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												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190222A00024	2/22/2019	2.79	2/18/2020	2/22/2019	100.1255	100.1254984	100.1254984	100.0979032	100.0479923	99.99814503	99.94836137	99.89864117	99.8489843
190308A00013	3/8/2019	2.69	3/2/2020	3/8/2019	100.2094	100.2094043	100.2094043	100.1615504	100.0756332	99.98986583	99.9042479	99.81877902	99.7334588
190411A00036	4/11/2019	2.62	4/10/2020	4/11/2019	100.46259	100.4625914	100.4625914	100.3482608	100.1544761	99.96145026	99.76917891	99.57765752	99.38688165
190412A00013	4/12/2019	2.64	4/10/2020	4/12/2019	100.46648	100.466479	100.466479	100.3521451	100.1583548	99.96532353	99.77304667	99.5815198	99.39073846
190509A00015	5/9/2019	2.55	5/4/2020	5/9/2019	100.60035	100.6003513	100.6003513	100.4453053	100.1853465	99.92673495	99.66946007	99.41351151	99.15887905
190821A00019	8/21/2019	2.05	3/19/2020	8/21/2019	100.24099	100.2409899	100.2409899	100.1642631	100.0313767	99.8988571	99.76670278	99.6349122	99.50348382
190912A00012	9/12/2019	2.06	4/27/2020	9/12/2019	100.43721	100.4372061	100.4372061	100.2938822	100.0534173	99.81410538	99.57593816	99.33890745	99.10300517
190916A00006	9/16/2019	2.12	4/15/2020	9/16/2019	100.38941	100.3894099	100.3894099	100.2666124	100.0591989	99.85265515	99.64697575	99.4421552	99.23818806
191210A00004	12/10/2019	1.83	8/10/2020	12/10/2019	100.83828	100.8382792	100.8382792	100.5244915	99.99638742	99.47382562	98.95671912	98.44498271	97.93853297
191220A00012	12/20/2019	1.85	11/20/2020	12/20/2019	101.29169	101.2916922	101.2916922	100.7983178	99.9933453	99.20119102	98.42155054	97.65412906	96.89864096
200117A00005	1/17/2020	1.84	10/19/2020	1/17/2020	101.15121	101.1512096	101.1512096	100.715154	99.9966837	99.28843945	98.59020397	97.9017661	97.22292061
190219A00030	2/19/2019	2.78	2/19/2020	2/19/2019	100.13194	100.131943	100.131943	100.1028154	100.050134	99.99752133	99.94497721	99.89250151	99.8400941
190424A00026	4/24/2019	2.58	4/20/2020	4/24/2019	100.51755	100.5175459	100.5175459	100.386096	100.1647382	99.94436611	99.72497322	99.50655294	99.28909878
190607A00010	6/7/2019	2.27	6/1/2020	6/7/2019	100.68485	100.6848467	100.6848467	100.4846562	100.1477548	99.81310532	99.48068542	99.15047287	98.8224458
190620A00013	6/20/2019	2.2	6/15/2020	6/20/2019	100.73689	100.7368856	100.7368856	100.5144817	100.1391592	99.76664527	99.3969084	99.02991752	98.66564201
190710A00014	7/10/2019	2.24	3/10/2020	7/10/2019	100.21504	100.2150428	100.2150428	100.153606	100.0455891	99.93781873	99.83029385	99.72301362	99.61597719
190821A00014	8/22/2019	2.04	5/21/2020	8/22/2019	100.55207	100.5520749	100.5520749	100.3697113	100.0632082	99.75858413	99.45582188	99.15490434	98.85581462
190821A00034	8/21/2019	2.03	6/22/2020	8/21/2019	100.70727	100.7072733	100.7072733	100.4738473	100.0794665	99.68818244	99.29995882	98.91475974	98.53254991
190822A00008	8/22/2019	2.06	4/22/2020	8/22/2019	100.41208	100.4120846	100.4120846	100.2773169	100.0506276	99.82497059	99.60033888	99.37672545	99.15412336
190215A00013	2/15/2019	2.79	2/3/2020	2/15/2019	100.021	100.0210026	100.0210026	100.0164018	100.0080779	99.99976117	99.99145159	99.98314918	99.97485391
190221A00007	2/21/2019	2.62	2/21/2020	2/21/2019	100.14556	100.145563	100.145563	100.1133237	100.0550176	99.99679157	99.93864553	99.88057928	99.82259264
190226A00012	2/26/2019	2.78	2/26/2020	2/26/2019	100.1813	100.1813019	100.1813019	100.1414431	100.0693638	99.99739241	99.92552884	99.85377279	99.78212405
190409A00039	4/9/2019	2.59	4/3/2020	4/9/2019	100.4111	100.4110963	100.4110963	100.3087729	100.134337	99.96050982	99.78728817	99.6146689	99.44264887
190429A00010	4/29/2019	2.59	4/23/2020	4/29/2019	100.54157	100.541565	100.541565	100.4049556	100.1752881	99.94667787	99.71911763	99.49260011	99.26711814
190621A00038	6/21/2019	2.24	6/15/2020	6/21/2019	100.75199	100.7519879	100.7519879	100.5295634	100.1542059	99.78165724	99.4118858	99.04486053	98.68055083
190709A00002	7/9/2019	2.31	7/3/2020	7/9/2019	100.88137	100.8813683	100.8813683	100.6301775	100.2053364	99.78407591	99.36635103	98.95211737	98.54133131
190710A00011	7/10/2019	2.25	5/11/2020	7/10/2019	100.56106	100.5610628	100.5610628	100.3947824	100.1156783	99.83813506	99.56213963	99.28767899	99.01474029
190815A00016	8/15/2019	2.06	8/14/2020	8/15/2019	100.98091	100.9809089	100.9809089	100.6599541	100.1205506	99.5869246	99.05898342	98.53663648	98.01979506
200121A00006	1/21/2020	1.88	1/15/2021	1/21/2020	101.56708	101.5670789	101.5670789	100.9844279	100.0281349	99.08989172	98.16919084	97.2655437	96.37847973
200129A00006	1/29/2020	1.84	1/25/2021	1/29/2020	101.56208	101.5620802	101.5620802	100.9694344	99.98650464	99.02263652	98.0772798	97.14990522	96.24000353
190212A00005	2/12/2019	2.62	2/12/2020	2/12/2019	100.08318	100.0831788	100.0831788	100.0647545	100.0314269	99.99813684	99.9648842	99.93166891	99.89849092
190528A00037	5/28/2019	2.6	4/28/2020	5/28/2019	100.57418	100.5741754	100.5741754	100.4290133	100.1855768	99.94331863	99.70223028	99.46230335	99.22352947
190530A00046	5/30/2019	2.51	5/29/2020	5/30/2019	100.74728	100.7472766	100.7472766	100.5518103	100.2229955	99.89632692	99.57178359	99.24934487	98.92899038

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190611A00003	6/11/2019	2.37	3/11/2020	6/11/2019	100.23503	100.235031	100.235031	100.1718857	100.0610882	99.9505499	99.84026988	99.73024717	99.62048084
190710A00010	7/10/2019	2.24	3/10/2020	7/10/2019	100.21504	100.2150428	100.2150428	100.153606	100.0455891	99.93781873	99.83029385	99.72301362	99.61597719
190813A00003	8/13/2019	2.04	7/13/2020	8/13/2019	100.81582	100.8158224	100.8158224	100.5484957	100.096553	99.64867514	99.20480717	98.76489535	98.32888684
190821A00033	8/21/2019	2.05	4/21/2020	8/21/2019	100.40481	100.4048112	100.4048112	100.271757	100.0478269	99.82490552	99.60298593	99.3820614	99.1621252
190910A00024	9/10/2019	2.05	4/10/2020	9/10/2019	100.3518	100.3517966	100.3517966	100.2375574	100.0439306	99.85106212	99.6589476	99.46758255	99.27696255
190910A00025	9/10/2019	2.05	6/10/2020	9/10/2019	100.65528	100.6552799	100.6552799	100.440891	100.079426	99.72056672	99.36428505	99.01055318	98.65934374
191022A00014	10/22/2019	1.86	4/24/2020	10/22/2019	100.37782	100.3778217	100.3778217	100.2396581	100.0075045	99.77643121	99.54643063	99.31749533	99.08961789
191216A00011	12/16/2019	1.84	10/16/2020	12/16/2019	101.138	101.1379997	101.1379997	100.7070774	99.99674319	99.29640687	98.60585832	97.9248933	97.25331321
200108A00011	1/8/2020	1.88	1/4/2021	1/8/2020	101.51776	101.5177551	101.5177551	100.9463712	100.019844	99.11025985	98.21715742	97.34009193	96.47863449
200121A00001	1/21/2020	1.88	1/15/2021	1/21/2020	101.56708	101.5670789	101.5670789	100.9844279	100.0281349	99.08989172	98.16919084	97.2655437	96.37847973
190227A00008	2/27/2019	2.77	2/27/2020	2/27/2019	100.1883	100.1883018	100.1883018	100.1469066	100.0720504	99.99730845	99.92268059	99.84816653	99.77376603
190517A00016	5/17/2019	2.51	5/15/2020	5/17/2019	100.65915	100.6591518	100.6591518	100.486323	100.1960622	99.90748864	99.62058761	99.33534451	99.05174492
190520A00094	5/22/2019	2.6	4/22/2020	5/22/2019	100.53504	100.5350352	100.5350352	100.400154	100.17327	99.9474191	99.72259415	99.49878817	99.27599422
190524A00006	5/24/2019	2.52	5/18/2020	5/24/2019	100.68103	100.6810341	100.6810341	100.5033503	100.2048188	99.90807043	99.61308929	99.31985952	99.02836547
190530A00011	5/30/2019	2.41	5/29/2020	5/30/2019	100.75702	100.7570225	100.7570225	100.5612601	100.2319524	99.90479969	99.57978099	99.25687544	98.93606248
190531A00010	5/31/2019	2.49	5/26/2020	5/31/2019	100.72195	100.7219515	100.7219515	100.531343	100.2107996	99.89230141	99.57582909	99.2613633	98.94888499
190701A00004	7/1/2019	2.24	6/25/2020	7/1/2019	100.8072	100.8072045	100.8072045	100.5688953	100.1660781	99.766485	99.37007742	98.97681736	98.58666743
190715A00021	7/15/2019	2.25	6/15/2020	7/15/2019	100.75576	100.7557634	100.7557634	100.5333338	100.1579676	99.78541023	99.41563015	99.04859629	98.68427804
190814A00040	8/14/2019	2.11	5/6/2020	8/14/2019	100.49588	100.4958814	100.4958814	100.3377204	100.0724529	99.80859212	99.54612701	99.28504645	99.02533946
190815A00028	8/15/2019	2.05	3/16/2020	8/15/2019	100.22585	100.2258491	100.2258491	100.1542202	100.0296249	99.90535489	99.78140894	99.65778574	99.534484
191112A00020	11/12/2019	1.85	10/13/2020	11/12/2019	101.13189	101.1318936	101.1318936	100.7060884	100.0038642	99.31141123	98.62852647	97.95501251	97.29067733
200122A00009	1/22/2020	1.86	12/22/2020	1/22/2020	101.44137	101.4413661	101.4413661	100.8902198	99.9988627	99.12320257	98.26282757	97.4173401	96.58635626
190709A00049	7/9/2019	2.29	6/9/2020	7/9/2019	100.7369	100.7369035	100.7369035	100.5239885	100.1650763	99.80873087	99.45492476	99.10363078	98.75482218
190715A00012	7/15/2019	2.25	2/14/2020	7/15/2019	100.07621	100.0762123	100.0762123	100.0547602	100.0159569	99.9771987	99.93848567	99.89981766	99.86119462
191210A00005	12/10/2019	1.85	11/10/2020	12/10/2019	101.25572	101.2557197	101.2557197	100.7806835	100.0026011	99.23649847	98.48210057	97.73914062	97.00735989
191219A00024	12/19/2019	1.83	9/21/2020	12/19/2019	101.02162	101.0216236	101.0216236	100.634094	99.99165091	99.3573918	98.731161	98.11280675	97.50218108
191219A00046	12/19/2019	1.77	12/18/2020	12/19/2019	101.4763	101.4763047	101.4763047	100.9310131	100.0483714	99.18111611	98.32884737	97.4911792	96.66773874
191219A00050	12/19/2019	1.84	11/19/2020	12/19/2019	101.27918	101.2791844	101.2791844	100.7876735	99.98543878	99.19593704	98.41886689	97.65393639	96.90086267
191223A00045	12/23/2019	1.84	9/23/2020	12/23/2019	101.03688	101.0368793	101.0368793	100.6457808	99.99787973	99.35829918	98.72687968	98.10346573	97.48790579
190205A00043	2/5/2019	2.79	2/5/2020	2/5/2019	100.03486	100.0348605	100.0348605	100.0271936	100.0133228	99.99946472	99.98561934	99.97178664	99.9579666
190418A00002	4/19/2019	2.62	4/17/2020	4/19/2019	100.50669	100.5066947	100.5066947	100.3803785	100.1672875	99.95511268	99.74384798	99.53348752	99.32402547
190521A00015	5/21/2019	2.63	3/20/2020	5/21/2019	100.32496	100.324959	100.324959	100.2464812	100.1107406	99.97538122	99.84040136	99.7057994	99.57157374
190528A00001	5/28/2019	2.51	5/22/2020	5/28/2019	100.70321	100.7032141	100.7032141	100.5190654	100.2095226	99.90189299	99.59615871	99.29230227	98.99030637

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190531A00055	5/31/2019	2.49	5/29/2020	5/31/2019	100.74067	100.7406689	100.7406689	100.5452107	100.2164095	99.88975448	99.56522465	99.24279936	98.92245824
190617A00045	6/17/2019	2.34	3/17/2020	6/17/2019	100.26794	100.2679414	100.2679414	100.1945896	100.0671889	99.94012737	99.81340355	99.68701609	99.56096361
190620A00007	6/20/2019	2.22	3/20/2020	6/20/2019	100.26917	100.2691692	100.2691692	100.190728	100.0550517	99.91975637	99.78484043	99.65030225	99.51614022
190710A00009	7/10/2019	2.25	2/10/2020	7/10/2019	100.05444	100.0544372	100.0544372	100.0391133	100.0113925	99.98370096	99.95603856	99.92840529	99.90080109
190715A00019	7/15/2019	2.24	4/15/2020	7/15/2019	100.4144	100.4144004	100.4144004	100.2915812	100.0841302	99.87754922	99.67183267	99.46697508	99.26297104
190910A00026	9/10/2019	2.06	7/10/2020	9/10/2019	100.8098	100.8097968	100.8097968	100.5473483	100.1035984	99.66376602	99.22779947	98.79564781	98.36726102
191216A00010	12/16/2019	1.84	8/17/2020	12/16/2019	100.87992	100.8799193	100.8799193	100.5539341	100.0066417	99.46530119	98.92981575	98.40009062	97.87603311
191223A00049	12/23/2019	1.85	10/23/2020	12/23/2019	101.1762	101.1762039	101.1762039	100.7332867	100.0039411	99.28512807	98.57662056	97.87819811	97.18964651
200129A00009	1/29/2020	1.84	1/25/2021	1/29/2020	101.56208	101.5620802	101.5620802	100.9694344	99.98650464	99.02263652	98.0772798	97.14990522	96.24000353
190211A00009	2/11/2019	2.79	2/11/2020	2/11/2019	100.07638	100.0763769	100.0763769	100.059513	100.0290071	99.99853424	99.96809429	99.93768724	99.90731302
190322A00009	3/22/2019	2.64	3/20/2020	3/22/2019	100.32632	100.3263197	100.3263197	100.247841	100.1120989	99.97673793	99.8417565	99.70715299	99.57292577
190621A00011	6/21/2019	2.21	5/21/2020	6/21/2019	100.60447	100.6044655	100.6044655	100.4220411	100.1154346	99.81070773	99.50784311	99.20682365	98.90763249
190718A00016	7/18/2019	2.24	6/18/2020	7/18/2019	100.76855	100.7685528	100.7685528	100.5413624	100.1577649	99.77709927	99.39933186	99.0244296	98.65235989
191206A00012	12/6/2019	1.82	6/8/2020	12/6/2019	100.56292	100.5629204	100.5629204	100.3518144	99.9960237	99.64275799	99.2919904	98.94369443	98.59784397
191216A00022	12/16/2019	1.93	12/10/2020	12/16/2019	101.44919	101.4491882	101.4491882	100.9193208	100.0600337	99.21533548	98.38485689	97.56824108	96.76514304
150601A00439	6/1/2015	2.57	3/18/2024	6/1/2015	104.66385	104.6638545	104.6638545	103.8473713	101.7863606	99.78990119	97.85642803	95.98343037	94.16851619
170428A00034	4/28/2017	2.92	4/29/2030	4/28/2017	114.21673	114.2167305	114.2167305	110.8898265	105.4722264	100.4293793	95.73128708	91.35023626	87.26098845
170505A00007	5/5/2017	2.92	5/6/2030	5/5/2017	114.33404	114.3340442	114.3340442	110.95811	105.4963854	100.4151001	95.68358895	91.27355234	87.15923376
170512A00030	5/12/2017	2.94	5/12/2027	5/12/2017	115.95002	115.9500213	115.9500213	112.332766	106.2813209	100.6364836	95.3681681	90.44846175	85.85168748
170705A00021	7/5/2017	2.59	7/6/2027	7/5/2017	113.6232	113.6232034	113.6232034	110.4315703	104.9440751	99.81446907	95.01670443	90.52646695	86.32138235
170901A00005	9/1/2017	2.58	9/3/2030	9/1/2017	112.81151	112.8115117	112.8115117	109.292498	103.7502011	98.60490406	93.82370027	89.3763462	85.23538487
171130A00037	11/10/2017	2.85	11/12/2030	11/10/2017	114.62923	114.6292297	114.6292297	110.9555185	105.2467919	99.9526163	95.03815514	90.47145706	86.22355126
180321A00015	3/21/2018	3.02	3/21/2025	3/21/2018	107.99946	107.9994555	107.9994555	106.8251376	103.8828568	101.0600297	98.35149225	95.75161948	93.25510458
180508A00038	5/8/2018	3.57	5/9/2033	5/8/2018	123.6071	123.6071018	123.5920442	117.8682389	110.5184669	103.8092139	97.67601496	92.0612394	86.91360437
150601A00435	6/1/2015	1.91	3/17/2021	6/1/2015	100.91548	100.9154821	100.9154821	100.5809524	100.0163313	99.45971787	98.91156505	98.37165853	97.83979171
160524A00006	5/24/2016	1.3	5/26/2020	5/24/2016	100.21508	100.2150753	100.2150753	100.0950447	99.8913467	99.68863469	99.48690076	99.28613715	99.08633615
160608A00026	6/8/2016	2.36	6/8/2026	6/8/2016	111.5607	111.5607024	111.5607024	108.614719	103.0783473	97.88213813	93.00327288	88.42037314	84.11361456
160608A00032	6/8/2016	2.36	6/8/2026	6/8/2016	111.5607	111.5607024	111.5607024	108.614719	103.0783473	97.88213813	93.00327288	88.42037314	84.11361456
160620A00018	6/20/2016	1.25	6/21/2021	6/20/2016	100.73046	100.7304613	100.7304613	100.3224691	99.5808602	98.84898153	98.12952596	97.42215693	96.72655053
160701A00032	7/1/2016	1.99	7/2/2029	7/1/2016	108.35313	108.35313	108.35313	105.5787228	100.7759842	96.2839436	92.0793639	88.14054678	84.44761916
160715A00015	7/15/2016	2.13	7/16/2029	7/15/2016	109.06724	109.0672381	109.0672381	106.2741183	101.4395208	96.91771575	92.68530512	88.72044127	85.00311471
161222A00037	12/22/2016	3.08	12/22/2031	12/22/2016	116.67213	116.6721292	116.6721292	112.5573474	106.5523967	101.0093316	95.88672135	91.14689041	86.75591287
170317A00022	3/17/2017	3.11	3/18/2030	3/17/2017	115.16712	115.1671161	115.1671161	111.8596119	106.4367183	101.3862214	96.67853051	92.28627764	88.18452285

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170407A00012	4/7/2017	2.88	4/8/2030	4/7/2017	113.98892	113.9889228	113.9889228	110.6694225	105.2630029	100.2305058	95.54200609	91.16985667	87.08887913
170602A00010	6/2/2017	2.7	6/3/2030	6/2/2017	113.18939	113.1893909	113.1893909	109.8006741	104.3549756	99.2912913	94.57861224	90.18835074	86.09450396
170623A00020	6/23/2017	2.67	6/24/2030	6/23/2017	113.01904	113.0190365	113.0190365	109.6345367	104.1965487	99.1400948	94.4341975	90.05029971	85.96242707
171006A00020	10/6/2017	2.88	10/7/2030	10/6/2017	114.69155	114.6915471	114.6915471	111.0652546	105.392106	100.1281209	95.23915004	90.6938406	86.4637464
171013A00004	10/13/2017	2.77	10/15/2030	10/13/2017	114.03836	114.0383628	114.0383628	110.4323003	104.7912038	99.55698423	94.69568022	90.17611202	85.96999077
171103A00011	11/3/2017	2.83	11/4/2030	11/3/2017	114.50888	114.5088849	114.5088849	110.8393554	105.1367785	99.84828491	94.93907978	90.37724976	86.13385827
171222A00017	12/22/2017	3.04	12/23/2030	12/22/2017	115.8981	115.8980955	115.8980955	112.1333685	106.3225532	100.9365797	95.9395041	91.29839103	86.98339648
180112A00013	1/12/2018	3.05	1/14/2031	1/12/2018	116.08433	116.08433	116.08433	112.2633048	106.4045144	100.9769246	95.94381268	91.27156131	86.92972741
180316A00003	3/16/2018	2.43	3/16/2021	3/16/2018	101.46013	101.4601286	101.4601286	101.0910237	100.4652998	99.84844095	99.24120811	98.6433519	98.05463198
150601A00342	6/1/2015	3.97	8/26/2033	6/1/2015	124.4804	124.4804031	124.4563778	119.1164671	112.1238428	105.7278188	99.86889554	94.49379261	89.55508908
150601A00434	6/1/2015	1.91	3/17/2021	6/1/2015	100.91548	100.9154823	100.9154823	100.5809526	100.0163313	99.45971778	98.91156481	98.37165817	97.83979122
150601A00559	6/1/2015	3.06	8/31/2029	6/1/2015	113.04987	113.0498708	113.0498708	110.2893247	105.4737209	100.9658435	96.74283946	92.78330544	89.06763707
161222A00036	12/22/2016	2.69	12/22/2026	12/22/2016	108.39843	108.3984272	108.3984272	106.8204299	103.3246476	99.99787742	96.83089086	93.81442498	90.93982695
170616A00012	6/16/2017	2.69	6/17/2030	6/16/2017	113.13295	113.1329522	113.1329522	109.7453438	104.3020486	99.24063829	94.53010946	90.14188051	86.04995465
170804A00009	8/4/2017	2.71	8/5/2030	8/4/2017	113.46435	113.4643488	113.4643488	109.972874	104.4369352	99.29481431	94.51409236	90.06494388	85.92027438
170825A00015	8/25/2017	2.68	8/26/2030	8/25/2017	113.291	113.290996	113.290996	109.8039816	104.2760529	99.14142906	94.36772656	89.92515388	85.78664804
170921A00056	9/21/2017	2.82	9/21/2027	9/21/2017	116.79708	116.7970785	116.7970785	112.5832279	105.9386028	99.76956398	94.03893631	88.71248239	83.75883437
170925A00048	9/25/2017	2.75	9/25/2030	9/25/2017	113.80949	113.8094866	113.8094866	110.2586059	104.6669891	99.47595911	94.65230463	90.16550376	85.98784747
171117A00017	11/17/2017	2.9	11/18/2030	11/17/2017	114.92965	114.9296542	114.9296542	111.2461111	105.5223489	100.2142448	95.28686736	90.70817862	86.44912924
171208A00017	12/8/2017	2.9	12/9/2030	12/8/2017	115.04748	115.0474789	115.0474789	111.3108484	105.5428306	100.1964921	95.23616103	90.62915061	86.34584151
171215A00022	12/15/2017	2.91	12/16/2030	12/15/2017	115.10847	115.1084737	115.1084737	111.3695767	105.5983698	100.2490938	95.28605298	90.67653947	86.39091488
180119A00025	1/19/2018	3.08	1/21/2031	1/19/2018	116.26893	116.2689275	116.2689275	112.4415662	106.5733597	101.1370654	96.09589727	91.41618091	87.06742159
180209A00010	2/9/2018	3.25	2/10/2031	2/9/2018	117.45108	117.4510765	117.4510765	113.5337833	107.5671121	102.0424932	96.92203092	92.17106732	87.75823637
150601A00433	6/1/2015	1.91	3/17/2021	6/1/2015	100.91548	100.9154842	100.9154842	100.5809538	100.0163314	99.4597167	98.91156262	98.37165488	97.83978686
150601A00440	6/1/2015	3.27	3/16/2029	6/1/2015	113.38291	113.3829146	113.3829146	110.8332982	106.2162418	101.8817433	97.80973697	93.98127898	90.3789584
150601A00450	6/1/2015	3.28	4/27/2029	6/1/2015	113.59245	113.5924534	113.5924534	110.9874127	106.312396	101.9264977	97.80895759	93.94021655	90.30231295
160531A00012	5/31/2016	1.43	6/1/2021	5/31/2016	100.82774	100.8277431	100.8277431	100.4325308	99.72948935	99.03525792	98.35271185	97.68153105	97.02140768
160609A00075	6/9/2016	1.94	6/9/2026	6/9/2016	105.45603	105.4560262	105.4560262	104.0519128	100.7916354	97.68101092	94.71237899	91.87791812	89.17029733
161222A00035	12/22/2016	2.29	12/22/2023	12/22/2016	104.02338	104.023379	104.023379	103.2319825	101.2464068	99.32031175	97.45248659	95.6406896	93.88278197
170406A00031	4/6/2017	3.01	4/6/2027	4/6/2017	117.13647	117.1364732	117.1364732	113.3097347	106.960654	101.0427491	95.52398215	90.3747011	85.56762601
170831A00026	8/31/2017	1.65	8/31/2020	8/31/2017	100.46692	100.4669189	100.4669189	100.2697438	99.93691503	99.60684265	99.27948855	98.95481533	98.63278635
170915A00019	9/15/2017	2.67	9/16/2030	9/15/2017	113.33924	113.3392404	113.3392404	109.8032965	104.2348654	99.06533829	94.26164638	89.79339802	85.63300216
180202A00020	2/2/2018	3.41	2/3/2031	2/2/2018	118.44909	118.4490946	118.4490946	114.4989797	108.4819392	102.9106547	97.74691642	92.95577819	88.50561293

