04	7/31/2025	7/31/2015	106.65016	103.9748004	101.380527	98.86436591	96.42347649	94.0551417	91.75676185	89.52584856	87.36001914
171228A00023	12/28/2017	2.69	3/29/2024	12/28/2017	102.31733	101.0012479	99.70880905	98.43941673	97.19249667	95.96749339	94.7638695	93.58110495	92.41869631
161125A00002	11/25/2016	2.62	11/27/2023	11/25/2016	101.3459	100.361416	99.39602212	98.44916573	97.52031672	96.60896499	95.71461957	94.83680769	93.97507396
191002A00046	2/14/2020	1.75	2/14/2023	2/14/2020	100.24701	100.0367277	99.82733615	99.61883038	99.41120473	99.20445359	98.99857142	98.79355269	98.58939195
160520A00018	9/20/2017	2.34	9/20/2024	9/20/2017	102.6748	100.890063	99.14483023	97.43796105	95.76835632	94.13495681	92.53674144	90.97272559	89.44195947
181220A00041	12/20/2018	3.36	12/18/2026	12/20/2018	112.65542	108.4982235	104.5200459	100.7122068	97.06649291	93.57513211	90.23076704	87.02643078	83.95552393
190815A00040	8/15/2019	1.86	8/15/2023	8/15/2019	100.50339	99.79873331	99.10393696	98.41879401	97.74310418	97.07667272	96.41931018	95.77083227	95.13105965
190829A00076	8/29/2019	1.81	6/30/2023	8/29/2019	100.43743	99.85631328	99.28189964	98.71406927	98.15270961	97.59771069	97.04896498	96.50636738	95.96981513
160210A00042	2/10/2016	2.57	2/10/2026	2/10/2016	106.92434	103.7212076	100.6311499	97.64950107	94.77181868	91.9938718	89.31162938	86.72124934	84.21906839
180615A00039	6/15/2018	3.49	6/15/2028	6/15/2018	118.05028	112.2537748	106.7840378	101.6208644	96.74540547	92.14006806	87.7884255	83.67513398	79.78585566
191002A00043	2/3/2020	1.75	2/3/2023	2/3/2020	100.22454	100.0445897	99.86528457	99.68662323	99.50860219	99.33121802	99.15446732	98.9783467	98.80285281
150601A00356	6/1/2015	3.66	9/22/2023	6/1/2015	101.9506	101.1384898	100.3393319	99.55281372	98.77863687	98.01651225	97.2661597	96.52730774	95.79969316
160210A00036	2/10/2016	1.77	2/10/2023	2/10/2016	100.27615	100.0764865	99.877628	99.67957078	99.48230995	99.28584067	99.09015809	98.89525744	98.70113398
180709A00081	7/9/2018	3.05	7/7/2023	7/9/2018	101.1939	100.5913798	99.99602976	99.40772503	98.82634099	98.25175594	97.68385099	97.12251003	96.56761964
160222A00018	2/22/2016	2.59	2/23/2026	2/22/2016	107.10458	103.86022	100.7314973	97.71358942	94.80190925	91.99209063	89.27997613	86.66160547	84.13320474
160222A00019	2/22/2016	3.09	2/21/2031	2/22/2016	120.84363	112.2946996	104.4288798	97.18765814	90.51783509	84.37101532	78.70314972	73.47412366	68.64738608
190829A00073	8/29/2019	1.81	3/15/2023	8/29/2019	100.31669	100.0266244	99.73824916	99.45154626	99.16650112	98.88309932	98.60132659	98.32116883	98.04261212
180131A00022	1/31/2018	2.96	1/30/2025	1/31/2018	104.80079	102.6439018	100.5421635	98.4937751	96.49701049	94.55021361	92.65179483	90.80022776	88.99404612
171222A00037	12/22/2017	2.71	12/29/2023	12/22/2017	101.64465	100.5726487	99.52321734	98.49564948	97.48926712	96.50342006	95.53748447	94.59086155	93.66297632