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00528	6/1/2015	3.08	7/27/2029	6/1/2015	113.01306	113.0130569	113.0130569	110.2995305	105.5290017	101.0606315	96.87218417	92.94280235	89.25336803
150601A00542	6/1/2015	1.97	8/4/2021	6/1/2015	101.26461	101.2646122	101.2646122	100.8606051	100.1093078	99.36849248	98.64047597	97.92491215	97.22146776
150601A00684	6/1/2015	2.25	2/7/2025	6/1/2015	104.84779	104.8477894	104.8477894	103.8635647	101.3695555	98.96767775	96.65453906	94.42608642	92.27848203
170630A00051	6/30/2017	1.75	6/30/2021	6/30/2017	101.10868	101.1086822	101.1086822	100.6999704	99.95696675	99.22376154	98.5030076	97.79436738	97.09751607
170929A00028	9/29/2017	2.8	9/30/2030	9/29/2017	114.10401	114.104015	114.104015	110.5437982	104.9376933	99.73322492	94.89709365	90.39869644	86.21025071
171127A00023	11/27/2017	2.85	11/27/2030	11/27/2017	114.63015	114.6301489	114.6301489	110.9558232	105.2467816	99.95235662	95.03770165	90.47085659	86.22284314
180322A00030	3/22/2018	2.79	3/24/2025	3/22/2018	107.25985	107.2598517	107.2598517	106.1878862	103.4754043	100.8665578	98.35727913	95.94289881	93.61900087
180323A00008	3/23/2018	3.35	3/24/2031	3/23/2018	118.21661	118.2166094	118.2166094	114.2211875	108.1761222	102.5819096	97.39964086	92.59376636	88.13213364
150601A00460	6/1/2015	3.05	5/16/2029	6/1/2015	112.60485	112.6048538	112.6048538	109.9911132	105.3233074	100.9458768	96.83784998	92.9794916	89.35268571
150601A00589	6/1/2015	2.52	7/14/2025	6/1/2015	105.99212	105.9921152	105.9921152	104.9035381	102.1841466	99.57232088	97.06360086	94.65299015	92.3357719
160608A00031	6/8/2016	2.36	6/8/2026	6/8/2016	111.5607	111.5607024	111.5607024	108.614719	103.0783473	97.88213813	93.00327288	88.42037314	84.11361456
160610A00017	6/10/2016	2.21	6/11/2029	6/10/2016	109.39164	109.3916395	109.3916395	106.6315131	101.8209357	97.3191775	93.10332125	89.1519403	85.44539827
170324A00011	3/24/2017	3	3/25/2030	3/24/2017	114.54742	114.5474186	114.5474186	111.2573548	105.8634058	100.8398893	96.1573682	91.7886169	87.70882569
170630A00023	6/30/2017	2.77	7/1/2030	6/30/2017	113.59213	113.5921349	113.5921349	110.1903373	104.7247877	99.64271848	94.91299285	90.50690662	86.39835186
170908A00007	9/8/2017	2.52	9/9/2030	9/8/2017	112.46132	112.4613176	112.4613176	108.9529269	103.4276505	98.29817308	93.53168532	89.09803365	84.96984288
171020A00012	10/20/2017	2.85	10/21/2030	10/20/2017	114.51384	114.5138443	114.5138443	110.8925881	105.2279483	99.9718964	95.09032629	90.55192581	86.32828615
180126A00015	1/26/2018	3.08	1/27/2031	1/26/2018	116.26933	116.2693332	116.2693332	112.4417262	106.5734078	101.1370272	96.09579407	91.41603048	87.06723866
180302A00012	3/2/2018	3.3	3/4/2031	3/2/2018	117.76382	117.7638239	117.7638239	113.8354366	107.8525792	102.3130249	97.17876491	92.41503821	87.99038632
180607A00028	6/7/2018	2.76	6/7/2021	6/7/2018	101.7771	101.7770989	101.7770989	101.3801292	100.6743978	99.9775046	99.29231081	98.6184964	97.95575358
160603A00015	6/3/2016	1.95	6/5/2023	6/3/2016	105.31164	105.3116397	105.3116397	104.1477811	101.001673	97.96976588	95.04749416	92.23031378	89.51389307
160708A00021	7/8/2016	2	7/6/2029	7/8/2016	108.40415	108.404147	108.404147	105.6282949	100.8232175	96.32899952	92.12239044	88.18167981	84.48698352
170417A00018	4/17/2017	2.82	4/17/2030	4/17/2017	113.65033	113.6503338	113.6503338	110.3402878	104.9496803	99.93192877	95.25719023	90.89789422	86.8289323
170417A00059	4/17/2017	2.14	4/18/2022	4/17/2017	103.90981	103.909809	103.909809	103.1250196	101.0418676	99.01218624	97.0344465	95.1069398	93.22802835
170519A00021	5/19/2017	2.79	5/20/2030	5/19/2017	113.58049	113.5804865	113.5804865	110.230127	104.808599	99.76458929	95.06767331	90.68977217	86.60533002
170609A00011	6/9/2017	2.74	6/10/2030	6/9/2017	113.41888	113.4188844	113.4188844	110.0230288	104.5661563	99.49209983	94.76978303	90.37055644	86.26836131
170720A00017	7/20/2017	2.74	7/19/2030	7/20/2017	113.52958	113.5295816	113.5295816	110.0830414	104.5821194	99.46984485	94.71444235	90.28664921	86.15986588
170811A00006	8/11/2017	2.67	8/12/2030	8/11/2017	113.23201	113.2320073	113.2320073	109.7473447	104.2225443	99.0907893	94.31972213	89.87957404	85.74330238
170830A00040	8/30/2017	1.84	8/30/2022	8/30/2017	102.07904	102.0790356	102.0790356	101.5024808	100.1842625	98.89423536	97.6331522	96.40012528	95.19430147
180329A00011	3/29/2018	2.77	3/29/2023	3/29/2018	104.11672	104.1167211	104.1167211	103.437874	101.7928342	100.1894166	98.62753729	97.10578492	95.62280696
180402A00025	4/2/2018	3.27	4/2/2031	4/2/2018	117.84917	117.8491735	117.8491735	113.8145539	107.7495736	102.1398402	96.94581696	92.13141292	87.66400591
150601A00316	6/1/2015	1.93	6/19/2020	6/1/2015	100.32363	100.3236349	100.3236349	100.2084379	100.0131698	99.81900605	99.62593634	99.43395047	99.24303833
150601A00320	6/1/2015	2.63	6/28/2023	6/1/2015	103.95685	103.9568482	103.9568482	103.2629912	101.5607243	99.90398029	98.29236585	96.72428545	95.1982121
150601A00443	6/1/2015	1.91	4/9/2021	6/1/2015	100.96985	100.969848	100.969848	100.6211498	100.0241028	99.43474214	98.85484192	98.28414929	97.72242089

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00506	6/1/2015	3.14	7/6/2029	6/1/2015	113.22036	113.2203569	113.2203569	110.5293913	105.7770197	101.3240772	97.14864742	93.23015257	89.54972286
150601A00549	6/1/2015	1.94	8/13/2021	6/1/2015	101.26308	101.2630802	101.2630802	100.8546552	100.0906003	99.33735481	98.59718424	97.86973489	97.15466617
160628A00006	6/28/2016	1.44	6/28/2023	6/28/2016	102.03679	102.0367899	102.0367899	101.332497	99.5987666	97.91172156	96.27090872	94.67468834	93.12149122
160707A00017	7/7/2016	1.22	7/7/2021	7/7/2016	101.53886	101.538855	101.538855	100.9184317	99.55311119	98.21315039	96.89817093	95.6075321	94.3406147
170331A00016	3/31/2017	3.02	4/1/2030	3/31/2017	114.66045	114.6604533	114.6604533	111.3669243	105.9675854	100.9390648	96.25189322	91.87881538	87.79499455
170406A00019	4/6/2017	1.84	4/6/2020	4/6/2017	100.29093	100.2909278	100.2909278	100.1837534	100.0015156	99.81994743	99.63904536	99.45880565	99.27922463
170518A00028	5/18/2017	2.45	5/20/2024	5/18/2017	108.65278	108.6527827	108.6527827	107.145411	103.172313	99.37599077	95.74777973	92.27928317	88.96257005
170526A00022	5/26/2017	2.77	5/28/2030	5/26/2017	113.48035	113.4803472	113.4803472	110.128626	104.7071289	99.66333519	94.96679366	90.58940301	86.50558765
170714A00014	7/14/2017	2.78	7/15/2030	7/14/2017	113.74944	113.7494368	113.7494368	110.2999067	104.7923792	99.67380981	94.91240766	90.4788937	86.34665298
170817A00008	8/17/2017	2.71	8/16/2030	8/17/2017	113.46498	113.4649849	113.4649849	109.9730305	104.4368247	99.29448449	94.5135834	90.0642898	85.91950397
180302A00014	3/2/2018	2.69	3/2/2023	3/2/2018	103.87914	103.8791431	103.8791431	103.2147679	101.6146225	100.0540996	98.53323845	97.05071128	95.60524504
180612A00012	6/12/2018	2.94	6/12/2023	6/12/2018	104.74359	104.743594	104.743594	104.0210498	102.2425465	100.5118812	98.82859396	97.19100658	95.59751288
180712A00048	7/12/2018	3.05	7/12/2023	7/12/2018	109.20541	109.2054065	109.2054065	107.9694593	104.6329462	101.420687	98.32757375	95.34853491	92.47874266
150601A00571	6/1/2015	2.5	9/23/2022	6/1/2015	103.09367	103.0936746	103.0936746	102.4753023	101.0663348	99.69033474	98.34626865	97.03311206	95.74988228
020920A00012	9/20/2002	5.4	9/20/2022	9/20/2002	113.5975	113.5975027	113.5975027	112.594378	109.8634263	107.2138923	104.6430233	102.1479907	99.72608758
060908A00017	9/8/2006	5.27	9/15/2021	9/8/2006	108.47678	108.4767768	108.4767768	107.759437	106.098535	104.4714173	102.8773082	101.3152673	99.7843898
080508A00054	5/8/2008	5.01	5/8/2020	5/8/2008	101.29534	101.295337	101.295337	101.1331147	100.8609264	100.5902118	100.3209591	100.0531562	99.78679147
081205A00033	12/5/2008	4.77	12/7/2023	12/5/2008	117.37079	117.3707862	117.3707862	115.8785924	111.8687992	108.0232576	104.3345545	100.7954688	97.39914911
091112A00011	11/12/2009	4.77	11/15/2024	11/12/2009	122.54525	122.5452529	122.5452529	120.5249905	115.436908	110.6001875	106.001164	101.6268354	97.46498124
100322A00001	3/22/2010	4.16	3/30/2020	3/22/2010	100.66196	100.6619642	100.6619642	100.5661704	100.4022459	100.2388561	100.0759982	99.91366986	99.75186834
100809A00029	8/9/2010	4.23	8/15/2025	8/9/2010	121.86123	121.8612271	121.8612271	119.234162	113.4605503	108.0108817	102.8653329	98.00524469	93.41320009
100817A00002	8/17/2010	3.03	8/31/2020	8/17/2010	101.72193	101.7219267	101.7219267	101.3695546	100.780562	100.198403	99.62295936	99.05411543	98.49175819
110103A00009	1/3/2011	3.99	1/3/2022	1/3/2011	107.55106	107.5510559	107.5510559	106.7850131	104.8321589	102.9249255	101.0621321	99.24247638	97.464703
110302A00006	3/2/2011	4.26	3/15/2021	3/2/2011	104.51747	104.5174668	104.5174668	103.907862	102.7860528	101.6781024	100.5941233	99.53334216	98.49501891
110302A00007	3/2/2011	4.86	3/16/2026	3/2/2011	128.01598	128.0159768	128.0159768	124.6558624	118.143769	112.0279539	106.2821546	100.8818378	95.80422767
110524A00009	5/24/2011	3.64	6/1/2021	5/24/2011	104.75942	104.7594188	104.7594188	104.1447208	102.8025906	101.4825978	100.1857547	98.91150405	97.65930598
110818A00006	8/18/2011	3.09	8/30/2021	8/18/2011	104.48323	104.4832272	104.4832272	103.7922226	102.2136236	100.6666461	99.15052807	97.66441228	96.20747292
111024A00027	10/24/2011	3.11	10/30/2023	10/24/2011	111.34134	111.3413432	111.3413432	109.9282229	106.1166598	102.4591124	98.94853683	95.57817904	92.34163827
111031A00013	10/31/2011	2.82	11/1/2021	10/31/2011	104.79731	104.7973079	104.7973079	104.0751107	102.3185025	100.5998525	98.91806532	97.27202529	95.66066215
111223A00006	12/23/2011	2.98	12/30/2021	12/23/2011	105.19624	105.196237	105.196237	104.4463651	102.5337664	100.6656371	98.84079887	97.05799218	95.31600239
120113A00012	1/13/2012	3.62	1/15/2027	1/13/2012	123.14051	123.140508	123.140508	118.8123511	111.6751372	105.0280387	98.8347795	93.06182271	87.67827766
120126A00006	1/26/2012	2.93	1/31/2022	1/26/2012	105.33268	105.332676	105.332676	104.5605167	102.5625962	100.6131376	98.71077922	96.85409093	95.04169582
120209A00012	2/9/2012	2.27	2/16/2021	2/9/2012	102.28122	102.2812218	102.2812218	101.6785372	100.6313879	99.60432473	98.59816963	97.61228899	96.64607456

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
120228A00010	2/28/2012	2.34	3/2/2022	2/28/2012	104.68928	104.6892753	104.6892753	103.9034562	101.817698	99.784084	97.80104908	95.86700026	93.98040686
120517A00006	5/17/2012	1.88	6/1/2020	5/17/2012	100.59655	100.5965519	100.5965519	100.3961788	100.0589768	99.72403495	99.39133069	99.06084164	98.73254573
120517A00007	5/17/2012	2.42	5/31/2023	5/17/2012	107.75754	107.7575446	107.7575446	106.5268508	103.1833393	99.96259723	96.85958437	93.86940172	90.98737946
120801A00015	8/1/2012	2.08	8/17/2020	8/1/2012	101.01248	101.0124804	101.0124804	100.6862468	100.1385346	99.59677759	99.06087887	98.53074365	98.00627921
121101A00011	11/1/2012	2.03	11/1/2022	11/1/2012	105.32705	105.3270479	105.3270479	104.3274657	101.5849724	98.92825967	96.35412396	93.85946893	91.4413377
000829A00072	8/29/2000	7.19	8/31/2020	8/29/2000	104.09877	104.0987728	104.0987728	103.742309	103.1463875	102.5573404	101.9750492	101.3993979	100.8302734
020619A00062	6/19/2002	5.86	6/20/2022	6/19/2002	113.87012	113.8701242	113.8701242	112.9477014	110.4569789	108.0348603	105.6793021	103.3881023	101.1591448
020916A00006	9/16/2002	5.38	9/16/2022	9/16/2002	113.48823	113.4882277	113.4882277	112.4893245	109.7710542	107.1335718	104.574161	102.0900242	99.6784836
050916A00047	9/16/2005	4.98	9/21/2020	9/16/2005	103.06718	103.0671774	103.0671774	102.6752224	102.0253356	101.3837004	100.7501601	100.1245618	99.50675675
051107A00074	11/7/2005	5.24	11/16/2020	11/7/2005	104.12341	104.1234122	104.1234122	103.6288977	102.8206057	102.0249809	101.2417265	100.4705549	99.71118735
051230A00040	12/30/2005	5.16	12/30/2020	12/30/2005	104.53433	104.5343329	104.5343329	103.9596982	103.0315691	102.120081	101.2247888	100.3452628	99.48108874
081219A00069	12/19/2008	4.26	12/22/2023	12/19/2008	115.55414	115.55414	115.55414	114.0583683	110.0433937	106.1948616	102.5051553	98.96688492	95.57304273
110104A00019	1/4/2011	3.78	1/15/2021	1/4/2011	103.55771	103.5577117	103.5577117	102.9675516	101.9988685	101.0484419	100.1157586	99.2003243	98.30166321
110505A00021	5/5/2011	4.08	5/17/2021	5/5/2011	104.9768	104.9767961	104.9767961	104.3639713	103.0730452	101.795644	100.5441378	99.31774435	98.11571337
110824A00004	8/24/2011	3.11	8/30/2023	8/24/2011	110.83666	110.8366613	110.8366613	109.4902094	105.8521371	102.355713	98.99475582	95.76327274	92.65557078
111006A00022	10/6/2011	3.08	10/15/2021	10/6/2011	104.8224	104.8223964	104.8223964	104.109794	102.4034117	100.7330765	99.09778849	97.49650773	95.92823551
111024A00010	10/24/2011	3.11	10/30/2023	10/24/2011	111.34134	111.3413432	111.3413432	109.9282229	106.1166598	102.4591124	98.94853683	95.57817904	92.34163827
111201A00005	12/1/2011	3.16	12/15/2021	12/1/2011	105.42581	105.4258073	105.4258073	104.6830981	102.8077147	100.9750967	99.18414382	97.43366649	95.72251664
111216A00001	12/16/2011	3.95	12/30/2031	12/16/2011	143.2369	143.2368989	143.2368989	131.1973283	118.9165454	107.9702504	98.20388741	89.48151731	81.68360929
120127A00019	1/27/2012	3.87	1/30/2032	1/27/2012	142.58396	142.5839646	142.5839646	130.4052244	118.0957982	107.1336777	97.36174335	88.64193489	80.85296836
120202A00020	2/2/2012	2.7	2/15/2022	2/2/2012	104.96559	104.9655907	104.9655907	104.1883071	102.1502066	100.1622294	98.22292331	96.33078422	94.48436549
120307A00002	3/7/2012	2.21	3/15/2021	3/7/2012	102.374	102.3739958	102.3739958	101.7705952	100.6589711	99.56109478	98.48709622	97.43620272	96.40767462
120411A00013	4/11/2012	3.59	4/15/2027	4/11/2012	123.73272	123.7327186	123.7327186	119.1108556	111.7237224	104.8595672	98.47843406	92.5435605	87.02117382
120515A00020	5/15/2012	2.28	5/16/2022	5/15/2012	105.01184	105.0118369	105.0118369	104.1663934	101.8763802	99.64791952	97.47903572	95.3677637	93.31221741
120928A00019	9/28/2012	2.07	9/30/2021	9/28/2012	103.0049	103.0049004	103.0049004	102.3073313	100.6564039	99.0398203	97.45661761	95.90582501	94.38650937
121031A00004	10/31/2012	2.07	10/31/2022	10/31/2012	105.43313	105.4331266	105.4331266	104.4338747	101.6926051	99.0369894	96.4638276	93.97002665	91.55263315
121227A00024	12/27/2012	2.2	12/30/2021	12/27/2012	103.68627	103.6862743	103.6862743	102.9436542	101.045859	99.19228364	97.3817241	95.61292852	93.88468962
121227A00026	12/27/2012	2	12/30/2020	12/27/2012	101.60652	101.6065169	101.6065169	101.0406838	100.1271263	99.23002578	98.34894095	97.48344604	96.63313028
130212A00015	2/12/2013	1.91	2/16/2021	2/12/2013	101.73055	101.730547	101.730547	101.1311085	100.0894842	99.06781797	98.06693153	97.08619581	96.12500696
121228A00022	12/28/2012	2.36	12/30/2022	12/28/2012	106.07335	106.0733499	106.0733499	105.0128649	102.1158746	99.31386258	96.60330458	93.98073366	91.44283358
130117A00010	1/17/2013	1.98	1/31/2022	1/17/2013	103.77532	103.7753191	103.7753191	103.0085282	101.0197117	99.0793719	97.18610386	95.33847425	93.53510342
130501A00006	5/1/2013	1.61	5/15/2020	5/1/2013	100.39678	100.3967773	100.3967773	100.2242409	99.93447719	99.64639862	99.35999038	99.07523792	98.79212681
130508A00013	5/8/2013	2.23	5/15/2023	5/8/2013	107.02352	107.023518	107.023518	105.8148694	102.5251562	99.35497985	96.29939367	93.35362323	90.51312177

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
130517A00013	5/17/2013	2.07	5/17/2022	5/17/2013	104.53028	104.530278	104.530278	103.6865369	101.3995137	99.17406609	97.00821228	94.89998833	92.84750896
130702A00017	7/2/2013	2.5	7/15/2020	7/2/2013	101.09748	101.0974774	101.0974774	100.8260378	100.3671847	99.91251525	99.46197233	99.01549974	98.57304234
130926A00008	9/26/2013	2.91	9/30/2021	9/26/2013	104.70934	104.7093393	104.7093393	104.0022969	102.3317589	100.6959752	99.09400461	97.52486233	95.98760198
131003A00005	10/3/2013	2.65	10/15/2020	10/3/2013	101.8133	101.8133039	101.8133039	101.3816967	100.6701004	99.968489	99.27665318	98.59438941	97.92149981
131107A00012	11/7/2013	3.14	11/7/2022	11/7/2013	108.47067	108.4706735	108.4706735	107.4466064	104.6440784	101.9292909	99.29903708	96.75016163	94.27964936
140307A00010	3/7/2014	2.63	3/15/2021	3/7/2014	102.85082	102.8508161	102.8508161	102.245723	101.131242	100.0305486	98.95377557	97.90014925	96.8689289
140313A00030	3/13/2014	3.27	3/15/2024	3/13/2014	113.14139	113.1413948	113.1413948	111.5623096	107.3463207	103.3152093	99.45995669	95.77192902	92.24296532
140423A00035	4/23/2014	2.71	4/23/2021	4/23/2014	103.02221	103.0222146	103.0222146	102.4172772	101.2130361	100.0128419	98.84106789	97.69671314	96.57882331
140710A00026	7/10/2014	2.36	7/15/2021	7/10/2014	103.30278	103.3027778	103.3027778	102.6494925	101.1977869	99.77371976	98.37666592	97.00592409	95.66081686
140815A00029	8/15/2014	2.56	10/15/2021	8/15/2014	103.92484	103.9248449	103.9248449	103.216298	101.5178173	99.85526197	98.22761407	96.63383736	95.0729369
140815A00030	8/15/2014	2.96	10/16/2023	8/15/2014	109.96291	109.9629089	109.9629089	108.5815401	104.8505472	101.2688646	97.82973605	94.52667763	91.35354072
140820A00025	8/20/2014	2.59	8/19/2022	8/20/2014	106.38122	106.3812161	106.3812161	105.444954	102.885916	100.4022325	97.99133604	95.65066422	93.37776178
140905A00017	9/5/2014	2.19	9/8/2020	9/5/2014	101.27109	101.2710851	101.2710851	100.9053961	100.2961797	99.69431102	99.09965752	98.51208992	97.931482
140908A00063	9/8/2014	2.5	8/31/2021	9/8/2014	103.54601	103.5460082	103.5460082	102.85845	101.2848775	99.74289783	98.23172236	96.7504942	95.2983879
141015A00025	10/15/2014	2.48	10/17/2022	10/15/2014	105.98097	105.9809695	105.9809695	104.9960697	102.2948774	99.67684809	97.13894417	94.67820354	92.29179558
141017A00029	10/17/2014	2.02	10/19/2020	10/17/2014	101.38315	101.3831527	101.3831527	100.9457379	100.2250332	99.51460104	98.81422265	98.12368562	97.44278344
150220A00021	2/20/2015	2.72	2/20/2024	2/20/2015	109.91055	109.9105475	109.9105475	108.392224	104.3274784	100.4389067	96.71803023	93.15672485	89.74730447
150302A00022	3/2/2015	1.96	3/2/2020	3/2/2015	100.14656	100.1465571	100.1465571	100.0987332	100.0128699	99.92715635	99.84159213	99.75617687	99.67091017
150408A00004	4/8/2015	2.17	4/10/2023	4/8/2015	106.62526	106.6252635	106.6252635	105.45489	102.2646175	99.18743351	96.21870672	93.35397817	90.5890018
150518A00021	5/18/2015	1.88	5/18/2020	5/18/2015	100.48913	100.4891279	100.4891279	100.3116624	100.0135021	99.71712341	99.42251021	99.12964672	98.83851731
001003A00018	10/3/2000	7.13	10/5/2020	10/3/2000	104.73015	104.730148	104.730148	104.3097617	103.6153603	102.930264	102.2542864	101.5872457	100.9289651
050923A00095	9/23/2005	4.77	9/21/2020	9/23/2005	103.02203	103.02203	103.02203	102.6294741	101.9786101	101.3360264	100.7015654	100.0750735	99.45640087
050923A00096	9/23/2005	4.86	9/22/2025	9/23/2005	127.05163	127.0516299	127.0516299	124.2374955	118.1816947	112.4700587	107.0811986	101.9950218	97.19279566
060613A00028	6/13/2006	5.47	6/15/2021	6/13/2006	107.44058	107.4405812	107.4405812	106.8009127	105.4003867	104.0242429	102.6728241	101.3455195	100.041738
081217A00076	12/17/2008	3.86	12/22/2023	12/17/2008	114.73306	114.7330574	114.7330574	113.2365215	109.2175455	105.3658636	101.6737798	98.13384544	94.73899817
091210A00005	12/10/2009	5.08	12/16/2024	12/10/2009	123.43913	123.4391295	123.4391295	121.3658848	116.2023261	111.2967757	106.6351255	102.2039225	97.99052432
101101A00006	11/1/2010	3.34	11/16/2020	11/1/2010	102.47302	102.4730239	102.4730239	101.9838582	101.184425	100.3975299	99.6228795	98.86018919	98.10918325
110802A00008	8/2/2011	3.34	8/16/2021	8/2/2011	105.03296	105.0329553	105.0329553	104.346436	102.7962523	101.2767825	99.7873168	98.32703591	96.89515021
110822A00010	8/22/2011	2.8	8/30/2021	8/22/2011	104.29345	104.2934484	104.2934484	103.6014503	102.0198261	100.4699714	98.95110667	97.46236935	96.0029287
111006A00023	10/6/2011	3.81	10/15/2026	10/6/2011	123.58979	123.5897927	123.5897927	119.5633885	112.6402176	106.1765116	100.139234	94.49781732	89.22404659
120113A00013	1/13/2012	3.87	1/15/2032	1/13/2012	142.44065	142.4406462	142.4406462	130.3466481	118.0758874	107.1442584	97.39606347	88.69443439	80.91908409
120119A00010	1/18/2012	2.43	1/31/2022	1/18/2012	104.68792	104.6879231	104.6879231	103.9166331	101.918463	99.96893352	98.06665405	96.21018618	94.39814542
120709A00015	7/9/2012	2.5	7/15/2022	7/9/2012	105.46411	105.4641114	105.4641114	104.5684344	102.1225945	99.74653208	97.43796076	95.19458482	93.01420064

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
120709A00016	7/9/2012	3.2	7/15/2027	7/9/2012	121.6297	121.6296973	121.6296973	116.7553774	109.218691	102.2339435	95.75774703	89.75022796	84.17483695
120907A00024	9/7/2012	2.31	9/16/2024	9/7/2012	110.25871	110.2587095	110.2587095	108.4504102	103.8082135	99.39217583	95.19014136	91.1906067	87.38274944
120928A00021	9/28/2012	2.55	9/30/2024	9/28/2012	110.5452	110.545204	110.545204	108.724223	104.065919	99.63530707	95.4200945	91.40865723	87.59006266
121121A00003	11/21/2012	2.3	11/30/2022	11/21/2012	105.7308	105.7308044	105.7308044	104.7048235	101.8902574	99.1656729	96.52781742	93.97348551	91.49960733
130211A00017	2/11/2013	3.27	2/15/2028	2/11/2013	123.88176	123.8817617	123.8817617	118.2982124	110.1576349	102.6532714	95.73184961	89.34471742	83.44752827
130503A00007	5/3/2013	1.48	5/4/2020	5/3/2013	100.35502	100.3550222	100.3550222	100.2000062	99.94010917	99.68156373	99.42435928	99.16848537	98.91393165
130515A00037	5/15/2013	1.64	5/15/2020	5/15/2013	100.44333	100.4433287	100.4433287	100.270494	99.98023305	99.69166486	99.40477449	99.11954723	98.83596853
130523A00042	5/28/2013	2.38	5/23/2022	5/28/2013	104.86198	104.8619756	104.8619756	104.0140954	101.7159941	99.4799451	97.30399073	95.18616749	93.12458874
130528A00028	5/28/2013	2.63	5/30/2023	5/28/2013	107.83664	107.8366368	107.8366368	106.6116816	103.284618	100.0792677	96.99065486	94.01393406	91.14448601
130606A00012	6/6/2013	2.26	6/15/2020	6/6/2013	100.75954	100.759539	100.759539	100.5371042	100.1617293	99.78916322	99.4193745	99.05233204	98.68800524
130821A00017	8/21/2013	2.8	8/28/2020	8/21/2013	101.56355	101.5635499	101.5635499	101.2166908	100.6363949	100.062746	99.49563032	98.93493675	98.38055659
001003A00016	10/3/2000	7.13	10/5/2020	10/3/2000	104.73015	104.730148	104.730148	104.3097617	103.6153603	102.930264	102.2542864	101.5872457	100.9289651
011107A00022	11/7/2001	5.56	11/5/2021	11/7/2001	109.40928	109.4092794	109.4092794	108.6662422	106.8621783	105.0969622	103.3696088	101.6789886	100.024017
050302A00027	3/2/2005	5.07	3/10/2020	3/2/2005	100.53593	100.5359323	100.5359323	100.4742298	100.3657452	100.2575094	100.1495217	100.0417811	99.93428663
050927A00012	9/27/2005	5.06	9/21/2020	9/27/2005	103.11913	103.119128	103.119128	102.7270606	102.0769848	101.4351622	100.8014363	100.175654	99.55766661
080909A00042	9/9/2008	4.74	9/11/2023	9/9/2008	116.89477	116.89477	116.89477	115.4926724	111.7127593	108.0799302	104.5877891	101.2300884	98.00089513
081215A00091	12/15/2008	4.19	12/15/2023	12/15/2008	115.95369	115.9536925	115.9536925	114.4559648	110.4321659	106.5748468	102.876403	99.32945748	95.92701409
100629A00001	6/29/2010	3.85	6/30/2020	6/29/2010	101.5097	101.5096961	101.5096961	101.2624559	100.8442386	100.4294688	100.018104	99.61010239	99.20542307
100809A00028	8/9/2010	3.61	8/17/2020	8/9/2010	101.85756	101.8575575	101.8575575	101.5297404	100.979352	100.4349396	99.89640623	99.36365674	98.83659815
100826A00013	8/26/2010	3.32	8/31/2020	8/26/2010	101.81102	101.8110207	101.8110207	101.4590857	100.8708075	100.2893402	99.7145661	99.14637014	98.58463997
101208A00006	12/8/2010	4.12	12/15/2020	12/8/2010	103.41037	103.4103693	103.4103693	102.8659701	101.9839165	101.1170251	100.2649065	99.42718507	98.60349741
110222A00011	2/22/2011	4.35	3/2/2021	2/22/2011	104.47273	104.4727303	104.4727303	103.8636365	102.7705479	101.6969938	100.6459408	99.61668595	98.60855545
111024A00009	10/24/2011	2.65	10/30/2020	10/24/2011	101.91878	101.918778	101.918778	101.4612681	100.7086173	99.9671112	99.23650359	98.51655561	97.80703525
111024A00026	10/24/2011	2.65	10/30/2020	10/24/2011	101.91878	101.918778	101.918778	101.4612681	100.7086173	99.9671112	99.2365036	98.51655561	97.80703525
120112A00013	1/12/2012	2.76	1/16/2024	1/12/2012	110.5842	110.5841952	110.5841952	109.0904644	105.086497	101.2528759	97.58156492	94.06484453	90.69540302
120203A00018	2/3/2012	2.32	2/3/2020	2/3/2012	100.01709	100.0170868	100.0170868	100.0124879	100.0041674	99.99585399	99.98754777	99.9792487	99.97095679
120320A00005	3/20/2012	3.18	3/30/2022	3/20/2012	106.29891	106.2989111	106.2989111	105.4855955	103.3157094	101.2012204	99.14041896	97.13156747	95.17299864
120514A00018	5/14/2012	2.26	5/15/2020	5/14/2012	100.58627	100.58627	100.58627	100.4135224	100.1233997	99.83496363	99.54819949	99.26309268	98.97962878
120801A00007	8/1/2012	2.08	8/17/2020	8/1/2012	101.01248	101.0124804	101.0124804	100.6862468	100.1385346	99.59677759	99.06087887	98.53074365	98.00627921
120928A00020	9/28/2012	2.25	9/30/2022	9/28/2012	105.25934	105.2593425	105.2593425	104.2955787	101.6485001	99.08187873	96.59281971	94.17849709	91.83620807
121116A00007	11/16/2012	1.99	11/16/2021	11/16/2012	103.09172	103.0917247	103.0917247	102.373513	100.5970831	98.85980076	97.16057641	95.49830595	93.87192648
121116A00021	11/16/2012	2.35	11/17/2025	11/16/2012	113.07606	113.0760595	113.0760595	110.2495628	104.4372038	98.96941689	93.82404387	88.98040275	84.41924244
121116A00022	11/16/2012	2.78	11/16/2029	11/16/2012	126.28845	126.2884482	126.2884482	118.3416556	108.5079645	99.59350675	91.50697927	84.16655127	77.49888908

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
130211A00025	2/11/2013	1.88	2/16/2021	2/11/2013	101.69876	101.6987641	101.6987641	101.0994329	100.0579874	99.03649761	98.03578502	97.0552207	96.09420087
130212A00016	2/12/2013	2.13	2/15/2022	2/12/2013	103.78819	103.7881911	103.7881911	103.0167628	100.9909421	99.01502625	97.08754564	95.20700287	93.3719577
010824A00019	8/24/2001	6.24	8/24/2021	8/24/2001	109.42092	109.420921	109.420921	108.7123555	107.1096547	105.5386641	103.9987557	102.4890735	101.0087924
011029A00020	10/29/2001	5.73	10/29/2021	10/29/2001	109.91825	109.9182545	109.9182545	109.1739128	107.3792533	105.6229646	103.9040607	102.2214121	100.573935
050308A00058	3/8/2005	5.32	3/11/2025	3/8/2005	125.78182	125.7818237	125.7818237	123.5167374	118.059995	112.8867215	107.9807534	103.3267551	98.91035431
050523A00034	5/23/2005	4.81	6/5/2020	5/23/2005	101.64133	101.6413259	101.6413259	101.4332801	101.0828486	100.7348455	100.3892454	100.0460236	99.70515533
050525A00028	5/25/2005	4.82	6/5/2020	5/25/2005	101.59928	101.5992787	101.5992787	101.3915908	101.0417573	100.694342	100.3493198	100.0066661	99.6663565
050912A00098	9/12/2005	4.74	9/21/2020	9/12/2005	103.00254	103.0025386	103.0025386	102.6100249	101.959232	101.3167186	100.6823274	100.0559046	99.43730048
100225A00036	2/25/2010	4.47	3/2/2020	2/25/2010	100.36265	100.362648	100.362648	100.314721	100.2286724	100.1427739	100.057025	99.97142537	99.88597463
100713A00024	7/13/2010	3.95	7/15/2020	7/13/2010	101.70592	101.7059183	101.7059183	101.4339178	100.9741054	100.5184725	100.066962	99.61951819	99.17608604
110201A00004	2/1/2011	4.25	2/16/2021	2/1/2011	104.20961	104.2096071	104.2096071	103.6018049	102.5462279	101.5108061	100.4963594	99.50225422	98.52788212
110505A00022	5/5/2011	4.59	5/15/2026	5/5/2011	127.05547	127.0554716	127.0554716	123.5048049	116.8640488	110.63749	104.7970503	99.31656898	94.17179463
110601A00013	6/1/2011	3.49	6/15/2021	6/1/2011	104.6875	104.6874985	104.6874985	104.0588423	102.6781359	101.321556	99.98937019	98.6809766	97.39579281
110919A00026	9/19/2011	2.66	9/30/2021	9/19/2011	104.28756	104.2875614	104.2875614	103.5824029	101.9154995	100.2832953	98.68484033	97.11915151	95.58528412
111006A00021	10/6/2011	2.93	10/15/2020	10/6/2011	101.91395	101.9139544	101.9139544	101.482898	100.7721832	100.0714214	99.38040404	98.69892886	98.02679894
111024A00022	10/24/2011	3.11	10/30/2023	10/24/2011	111.34134	111.3413432	111.3413432	109.9282229	106.1166598	102.4591124	98.94853683	95.57817904	92.34163827
120127A00018	1/27/2012	3.64	2/1/2027	1/27/2012	123.43439	123.4343926	123.4343926	119.0454863	111.8567295	105.1645006	98.9318261	93.12454416	87.71120533
120327A00006	3/27/2012	3.06	3/30/2022	3/27/2012	106.0368	106.0367958	106.0367958	105.2248234	103.0578189	100.9461581	98.88812778	96.88199199	94.92608506
120330A00009	3/30/2012	2.98	3/30/2022	3/30/2012	105.86205	105.8620523	105.8620523	105.0509753	102.885892	100.7761166	98.71993365	96.71560834	94.761476
120411A00012	4/11/2012	2.87	4/15/2022	4/11/2012	105.73526	105.7352575	105.7352575	104.9131829	102.7059595	100.5560362	98.4615847	96.42077687	94.43186034
120601A00012	6/1/2012	1.93	6/15/2021	6/1/2012	102.5184	102.5184031	102.5184031	101.8984232	100.5333322	99.19216635	97.87513377	96.58163977	95.31110875
120718A00011	7/18/2012	2.29	7/30/2021	7/18/2012	103.03187	103.0318703	103.0318703	102.3664391	100.8816724	99.42586945	97.99835051	96.59836411	95.22518493
120928A00018	9/28/2012	1.87	9/30/2020	9/28/2012	101.08778	101.0877779	101.0877779	100.6841961	100.0172097	99.35902625	98.70947242	98.06837957	97.43558335
130415A00006	4/15/2013	1.78	4/15/2020	4/15/2013	100.3186	100.3186034	100.3186034	100.1958676	99.98856005	99.78212195	99.57654782	99.37183219	99.16796962
131113A00036	11/13/2013	3.14	11/15/2021	11/13/2013	105.15218	105.1521829	105.1521829	104.4249152	102.6325235	100.8794601	99.16467338	97.4870505	95.84552049
131113A00040	11/13/2013	2.8	11/16/2020	11/13/2013	102.03854	102.0385426	102.0385426	101.5505219	100.7529982	99.96799147	99.19520862	98.4343655	97.68518674
130212A00017	2/12/2013	2.29	2/15/2023	2/12/2013	106.1248	106.1248045	106.1248045	105.0160103	101.9925241	99.07204629	96.25057877	93.52421619	90.88923061
130314A00026	3/14/2013	1.72	3/16/2020	3/14/2013	100.19978	100.1997836	100.1997836	100.1280842	100.003368	99.87897906	99.75491612	99.63117784	99.50776288
130314A00027	3/14/2013	2.38	3/15/2023	3/14/2013	107.14076	107.1407579	107.1407579	105.9941558	102.8647397	99.84417641	96.9281254	94.11237203	91.39289837
130501A00013	5/1/2013	1.82	5/3/2021	5/1/2013	101.9594	101.9593953	101.9593953	101.3583516	100.133985	98.91454802	97.72362825	96.5602301	95.42340396
130513A00006	5/13/2013	1.8	5/15/2020	5/13/2013	100.45217	100.4521675	100.4521675	100.2795693	99.98970069	99.70151762	99.41500535	99.13014931	98.84693507
130523A00038	5/28/2013	2.58	5/23/2023	5/28/2013	107.62467	107.6246694	107.6246694	106.4085723	103.1031247	99.91803235	96.84835836	93.8893098	91.0363195
130529A00014	5/29/2013	2.05	6/1/2020	5/29/2013	100.61033	100.6103306	100.6103306	100.4102324	100.0734875	99.7389939	99.40672901	99.0766707	98.7487971

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
130530A00007	5/30/2013	2.04	6/1/2020	5/30/2013	100.60694	100.6069435	100.6069435	100.4068495	100.0701118	99.7356252	99.40336735	99.07331606	98.74544944
130531A00010	5/31/2013	2.04	6/1/2020	5/31/2013	100.60694	100.6069435	100.6069435	100.4068495	100.0701118	99.7356252	99.40336735	99.07331606	98.74544944
130531A00021	5/31/2013	3.22	5/30/2028	5/31/2013	126.07535	126.0753476	126.0753476	120.0526777	111.4989983	103.6361546	96.40450448	89.74974312	83.62250584
130702A00018	7/2/2013	3.17	7/17/2023	7/2/2013	110.68238	110.6823824	110.6823824	109.3836469	105.864927	102.4795342	99.22182532	96.08630491	93.06774408
131029A00011	10/29/2013	2.47	10/30/2020	10/29/2013	101.78235	101.7823465	101.7823465	101.3251761	100.5730931	99.83214881	99.10209722	98.38269949	97.67372376
131106A00003	11/6/2013	3.57	11/15/2023	11/6/2013	112.51398	112.5139814	112.5139814	111.0821302	107.2239064	103.5225017	99.97079486	96.56191547	93.2893476
131107A00008	11/7/2013	2.52	11/9/2020	11/7/2013	101.88685	101.8868491	101.8868491	101.411127	100.6315784	99.86399879	99.10811379	98.3636575	97.63037199
140131A00025	1/31/2014	3.28	1/30/2023	1/31/2014	109.03539	109.0353913	109.0353913	107.9216481	104.9002894	101.9802923	99.15782369	96.42908901	93.79046326
140701A00002	7/1/2014	2.84	7/1/2022	7/1/2014	106.20871	106.2087062	106.2087062	105.3218437	102.9033189	100.5526965	98.26780529	96.0464441	93.88649874
140701A00004	7/1/2014	2.3	7/1/2020	7/1/2014	100.86567	100.8656747	100.8656747	100.6177569	100.1984153	99.7825587	99.37014403	98.96112871	98.55547091
140908A00064	9/8/2014	2.57	11/30/2021	9/8/2014	104.21366	104.2136605	104.2136605	103.4849201	101.6604885	99.87692102	98.13317006	96.42812073	94.76069629
141009A00028	10/9/2014	3.02	10/9/2024	10/9/2014	112.82056	112.8205617	112.8205617	110.9640852	106.2304787	101.7285538	97.44577803	93.37029077	89.49093957
141128A00003	11/28/2014	2.62	11/30/2023	11/28/2014	109.69791	109.6979085	109.6979085	108.2651977	104.4007416	100.6959829	97.14361267	93.7365948	90.46825368
141202A00012	12/2/2014	2.32	12/2/2021	12/2/2014	104.09843	104.0984299	104.0984299	103.3670267	101.5323994	99.73908911	97.98601977	96.27205902	94.59611348
141208A00008	12/8/2014	3.02	12/16/2024	12/8/2014	113.32588	113.325879	113.325879	111.3475433	106.4255502	101.7527988	97.31549485	93.10056461	89.0957253
150123A00010	1/23/2015	2.02	1/31/2022	1/23/2015	103.85644	103.8564394	103.8564394	103.0892486	101.0996007	99.15844404	97.26437499	95.41595976	93.61181826
150317A00013	3/17/2015	2.58	3/17/2025	3/17/2015	112.75936	112.7593624	112.7593624	110.594974	105.4155981	100.5116438	95.86707129	91.46678626	87.29665284
051003A00009	10/3/2005	5.15	10/15/2025	10/3/2005	127.79295	127.7929536	127.7929536	124.9216406	118.823228	113.0731539	107.6496291	102.5322054	97.70182802
080910A00065	9/10/2008	5.03	9/15/2023	9/10/2008	117.30102	117.3010228	117.3010228	115.8982042	112.1174961	108.4837593	104.9906111	101.6318097	98.40142789
081209A00008	12/9/2008	4.87	12/15/2023	12/9/2008	117.85962	117.8596221	117.8596221	116.3543608	112.3137502	108.4393969	104.7237621	101.1595034	97.73965648
090226A00006	2/26/2009	4.55	3/1/2024	2/26/2009	118.30743	118.3074327	118.3074327	116.704281	112.4210068	108.3228605	104.4009763	100.6467944	97.05221888
100308A00008	3/8/2010	4.17	3/16/2020	3/8/2010	100.50599	100.505992	100.505992	100.4340996	100.3090442	100.1843168	100.0599162	99.93584102	99.81208989
100712A00003	7/12/2010	3.91	7/15/2020	7/12/2010	101.68749	101.6874864	101.6874864	101.4155156	100.9557533	100.5001701	100.0487091	99.60131444	99.15793111
100923A00051	9/23/2010	3.4	9/30/2021	9/23/2010	105.24543	105.2454252	105.2454252	104.5378689	102.867675	101.2321158	99.63027567	98.06117453	96.52387036
100930A00007	9/30/2010	3.27	9/30/2020	9/30/2010	102.03185	102.031853	102.031853	101.6261653	100.9556413	100.2939534	99.64092777	98.99639533	98.36019122
110810A00020	8/10/2011	2.86	8/16/2021	8/10/2011	104.28302	104.2830236	104.2830236	103.5997128	102.0555469	100.5420094	99.05837238	97.60381974	96.17756444
110825A00016	8/25/2011	3.06	8/31/2022	8/25/2011	107.69258	107.6925819	107.6925819	106.7377039	104.129747	101.5990995	99.14311817	96.75915153	94.44465997
111024A00021	10/24/2011	2.65	10/30/2020	10/24/2011	101.91878	101.918778	101.918778	101.4612681	100.7086173	99.9671112	99.23650359	98.51655561	97.80703525
120130A00009	1/30/2012	2.79	1/31/2022	1/30/2012	105.04929	105.049287	105.049287	104.2785216	102.283499	100.3368875	98.43732118	96.58337141	94.77366277
120315A00021	3/15/2012	3.12	3/15/2022	3/15/2012	106.05072	106.0507156	106.0507156	105.2503254	103.1229069	101.0490758	99.02721982	97.05568289	95.13287486
120726A00001	7/26/2012	2.36	8/1/2022	7/26/2012	105.21399	105.2139939	105.2139939	104.3040846	101.8172378	99.40261268	97.05778833	94.7803474	92.56797147
130107A00001	1/7/2013	2.53	1/17/2023	1/7/2013	106.68452	106.6845172	106.6845172	105.6001074	102.6476182	99.79339105	97.03372128	94.36496689	91.78364696
130219A00018	2/19/2013	1.85	3/2/2020	2/19/2013	100.13709	100.137087	100.137087	100.0892676	100.0034124	99.91770698	99.83215085	99.74674366	99.66148503