160210A00021	2/10/2016	1.97	2/10/2023	2/10/2016	100.28281	100.0834879	99.88496756	99.68724313	99.49030981	99.29416282	99.09879741	98.90420889	98.7103926
160209A00049	2/9/2016	1.92	2/9/2023	2/9/2016	100.2703	100.0737535	99.87798368	99.68298754	99.48876051	99.295298	99.10259549	98.91064846	98.71945245
180912A00017	9/12/2018	3.13	9/12/2023	9/12/2018	101.52662	100.7429537	99.97138736	99.21163951	98.46343982	97.72652618	97.0006444	96.28554783	95.58099718
181203A00039	12/3/2018	3.27	12/1/2023	12/3/2018	102.02227	101.0234745	100.0442288	99.08396274	98.14212836	97.21819852	96.31166605	95.42204277	94.54885861
160714A00024	9/20/2016	2.5	9/20/2028	9/20/2016	112.91835	107.0010608	101.4335253	96.19324833	91.25929193	86.6121622	82.23370272	78.10699613	74.21627341
180518A00042	5/25/2018	3.42	5/19/2025	5/25/2018	106.9075	104.4267069	102.0167592	99.67522577	97.39977718	95.18817772	93.03828086	90.94802516	88.91543035
190815A00041	8/15/2019	1.86	8/15/2024	8/15/2019	101.68691	100.0067717	98.36222281	96.75219391	95.17566118	93.63164148	92.11919036	90.63740009	89.18539785
181001A00031	10/1/2018	3.23	9/29/2023	10/1/2018	101.66897	100.8394794	100.0235181	99.22075233	98.430864	97.65354502	96.88849707	96.13543125	95.39406762
190327A00027	3/27/2019	2.66	1/15/2025	3/27/2019	104.03704	101.928315	99.87281167	97.86882419	95.91471192	94.0088994	92.14987319	90.33617887	88.56641825
161118A00026	12/20/2016	3.03	12/21/2026	12/20/2016	111.34355	107.204652	103.2445724	99.45461904	95.82656888	92.35264162	89.02547319	85.83809116	82.7838917
180518A00048	5/25/2018	3.65	5/18/2028	5/25/2018	118.73333	112.996016	107.5779002	102.4594962	97.62260422	93.05022234	88.72646137	84.63646661	80.76634535
170327A00080	3/27/2019	3.43	3/27/2029	3/27/2019	119.42255	112.7995808	106.5954404	100.7813804	95.33076458	90.21890729	85.42292157	80.92157927	76.69518291
171228A00024	12/28/2017	2.71	6/28/2024	12/28/2017	102.86664	101.3030125	99.77076281	98.26901508	96.7969242	95.35367601	93.93848582	92.55059712	91.18928025
160211A00036	2/11/2016	2.41	2/11/2026	2/11/2016	106.41991	103.2219329	100.1370112	97.16047096	94.28786603	91.51496204	88.83772492	86.25230996	83.75505149

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180316A00031	3/16/2018	2.96	12/16/2022	3/16/2018	100.12425	100.0797978	100.0354043	99.99106792	99.94678849	99.90256591	99.85840005	99.81429081	99.77023808
181029A00051	2/5/2019	3.69	2/5/2029	2/5/2019	120.73987	114.2182197	108.1000704	102.3581913	96.96733115	91.90406753	87.14666405	82.67494036	78.47015253
190726A00014	7/26/2019	2.23	7/24/2024	7/26/2019	102.22304	100.5959786	99.00253097	97.4417172	95.91259786	94.41426954	92.94586311	91.50654207	90.09550102
161017A00007	10/17/2016	1.99	10/18/2023	10/17/2016	100.64642	99.77138534	98.91152721	98.0664493	97.23577285	96.41913199	95.61617314	94.8265545	94.04994561