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
130516A00014	5/16/2013	1.64	6/1/2020	5/16/2013	100.51524	100.5152393	100.5152393	100.314967	99.97793605	99.64316447	99.31062959	98.98030906	98.65218084
130911A00009	9/11/2013	2.87	9/15/2020	9/11/2013	101.74178	101.74178	101.74178	101.3626674	100.7327762	100.1107156	99.49634007	98.88950751	98.29007945
130920A00020	9/20/2013	2.71	9/30/2020	9/20/2013	101.74831	101.7483118	101.7483118	101.3425257	100.6718741	100.0100809	99.35697146	98.71237574	98.07612816
130926A00009	9/26/2013	4	10/2/2028	9/26/2013	133.96719	133.9671901	133.9671901	127.3586056	118.1766923	109.7560625	102.0289567	94.93392281	88.4152774
131024A00019	10/24/2013	3.23	10/30/2023	10/24/2013	111.79629	111.796294	111.796294	110.3797848	106.559746	102.8939699	99.37540841	95.9972982	92.75322981
140113A00012	1/13/2014	3.48	1/17/2023	1/13/2014	109.52677	109.5267676	109.5267676	108.4246638	105.4299612	102.5345331	99.7346802	97.02672715	94.40716101
140423A00036	4/23/2014	4.03	4/23/2029	4/23/2014	134.36476	134.3647606	134.3647606	127.1085425	117.4906043	108.7118184	100.6936669	93.36533297	86.66297082
140528A00019	5/28/2014	1.92	2/14/2020	5/28/2014	100.06982	100.0698226	100.0698226	100.048341	100.0094848	99.97067439	99.9319098	99.8931909	99.85451761
010824A00028	8/24/2001	6.24	8/24/2021	8/24/2001	109.42092	109.420921	109.420921	108.7123555	107.1096547	105.5386641	103.9987557	102.4890735	101.0087924
020627A00001	6/27/2002	6.07	6/27/2022	6/27/2002	114.02889	114.028894	114.028894	113.1027897	110.5997675	108.1659941	105.7994011	103.4977555	101.2589117
050902A00032	9/2/2005	4.69	8/22/2025	9/2/2005	125.69078	125.6907808	125.6907808	122.9825515	117.048865	111.4486177	106.1613548	101.1678159	96.45002752
061221A00005	12/21/2006	5.28	12/30/2021	12/21/2006	109.64869	109.648691	109.648691	108.8774357	106.9211857	105.0101409	103.1431988	101.3190773	99.53654002
071231A00068	12/31/2007	4.93	12/30/2022	12/31/2007	114.19495	114.1949508	114.1949508	113.0803193	110.0521233	107.1223932	104.2875856	101.5441087	98.88852682
100210A00012	2/10/2010	4.11	2/18/2020	2/10/2010	100.19926	100.1992602	100.1992602	100.1715903	100.1215447	100.0715638	100.0216474	99.97179526	99.92200739
100824A00009	8/24/2010	3.91	9/2/2025	8/24/2010	120.25594	120.2559431	120.2559431	117.5950561	111.818102	106.368316	101.2254981	96.37066529	91.78610802
101006A00011	10/6/2010	2.9	10/15/2020	10/6/2010	101.99238	101.9923848	101.9923848	101.5603535	100.8480463	100.1457311	99.45319847	98.77024472	98.09667187
101130A00010	11/30/2010	3.25	11/30/2020	11/30/2010	102.6428	102.6428004	102.6428004	102.1263588	101.2867143	100.4608654	99.64847411	98.84921351	98.06276712
110805A00013	8/5/2011	3.43	8/16/2021	8/5/2011	104.90494	104.9049443	104.9049443	104.2207566	102.6760326	101.1618444	99.67749182	98.22216176	96.7950704
110805A00014	8/5/2011	4.06	8/17/2026	8/5/2011	124.66991	124.6699121	124.6699121	120.8278888	114.0207455	107.6552604	101.7004111	96.1273727	90.90949158
120312A00009	3/12/2012	2.72	3/15/2024	3/12/2012	110.8479	110.8478968	110.8478968	109.2873025	105.1181245	101.1323458	97.32098529	93.67546665	90.18768389
120503A00014	5/3/2012	2.4	5/16/2022	5/3/2012	105.29011	105.2901058	105.2901058	104.4431861	102.1499317	99.91829312	97.74629776	95.63197861	93.57344773
120824A00023	8/24/2012	2.4	8/30/2022	8/24/2012	105.48367	105.4836743	105.4836743	104.5455813	101.979203	99.48887272	97.07197139	94.72589653	92.44815527
120907A00022	9/7/2012	1.88	9/15/2021	9/7/2012	102.89844	102.8984364	102.8984364	102.2056754	100.591764	99.01093891	97.4623028	95.94493762	94.45796016
130117A00011	1/17/2013	2.18	1/30/2023	1/17/2013	106.25888	106.2588807	106.2588807	105.1582577	102.1658401	99.27448731	96.480317	93.77953265	91.16850814
130211A00015	2/11/2013	1.88	2/16/2021	2/11/2013	101.69876	101.6987641	101.6987641	101.0994329	100.0579874	99.03649761	98.03578502	97.0552207	96.09420087
130228A00007	2/28/2013	1.54	3/2/2020	2/28/2013	100.12193	100.1219334	100.1219334	100.0740593	99.98810682	99.90230536	99.81665454	99.73115395	99.64580319
130425A00030	4/25/2013	1.52	4/30/2020	4/25/2013	100.34987	100.3498745	100.3498745	100.2013105	99.95241164	99.70474495	99.45830129	99.21307166	98.96904714
130531A00019	5/31/2013	2.09	6/1/2021	5/31/2013	102.6644	102.6644027	102.6644027	102.0579486	100.7304956	99.42499556	98.1424012	96.8821619	95.64374427
130606A00013	6/6/2013	2.94	6/15/2023	6/6/2013	108.99371	108.9937059	108.9937059	107.7451566	104.3560155	101.0921692	97.94844988	94.91981826	92.00147272
130614A00008	6/14/2013	2.39	6/15/2020	6/14/2013	100.80862	100.8086215	100.8086215	100.5861197	100.2106312	99.83795212	99.46805104	99.10089684	98.73645892
130821A00019	8/21/2013	3.81	8/29/2025	8/21/2013	120.8167	120.8167024	120.8167024	118.1415063	112.3217737	106.8320512	101.6519418	96.76228051	92.14518887
130904A00039	9/4/2013	4.19	9/15/2028	9/4/2013	135.43968	135.4396795	135.4396795	128.8563051	119.6576861	111.2166805	103.466267	96.34559476	89.79949527
150601A00302	6/1/2015	1.66	4/17/2020	6/1/2015	100.29562	100.2956223	100.2956223	100.1694933	99.95672381	99.74486931	99.53392387	99.3238816	99.11473665

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00360	6/1/2015	2.82	10/2/2020	6/1/2015	101.71121	101.7112098	101.7112098	101.3028211	100.6280815	99.96231424	99.30534131	98.65698933	98.01708947
150601A00404	6/1/2015	4.29	1/17/2029	6/1/2015	135.17179	135.171791	135.171791	128.2375355	118.8243707	110.2104809	102.32307	95.09620879	88.47029607
150601A00513	6/1/2015	2.87	7/15/2022	6/1/2015	106.27681	106.2768117	106.2768117	105.3766386	102.9206586	100.5346653	98.21637955	95.96349906	93.77381398
150601A00548	6/1/2015	2.55	8/13/2021	6/1/2015	103.45253	103.4525318	103.4525318	102.7763728	101.2512119	99.75618311	98.29056339	96.85355483	95.44438789
150601A00608	6/1/2015	2.45	6/30/2021	6/1/2015	103.03984	103.0398389	103.0398389	102.4042432	100.9978333	99.61741814	98.26243732	96.93224928	95.62623351
150601A00611	6/1/2015	2.58	12/31/2021	6/1/2015	104.35323	104.3532268	104.3532268	103.6068448	101.6998643	99.83733177	98.01804859	96.24075465	94.50423486
150601A00627	6/1/2015	2.16	3/31/2020	6/1/2015	100.31398	100.3139813	100.3139813	100.2168582	100.0508106	99.88530936	99.72035181	99.55593532	99.39205724
150601A00665	6/1/2015	3.82	1/14/2033	6/1/2015	144.5594	144.5594017	144.3883424	130.4266885	117.2824182	105.6759392	95.41585517	86.33553606	78.28990745
150601A00731	6/1/2015	2.4	4/29/2022	6/1/2015	104.68844	104.6884445	104.6884445	103.8616998	101.6282732	99.45371872	97.33609857	95.27350688	93.26411832
150601A00773	6/1/2015	1.84	5/15/2020	6/1/2015	100.45503	100.455035	100.455035	100.2824336	99.99255955	99.70437106	99.41785341	99.132992	98.84977243
150601A01470	6/1/2015	1.88	6/1/2020	6/1/2015	100.55275	100.55275	100.55275	100.3527231	100.0160992	99.68172598	99.34958087	99.01964175	98.69188674
150603A00015	6/3/2015	2.02	6/3/2020	6/3/2015	100.60999	100.6099915	100.6099915	100.4067303	100.0645127	99.72462397	99.38704042	99.05173865	98.71869561
150603A00039	6/9/2015	2.02	6/15/2020	6/9/2015	100.66893	100.6689252	100.6689252	100.4466141	100.0714489	99.69909141	99.32951012	98.96267395	98.59855231
150630A00008	6/30/2015	2.41	6/30/2022	6/30/2015	105.59886	105.5988583	105.5988583	104.7133139	102.2957074	99.94614559	97.66243185	95.44235783	93.28380246
150710A00039	7/10/2015	2.07	7/10/2020	7/10/2015	100.81427	100.8142661	100.8142661	100.5518106	100.1080488	99.66820467	99.23222644	98.80006317	98.37166484
150710A00040	7/10/2015	2.63	7/11/2022	7/10/2015	105.76064	105.7606353	105.7606353	104.8670069	102.4279006	100.0580559	97.75522023	95.51712443	93.34158997
150717A00009	7/17/2015	2.18	7/19/2021	7/17/2015	103.06041	103.060412	103.060412	102.4041297	100.9437673	99.51141791	98.10643395	96.72810016	95.37572578
150807A00003	8/7/2015	1.9	8/7/2020	8/7/2015	100.93479	100.9347857	100.9347857	100.6254808	100.1043557	99.5886233	99.0782	98.57300406	98.07295537
150819A00013	8/19/2015	3.51	8/19/2030	8/19/2015	133.73605	133.7360498	133.7360498	124.4802889	113.773998	104.1226725	95.4155777	87.55407205	80.45033624
150825A00016	8/25/2015	1.9	8/25/2020	8/25/2015	100.94416	100.9441569	100.9441569	100.6042866	100.0351622	99.4724633	98.91608163	98.36591119	97.82184838
150828A00010	8/28/2015	1.96	8/28/2020	8/28/2015	100.99284	100.9928417	100.9928417	100.6477014	100.0702858	99.49947704	98.93516228	98.3772312	97.82557599
150901A00002	9/1/2015	1.98	9/1/2020	9/1/2015	101.02365	101.0236483	101.0236483	100.6715011	100.0831452	99.50164327	98.92687626	98.35872777	97.79708406
150914A00052	9/14/2015	1.77	9/14/2020	9/14/2015	101.04083	101.0408337	101.0408337	100.6649784	100.0402956	99.42335401	98.81401019	98.21212427	97.61755981
130304A00009	3/4/2013	1.79	3/16/2020	3/4/2013	100.19336	100.1933579	100.1933579	100.1217495	99.9971901	99.87295598	99.74904582	99.62545834	99.50219222
130405A00007	4/5/2013	2.91	4/17/2028	4/5/2013	123.13882	123.1388224	123.1388224	117.3148323	108.9806749	101.31367	94.25664947	87.75759993	81.76920839
130424A00005	4/24/2013	3.07	4/24/2030	4/24/2013	130.44037	130.4403701	130.4403701	121.6962408	111.3035142	101.9161611	93.43070443	85.7548294	78.80614801
130509A00004	5/9/2013	2.4	5/15/2023	5/9/2013	106.97732	106.9773226	106.9773226	105.7740542	102.4999323	99.34444735	96.30270941	93.36999062	90.5417881
130513A00007	5/13/2013	2.54	5/15/2023	5/13/2013	107.44164	107.4416351	107.4416351	106.2352512	102.9535169	99.79061834	96.74166416	93.8019197	90.96687552
130530A00008	5/30/2013	2.29	6/1/2021	5/30/2013	102.71822	102.7182232	102.7182232	102.1129552	100.7885019	99.48589721	98.20610008	96.94856324	95.71275645
130531A00020	5/31/2013	2.5	5/30/2023	5/31/2013	108.02062	108.0206174	108.0206174	106.789209	103.443927	100.2213464	97.11643284	94.1242906	91.2402531
130612A00037	6/12/2013	2.16	6/15/2020	6/12/2013	100.7707	100.7707013	100.7707013	100.5479219	100.1719711	99.79884015	99.42849738	99.06091145	98.69605151
130712A00004	7/12/2013	2.82	7/15/2021	7/12/2013	103.98065	103.9806491	103.9806491	103.3245605	101.867704	100.4385558	99.03650797	97.66085688	96.31092283
130904A00036	9/4/2013	3.57	9/15/2023	9/4/2013	112.6557	112.6557016	112.6557016	111.2803384	107.565645	103.9966748	100.5670076	97.27042499	94.10102363

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
131011A00006	10/11/2013	3.28	10/15/2021	10/11/2013	105.16761	105.1676085	105.1676085	104.4534464	102.7440249	101.0706974	99.43247096	97.82830402	96.25719652
131210A00003	12/10/2013	2.67	12/15/2020	12/10/2013	102.25958	102.2595782	102.2595782	101.7173652	100.8390194	99.97582706	99.12739816	98.29335609	97.47333692
131217A00024	12/17/2013	4.34	1/2/2029	12/17/2013	136.01734	136.0173373	136.0173373	129.1175811	119.7049144	111.087307	103.1926976	95.95578465	89.31750524
140131A00024	1/31/2014	2.71	2/1/2021	1/31/2014	102.47798	102.4779839	102.4779839	101.876281	100.8697152	99.8829118	98.91538005	97.96655959	97.03591157
140307A00011	3/7/2014	3.19	3/15/2023	3/7/2014	109.69857	109.6985746	109.6985746	108.5354163	105.365999	102.3064373	99.35239	96.49960849	93.74404242
140410A00011	4/10/2014	2.17	4/10/2020	4/10/2014	100.3985	100.398499	100.398499	100.2840774	100.0901428	99.89697048	99.70455596	99.51289467	99.32198215
140411A00009	4/11/2014	3.1	4/11/2024	4/11/2014	112.65502	112.6550246	112.6550246	111.047004	106.7686515	102.6808587	98.77415353	95.03950934	91.46840228
140416A00014	4/16/2014	2.66	4/30/2021	4/16/2014	103.00622	103.0062238	103.0062238	102.4012451	101.1798796	99.96174151	98.77287389	97.61223123	96.47881736
140929A00098	9/29/2014	2.62	9/29/2021	9/29/2014	103.92499	103.9249898	103.9249898	103.2237336	101.5676223	99.9458786	98.35756463	96.80170974	95.27738085
141009A00027	10/9/2014	2.69	10/11/2022	10/9/2014	106.51639	106.5163868	106.5163868	105.5343409	102.841554	100.2312074	97.70031899	95.24596735	92.86536011
141016A00022	10/16/2014	2.13	10/18/2021	10/16/2014	103.49386	103.4938632	103.4938632	102.7839945	101.0762662	99.40489992	97.76883894	96.167029	94.59845814
141016A00024	10/16/2014	1.85	10/16/2020	10/16/2014	101.24506	101.2450564	101.2450564	100.8130893	100.1010461	99.39904128	98.70686341	98.02430709	97.35117258
141028A00012	10/28/2014	2.73	10/28/2022	10/28/2014	106.73952	106.7395219	106.7395219	105.7391853	102.9988353	100.3435163	97.77009734	95.27552351	92.85687692
150105A00027	1/5/2015	2.23	1/5/2022	1/5/2015	104.13003	104.1300347	104.1300347	103.3791497	101.4548472	99.57583725	97.74087121	95.94865385	94.1979367
150401A00008	4/1/2015	2.62	4/1/2025	4/1/2015	112.03212	112.0321174	112.0321174	109.8561745	104.6896531	99.79903347	95.16816585	90.78187082	86.62593751
150406A00006	4/6/2015	1.66	4/6/2020	4/6/2015	100.25839	100.2583885	100.2583885	100.1510675	99.96859448	99.78679268	99.60565835	99.42518781	99.24537737
150407A00008	4/7/2015	1.78	4/7/2021	4/7/2015	101.99188	101.9918843	101.9918843	101.3895852	100.2284601	99.07323217	97.94450607	96.84137826	95.76298581
150416A00014	4/16/2015	1.68	4/8/2020	4/16/2015	100.27188	100.2718827	100.2718827	100.1611245	99.97311223	99.78581445	99.59922707	99.41334602	99.22816724
150601A00147	6/1/2015	3.45	7/30/2021	6/1/2015	104.96741	104.9674085	104.9674085	104.2921104	102.7880184	101.3132536	99.86717225	98.44901064	97.0580318
150601A00149	6/1/2015	3.45	7/30/2021	6/1/2015	104.96741	104.9674085	104.9674085	104.2921104	102.7880184	101.3132536	99.86717225	98.44901064	97.0580318
150601A00282	6/1/2015	3.8	4/3/2020	6/1/2015	100.61188	100.6118808	100.6118808	100.5094064	100.3347087	100.1606204	99.98713842	99.81425958	99.64198072
150601A00287	6/1/2015	3.79	10/5/2020	6/1/2015	102.3888	102.3887973	102.3887973	101.9737427	101.2882906	100.612058	99.94485966	99.28651533	98.63684942
150601A00485	6/1/2015	3.09	6/21/2024	6/1/2015	112.99587	112.9958719	112.9958719	111.2924482	106.8172951	102.5496101	98.47881703	94.5948181	90.88808459
150601A00490	6/1/2015	3.19	7/2/2024	6/1/2015	112.63398	112.6339763	112.6339763	110.9283291	106.4572192	102.1941324	98.1284269	94.24994143	90.54908945
150601A00532	6/1/2015	2.48	9/24/2020	6/1/2015	101.43545	101.4354496	101.4354496	101.0417117	100.3896442	99.74597899	99.11055439	98.48321284	97.8638008
150601A00547	6/1/2015	2.29	8/13/2020	6/1/2015	101.08006	101.0800574	101.0800574	100.760647	100.2236498	99.69237428	99.16672918	98.64662521	98.13197494
150601A00601	6/1/2015	2.2	6/30/2020	6/1/2015	100.80293	100.8029292	100.8029292	100.5567288	100.140274	99.72725586	99.31763217	98.91136128	98.50840225
150601A00604	6/1/2015	2.33	12/31/2020	6/1/2015	101.88251	101.8825061	101.8825061	101.3140666	100.3964591	99.49542045	98.61050527	97.7412839	96.88734181
150601A00642	6/1/2015	2.6	3/31/2022	6/1/2015	104.95397	104.9539708	104.9539708	104.1467595	101.9889875	99.88645713	97.83743321	95.84018107	93.89303648
150601A00650	6/1/2015	2.75	3/31/2023	6/1/2015	107.70728	107.7072807	107.7072807	106.5443719	103.3778803	100.3223357	97.37327151	94.52635697	91.77746548
150601A00664	6/1/2015	3.78	1/16/2032	6/1/2015	140.73145	140.7314525	140.7314525	128.6971802	116.5168413	105.6688174	95.99799011	87.36802235	79.6591096
150601A00688	6/1/2015	2.61	2/21/2025	6/1/2015	112.55325	112.5532539	112.5532539	110.441537	105.3307959	100.4889346	95.90047994	91.55083817	87.42633189
150601A00825	6/1/2015	2.87	5/29/2025	6/1/2015	113.51283	113.512834	113.512834	111.1839146	105.8316609	100.7724107	95.98871707	91.4641581	87.1833711

Classification | Public

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00833	6/1/2015	7.14	8/28/2020	6/1/2015	104.02595	104.0259543	104.0259543	103.6742672	103.0858194	102.5040856	101.9289511	101.360304	100.7980345
150610A00008	6/10/2015	3.58	6/10/2030	6/10/2015	136.1468	136.1467964	136.1467964	127.0192576	116.2465943	106.5202957	97.73208503	89.7853347	82.59387084
150720A00012	7/20/2015	2.99	7/21/2025	7/20/2015	115.88339	115.8833942	115.8833942	113.3726471	107.7867253	102.5145074	97.53682347	92.8356621	88.39420424
150727A00013	7/27/2015	3.04	7/28/2025	7/27/2015	115.09743	115.0974256	115.0974256	112.5939758	107.0479894	101.8136919	96.8720203	92.20506317	87.79609611
150804A00002	8/4/2015	2.84	8/5/2024	8/4/2015	111.56656	111.5665586	111.5665586	109.8196158	105.2833262	100.9625135	96.84590979	92.92278946	89.18304653
130821A00018	8/21/2013	3.37	8/30/2022	8/21/2013	108.4943	108.4942978	108.4942978	107.5357901	104.9200389	102.3816876	99.91810736	97.52664612	95.20476357
131106A00002	11/6/2013	2.76	11/16/2020	11/6/2013	102.00636	102.0063588	102.0063588	101.5184229	100.7210406	99.93617381	99.1635293	98.402823	97.65377959
140521A00019	5/21/2014	3.43	5/22/2028	5/21/2014	127.768	127.7679963	127.7679963	121.736648	113.1354089	105.2256899	97.94795616	91.24800429	85.0765529
140702A00034	7/2/2014	2.7	7/1/2022	7/2/2014	106.31464	106.3146427	106.3146427	105.4242562	102.9952583	100.6346314	98.3401777	96.10967623	93.94099381
140710A00027	7/10/2014	2.8	7/17/2023	7/10/2014	109.38706	109.3870624	109.3870624	108.0973869	104.6010286	101.237387	98.00082606	94.8858717	91.8873158
140908A00057	9/8/2014	2.14	2/28/2020	9/8/2014	100.14629	100.146287	100.146287	100.1033824	100.0257986	99.94833536	99.87099248	99.79376968	99.71666669
140908A00058	9/8/2014	2.21	5/29/2020	9/8/2014	100.64816	100.6481615	100.6481615	100.4528157	100.1242054	99.79774031	99.47339949	99.15116229	98.83100836
140930A00030	9/30/2014	2.36	9/30/2020	9/30/2014	101.4182	101.4182041	101.4182041	101.0138853	100.3456608	99.68625073	99.03548179	98.39318509	97.7591961
141016A00026	10/16/2014	1.91	4/17/2020	10/16/2014	100.35489	100.3548922	100.3548922	100.2287107	100.0158509	99.80390643	99.59287134	99.38273972	99.17350573
141201A00024	12/1/2014	2.19	12/1/2020	12/1/2014	101.62758	101.6275801	101.6275801	101.1132106	100.2772184	99.45500556	98.64623379	97.85057565	97.06771429
150116A00039	1/16/2015	1.85	1/19/2021	1/16/2015	101.54582	101.5458228	101.5458228	100.9592836	99.99251414	99.04419352	98.11379742	97.20082124	96.3047792
150202A00017	2/2/2015	1.67	2/3/2020	2/2/2015	100.01167	100.0116714	100.0116714	100.0070751	99.99875918	99.99045043	99.98214885	99.97385443	99.96556714
150203A00005	2/3/2015	2.11	2/3/2022	2/3/2015	103.68764	103.6876363	103.6876363	102.9221959	100.932357	98.9910263	97.09680035	95.24824289	93.44397154
150206A00015	2/6/2015	1.87	2/8/2021	2/6/2015	101.81842	101.8184243	101.8184243	101.2174033	100.1937916	99.19008934	98.20641783	97.24218216	96.29681071
150303A00011	3/3/2015	2.06	3/3/2021	3/3/2015	102.13901	102.1390052	102.1390052	101.5365942	100.4523467	99.3870839	98.34432933	97.32337553	96.32354447
150325A00016	3/25/2015	1.57	3/25/2020	3/25/2015	100.21737	100.2173704	100.2173704	100.130379	99.98079828	99.8316738	99.68300345	99.53478515	99.38701681
150601A00006	6/1/2015	4.71	6/27/2025	6/1/2015	124.71607	124.7160749	124.7160749	122.1783674	116.4200618	110.9778058	105.8326823	100.9668322	96.36356097
150601A00039	6/1/2015	5.76	6/12/2026	6/1/2015	135.74017	135.7401736	135.7401736	131.9469479	124.9181472	118.3296391	112.1514531	106.3556099	100.9161821
150601A00484	6/1/2015	2.45	6/23/2021	6/1/2015	103.23955	103.2395508	103.2395508	102.6086028	101.2161639	99.84886553	98.5065119	97.18847965	95.89416581
150601A00495	6/1/2015	2.99	6/27/2024	6/1/2015	112.60502	112.6050166	112.6050166	110.8969592	106.4141609	102.1400249	98.06386941	94.17550341	90.46531214
150601A00523	6/1/2015	4.55	7/25/2031	6/1/2015	147.80937	147.8093733	147.8093733	136.4259983	124.2464815	113.3405617	103.5657531	94.79616344	86.9206201
150601A00599	6/1/2015	2.14	3/31/2020	6/1/2015	100.3107	100.3107037	100.3107037	100.2135828	100.0475393	99.88204215	99.71708866	99.55267621	99.38880216
150601A00609	6/1/2015	2.52	9/30/2021	6/1/2015	103.69849	103.6984903	103.6984903	102.9978204	101.340906	99.71842583	98.12943184	96.57295031	95.04804533
150601A00613	6/1/2015	2.63	3/31/2022	6/1/2015	105.01861	105.0186083	105.0186083	104.2110654	102.0525814	99.94935245	97.89964397	95.90172097	93.95391882
140113A00011	1/13/2014	2.88	1/15/2021	1/13/2014	102.53793	102.5379282	102.5379282	101.9522292	100.9908873	100.0476619	99.12204399	98.21354365	97.32168888
140204A00007	2/4/2014	2.68	2/16/2021	2/4/2014	102.54631	102.5463061	102.5463061	101.9441154	100.8978998	99.87170722	98.86635866	97.88122358	96.91569665
140626A00036	6/26/2014	3.55	6/26/2029	6/26/2014	132.54631	132.5463142	132.5463142	125.0044761	115.2233572	106.3165817	98.20071683	90.80059817	84.04858811
140827A00038	8/27/2014	3.07	8/30/2024	8/27/2014	112.80261	112.8026064	112.8026064	111.0072789	106.3785672	101.9719284	97.77562915	93.77850697	89.97005162

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
140908A00061	9/8/2014	2.39	2/26/2021	9/8/2014	102.29695	102.2969479	102.2969479	101.69545	100.6245207	99.57378122	98.54492534	97.53727487	96.55017938
140908A00065	9/8/2014	2.63	2/28/2022	9/8/2014	104.90385	104.9038454	104.9038454	104.1208784	102.0454393	100.0216366	98.04794247	96.12278591	94.24465705
141009A00029	10/9/2014	3.5	10/9/2029	10/9/2014	130.93112	130.9311167	130.9311167	123.1132151	113.2496743	104.2892697	96.14368681	88.73365521	81.98803018
141017A00020	10/17/2014	2.28	10/18/2021	10/17/2014	103.75441	103.7544142	103.7544142	103.0433627	101.3333254	99.65968595	98.0213928	96.4173906	94.84666627
141128A00002	11/28/2014	2.3	11/29/2021	11/28/2014	104.04305	104.0430492	104.0430492	103.3133956	101.4872736	99.70211982	97.95686564	96.25038862	94.58160506
150331A00004	3/31/2015	2.08	3/31/2022	3/31/2015	104.29815	104.2981528	104.2981528	103.4918185	101.3335871	99.2308077	97.18171369	95.18456028	93.23767368
150401A00007	4/1/2015	1.72	4/1/2020	4/1/2015	100.25068	100.2506783	100.2506783	100.151892	99.98317013	99.81501493	99.64742354	99.48039316	99.31392099
150407A00009	4/7/2015	2.03	4/7/2022	4/7/2015	104.22561	104.2256128	104.2256128	103.4145869	101.2381043	99.11794271	97.05228705	95.03935163	93.07742423
150413A00034	4/13/2015	2.25	4/13/2022	4/13/2015	104.34287	104.3428651	104.3428651	103.5294446	101.3432404	99.21378754	97.13925436	95.11783365	93.14779294
150601A00283	6/1/2015	3.8	7/6/2020	6/1/2015	101.52081	101.5208118	101.5208118	101.2637705	100.8290865	100.3981377	99.97087603	99.5472542	99.1272258
150601A00531	6/1/2015	3.28	7/24/2024	6/1/2015	113.25263	113.2526305	113.2526305	111.5088282	106.9661515	102.6373879	98.51145229	94.57777072	90.82637549
150601A00594	6/1/2015	3.2	10/20/2026	6/1/2015	119.21057	119.210569	119.210569	115.2299267	108.4356789	102.0957868	96.17739722	90.65014982	85.48602934
150601A00632	6/1/2015	2.33	12/31/2020	6/1/2015	101.88251	101.8825061	101.8825061	101.3140666	100.3964591	99.49542045	98.61050527	97.7412839	96.88734181
150601A00634	6/1/2015	2.39	3/31/2021	6/1/2015	102.43403	102.4340275	102.4340275	101.8316675	100.6879612	99.5509798	98.43959703	97.35295593	96.29023748
150601A00646	6/1/2015	2.68	9/30/2022	6/1/2015	106.31121	106.3112054	106.3112054	105.341325	102.6800735	100.0995914	97.59699033	95.16943436	92.81421115
150601A00648	6/1/2015	2.71	12/30/2022	6/1/2015	106.98712	106.9871181	106.9871181	105.9209907	103.0105812	100.1954677	97.47212848	94.83708622	92.28701466
150601A00687	6/1/2015	1.96	2/20/2020	6/1/2015	100.09156	100.0915582	100.0915582	100.0609205	100.005509	99.95017137	99.89490736	99.83971683	99.78459965
150601A00689	6/1/2015	2.81	2/28/2025	6/1/2015	112.58902	112.5890182	112.5890182	110.4782235	105.3787673	100.5475324	95.9690862	91.62886646	87.51322608
150601A00696	6/1/2015	2.83	3/13/2025	6/1/2015	112.77828	112.7782753	112.7782753	110.6369016	105.4997337	100.6342856	96.02481999	91.65650879	87.51546119
150601A00716	6/1/2015	1.66	4/1/2020	6/1/2015	100.23591	100.2359051	100.2359051	100.1371295	99.96842634	99.80028977	99.63271696	99.4657051	99.2992514
140820A00026	8/20/2014	2.94	8/19/2024	8/20/2014	112.98962	112.9896154	112.9896154	111.1993955	106.5696711	102.1615783	97.96343129	93.96411521	90.15316288
140908A00060	9/8/2014	2.34	11/30/2020	9/8/2014	101.74875	101.7487457	101.7487457	101.2358223	100.4019598	99.58179277	98.77498602	97.98121532	97.20016679
140908A00062	9/8/2014	2.45	5/28/2021	9/8/2014	102.91014	102.9101428	102.9101428	102.3051637	100.9920133	99.69879264	98.42893719	97.18185197	95.95696205
141024A00009	10/24/2014	2.05	10/26/2020	10/24/2014	101.44254	101.4425405	101.4425405	100.9930384	100.2531743	99.52412327	98.80564972	98.09752464	97.39952563
150121A00004	1/21/2015	1.97	1/24/2022	1/21/2015	103.71908	103.7190818	103.7190818	102.9573082	100.9873599	99.06499723	97.18885518	95.35753904	93.56970588
150123A00012	1/23/2015	2	1/29/2021	1/23/2015	101.741	101.740997	101.740997	101.1437355	100.149132	99.17401373	98.21781272	97.27998272	96.3599984
150130A00050	1/30/2015	1.87	1/31/2022	1/30/2015	103.55224	103.5522381	103.5522381	102.786547	100.800017	98.86192351	96.97085826	95.12538911	93.3241376
150213A00027	2/13/2015	1.95	2/13/2020	2/13/2015	100.05994	100.0599379	100.0599379	100.0400229	100.0039992	99.96801641	99.93207454	99.89617348	99.86031317
150220A00022	2/20/2015	2.8	2/20/2025	2/20/2015	112.69533	112.6953268	112.6953268	110.5978046	105.5182065	100.70474	96.14215214	91.81604347	87.71291592
150417A00020	4/17/2015	1.67	4/13/2020	4/17/2015	100.28984	100.2898416	100.2898416	100.1705318	99.96874372	99.76778023	99.56763626	99.36830675	99.16978667
150417A00037	4/17/2015	1.5	4/17/2020	4/17/2015	100.29506	100.2950647	100.2950647	100.1687626	99.95570431	99.74356562	99.53234047	99.3220229	99.11260698
150422A00017	4/22/2015	2.16	4/22/2022	4/22/2015	104.18899	104.188987	104.188987	103.3698957	101.1610936	99.01015584	96.91518673	94.87432624	92.88579217
150518A00016	5/18/2015	1.84	11/18/2020	5/18/2015	101.39552	101.3955224	101.3955224	100.9045362	100.1028698	99.31390647	98.53734587	97.77289717	97.02027859

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150518A00020	5/18/2015	1.99	5/18/2021	5/18/2015	102.4565	102.4565036	102.4565036	101.8520116	100.5717185	99.30541474	98.06462392	96.84858348	95.65656144
150601A00182	6/1/2015	3.85	7/18/2022	6/1/2015	108.69991	108.6999053	108.6999053	107.7835803	105.2895848	102.8666456	100.5124809	98.22474746	96.00119595
150601A00222	6/1/2015	2.2	9/27/2022	6/1/2015	105.02266	105.0226561	105.0226561	104.0628476	101.42697	98.87104297	96.39219678	93.98762986	91.65466246
150601A00264	6/1/2015	1.75	2/27/2020	6/1/2015	100.10967	100.1096677	100.1096677	100.0683097	99.99352096	99.91884639	99.84428577	99.76983884	99.69550536
150601A00405	6/1/2015	4.63	1/17/2034	6/1/2015	159.01948	159.019481	157.8642488	142.136344	127.378608	114.4369085	103.0722934	93.07854888	84.2776819
150601A00494	6/1/2015	2.37	6/25/2021	6/1/2015	103.14059	103.140587	103.140587	102.5080208	101.1107752	99.73894914	98.39223804	97.07001224	95.77166272
150601A00530	6/1/2015	3.08	7/24/2024	6/1/2015	113.21762	113.2176209	113.2176209	111.4646939	106.8980113	102.5470639	98.40063366	94.44803027	90.67917798
150601A00636	6/1/2015	2.45	6/30/2021	6/1/2015	103.03984	103.0398389	103.0398389	102.4042432	100.9978333	99.61741814	98.26243732	96.93224928	95.62623351
150601A00640	6/1/2015	2.57	12/31/2021	6/1/2015	104.33413	104.3341313	104.3341313	103.5878412	101.6810482	99.81870013	97.99959787	96.22248146	94.4861359
150601A00644	6/1/2015	2.64	6/30/2022	6/1/2015	105.61926	105.6192621	105.6192621	104.7365218	102.32776	99.98660911	97.71089988	95.49844288	93.34713493
150601A00717	6/1/2015	2.13	4/1/2022	6/1/2015	103.94629	103.9462851	103.9462851	103.1435249	100.9941474	98.89992973	96.85911684	94.86997458	92.93083935
131024A00018	10/24/2013	2.8	11/1/2021	10/24/2013	104.76179	104.7617916	104.7617916	104.0397575	102.2834705	100.5651367	98.88365988	97.23792462	95.62686082
131107A00010	11/7/2013	2.84	11/8/2021	11/7/2013	104.88559	104.8855919	104.8855919	104.1602321	102.3836393	100.6457889	98.94559793	97.28194848	95.65376654
140206A00006	2/6/2014	2.2	2/6/2020	2/6/2014	100.03459	100.0345901	100.0345901	100.0253807	100.0087196	99.99207459	99.97544549	99.95883231	99.94223503
140725A00006	7/25/2014	2.65	8/1/2022	7/25/2014	106.40985	106.4098475	106.4098475	105.4901548	102.97854	100.539941	98.17191665	95.87201866	93.63789887
140908A00059	9/8/2014	2.28	8/31/2020	9/8/2014	101.19622	101.1962243	101.1962243	100.8455063	100.2592822	99.67985182	99.10709778	98.5409053	97.98116224
141015A00020	10/15/2014	2.13	10/15/2021	10/15/2014	103.47712	103.477118	103.477118	102.7686998	101.0690573	99.40547714	97.7769174	96.18233652	94.62073449
141024A00010	10/24/2014	2.81	10/24/2024	10/24/2014	112.88186	112.8818633	112.8818633	110.988359	106.1862042	101.6216293	97.28163255	93.15393557	89.22700124
150115A00002	1/15/2015	1.72	1/15/2021	1/15/2015	101.55619	101.5561935	101.5561935	100.9723278	100.0140712	99.07393311	98.15140331	97.24599061	96.35722194
150202A00018	2/2/2015	1.89	2/2/2021	2/2/2015	101.64772	101.6477184	101.6477184	101.0487178	100.0440444	99.05908703	98.09344395	97.14655158	96.21786805
150213A00025	2/13/2015	2.37	2/14/2022	2/13/2015	104.27828	104.2782837	104.2782837	103.5048773	101.4768624	99.49872732	97.5690154	95.68623154	93.84893765
150220A00020	2/20/2015	2.42	2/18/2022	2/20/2015	104.4046	104.4045969	104.4045969	103.6287247	101.5877202	99.5970839	97.65533827	95.76096697	93.91251188
150319A00012	3/19/2015	3.13	3/19/2029	3/19/2015	125.79349	125.7934909	125.7934909	118.8703338	109.7046007	101.339897	93.7015183	86.72203889	80.34063508
150407A00010	4/7/2015	2.21	4/10/2023	4/7/2015	106.75445	106.7544532	106.7544532	105.5832296	102.3908927	99.31169699	96.34101103	93.47437407	90.7075383
150427A00021	4/27/2015	1.54	4/30/2020	4/27/2015	100.35487	100.3548735	100.3548735	100.2063046	99.95739749	99.70972254	99.46327066	99.21803284	98.97400015
150506A00010	5/6/2015	1.92	5/6/2020	5/6/2015	100.44524	100.4452372	100.4452372	100.2871286	100.0219502	99.75817827	99.49580159	99.23480909	98.97518981
150511A00026	5/13/2015	3.34	5/14/2020	5/13/2015	100.89252	100.892521	100.892521	100.7210447	100.4330884	100.1467897	99.86213418	99.57910771	99.29769623
150511A00060	5/11/2015	1.91	5/11/2020	5/11/2015	100.46572	100.4657182	100.4657182	100.2995408	100.0206119	99.74324316	99.4674215	99.19313388	98.92036747
150515A00003	5/15/2015	2.17	5/17/2021	5/15/2015	102.47741	102.4774096	102.4774096	101.87424	100.6003071	99.33969023	98.10468714	96.89452347	95.70845624
150518A00014	5/18/2016	2.38	5/18/2021	5/18/2016	102.75805	102.7580476	102.7580476	102.1537818	100.8746434	99.60944183	98.36967571	97.15458606	95.96344426
150518A00026	5/18/2015	2.08	11/18/2021	5/18/2015	103.57555	103.5755467	103.5755467	102.8523567	101.0605319	99.30836825	97.59477247	95.91862941	94.27886509
150519A00013	5/19/2015	2.98	5/19/2025	5/19/2015	114.25456	114.2545579	114.2545579	111.9429547	106.596571	101.5412371	96.75966176	92.2355801	87.95377707
150601A00470	6/1/2015	2.98	5/31/2024	6/1/2015	112.35139	112.3513905	112.3513905	110.6813331	106.276609	102.0737615	98.06261981	94.23346674	90.57712612

Classification | Public

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00512	6/1/2015	3.79	7/16/2029	6/1/2015	132.4195	132.4194958	132.4194958	124.8947912	115.1629772	106.3016105	98.22748012	90.8656346	84.148646
150601A00514	6/1/2015	3.07	11/15/2024	6/1/2015	114.08671	114.086712	114.086712	112.1446994	107.2559636	102.6114399	98.19771323	94.00208823	90.01263535
011107A00031	11/7/2001	5.56	11/5/2021	11/7/2001	109.40928	109.4092794	109.4092794	108.6662422	106.8621783	105.0969622	103.3696088	101.6789886	100.024017
051003A00008	10/3/2005	5.08	10/15/2020	10/3/2005	103.45319	103.4531926	103.4531926	103.0184964	102.3016808	101.5948787	100.8978808	100.2104837	99.53248947
051107A00075	11/7/2005	5.29	11/17/2025	11/7/2005	130.30389	130.303887	130.303887	127.2787232	120.9799343	115.0462432	109.4545509	104.1831741	99.21191931
060308A00014	3/8/2006	5.44	3/16/2026	3/8/2006	131.58396	131.5839647	131.5839647	128.1795416	121.5617714	115.3449407	109.50256	104.0098605	98.84384477
060613A00029	6/13/2006	5.47	6/15/2021	6/13/2006	107.44058	107.4405812	107.4405812	106.8009127	105.4003867	104.0242429	102.6728241	101.3455195	100.041738
060808A00022	8/8/2006	5.57	6/15/2026	8/8/2006	133.68885	133.6888524	133.6888524	129.9444336	123.0194402	116.5281259	110.440986	104.7304759	99.37106984
061220A00034	12/20/2006	5.07	12/30/2021	12/20/2006	109.6026	109.6025971	109.6025971	108.8293199	106.8669952	104.9501391	103.0776304	101.2481771	99.46053308
081211A00029	12/11/2008	4.57	12/15/2023	12/11/2008	116.68826	116.6882616	116.6882616	115.1919403	111.1737909	107.3212275	103.6267249	100.082966	96.68301051
100505A00024	5/5/2010	4.31	5/15/2020	5/5/2010	101.1839	101.1839006	101.1839006	101.0104874	100.7192322	100.4296687	100.1417821	99.8555577	99.57098114
100930A00008	9/30/2010	3.82	9/30/2025	9/30/2010	120.0184	120.0183994	120.0183994	117.2800798	111.4354712	105.9259411	100.7305147	95.82954061	91.20470209
110113A00008	1/13/2011	4.15	1/15/2021	1/13/2011	103.77091	103.7709068	103.7709068	103.1813369	102.2135829	101.26403	100.3321675	99.41750358	98.5195645
110527A00007	5/27/2011	3.98	6/1/2021	5/27/2011	104.99988	104.9998757	104.9998757	104.3856462	103.0452385	101.7268793	100.4315925	99.15882348	97.90803512
110818A00012	8/18/2011	2.86	8/31/2022	8/18/2011	107.16953	107.1695327	107.1695327	106.2176349	103.6165082	101.0925439	98.64309516	96.26551502	93.95726836
120112A00014	1/12/2012	3.43	1/15/2032	1/12/2012	139.88091	139.8809101	139.8809101	127.7022215	115.4390839	104.5262764	94.80588496	86.13919329	78.40436394
120203A00017	2/3/2012	2.32	2/3/2020	2/3/2012	100.01709	100.0170868	100.0170868	100.0124879	100.0041674	99.99585399	99.98754777	99.9792487	99.97095679
120306A00003	3/6/2012	2.36	3/16/2020	3/6/2012	100.26459	100.2645886	100.2645886	100.1929353	100.0682971	99.94398435	99.81999574	99.69632996	99.57298573
120306A00004	3/6/2012	2.95	3/15/2023	3/6/2012	108.35592	108.35592	108.35592	107.2060838	104.0713843	101.0452294	98.1233278	95.30148874	92.57571631
120315A00022	3/15/2012	3.86	3/15/2027	3/15/2012	125.38446	125.3844627	125.3844627	120.8354331	113.4694008	106.6183063	100.2432948	94.30853578	88.78108044
120411A00008	4/11/2012	2.42	4/15/2020	4/11/2012	100.45189	100.4518862	100.4518862	100.3290343	100.1215272	99.91489033	99.70911804	99.50420491	99.30014551
120907A00023	9/7/2012	2.05	9/15/2022	9/7/2012	105.13133	105.131333	105.131333	104.1779537	101.5626746	99.02615739	96.56560732	94.1782861	91.86157321
121116A00006	11/16/2012	2.64	11/13/2025	11/16/2012	113.57735	113.5773542	113.5773542	110.7792684	105.0025948	99.56627672	94.44852606	89.62899682	85.08874674
130107A00002	1/7/2013	3.22	1/18/2028	1/7/2013	123.25827	123.2582715	123.2582715	117.7721457	109.7243106	102.3005146	95.44892661	89.122168	83.27701898
130213A00039	2/13/2013	1.92	2/16/2021	2/13/2013	101.74114	101.7411412	101.7411412	101.141667	100.0999831	99.07825809	98.0773137	97.09652085	96.13527566
130405A00006	4/5/2013	2.41	4/7/2025	4/5/2013	112.01102	112.0110161	112.0110161	109.8068206	104.5921859	99.65780449	94.98716557	90.5647692	86.37611007
150921A00051	9/21/2015	1.92	9/21/2020	9/21/2015	101.08007	101.080068	101.080068	100.692412	100.0497562	99.41528633	98.78884669	98.17028547	97.55945468
150930A00052	9/30/2015	1.79	9/30/2020	9/30/2015	101.03383	101.0338307	101.0338307	100.6303693	99.96358507	99.30560184	98.6562464	98.0153501	97.38274861
151005A00053	10/5/2015	1.99	10/5/2021	10/5/2015	102.89375	102.8937513	102.8937513	102.1944049	100.5312827	98.90297193	97.30848305	95.7468254	94.21704713
151007A00013	10/7/2015	1.74	10/7/2020	10/7/2015	101.029	101.0289957	101.0289957	100.6136354	99.92798771	99.25165837	98.58445832	97.92620363	97.27671526
151109A00020	11/9/2015	2.79	11/9/2023	11/9/2015	109.49167	109.4916696	109.4916696	108.0885802	104.3031751	100.6716628	97.18700549	93.8424541	90.63160963
151123A00014	11/23/2015	2.13	11/23/2020	11/23/2015	101.53555	101.5355472	101.5355472	101.0360258	100.2219145	99.42088819	98.63263342	97.85684652	97.09323341
151208A00019	12/8/2015	2.1	12/8/2020	12/8/2015	101.58709	101.587087	101.587087	101.0603828	100.2058054	99.36564159	98.53952898	97.72711721	96.92806752