190621A00039	6/21/2019	2.21	6/17/2024	6/21/2019	102.02008	100.4933839	98.99701259	97.53013559	96.09194933	94.68167908	93.29857759	91.94192388	90.61102208
190422A00030	4/22/2019	2.93	12/22/2025	4/22/2019	107.62855	104.5509121	101.5781257	98.70602228	95.93062673	93.24814484	90.65495401	88.14759438	85.72276051
170327A00079	3/27/2019	3.19	3/29/2027	3/27/2019	112.94908	108.5026643	104.2588498	100.2073597	96.33848792	92.64306719	89.11243643	85.73841022	82.51325031
181016A00019	10/18/2018	3.32	10/16/2023	10/18/2018	101.82087	100.9454785	100.0851496	99.23949313	98.40813553	97.59071603	96.78688585	95.9963078	95.21865575
190917A00033	1/10/2020	2.03	1/10/2023	1/10/2020	100.19085	100.0771954	99.96380971	99.85069418	99.73784777	99.62526949	99.51295835	99.40091337	99.28913357
160729A00017	7/31/2017	2.47	7/31/2029	7/31/2017	113.71421	106.9354414	100.6096224	94.70406251	89.18859923	84.03538852	79.21871458	74.7148164	70.50172932
170918A00051	12/18/2017	2.24	12/19/2022	12/18/2017	100.10955	100.0567996	100.0041212	99.95151492	99.89898056	99.846518	99.79412708	99.74180765	99.68955956
180201A00022	2/1/2018	2.99	2/3/2025	2/1/2018	104.90291	102.7334218	100.6196182	98.55967673	96.55184692	94.59444956	92.68587321	90.8245709	89.0090569
180518A00071	5/25/2018	3.56	5/18/2026	5/25/2018	111.1485	107.6079982	104.2011021	100.9220533	97.76537083	94.72583838	91.79849051	88.97859893	86.26165996
170327A00078	3/27/2019	3.04	3/27/2026	3/27/2019	108.86013	105.5001389	102.2624751	99.14204499	96.13399203	93.23368704	90.43671626	87.73887009	85.13613259
190530A00049	5/30/2019	2.44	5/30/2023	5/30/2019	100.72772	100.2294503	99.73610166	99.24759699	98.76386528	98.2848369	97.81044357	97.34061833	96.87529549
180403A00024	4/3/2018	2.96	4/3/2023	4/3/2018	100.7437	100.4007037	100.0600397	99.72168524	99.38561679	99.05181129	98.72024592	98.39089821	98.06374595
180515A00022	5/15/2018	3.19	5/15/2023	5/15/2018	101.03122	100.572856	100.1186614	99.66857628	99.22254483	98.78051236	98.34242514	97.90823036	97.47787619
190829A00028	8/29/2019	1.78	8/29/2024	8/29/2019	101.59561	99.87967746	98.20067028	96.55745692	94.94895677	93.37413307	91.83199071	90.32157408	88.84196506
190917A00030	1/10/2020	2.03	1/10/2023	1/10/2020	100.19085	100.0771954	99.96380971	99.85069418	99.73784777	99.62526949	99.51295835	99.40091337	99.28913357
180328A00015	3/28/2018	2.93	3/28/2023	3/28/2018	100.70594	100.3794674	100.0551087	99.73284446	99.4126546	99.09451914	98.77841835	98.46433278	98.15224322
190621A00034	6/21/2019	2.17	6/15/2023	6/21/2019	100.62154	100.0802988	99.54487901	99.01518469	98.4911242	97.97260789	97.459548	96.95185862	96.44945564
190520A00048	5/20/2019	2.53	5/20/2024	5/20/2019	102.36688	100.912484	99.48597525	98.0866252	96.71372692	95.36659754	94.0445772	92.74702809	91.47333352
191002A00042	1/13/2020	1.76	1/13/2023	1/13/2020	100.16892	100.0469998	99.92538675	99.80408413	99.68309073	99.56240534	99.44202674	99.32195373	99.20218511