Classification | Public

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
151217A00014	12/17/2015	3	12/17/2025	12/17/2015	115.92116	115.9211625	115.9211625	112.9912857	107.0635286	101.4890206	96.24496848	91.31005359	86.66443693
151229A00080	12/29/2015	3.49	12/30/2030	12/29/2015	134.66368	134.6636789	134.6636789	124.7557187	113.7114371	103.7877951	94.86379672	86.83202569	79.5971696
160113A00005	1/13/2016	1.95	1/13/2021	1/13/2016	101.62568	101.6256825	101.6256825	101.0448688	100.0936367	99.16025647	98.24422913	97.34507403	96.46232816
160113A00006	1/13/2016	1.95	1/11/2021	1/13/2016	101.60681	101.6068051	101.6068051	101.0281541	100.0825185	99.15452762	98.24369112	97.34953655	96.47160874
160122A00044	1/22/2016	1.9	1/19/2021	1/22/2016	101.59492	101.5949167	101.5949167	101.0082218	100.0411945	99.09261943	98.16197224	97.24874826	96.35246164
160126A00046	1/26/2016	1.8	10/20/2020	1/26/2016	101.12642	101.1264214	101.1264214	100.688725	99.96766081	99.25689773	98.55621617	97.86540268	97.1842498
160129A00005	1/29/2016	1.96	1/28/2022	1/29/2016	103.35536	103.3553632	103.3553632	102.5949474	100.6250284	98.70284274	96.82701551	94.99614352	93.20887578
160129A00068	1/29/2016	1.97	1/30/2023	1/29/2016	105.62131	105.6213139	105.6213139	104.5247028	101.5418859	98.65990068	95.87486397	93.18298693	90.58065087
160211A00033	2/11/2016	1.67	2/11/2022	2/11/2016	102.82312	102.8231196	102.8231196	102.0583069	100.0541448	98.09924801	96.1921553	94.33139501	92.51555134
160217A00006	2/17/2016	1.38	2/18/2020	2/17/2016	100.06277	100.0627749	100.0627749	100.0351697	99.98524139	99.93537754	99.88557803	99.83584272	99.78617148
160307A00027	3/7/2016	2.71	3/6/2026	3/7/2016	114.72414	114.7241411	114.7241411	111.5618311	105.4678665	99.74985647	94.38268978	89.34297498	84.60899918
160330A00035	3/30/2016	2.32	4/1/2024	3/30/2016	108.50295	108.5029522	108.5029522	106.9486402	102.8049553	98.84527292	95.06047502	91.44189198	87.98133374
160330A00056	3/30/2016	2.26	3/31/2025	3/30/2016	111.18342	111.1834153	111.1834153	109.0035304	103.8282108	98.93043832	94.29390431	89.90329682	85.7442834
160331A00024	3/31/2016	1.91	3/31/2022	3/31/2016	103.52933	103.5293282	103.5293282	102.7294361	100.587384	98.50028081	96.4663726	94.48393369	92.55130849
160413A00002	4/13/2016	1.63	4/12/2021	4/13/2016	101.62751	101.6275147	101.6275147	101.0279856	99.85988188	98.69700552	97.56107447	96.45116081	95.3663788
160429A00007	4/29/2016	1.52	4/29/2021	4/29/2016	101.76554	101.7655358	101.7655358	101.1638749	99.9501118	98.73963296	97.55828959	96.40504054	95.27889373
160510A00011	5/10/2016	1.59	4/5/2021	5/10/2016	101.55387	101.5538653	101.5538653	100.9546651	99.80416094	98.65971067	97.54136575	96.44824129	95.37949198
150203A00003	2/3/2015	1.71	2/3/2020	2/3/2015	100.012	100.0120047	100.0120047	100.0074082	99.99909199	99.99078296	99.9824811	99.97418638	99.96589881
150206A00017	2/6/2015	2.05	2/7/2022	2/6/2015	103.95454	103.9545422	103.9545422	103.1836404	101.1724636	99.2106	97.29660809	95.42901815	93.60641617
150310A00019	3/10/2015	2.24	3/10/2021	3/10/2015	102.19914	102.1991428	102.1991428	101.5978176	100.5006589	99.41934774	98.36123928	97.32559262	96.31169809
150316A00043	3/16/2015	2.37	3/16/2023	3/16/2015	107.11542	107.1154163	107.1154163	105.9678953	102.8362471	99.81360789	96.89562611	94.0780782	91.35693787
150317A00012	3/17/2015	2.46	3/18/2024	3/17/2015	109.78313	109.7831305	109.7831305	108.2274722	104.0721943	100.1002728	96.30269379	92.67086492	89.19666582
150406A00003	4/6/2015	1.9	4/6/2021	4/6/2015	101.92792	101.9279204	101.9279204	101.327341	100.1720467	99.02271739	97.89964869	96.8019487	95.72876546
150428A00012	4/28/2015	1.76	6/15/2020	4/28/2015	100.57076	100.5707602	100.5707602	100.3485831	99.97364513	99.60151362	99.23215704	98.86554435	98.50164497
150512A00029	5/12/2015	3.03	5/12/2025	5/12/2015	114.46887	114.4688656	114.4688656	112.1725595	106.8382622	101.7933388	97.02061927	92.50396226	88.22826875
150515A00057	5/15/2015	1.77	8/14/2020	5/15/2015	100.89869	100.8986926	100.8986926	100.5773415	100.0372843	99.50302424	98.97446833	98.45152536	97.9341061
150519A00012	5/19/2015	2.44	5/19/2022	5/19/2015	104.97825	104.9782539	104.9782539	104.1331493	101.8441213	99.61664304	97.44876103	95.33852022	93.28404312
150601A00148	6/1/2015	3.45	7/30/2021	6/1/2015	104.96741	104.9674085	104.9674085	104.2921104	102.7880184	101.3132536	99.86717225	98.44901064	97.0580318
150601A00272	6/1/2015	1.84	3/27/2020	6/1/2015	100.24402	100.2440177	100.2440177	100.1537248	99.99878325	99.84432567	99.69034976	99.53685327	99.38383398
150601A00285	6/1/2015	3.8	7/6/2020	6/1/2015	101.52081	101.5208118	101.5208118	101.2637705	100.8290865	100.3981377	99.97087603	99.5472542	99.1272258
150601A00603	6/1/2015	2.26	9/30/2020	6/1/2015	101.32579	101.3257865	101.3257865	100.9216738	100.2537956	99.5947286	98.94429952	98.30233951	97.66868414
150601A00666	6/1/2015	3.88	1/16/2035	6/1/2015	152.1765	152.1764952	150.0209551	133.603827	118.5728344	105.5242075	94.1798222	84.30209592	75.68798661
150601A00694	6/1/2015	3.56	3/6/2030	6/1/2015	132.28871	132.2887114	132.2887114	123.8193007	113.5520028	104.258877	95.84136335	88.2112885	81.28981812

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00703	6/1/2015	1.8	3/20/2020	6/1/2015	100.208	100.2080034	100.2080034	100.1296024	99.99399647	99.85877142	99.72392558	99.58945732	99.45536505
150601A00729	6/1/2015	1.92	5/1/2020	6/1/2015	100.414	100.4139992	100.4139992	100.2639715	100.012567	99.76241898	99.51351796	99.26585469	99.01941999
150601A00930	6/1/2015	7.1	8/30/2030	6/1/2015	170.65063	170.6506308	170.6506308	160.2070703	147.6738423	136.3288495	126.0500122	116.7283034	108.2665063
150623A00025	6/23/2015	2.65	6/30/2022	6/23/2015	105.73844	105.738444	105.738444	104.8550698	102.4449006	100.1023706	97.82531175	95.61153361	93.45893219
150708A00003	7/8/2015	1.95	7/8/2020	7/8/2015	100.75116	100.7511585	100.7511585	100.4920471	100.0539034	99.61957912	99.18902429	98.76218994	98.33902792
150722A00014	7/22/2015	2.32	7/22/2021	7/22/2015	103.03214	103.0321445	103.0321445	102.374672	100.9107883	99.47506648	98.06685787	96.68544109	95.33011951
150812A00039	8/12/2015	1.95	8/12/2020	8/12/2015	100.91165	100.9116484	100.9116484	100.5942743	100.0605155	99.53241629	99.00988689	98.49283943	97.98118784
150817A00097	8/17/2015	3.1	8/17/2026	8/17/2015	118.36165	118.3616507	118.3616507	114.6064306	107.9981481	101.8222311	96.04814422	90.64755525	85.59427231
150807A00027	8/7/2015	2.06	6/30/2020	8/7/2015	100.75936	100.7593619	100.7593619	100.5132256	100.0968794	99.68396923	99.27445287	98.86828866	98.46543567
150817A00012	8/17/2015	2.01	8/17/2020	8/17/2015	100.97382	100.9738167	100.9738167	100.6476556	100.1000658	99.55843031	99.02265212	98.49263652	97.96829077
150825A00011	8/25/2015	1.9	8/25/2020	8/25/2015	100.94416	100.9441569	100.9441569	100.6042866	100.0351622	99.4724633	98.91608163	98.36591119	97.82184838
150902A00002	9/2/2015	2.25	9/2/2021	9/2/2015	103.15643	103.1564254	103.1564254	102.4697289	100.893886	99.34977342	97.83658312	96.35345211	94.89954926
150910A00039	9/10/2015	1.81	9/10/2020	9/10/2015	101.04728	101.047285	101.047285	100.678509	100.0646454	99.45825574	98.85920392	98.26735723	97.68258613
150921A00031	9/21/2015	1.92	9/21/2020	9/21/2015	101.08007	101.080068	101.080068	100.692412	100.0497562	99.41528633	98.78884669	98.17028547	97.55945467
150923A00041	9/23/2015	2.23	9/23/2022	9/23/2015	105.65629	105.6562869	105.6562869	104.6928922	102.0488804	99.48495574	96.99825445	94.58597409	92.24543368
150930A00083	9/30/2015	2.06	9/30/2021	9/30/2015	102.98805	102.9880544	102.9880544	102.2905603	100.6397778	99.02333687	97.44027432	95.88961938	94.37043899
151015A00063	10/15/2015	1.68	10/15/2020	10/15/2015	101.01905	101.0190484	101.0190484	100.5901082	99.88294047	99.18569032	98.4981501	97.82011792	97.15139746
151020A00008	10/20/2015	1.76	10/20/2020	10/20/2015	101.09723	101.09723	101.09723	100.6596038	99.93865722	99.2280106	98.52744432	97.83674496	97.15570509
151120A00017	11/20/2015	2.11	11/20/2020	11/20/2015	101.50377	101.5037693	101.5037693	101.0098288	100.2039131	99.41082608	98.63026328	97.86192968	97.10553946
160114A00007	1/14/2016	1.92	1/14/2021	1/14/2016	101.60132	101.6013181	101.6013181	101.0195699	100.0657812	99.12994367	98.21155397	97.31012754	96.42519758
160119A00030	1/19/2016	3.44	1/18/2033	1/19/2016	140.41196	140.4119568	140.2302038	126.4404344	113.5295895	102.1381137	92.07621847	83.17874694	75.30196267
160122A00029	1/22/2016	2.48	1/22/2025	1/22/2016	111.88957	111.8895686	111.8895686	109.8402529	104.8284876	100.076807	95.57045415	91.29549256	87.23884804
160328A00012	3/28/2016	1.85	3/28/2022	3/28/2016	103.7797	103.7797025	103.7797025	102.9783532	100.8337367	98.74411189	96.70772553	94.7228523	92.78783686
160328A00045	3/28/2016	2.49	3/27/2026	3/28/2016	114.74631	114.7463082	114.7463082	111.4874383	105.2976251	99.49422768	94.05111778	88.9440169	84.15040749
160329A00004	3/29/2016	1.78	3/25/2021	3/29/2016	101.73487	101.7348715	101.7348715	101.1351129	100.0086176	98.89139522	97.79902025	96.73067107	95.68556194
160329A00006	3/29/2016	2.12	3/29/2023	3/29/2016	105.81296	105.8129642	105.8129642	104.6645759	101.5332701	98.51182078	95.5957853	92.78087713	90.06301176
160420A00002	4/20/2016	1.96	11/16/2022	4/20/2016	104.6945	104.6945031	104.6945031	103.688064	100.92549	98.25030271	95.65928867	93.14931877	90.71740016
160519A00026	5/19/2016	1.66	5/19/2020	5/19/2016	100.4271	100.4270956	100.4270956	100.2480927	99.94731334	99.64834716	99.35117773	99.05578879	98.76216432
160606A00043	6/8/2016	2.23	12/15/2021	6/8/2016	103.664	103.663995	103.663995	102.9296522	101.0711999	99.25523204	97.48061795	95.74617663	94.05076836
160609A00009	6/9/2016	1.49	6/9/2020	6/9/2016	100.44818	100.4481768	100.4481768	100.2356411	99.8773725	99.52166724	99.16849786	98.81783724	98.46965865
160609A00011	6/9/2016	1.58	6/9/2022	6/9/2016	103.48581	103.4858054	103.4858054	102.6285542	100.2931038	98.02213537	95.81358254	93.6653961	91.57560591
160610A00036	6/10/2016	1.42	6/10/2021	6/10/2016	101.79125	101.791254	101.791254	101.1792005	99.8330959	98.51013807	97.21077962	95.93444429	94.68057418
150601A00616	6/1/2015	2.72	9/30/2022	6/1/2015	106.4173	106.4172962	106.4172962	105.4468004	102.7841243	100.202249	97.69828663	95.2694004	92.91287699

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00668	6/1/2015	3.89	1/16/2037	6/1/2015	159.136	159.1359988	154.7802634	135.9631616	119.1634327	104.8202413	92.55120968	82.03575947	73.00491443
150601A00681	6/1/2015	2.7	2/7/2025	6/1/2015	111.90116	111.9011624	111.9011624	109.8346135	104.8111708	100.0495857	95.53493033	91.25310675	87.19089452
150601A00733	6/1/2015	2.72	5/1/2025	6/1/2015	113.59616	113.5961596	113.5961596	111.3206611	106.002532	100.9728048	96.21431986	91.71098124	87.44773677
150601A00734	6/1/2015	2.92	5/1/2025	6/1/2015	113.57942	113.5794188	113.5794188	111.3196524	106.0358588	101.037595	96.30792933	91.830968	87.59184531
150601A00916	6/1/2015	7.27	4/5/2030	6/1/2015	169.70481	169.7048084	169.7048084	160.0260909	147.9260516	136.9350338	126.9427159	117.8502388	109.5691263
150601A00940	6/1/2015	6.58	2/16/2021	6/1/2015	106.56605	106.566053	106.566053	105.9502951	104.8814454	103.8329386	102.8055929	101.7987702	100.8118579
150601A01024	6/1/2015	5.33	2/27/2026	6/1/2015	130.20076	130.2007583	130.2007583	126.870955	120.339122	114.2011053	108.4310441	103.0047285	97.89966994
150603A00018	6/3/2015	2.84	6/3/2025	6/3/2015	114.69318	114.693178	114.693178	112.3228754	106.8922653	101.7602356	96.90893746	92.32157366	87.98243396
150605A00007	6/5/2015	2.24	6/7/2021	6/5/2015	102.90242	102.9024155	102.9024155	102.2889694	100.9432406	99.62033389	98.32089145	97.04434298	95.79013626
150610A00017	6/10/2015	2.9	6/15/2023	6/10/2015	108.85764	108.8576354	108.8576354	107.610017	104.2231618	100.9615404	97.81998568	94.79346039	91.87716494
150701A00053	7/1/2015	1.92	7/1/2020	7/1/2015	100.76002	100.7600209	100.7600209	100.5118852	100.0921816	99.67597463	99.2632207	98.85387699	98.4479014
150708A00046	7/8/2015	2	7/8/2021	7/8/2015	102.73571	102.7357092	102.7357092	102.0917599	100.6627162	99.26055926	97.8846773	96.53439669	95.20906632
150715A00009	7/15/2015	2.67	7/15/2022	7/15/2015	105.88561	105.8856134	105.8856134	104.9876137	102.5365424	100.1553563	97.84177279	95.5934928	93.40830949
150722A00013	7/22/2015	2.09	7/22/2020	7/22/2015	100.88473	100.8847258	100.8847258	100.6026851	100.1260368	99.65390326	99.18622051	98.72292576	98.26395739
150729A00012	7/29/2015	2.06	7/29/2020	7/29/2015	100.90562	100.9056244	100.9056244	100.6121961	100.1164345	99.62554526	99.13945682	98.65809908	98.1814033
150819A00012	8/19/2015	3.04	8/19/2025	8/19/2015	115.262	115.2620006	115.2620006	112.6951465	107.0893185	101.8013127	96.81151889	92.10152927	87.65416684
150824A00047	8/24/2015	1.88	11/24/2020	8/24/2015	101.33401	101.3340102	101.3340102	100.8332016	100.0173129	99.21458425	98.42469916	97.6473513	96.88224401
150824A00072	8/24/2015	2.14	8/24/2022	8/24/2015	105.24733	105.2473282	105.2473282	104.3128539	101.7552663	99.27337789	96.86457723	94.52627973	92.25600926
150824A00097	8/24/2015	2.67	8/25/2025	8/24/2015	114.35993	114.3599333	114.3599333	111.7668365	106.1330236	100.8209529	95.81063919	91.08334802	86.62160399
150904A00015	9/4/2015	1.79	10/15/2020	9/4/2015	101.19727	101.1972656	101.1972656	100.7671174	100.0579665	99.35877611	98.66933738	97.98944716	97.31890795
150914A00053	9/14/2015	1.77	9/14/2020	9/14/2015	101.04083	101.0408337	101.0408337	100.6649784	100.0402956	99.42335401	98.81401019	98.21212427	97.61755981
150923A00049	9/23/2015	1.97	9/23/2021	9/23/2015	103.08756	103.0875576	103.0875576	102.3906529	100.7532406	99.14969899	97.57909091	96.04046614	94.53291104
150924A00030	9/24/2015	1.67	9/24/2020	9/24/2015	101.02082	101.02082	101.02082	100.6272849	99.97559333	99.33232072	98.69730467	98.07038695	97.45141335
150610A00009	6/10/2015	3.03	6/10/2025	6/10/2015	115.77521	115.7752059	115.7752059	113.3755942	107.8982877	102.722699	97.83075116	93.20542943	88.83082327
150617A00005	6/17/2015	1.88	6/17/2020	6/17/2015	100.67472	100.6747248	100.6747248	100.4489102	100.0677069	99.6894042	99.31396904	98.94136876	98.5715712
150618A00011	6/18/2015	1.84	6/18/2020	6/18/2015	100.66417	100.6641706	100.6641706	100.4367876	100.0528722	99.67189845	99.29383261	98.91864133	98.54629181
150720A00011	7/20/2015	2.69	7/20/2023	7/20/2015	109.02332	109.0233243	109.0233243	107.7329752	104.2350696	100.8703043	97.63300576	94.51766965	91.51905959
150730A00055	7/30/2015	2.1	6/30/2020	7/30/2015	100.77613	100.7761291	100.7761291	100.5299682	100.1135801	99.70062844	99.29107077	98.88486551	98.4819717
150803A00049	8/3/2015	2.01	8/3/2020	8/3/2015	100.90516	100.9051639	100.9051639	100.6033088	100.0939522	99.58974072	99.09059671	98.59644407	98.10720824
150817A00005	8/17/2015	1.83	8/17/2020	8/17/2015	100.94562	100.9456174	100.9456174	100.6189897	100.0706277	99.52824004	98.99172924	98.46100001	97.93595913
150817A00007	8/17/2015	1.83	8/17/2020	8/17/2015	100.94562	100.9456174	100.9456174	100.6189897	100.0706277	99.52824004	98.99172924	98.46100001	97.93595913
150817A00073	8/17/2015	2.06	8/17/2021	8/17/2015	103.03853	103.0385263	103.0385263	102.3599275	100.8230929	99.31682456	97.84036179	96.39288971	94.97362275
150821A00016	8/21/2015	1.74	8/21/2020	8/21/2015	100.91391	100.9139144	100.9139144	100.5804293	100.0212968	99.46837433	98.92155868	98.38074899	97.84584659

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150824A00040	8/24/2015	2.36	8/24/2022	8/24/2015	105.3452	105.3451968	105.3451968	104.4134039	101.8645418	99.39090506	96.98991425	94.65900657	92.3957265
150824A00049	8/24/2015	1.99	5/24/2021	8/24/2015	102.27516	102.2751648	102.2751648	101.6727073	100.3771185	99.09901136	97.84502948	96.61451359	95.40682851
150827A00004	8/27/2015	1.82	8/27/2020	8/27/2015	100.98738	100.9873824	100.9873824	100.6433818	100.0677094	99.49860804	98.9359656	98.37967259	97.82962198
150915A00048	9/15/2015	1.79	9/15/2020	9/15/2015	101.05807	101.058074	101.058074	100.6804092	100.0529554	99.43331043	98.82132916	98.21686988	97.61979439
150930A00011	9/30/2015	2.06	9/30/2021	9/30/2015	102.98805	102.9880544	102.9880544	102.2905603	100.6397778	99.02333687	97.44027432	95.88961938	94.37043899
151005A00012	10/5/2015	1.53	10/5/2020	10/5/2015	100.97179	100.9717886	100.9717886	100.5592135	99.87796259	99.20591266	98.54287831	97.88867901	97.24313906
151008A00041	10/8/2015	1.58	10/8/2020	10/8/2015	101.0184	101.0184033	101.0184033	100.6006078	99.91107176	99.23096229	98.56008693	97.89825851	97.24529487
151013A00099	10/15/2015	2.44	10/15/2020	10/15/2015	101.66288	101.662876	101.662876	101.231625	100.5206258	99.81960562	99.12835514	98.44667096	97.77435529
151211A00055	12/11/2015	2.62	12/11/2024	12/11/2015	112.30406	112.3040638	112.3040638	110.332349	105.4176346	100.7523662	96.32270853	92.11556588	88.11863493
151223A00070	12/23/2015	2.57	12/26/2023	12/23/2015	109.68044	109.6804351	109.6804351	108.2181555	104.286413	100.5198819	96.91086812	93.4519781	90.13620356
160111A00037	1/11/2016	1.99	1/11/2021	1/11/2016	101.64519	101.6451939	101.6451939	101.0664236	100.1205904	99.19240463	98.2813757	97.38703119	96.50891583
160119A00029	1/19/2016	3.39	1/20/2032	1/19/2016	136.7667	136.7666986	136.7666986	124.8635913	112.8909257	102.2354446	92.74323934	84.27909494	76.72423514
160122A00022	1/22/2016	1.9	1/22/2021	1/22/2016	101.60845	101.6084534	101.6084534	101.0186866	100.0435476	99.08716709	98.14900779	97.22855273	96.32530435
160201A00011	2/1/2016	1.65	6/22/2020	2/1/2016	100.55642	100.5564203	100.5564203	100.3232083	99.92919035	99.53826714	99.15040223	98.76555981	98.38370459
160523A00018	5/23/2016	1.77	5/24/2021	5/23/2016	101.98302	101.9830156	101.9830156	101.3816955	100.0881197	98.81200043	97.55997311	96.33137934	95.1255848
160524A00011	5/24/2016	1.78	5/19/2021	5/24/2016	101.97542	101.9754155	101.9754155	101.3741677	100.097074	98.83444858	97.5969605	96.38386948	95.19446449
160524A00035	5/24/2016	1.79	5/24/2021	5/24/2016	102.00957	102.0095746	102.0095746	101.4081511	100.1143923	98.83809233	97.58588733	96.35711881	95.15115241
160527A00026	5/27/2016	1.72	4/29/2021	5/27/2016	101.8164	101.8163951	101.8163951	101.2159293	100.0048179	98.79695762	97.61811725	96.46726134	95.34340313
160603A00004	6/3/2016	1.65	6/3/2021	6/3/2016	101.86175	101.8617457	101.8617457	101.25784	99.93388722	98.6319881	97.35297215	96.09628855	94.86140374
160620A00003	6/20/2016	1.59	6/21/2021	6/20/2016	101.83164	101.8316369	101.8316369	101.2099396	99.83708294	98.48881537	97.16501835	95.86508402	94.5884242
160628A00031	6/28/2016	1.77	6/28/2023	6/28/2016	105.06618	105.0661838	105.0661838	103.8319996	100.4746546	97.24334271	94.13275382	91.13776208	88.25348635
160628A00038	6/28/2016	1.88	6/27/2025	6/28/2016	109.62666	109.6266593	109.6266593	107.2480139	101.8885203	96.8292315	92.05189446	87.5393864	83.27570776
160701A00018	7/1/2016	1.42	7/1/2021	7/1/2016	101.62402	101.624017	101.624017	100.9931815	99.59463172	98.22203564	96.87479142	95.55225869	94.25381817
160705A00005	7/5/2016	1.49	7/5/2023	7/5/2016	104.75533	104.7553336	104.7553336	103.5107114	100.1249741	96.86743652	93.73264075	90.71533312	87.81051287
160706A00006	7/6/2016	1.47	7/6/2023	7/6/2016	104.68972	104.6897245	104.6897245	103.444503	100.0573324	96.79852491	93.66261033	90.64432419	87.73865572
160706A00014	7/6/2016	1.41	7/6/2021	7/6/2016	101.6253	101.6253031	101.6253031	100.9895122	99.57796047	98.19284793	96.83355366	95.49941953	94.18980929
160707A00032	7/7/2016	1.52	7/7/2023	7/7/2016	104.86713	104.867129	104.867129	103.6196195	100.2268544	96.96272866	93.82175862	90.79866505	87.88842333
160808A00011	8/8/2016	1.6	8/9/2021	8/8/2016	102.02425	102.0242476	102.0242476	101.3565984	99.85336583	98.3797895	96.93512715	95.51859888	94.12945234
160830A00037	8/30/2016	2.16	8/29/2025	8/30/2016	110.40094	110.4009434	110.4009434	107.8590951	102.3599559	97.17597003	92.28751648	87.67622103	83.32494517
160830A00038	8/30/2016	2.24	8/28/2026	8/30/2016	112.76858	112.7685777	112.7685777	109.0538083	102.5956216	96.56490971	90.93121868	85.66634148	80.74421482
160909A00024	9/9/2016	1.7	9/9/2021	9/9/2016	102.29975	102.2997463	102.2997463	101.6139042	100.0260738	98.47051721	96.94636966	95.45274499	93.9887901
161004A00034	10/4/2016	1.67	10/4/2021	10/4/2016	102.34642	102.3464162	102.3464162	101.6499731	99.99421747	98.37310469	96.78563867	95.23083513	93.70774824
161006A00010	10/6/2016	1.35	10/6/2020	10/6/2016	100.85127	100.8512696	100.8512696	100.4372661	99.75377641	99.07955777	98.41442245	97.75818782	97.11067609

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
161115A00016	11/15/2016	1.88	11/15/2021	11/15/2016	103.19633	103.1963279	103.1963279	102.476065	100.6959009	98.95500756	97.25228027	95.58660673	93.95691647
161213A00014	12/13/2016	2.07	12/13/2021	12/13/2016	103.69255	103.6925538	103.6925538	102.9570318	101.0973575	99.28019603	97.50440983	95.76881771	94.07227973
170111A00020	1/11/2017	2.27	1/11/2022	1/11/2017	103.88738	103.8873771	103.8873771	103.135817	101.2047491	99.31939785	97.47849487	95.68072508	93.92482119
170117A00045	1/17/2017	2.21	1/18/2022	1/17/2017	103.80634	103.8063403	103.8063403	103.0504514	101.101959	99.20003427	97.34336722	95.53060616	93.76044894
170130A00054	3/30/2017	2.33	4/29/2022	3/30/2017	104.61031	104.6103108	104.6103108	103.7839881	101.5514901	99.37784628	97.26111776	95.19939927	93.19086601
150601A00522	6/1/2015	4.52	7/25/2030	6/1/2015	143.40259	143.4025918	143.4025918	133.9686942	122.8491839	112.8063213	103.7284661	95.51601641	88.08019542
150601A00615	6/1/2015	2.67	6/30/2022	6/1/2015	105.69133	105.6913269	105.6913269	104.8081933	102.3985511	100.0565376	97.77998443	95.56670148	93.41458504
150601A00638	6/1/2015	2.51	9/30/2021	6/1/2015	103.6819	103.6819001	103.6819001	102.9813042	101.3245326	99.702193	98.1133371	96.55699122	95.03221951
150601A00667	6/1/2015	3.88	1/16/2036	6/1/2015	155.5785	155.5784984	152.3662603	134.7498915	118.8291114	105.1235318	93.3052047	83.09660651	74.26273935
150601A00670	6/1/2015	2.23	6/5/2020	6/1/2015	100.68049	100.6804855	100.6804855	100.4739713	100.126129	99.78069453	99.437643	99.09694979	98.75859061
150601A00768	6/1/2015	2.34	5/13/2022	6/1/2015	104.63232	104.6323238	104.6323238	103.7941262	101.5247277	99.31601186	97.16602565	95.07282984	93.03456376
150601A00819	6/1/2015	1.71	5/28/2020	6/1/2015	100.51208	100.5120802	100.5120802	100.3182262	99.99216618	99.66822505	99.34638214	99.0266171	98.70890985
150601A01412	6/1/2015	1.88	6/1/2020	6/1/2015	100.55275	100.55275	100.55275	100.3527231	100.0160992	99.68172598	99.34958087	99.01964175	98.69188674
150601A01457	6/1/2015	1.88	6/1/2020	6/1/2015	100.55275	100.55275	100.55275	100.3527231	100.0160992	99.68172598	99.34958087	99.01964175	98.69188674
150604A00011	6/4/2015	1.97	3/4/2020	6/4/2015	100.15701	100.1570136	100.1570136	100.1057901	100.0143941	99.92317105	99.8321205	99.74124192	99.65053482
150618A00041	6/18/2015	2.02	6/18/2020	6/18/2015	100.68366	100.6836587	100.6836587	100.4565862	100.0731886	99.69272177	99.31515202	98.94044631	98.56857206
150626A00039	6/26/2015	3.23	6/26/2025	6/26/2015	115.89059	115.8905856	115.8905856	113.4657908	107.9791038	102.7958303	97.89771577	93.26757661	88.88935005
150813A00008	8/13/2015	3.03	8/13/2025	8/13/2015	115.16147	115.1614667	115.1614667	112.6125557	107.0245707	101.7526834	96.77743422	92.08055247	87.6449861
150819A00011	8/19/2015	2.53	8/19/2022	8/19/2015	105.75458	105.7545781	105.7545781	104.8250716	102.2840469	99.81770821	97.42351439	95.09893088	92.84152872
150824A00048	8/24/2015	1.93	2/24/2021	8/24/2015	101.78785	101.7878451	101.7878451	101.1881206	100.125331	99.08265109	98.06160027	97.06151112	96.08174338
150921A00037	9/21/2015	1.92	9/21/2020	9/21/2015	101.08007	101.080068	101.080068	100.692412	100.0497562	99.41528633	98.78884669	98.17028547	97.55945467
151001A00028	10/1/2015	1.74	10/1/2020	10/1/2015	101.00424	101.0042397	101.0042397	100.5991428	99.92977145	99.26927359	98.61747378	97.9742012	97.3392895
151001A00038	10/1/2015	1.75	10/1/2020	10/1/2015	101.01101	101.0110108	101.0110108	100.6058987	99.93650192	99.27597883	98.62415401	97.98085667	97.34592043
151102A00009	11/2/2015	1.89	11/2/2020	11/2/2015	101.2511	101.2510991	101.2510991	100.7907318	100.0341628	99.28891129	98.55472486	97.83135861	97.1185748
151112A00019	11/12/2015	2.36	11/14/2022	11/12/2015	106.32733	106.3273326	106.3273326	105.3092967	102.5177515	99.81439846	97.19599949	94.65938913	92.20154068
151116A00025	11/16/2015	3.04	11/14/2025	11/16/2015	115.91133	115.9113331	115.9113331	113.0834903	107.2387127	101.7373437	96.5574465	91.67851825	87.08146905
151119A00030	11/19/2015	2.1	11/19/2020	11/19/2015	101.49054	101.4905409	101.4905409	100.9984677	100.1952956	99.40486704	98.62688035	97.8610434	97.10707315
151211A00004	12/11/2015	2.48	12/15/2023	12/11/2015	109.25315	109.2531548	109.2531548	107.8067043	103.9117592	100.1794323	96.60219909	93.17282786	89.88446118
151211A00007	12/11/2015	2.73	12/15/2025	12/11/2015	115.5045	115.5045001	115.5045001	112.5624226	106.6106828	101.0148524	95.75189961	90.80029773	86.14001695
130424A00004	4/24/2013	2.46	4/24/2025	4/24/2013	112.38289	112.3828949	112.3828949	110.1360171	104.8673167	99.88389039	95.16879408	90.70613838	86.48106208
130528A00027	5/28/2013	1.94	5/28/2020	5/28/2013	100.55425	100.5542453	100.5542453	100.3606214	100.0349425	99.7113741	99.38989589	99.07048764	98.75312943
130529A00006	5/29/2013	2.05	6/1/2020	5/29/2013	100.61033	100.6103306	100.6103306	100.4102324	100.0734875	99.7389939	99.40672901	99.0766707	98.7487971
130712A00005	7/12/2013	3.25	7/17/2023	7/12/2013	110.96245	110.9624516	110.9624516	109.6617572	106.1382024	102.7481065	99.48582517	96.34585803	93.32297182

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
130904A00035	9/4/2013	2.85	9/15/2020	9/4/2013	101.72912	101.7291188	101.7291188	101.350033	100.7201869	100.0981711	99.48383987	98.87705126	98.27766676
131011A00005	10/11/2013	2.97	10/15/2020	10/11/2013	101.94259	101.9425914	101.9425914	101.5114672	100.800639	100.0997647	99.40863617	98.72705081	98.05481178
131217A00023	12/17/2013	3.74	1/2/2024	12/17/2013	113.61796	113.617961	113.617961	112.1243252	108.1177865	104.2789417	100.6000313	97.07355315	93.6923959
140402A00010	4/2/2014	2.62	4/2/2021	4/2/2014	102.96445	102.9644481	102.9644481	102.3586511	101.2037924	100.0555097	98.93322699	97.83606884	96.76319861
140701A00001	7/1/2014	3.22	7/1/2024	7/1/2014	112.96642	112.9664197	112.9664197	111.2594181	106.7837127	102.51603	98.44574006	94.56268918	90.85729753
140815A00032	8/15/2014	3.59	10/15/2029	8/15/2014	131.85579	131.8557895	131.8557895	123.9890897	114.0700675	105.0595448	96.8686082	89.41746084	82.63449437
140827A00037	8/27/2014	2.55	8/30/2021	8/27/2014	103.61982	103.6198167	103.6198167	102.93255	101.3610207	99.82101078	98.31173811	96.83234882	95.38202029
140911A00027	9/11/2014	3.18	9/16/2024	9/11/2014	113.39533	113.3953287	113.3953287	111.569759	106.8836231	102.4240322	98.17890379	94.13676654	90.28682556
140922A00026	9/22/2014	3.02	9/30/2024	9/22/2014	113.69448	113.6944752	113.6944752	111.8341864	107.0757846	102.5497435	98.24352757	94.14526671	90.24379777
141009A00026	10/9/2014	2.23	10/9/2020	10/9/2014	101.3799	101.3799001	101.3799001	100.9603266	100.2679255	99.58500516	98.91137159	98.24683623	97.59121557
141024A00008	10/24/2014	2.52	10/24/2022	10/24/2014	106.63941	106.6394051	106.6394051	105.6400373	102.9004697	100.2458813	97.67313985	95.1791955	92.76113493
150105A00026	1/5/2015	2.54	1/5/2024	1/5/2015	109.62897	109.6289745	109.6289745	108.1555375	104.1988503	100.4095116	96.77967428	93.30180272	89.96875678
150112A00014	1/12/2015	1.86	1/15/2021	1/12/2015	101.69222	101.692219	101.692219	101.1079256	100.1489604	99.20812302	98.28490318	97.37880941	96.48936843
150116A00040	1/16/2015	2.07	1/18/2022	1/16/2015	103.52798	103.5279766	103.5279766	102.7734441	100.8277518	98.92857872	97.07461064	95.2644973	93.49693795
150202A00014	2/2/2015	1.67	2/3/2020	2/2/2015	100.01167	100.0116714	100.0116714	100.0070751	99.99875918	99.99045043	99.98214885	99.97385443	99.96556714
150319A00013	3/19/2015	3.25	3/19/2030	3/19/2015	129.78632	129.786317	129.786317	121.3316509	111.1529353	101.9461189	93.61237654	86.06337377	79.22016992
150406A00011	4/6/2015	1.66	4/6/2020	4/6/2015	100.25839	100.2583885	100.2583885	100.1510675	99.96859448	99.78679268	99.60565835	99.42518781	99.24537737
150422A00019	4/22/2015	2.62	4/22/2025	4/22/2015	112.16468	112.1646845	112.1646845	109.9398712	104.7155173	99.7728583	95.0952314	90.66699922	86.47353263
150424A00035	4/24/2015	1.8	4/23/2021	4/24/2015	102.09041	102.0904104	102.0904104	101.4875794	100.2864412	99.08931452	97.92062758	96.77937657	95.66460446
150506A00014	5/6/2015	2.21	5/6/2022	5/6/2015	104.79152	104.7915194	104.7915194	103.9557779	101.6945722	99.49354945	97.35073789	95.26419628	93.23206402
150817A00099	8/17/2015	3.19	8/17/2027	8/17/2015	121.81375	121.8137523	121.8137523	116.8324928	109.2099949	102.1515309	95.61229972	89.5511768	83.93050115
150821A00018	8/21/2015	2.6	8/21/2024	8/21/2015	111.43804	111.4380397	111.4380397	109.6584557	105.0583334	100.6791044	96.50908544	92.53717905	88.75293532
150824A00039	8/24/2015	1.93	1/25/2021	8/24/2015	101.65195	101.6519451	101.6519451	101.0590102	100.0756014	99.11126071	98.16543779	97.23760321	96.32724758
150824A00093	8/24/2015	1.87	8/24/2021	8/24/2015	102.77519	102.7751856	102.7751856	102.0934379	100.5401646	99.01799206	97.52612718	96.06373313	94.6300036
150824A00095	8/24/2015	2.34	8/24/2023	8/24/2015	108.01038	108.0103837	108.0103837	106.69046	103.118521	99.68572943	96.38599315	93.21343526	90.1624721
150825A00007	8/25/2015	2.46	8/25/2022	8/25/2015	105.61015	105.6101457	105.6101457	104.6759338	102.1210202	99.64153594	97.23489643	94.89853018	92.62997346
150826A00039	8/26/2015	3.22	8/27/2029	8/26/2015	129.94476	129.9447567	129.9447567	122.225662	112.414861	103.4981537	95.3887079	88.00846727	81.28732179
150904A00021	9/4/2015	2.52	9/5/2023	9/4/2015	108.73918	108.7391795	108.7391795	107.4019069	103.7850323	100.3099144	96.9703039	93.76017552	90.67380698
150914A00018	9/14/2015	3.05	9/15/2025	9/14/2015	115.52009	115.5200851	115.5200851	112.8742736	107.1923033	101.8359802	96.78497364	92.02023919	87.52401969
150930A00035	9/30/2015	1.73	7/2/2020	9/30/2015	100.62929	100.629288	100.629288	100.3800978	99.95862331	99.54067788	99.12621737	98.71519835	98.30757815
151002A00075	10/2/2015	2.04	10/3/2022	10/2/2015	105.20048	105.2004783	105.2004783	104.2306111	101.5658415	98.9824958	96.47761875	94.04833683	91.69190255
151008A00024	10/8/2015	1.58	10/8/2020	10/8/2015	101.0184	101.0184033	101.0184033	100.6006078	99.91107176	99.23096229	98.56008693	97.89825851	97.24529487
151022A00011	10/22/2015	1.57	10/22/2020	10/22/2015	101.06791	101.0679145	101.0679145	100.6261459	99.89861334	99.18156999	98.47479018	97.77805466	97.0911504

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
151211A00002	12/11/2015	2.05	12/15/2021	12/11/2015	103.66543	103.6654272	103.6654272	102.9289384	101.0642771	99.24235476	97.46202343	95.72209268	94.02141381
151223A00066	12/23/2015	2.34	12/23/2022	12/23/2015	106.51077	106.5107661	106.5107661	105.451146	102.553766	99.7510234	97.03941761	94.41550638	91.87599647
151229A00081	12/29/2015	3.76	12/31/2035	12/29/2015	154.41748	154.417481	151.2587907	133.7555835	117.942287	104.3268456	92.58442375	82.44003508	73.66074951
160107A00042	1/7/2016	2.05	1/7/2021	1/7/2016	101.69248	101.6924838	101.6924838	101.1175309	100.1820629	99.26384863	98.36241425	97.47730291	96.60807425
160114A00015	1/14/2016	1.92	1/14/2021	1/14/2016	101.60132	101.6013181	101.6013181	101.0195699	100.0657812	99.12994367	98.21155397	97.31012754	96.42519758
160119A00019	1/19/2016	2.95	1/19/2027	1/19/2016	118.49151	118.4915073	118.4915073	114.2209263	107.2293381	100.7215852	94.66166327	89.01632092	83.75493988
160126A00053	1/26/2016	1.75	7/20/2020	1/26/2016	100.71309	100.7130854	100.7130854	100.4345714	99.96384777	99.49753491	99.03557097	98.57789523	98.12444809
160209A00047	2/9/2016	1.5	8/10/2020	2/9/2016	100.66242	100.6624204	100.6624204	100.3489519	99.8213876	99.29936154	98.78278673	98.27157804	97.76565208
160216A00006	2/16/2016	1.52	2/14/2020	2/16/2016	100.04783	100.0478305	100.0478305	100.0263919	99.98761285	99.94887902	99.91019027	99.87154653	99.83294771
160307A00028	3/7/2016	2.91	3/7/2028	3/7/2016	121.12915	121.1291502	121.1291502	115.536189	107.4487518	99.99974417	93.13525431	86.80611	80.96752176
160324A00011	3/24/2016	1.62	3/24/2020	3/24/2016	100.20294	100.2029374	100.2029374	100.1177582	99.97113278	99.82494608	99.67919617	99.53388109	99.38899887
160614A00009	6/14/2016	1.55	6/14/2021	6/14/2016	101.76483	101.7648316	101.7648316	101.1503076	99.79688396	98.46705558	97.16107039	95.87834314	94.61830728
160617A00045	6/17/2016	1.55	6/17/2021	6/17/2016	101.76148	101.7614823	101.7614823	101.1440635	99.78266642	98.44528251	97.1320021	95.84223053	94.57539223
160620A00015	6/20/2016	1.71	6/20/2023	6/20/2016	105.4522	105.4521998	105.4521998	104.2177395	100.8594455	97.62675894	94.51440528	91.51729399	88.63057668
160627A00070	6/27/2016	1.52	9/27/2021	6/27/2016	102.06817	102.0681659	102.0681659	101.3759944	99.74125064	98.14044357	96.57260647	95.03678422	93.53205858
160628A00054	6/28/2016	1.28	6/28/2021	6/28/2016	101.65642	101.6564228	101.6564228	101.0268579	99.63227021	98.26339109	96.91971737	95.6006144	94.30546841
160629A00050	6/29/2016	1.16	6/29/2020	6/29/2016	100.43344	100.433445	100.433445	100.188996	99.77556932	99.36554379	98.95887759	98.55552961	98.15545941
160630A00011	6/30/2016	1.8	6/30/2023	6/30/2016	105.17756	105.17756	105.17756	103.940682	100.5761982	97.33818323	94.22130266	91.22040591	88.3305887
160630A00034	6/30/2016	1.51	6/28/2021	6/30/2016	101.74283	101.7428347	101.7428347	101.1145032	99.72314113	98.35736115	97.01667339	95.70044723	94.40807272
160705A00009	7/5/2016	1.21	7/6/2021	7/5/2016	101.58081	101.5808074	101.5808074	100.9435839	99.52842093	98.13983238	96.7771845	95.43981478	94.12708283
160705A00104	7/5/2016	2.1	7/6/2026	7/5/2016	111.58476	111.5847631	111.5847631	108.0629342	101.7670829	95.88057524	90.37478135	85.22313686	80.40105877
160706A00011	7/6/2016	1.41	7/6/2021	7/6/2016	101.6253	101.6253031	101.6253031	100.9895122	99.57796047	98.19284793	96.83355366	95.49941953	94.18980929
160706A00026	7/6/2016	2.19	7/6/2027	7/6/2016	114.03539	114.0353906	114.0353906	109.3185132	102.0725599	95.36123802	89.14238703	83.37729694	78.03048567
160706A00027	7/6/2016	2.29	7/6/2028	7/6/2016	116.74914	116.7491373	116.7491373	110.8707464	102.6722383	95.14888176	88.24151587	81.89636967	76.06462386
160706A00030	7/6/2016	2.59	7/7/2031	7/6/2016	126.02381	126.0238066	126.0238066	115.5035198	104.5018237	94.67792154	85.89854056	78.04606971	71.01672849
160708A00002	7/8/2016	1.46	7/8/2021	7/8/2016	101.70417	101.7041668	101.7041668	101.0660733	99.64873574	98.25804035	96.89336048	95.55403059	94.23940731
160712A00016	7/12/2016	1.32	7/12/2021	7/12/2016	101.76019	101.7601868	101.7601868	101.1162631	99.68410365	98.27912685	96.90068013	95.5480786	94.2206605
160727A00018	7/27/2016	2.27	7/27/2026	7/27/2016	112.79503	112.7950342	112.7950342	109.1863642	102.803569	96.83851455	91.26176719	86.04603069	81.16606123
160808A00012	8/8/2016	1.6	8/9/2021	8/8/2016	102.02425	102.0242476	102.0242476	101.3565984	99.85336583	98.3797895	96.93512715	95.51859888	94.12945234
160811A00014	8/11/2016	1.18	8/11/2020	8/11/2016	100.56873	100.5687341	100.5687341	100.2531752	99.72229574	99.19703116	98.67729259	98.16299302	97.65404728
160815A00006	8/15/2016	2.23	8/17/2026	8/15/2016	112.64479	112.6447888	112.6447888	108.9682342	102.5401691	96.53604832	90.92577733	85.68147069	80.77735485
160826A00008	8/26/2016	1.48	8/26/2020	8/26/2016	100.70627	100.7062699	100.7062699	100.3651368	99.79408263	99.22950749	98.67130164	98.11935776	97.57357097
160830A00007	8/30/2016	1.65	8/30/2021	8/30/2016	102.1808	102.1807991	102.1807991	101.4997624	99.94001607	98.41161861	96.91375484	95.44557637	94.00626589