190426A00023	4/26/2019	2.91	6/24/2026	4/26/2019	109.23161	105.6228681	102.1539467	98.81866216	95.61113658	92.52578432	89.55729573	86.70062185	83.95096006
180727A00017	7/27/2018	3.16	7/27/2023	7/27/2018	101.3478	100.6908444	100.0424011	99.4023043	98.77039373	98.146513	97.53050971	96.9222353	96.32154491
180312A00014	3/12/2018	3	3/13/2023	3/12/2018	100.65331	100.3681059	100.0845253	99.80255753	99.52218881	99.24340546	98.96619397	98.69054099	98.41643332
200131A00029	1/31/2020	1.78	10/31/2024	1/31/2020	101.8063	99.9226295	98.08294688	96.28596795	94.53045089	92.81519808	91.13905425	89.50090467	87.89967345
150601A00677	6/1/2015	2.39	1/30/2025	6/1/2015	103.94006	101.7837503	99.68278731	97.63536004	95.63973137	93.69423474	91.7972707	89.94730358	88.14285838
160211A00034	2/11/2016	1.82	2/10/2023	2/11/2016	100.25283	100.0535522	99.85507552	99.65739459	99.46050462	99.26440085	99.06907852	98.87453294	98.68075945
160714A00018	9/6/2016	2.28	9/4/2026	9/6/2016	107.50988	103.7387191	100.1205744	96.64836574	93.31538838	90.11528686	87.04203439	84.08991367	81.25349897
170609A00052	6/11/2018	2.9	6/9/2027	6/11/2018	112.2433	107.6167077	103.2098782	99.01120594	95.00975557	91.19522391	87.55789992	84.08862751	80.7787709
160222A00005	2/22/2016	2.79	2/22/2028	2/22/2016	113.55874	108.1937012	103.11731	98.3124547	93.76313255	89.45437184	85.37215978	81.50337561	77.83572872
180625A00012	6/25/2018	3.07	6/23/2023	6/25/2018	101.14715	100.5826	100.0243533	99.47230202	98.92634338	98.38637684	97.85230407	97.32402887	96.80145714

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	Parallel-Shift Sensitivity Analysis												
11/30/2022					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160303A00020	3/3/2016	2.97	3/3/2031	3/3/2016	121.88288	113.1749166	105.1675691	97.80046736	91.01875306	84.77254887	79.01648122	73.70925143	68.81324971
190621A00037	6/21/2019	2.21	5/15/2024	6/21/2019	101.87364	100.4360199	99.02573984	97.64208589	96.28437083	94.95193057	93.64412319	92.36032805	91.09994487
130211A00026	2/11/2013	2.27	2/15/2023	2/11/2013	100.36019	100.1469835	99.93468964	99.72330497	99.51282367	99.30323991	99.09454791	98.88674196	98.67981638
141117A00011	11/17/2014	3.81	11/17/2034	11/17/2014	134.98413	122.1679788	110.7557745	100.5837463	91.50811323	83.40254615	76.15596622	69.6706305	63.8604667
180123A00067	1/23/2018	2.67	1/23/2023	1/23/2018	100.33474	100.1849892	100.0357	99.88686604	99.73848524	99.59055552	99.44307482	99.29604108	99.14945226
191002A00045	2/14/2020	1.75	2/14/2023	2/14/2020	100.24701	100.0367277	99.82733615	99.61883038	99.41120473	99.20445359	98.99857142	98.79355269	98.58939195
170327A00077	3/27/2019	2.74	3/27/2024	3/27/2019	102.36939	101.0579143	99.77053595	98.50662323	97.26556853	96.04678517	94.84970648	93.67378493	92.5184913
181031A00070	3/1/2019	3.77	3/1/2029	3/1/2019	121.41257	114.7984932	108.597401	102.7811628	97.32371391	92.20089494	87.39030222	82.87115083	78.62414893
160524A00015	11/25/2016	2.71	11/25/2026	11/25/2016	109.82341	105.7856526	101.9202091	98.21881727	94.67365277	91.27730594	88.02275758	84.90335632	81.91279729
190805A00031	8/5/2020	1.77	8/4/2023	8/5/2020	100.43263	99.75764651	99.09170503	98.43462671	97.78623553	97.14636011	96.51483353	95.89149324	95.27618086
150601A00998	6/1/2015	5.37	10/25/2034	6/1/2015	152.17829	138.4462591	126.1824335	115.218205	105.405306	96.61325191	88.72711913	81.64561125	75.27937417
180104A00016	1/4/2018	2.56	1/4/2023	1/4/2018	100.22119	100.1240857	100.0271772	99.93046218	99.83394018	99.73761057	99.64147277	99.54552618	99.44977024
160307A00029	3/7/2016	3.21	3/7/2031	3/7/2016	121.91058	113.2804017	105.3418328	98.03544777	91.30723539	85.10807491	79.39326895	74.12212352	69.2575699
081028A00036	10/30/2008	4.22	10/30/2023		102.71437	101.7974383	100.8968835	100.0122866	99.14322787	98.289301	97.45011855	96.62530576	95.8144937
180406A00015	4/10/2018	2.61	4/10/2028	4/10/2023	115.2554	109.8464457	105.1746949	101.5789337	99.60476182	98.92894088	98.56670375	98.21926121	97.87430508
180925A00059	9/25/2018	3.01	9/25/2028	9/25/2023	118.69451	112.6794258	107.3937737	102.9986178	99.79007149	97.91124286	96.90076526	96.13931751	95.40502134
190522A00029	5/22/2019	2.41	5/22/2024	5/22/2023	102.43193	101.0706884	100.0083039	99.30052465	98.79462721	98.33402588	97.87974276	97.4296676	96.98373799
190523A00048	5/23/2019	2.32	5/23/2024	5/23/2023	102.31311	100.9646299	99.92760699	99.24352103	98.74370303	98.28140166	97.82476011	97.37236087	96.92415044
190613A00024	6/13/2019	2.18	6/13/2024	6/13/2023	102.24051	100.8476164	99.77494271	99.04239959	98.48846419	97.97348711	97.46565144	96.96306707	96.46567031
191209A00045	12/9/2019	1.56	12/9/2024	12/9/2022	102.62227	100.9192629	100.0579518	99.95733722	99.93246978	99.90762917	99.88281507	99.85802783	99.8332674
191211A00013	12/11/2019	1.57	12/11/2024	12/12/2022	102.62248	100.9143215	100.0544361	99.94562174	99.91245468	99.87932638	99.84623646	99.81318528	99.78017278
200131A00023	1/31/2020	1.56	1/31/2025	1/31/2023	102.4791	100.7504575	99.90428938	99.6661439	99.49632887	99.32708758	99.15841717	98.99031509	98.82277852
200207A00008	2/7/2020	1.35	2/7/2025	2/7/2023	102.5537	100.8018279	99.90438407	99.61276957	99.42243807	99.2343078	99.046781	98.8598984	98.6737601
200221A00041	2/21/2020	1.53	2/21/2025	2/21/2023	102.5345	100.7546976	99.83350166	99.51181714	99.28454641	99.05945675	98.83535198	98.61224154	98.39015334
200227A00025	2/27/2020	1.09	2/27/2025	2/27/2023	102.11974	100.4532583	99.70128917	99.41683868	99.17401119	98.93247027	98.69209849	98.45288979	98.21484067
200303A00035	3/3/2020	0.81	3/3/2025	3/3/2023	101.69422	100.2014174	99.58776365	99.30798477	99.0548031	98.80303489	98.55239517	98.30300862	98.05490511

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