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160916A00014	9/16/2016	1.66	9/16/2021	9/16/2016	102.26119	102.2611926	102.2611926	101.5726568	99.96612636	98.39251765	96.85092769	95.34044354	93.86018682
160916A00016	9/16/2016	1.66	9/16/2021	9/16/2016	102.26119	102.2611926	102.2611926	101.5726568	99.96612636	98.39251765	96.85092769	95.34044354	93.86018682
151008A00019	10/8/2015	1.58	10/15/2020	10/8/2015	101.04684	101.0468376	101.0468376	100.6170457	99.90849189	99.20989273	98.52103934	97.8417287	97.17176342
151013A00030	10/13/2015	1.89	4/14/2021	10/13/2015	101.95139	101.9513946	101.9513946	101.3506485	100.1755874	99.00554324	97.86271627	96.74616537	95.65499233
151106A00011	11/6/2015	3.1	1/15/2026	11/6/2015	116.73349	116.7334925	116.7334925	113.7012091	107.678911	102.0195681	96.69948297	91.69651138	86.99006483
151120A00016	11/20/2015	2.11	11/20/2020	11/20/2015	101.50377	101.5037693	101.5037693	101.0098288	100.2039131	99.41082608	98.63026328	97.86192968	97.10553946
151221A00010	12/21/2015	2.1	12/21/2020	12/21/2015	101.65332	101.653317	101.653317	101.1033234	100.2136092	99.33951166	98.48062215	97.63654631	96.80690328
151223A00072	12/23/2015	2.81	12/23/2025	12/23/2015	116.0389	116.0388974	116.0388974	113.064918	107.0779887	101.4500286	96.15774111	91.17935455	86.49461614
151223A00077	12/23/2015	3.57	12/24/2035	12/23/2015	155.13351	155.1335149	151.904162	134.0735481	118.0230167	104.215495	92.31836962	82.0502024	73.17270383
160104A00014	1/4/2016	2.49	1/4/2023	1/4/2016	106.48613	106.4861259	106.4861259	105.4175294	102.5015754	99.68158827	96.95399436	94.31527617	91.76206978
160119A00005	1/19/2016	1.89	1/19/2021	1/19/2016	101.5851	101.5850979	101.5850979	100.9984342	100.0314584	99.08293425	98.15233727	97.23916286	96.34292515
160119A00025	1/19/2016	3.05	1/19/2028	1/19/2016	121.90903	121.9090345	121.9090345	116.4455256	108.4463622	101.0687882	94.26110444	87.97606308	82.17056764
160119A00026	1/19/2016	3.14	1/19/2029	1/19/2016	125.43475	125.4347506	125.4347506	118.7200213	109.7122736	101.479421	93.95034086	87.06068889	80.75232624
160120A00010	1/20/2016	1.99	10/20/2021	1/20/2016	102.96461	102.9646101	102.9646101	102.2581314	100.5549688	98.88809352	97.2564432	95.65896493	94.09464802
160122A00021	1/22/2016	1.71	1/22/2021	1/22/2016	101.57743	101.5774279	101.5774279	100.9864066	100.00922	99.05086686	98.11080673	97.18851974	96.28350554
160203A00022	2/3/2016	1.35	2/3/2020	2/3/2016	100.01021	100.0102125	100.0102125	100.005611	99.99728572	99.98896777	99.9806571	99.9723537	99.96405755
160204A00023	2/4/2016	1.49	2/4/2020	2/4/2016	100.01356	100.0135623	100.0135623	100.007435	99.99634921	99.98527331	99.97420727	99.96315107	99.95210469
160218A00029	2/18/2016	1.81	4/15/2021	2/18/2016	101.85823	101.8582281	101.8582281	101.2578179	100.0808997	98.90887283	97.76417349	96.64585457	95.55301232
160301A00009	3/1/2016	2.06	3/1/2023	3/1/2016	105.4854	105.4853958	105.4853958	104.3690599	101.3154055	98.36689844	95.51939859	92.76887961	90.11150031
160328A00011	3/28/2016	1.46	3/27/2020	3/28/2016	100.20834	100.2083361	100.2083361	100.1179562	99.96286832	99.80826693	99.65414975	99.50051451	99.34735894
160329A00045	3/29/2016	2.12	3/29/2024	3/29/2016	108.42343	108.4234296	108.4234296	106.8654469	102.7094761	98.73833747	94.94285724	91.31431893	87.84448847
160408A00015	4/8/2016	2.01	4/7/2023	4/8/2016	105.50476	105.5047573	105.5047573	104.3494481	101.1991697	98.1601777	95.22792872	92.3980519	89.666384
160415A00010	4/15/2016	1.66	4/15/2021	4/15/2016	101.67524	101.6752381	101.6752381	101.0755071	99.89975641	98.72888229	97.58531702	96.46811401	95.37636998
160502A00014	5/2/2016	1.5	5/4/2020	5/2/2016	100.3263	100.3263044	100.3263044	100.1715359	99.91205048	99.65391029	99.39710491	99.14162399	98.88745729
160502A00018	5/2/2016	2.09	5/2/2023	5/2/2016	105.88486	105.884864	105.884864	104.7026299	101.4798235	98.37287567	95.37696952	92.48748107	89.70001
160516A00019	5/16/2016	1.44	5/17/2021	5/16/2016	101.73079	101.7307944	101.7307944	101.1291219	99.85707722	98.59836153	97.36528738	96.15707815	94.97298879
170203A00033	2/3/2017	1.64	2/3/2020	2/3/2017	100.01263	100.0126289	100.0126289	100.0080262	99.99969891	99.99137888	99.98306613	99.97476066	99.96646245
170213A00009	2/13/2017	1.86	2/13/2020	2/13/2017	100.05669	100.0566887	100.0566887	100.0367753	100.0007543	99.96477434	99.92883524	99.89293696	99.85707943
170215A00008	2/15/2017	1.72	2/14/2020	2/15/2017	100.06205	100.0620457	100.0620457	100.0405678	100.0017182	99.96291449	99.92415657	99.88544432	99.84677768
170215A00038	2/15/2017	2.71	8/22/2022	2/15/2017	106.23825	106.2382488	106.2382488	105.3032471	102.7480966	100.2681563	97.86086736	95.52367204	93.25411941
170215A00039	2/15/2017	2.72	11/7/2022	2/15/2017	106.77857	106.7785712	106.7785712	105.7682936	103.0006912	100.3196975	97.72213531	95.20489475	92.76500393
170215A00041	2/15/2017	2.6	10/16/2023	2/15/2017	108.61659	108.6165901	108.6165901	107.2451423	103.5389192	99.98129221	96.56551713	93.28513637	90.13402632
170224A00020	2/24/2017	3.08	2/24/2027	2/24/2017	119.67043	119.6704337	119.6704337	115.2714667	108.1472438	101.5216438	95.35712246	89.61904852	84.27556606

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170224A00021	2/24/2017	3.4	2/24/2032	2/24/2017	137.17489	137.1748941	137.1748941	125.0784538	113.0089149	102.2762437	92.72316531	84.21164712	76.6205499
170224A00039	5/24/2017	3.17	5/24/2027	5/24/2017	121.0012	121.0011979	121.0011979	116.3002292	108.9122179	102.0561209	95.69080284	89.7784201	84.28423394
170303A00023	3/3/2017	2	3/3/2021	3/3/2017	102.07289	102.0728852	102.0728852	101.4707041	100.386842	99.32195923	98.279579	97.25899409	96.25952659
170313A00034	3/13/2017	3.31	3/15/2027	3/13/2017	121.45629	121.4562864	121.4562864	116.9693268	109.7372089	103.0132961	96.75911813	90.93922405	85.52101917
170314A00006	3/14/2017	2.67	3/14/2024	3/14/2017	110.63234	110.632339	110.632339	109.0747028	104.9125467	100.9334363	97.12841039	93.48891259	90.00685531
170317A00060	3/17/2017	2.04	3/17/2021	3/17/2017	102.19167	102.191669	102.191669	101.58889	100.4740318	99.37203192	98.29412005	97.23951289	96.20746082
170321A00003	3/21/2017	1.95	3/23/2020	3/21/2017	100.24674	100.2467373	100.2467373	100.1632238	100.0193026	99.87580555	99.73273079	99.59007644	99.44784065
170322A00025	3/22/2017	3.58	3/22/2033	3/22/2017	142.76571	142.7657146	142.4309236	128.3523044	115.1750234	103.5627513	93.31796771	84.26911574	76.26711918
170417A00043	4/17/2017	2.14	4/18/2022	4/17/2017	104.12373	104.123726	104.123726	103.3078473	101.1105847	98.9706621	96.88621065	94.85539479	92.87645535
170417A00094	4/17/2017	1.95	4/19/2022	4/17/2017	104.10957	104.1095706	104.1095706	103.2904729	101.0826723	98.93269933	96.83865449	94.79868094	92.81099951
170419A00023	4/19/2017	2.11	4/19/2023	4/19/2017	106.48103	106.481029	106.481029	105.30278	102.0905478	98.99294962	96.00525061	93.12290131	90.34157128
170505A00003	5/5/2017	2.09	5/5/2021	5/5/2017	102.31232	102.3123183	102.3123183	101.7099121	100.4766224	99.2494808	98.05046961	96.8786235	95.73302105
170505A00009	5/5/2017	1.9	5/15/2020	5/5/2017	100.48132	100.4813202	100.4813202	100.3086896	100.0187657	99.73052762	99.4439606	99.15905004	98.87578153
170512A00015	5/12/2017	1.67	5/12/2020	5/12/2017	100.43913	100.4391347	100.4391347	100.2711384	99.98912089	99.70870143	99.42986634	99.15260212	98.8768954
170512A00027	5/12/2017	1.85	5/12/2020	5/12/2017	100.45336	100.4533555	100.4533555	100.2855823	100.0039345	99.7238779	99.445399	99.16848441	98.89312091
170515A00054	5/15/2017	3.2	5/17/2032	5/15/2017	138.14831	138.1483117	138.1483117	125.3852274	112.9557325	101.9327897	92.14765303	83.45265571	75.71853131
170524A00011	5/24/2017	2.54	5/24/2024	5/24/2017	109.75334	109.7533387	109.7533387	108.1230696	103.8151371	99.70397203	95.77965713	92.03274258	88.45430521
160331A00023	3/31/2016	1.68	3/31/2021	3/31/2016	101.64193	101.6419344	101.6419344	101.0424558	99.90365104	98.77150617	97.66488399	96.58292957	95.52482579
160510A00012	5/10/2016	1.49	10/12/2021	5/10/2016	102.35933	102.3593329	102.3593329	101.6573373	99.9754509	98.32917971	96.71747409	95.13930977	93.59370315
160601A00016	6/1/2016	1.74	6/1/2021	6/1/2016	101.97567	101.9756736	101.9756736	101.3733221	100.0540611	98.75658353	97.48182742	96.22924778	94.99831665
160606A00023	6/6/2016	1.51	6/10/2020	6/6/2016	100.45889	100.458891	100.458891	100.2447618	99.88373746	99.5253165	99.16947078	98.81617254	98.46539442
160614A00025	6/14/2016	1.83	6/14/2023	6/14/2016	105.21354	105.2135441	105.2135441	103.9918163	100.668813	97.46922062	94.38789841	91.41987723	88.56042262
160614A00067	6/14/2016	1.51	2/16/2021	6/14/2016	101.30678	101.306776	101.306776	100.7087672	99.66952796	98.65021316	97.65164471	96.67319437	95.71425907
160615A00031	6/15/2016	2.51	6/17/2030	6/15/2016	125.01907	125.01907	125.01907	116.1928554	105.9405488	96.70032536	88.36643241	80.84460438	74.05084159
160616A00006	6/16/2016	1.51	6/16/2021	6/16/2016	101.70234	101.7023374	101.7023374	101.0861541	99.72792096	98.39355348	97.08319308	95.79624853	94.53214753
160616A00034	6/16/2016	1.97	6/17/2024	6/16/2016	107.34095	107.3409454	107.3409454	105.7001963	101.3829791	97.26636371	93.34009819	89.59443254	86.02016461
160616A00072	6/16/2016	1.32	2/18/2020	6/16/2016	100.05202	100.0520161	100.0520161	100.0244557	99.97460783	99.92482354	99.87510274	99.82544532	99.77585116
160624A00026	6/24/2016	1.52	6/24/2021	6/24/2016	101.74347	101.7434717	101.7434717	101.1191322	99.738707	98.3832909	97.05260493	95.74603169	94.46297385
160628A00050	6/28/2016	1.56	6/28/2023	6/28/2016	104.97014	104.9701371	104.9701371	103.7312435	100.3599183	97.11553509	93.99272297	90.98630681	88.09135927
160629A00052	6/29/2016	1.29	6/29/2021	6/29/2016	101.67393	101.6739317	101.6739317	101.0432935	99.64583251	98.27422568	96.92791778	95.60627076	94.30866758
160629A00056	6/29/2016	1.36	6/29/2020	6/29/2016	100.46285	100.4628544	100.4628544	100.2187302	99.80584645	99.39635153	98.99020392	98.58736279	98.18778795
160630A00019	6/30/2016	1.52	7/1/2021	6/30/2016	101.76732	101.7673156	101.7673156	101.135898	99.73628906	98.36264779	97.01437613	95.69083324	94.39139938
160630A00042	6/30/2016	1.52	6/30/2021	6/30/2016	101.76389	101.7638882	101.7638882	101.1334754	99.73649298	98.36538118	97.01954562	95.69834902	94.40117502

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160630A00049	6/30/2016	1.51	6/30/2021	6/30/2016	101.74959	101.749586	101.749586	101.1192312	99.72235432	98.35134663	97.00561343	95.68451747	94.38744242
160630A00091	6/30/2016	1.51	6/30/2021	6/30/2016	101.74959	101.749586	101.749586	101.1192312	99.72235432	98.35134663	97.00561343	95.68451747	94.38744242
160701A00034	7/1/2016	1.43	7/21/2021	7/1/2016	101.70192	101.7019178	101.7019178	101.0509665	99.59988756	98.17673129	96.78081989	95.41144039	94.06790418
160705A00006	7/5/2016	1.38	7/5/2022	7/5/2016	103.0995	103.0995008	103.0995008	102.2230362	99.82309144	97.49130049	95.22540485	93.02317986	90.88248935
160727A00015	7/27/2016	1.48	7/27/2020	7/27/2016	100.60897	100.6089666	100.6089666	100.3192843	99.82981727	99.34511378	98.8651046	98.38972181	97.91889878
160810A00032	8/10/2016	1.32	8/10/2021	8/10/2016	101.85697	101.8569701	101.8569701	101.1876825	99.67882673	98.19984588	96.74997737	95.32843328	93.93445369
160812A00005	8/12/2016	1.69	8/12/2022	8/12/2016	103.56381	103.5638129	103.5638129	102.6530525	100.1584259	97.73698631	95.38622424	93.10366785	90.88694761
160815A00005	8/15/2016	2.23	8/17/2026	8/15/2016	112.64479	112.6447888	112.6447888	108.9682342	102.5401691	96.53604832	90.92577733	85.68147069	80.77735485
160921A00021	9/21/2016	1.45	9/21/2021	9/21/2016	102.21298	102.2129778	102.2129778	101.5207754	99.89627509	98.30534307	96.74703436	95.22041025	93.72456798
160922A00009	9/22/2016	1.55	9/22/2022	9/22/2016	103.83066	103.8306557	103.8306557	102.8786894	100.2617743	97.72426454	95.26329433	92.8760856	90.55998071
160922A00050	9/22/2016	2.24	9/22/2025	9/22/2016	110.97614	110.9761363	110.9761363	108.3609183	102.7854662	97.5325508	92.58187316	87.91446504	83.51264693
160930A00010	9/30/2016	1.47	9/30/2022	9/30/2016	103.64646	103.6464627	103.6464627	102.6886286	100.0526314	97.49715723	95.01926739	92.61612586	90.28502062
161014A00024	10/18/2016	2.34	10/16/2020	10/18/2016	101.49735	101.4973483	101.4973483	101.0655732	100.3538098	99.65205863	98.9601092	98.27775707	97.60480344
161212A00040	12/12/2016	2.45	12/12/2023	12/12/2016	109.11625	109.1162459	109.1162459	107.6742625	103.7897297	100.0671	96.49889478	93.07792659	89.79737921
170110A00020	1/10/2017	2.4	1/10/2024	1/10/2017	109.10383	109.1038294	109.1038294	107.6286314	103.6692539	99.87801268	96.24698756	92.76858144	89.43559719
170111A00014	1/11/2017	3.47	1/12/2032	1/11/2017	137.65245	137.6524503	137.6524503	125.7571041	113.752388	103.0647125	93.54053779	85.04493104	77.45933022
170120A00009	1/20/2017	3.67	1/22/2035	1/20/2017	149.94497	149.9449689	147.7757437	131.4669801	116.5715671	103.647742	92.41821063	82.64618201	74.12935798
170120A00010	1/20/2017	3.71	1/22/2036	1/20/2017	153.82811	153.8281097	150.6028625	133.078041	117.2680095	103.6642445	91.93944607	81.81672597	73.06169513
170130A00008	1/30/2017	2.58	1/30/2023	1/30/2017	106.91605	106.9160502	106.9160502	105.8156106	102.8260822	99.93714466	97.1449616	94.44576385	91.83595097
170130A00010	1/30/2017	2.92	1/30/2025	1/30/2017	113.15743	113.1574303	113.1574303	111.0932769	106.0613099	101.2901833	96.76510865	92.47210234	88.39804693
170207A00013	2/7/2017	2.05	2/7/2022	2/7/2017	103.95454	103.9545422	103.9545422	103.1836404	101.1724636	99.2106	97.29660809	95.42901815	93.60641617
170207A00023	2/7/2017	2.26	2/7/2022	2/7/2017	104.01391	104.0139132	104.0139132	103.2450295	101.2401736	99.28434204	97.37611386	95.51403096	93.69669023
170215A00034	2/15/2017	2.69	12/18/2020	2/15/2017	102.16506	102.1650643	102.1650643	101.6189114	100.7347602	99.8659769	99.01216327	98.17293457	97.34791921
170216A00043	2/16/2017	3.17	2/16/2027	2/16/2017	120.24689	120.2468906	120.2468906	115.8625856	108.7403843	102.1148605	95.94873781	90.20761674	84.8598466
170217A00034	2/17/2017	1.63	2/18/2020	2/17/2017	100.07527	100.0752735	100.0752735	100.0476624	99.99772338	99.94784881	99.89803859	99.84829259	99.79861067
170223A00003	2/23/2017	2.05	2/23/2022	2/23/2017	104.03971	104.0397138	104.0397138	103.2610165	101.2020816	99.19434488	97.23627412	95.32631668	93.46298012
170224A00019	2/24/2017	2.21	2/24/2022	2/24/2017	104.00036	104.0003572	104.0003572	103.2237524	101.1695104	99.16626271	97.21249113	95.30665074	93.44725634
170310A00024	3/10/2017	2	2/5/2020	3/10/2017	100.02389	100.0238909	100.0238909	100.0162292	100.0023678	99.98851916	99.97468317	99.96085986	99.9470492
170322A00022	3/22/2017	3.89	9/23/2041	3/22/2017	176.12359	176.1235881	165.8731748	141.4739446	120.7657465	103.7320149	89.67560938	78.03675446	68.36524836
170323A00016	3/23/2017	1.87	3/23/2020	3/23/2017	100.23519	100.2351851	100.2351851	100.1516794	100.0077718	99.86428837	99.72122718	99.57858637	99.43636408
170404A00049	4/6/2017	2.42	4/6/2022	4/6/2017	104.67982	104.6798191	104.6798191	103.8697003	101.6987057	99.58364866	97.52274965	95.51424067	93.55642613
170417A00012	4/17/2017	1.58	4/17/2020	4/17/2017	100.31217	100.3121727	100.3121727	100.1858553	99.97277096	99.76060627	99.54935521	99.33901182	99.12957016
160523A00047	5/23/2016	1.77	5/18/2021	5/23/2016	101.95813	101.9581261	101.9581261	101.3569539	100.0832647	98.82344524	97.58897104	96.3790856	95.1930627

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160606A00003	6/6/2016	1.66	6/7/2021	6/6/2016	101.89057	101.8905731	101.8905731	101.2825508	99.94742066	98.63490869	97.34563476	96.07903546	94.8345651
160628A00040	6/28/2016	1.56	6/28/2023	6/28/2016	104.97014	104.9701371	104.9701371	103.7312435	100.3599183	97.11553509	93.99272297	90.98630681	88.09135927
160630A00044	6/30/2016	1.42	10/30/2020	6/30/2016	100.88149	100.8814921	100.8814921	100.4274086	99.68044402	98.94453897	98.21944941	97.50493848	96.80077619
160701A00007	7/1/2016	1.42	7/1/2021	7/1/2016	101.62402	101.624017	101.624017	100.9931815	99.59463172	98.22203564	96.87479142	95.55225869	94.25381817
160701A00027	7/1/2016	1.93	7/1/2024	7/1/2016	107.22667	107.2266736	107.2266736	105.568687	101.2177358	97.07064372	93.11690429	89.34653281	85.75011028
160701A00028	7/1/2016	2.16	7/1/2026	7/1/2016	111.94685	111.9468537	111.9468537	108.4369808	102.1416434	96.25458874	90.74732875	85.59342315	80.76839941
160707A00005	7/7/2016	1.34	7/7/2020	7/7/2016	100.47887	100.4788734	100.4788734	100.2218033	99.78709479	99.35615269	98.92892816	98.5053732	98.08544063
160714A00053	7/14/2016	1.58	7/15/2021	7/14/2016	101.9036	101.9036021	101.9036021	101.2577558	99.82072298	98.41103968	97.02805702	95.67108341	94.33945063
160801A00001	8/1/2016	1.97	8/1/2024	8/1/2016	107.59285	107.5928456	107.5928456	105.8864362	101.4484706	97.22210246	93.19622474	89.36029733	85.70438869
160809A00002	8/9/2016	1.6	8/9/2021	8/9/2016	102.02425	102.0242476	102.0242476	101.3565984	99.85336583	98.3797895	96.93512715	95.51859888	94.12945234
160830A00034	8/30/2016	1.9	8/30/2023	8/30/2016	105.79172	105.7917181	105.7917181	104.4874041	100.9562079	97.56306592	94.30190255	91.16687498	88.15243256
160907A00009	9/7/2016	1.36	9/8/2021	9/7/2016	102.0187	102.0187033	102.0187033	101.3326864	99.7452673	98.19016934	96.66651343	95.17341212	93.71001115
160922A00051	9/22/2016	2.5	9/22/2028	9/22/2016	118.98526	118.9852573	118.9852573	112.8123944	104.3453922	96.58902826	89.4797447	82.95994005	76.97742557
160923A00030	9/23/2016	1.41	9/23/2021	9/23/2016	102.15364	102.1536424	102.1536424	101.4608831	99.8314363	98.23574051	96.67283862	95.14178428	93.64166751
160923A00032	9/23/2016	1.67	9/25/2023	9/23/2016	105.73161	105.7316136	105.7316136	104.3969279	100.7804719	97.30814945	93.97345426	90.77017635	87.69242316
160926A00028	9/26/2016	1.4	3/26/2020	9/26/2016	100.17704	100.1770422	100.1770422	100.0884907	99.93638544	99.78474873	99.63357842	99.48287236	99.33262841
161013A00037	10/13/2016	1.52	10/13/2021	10/13/2016	102.41484	102.414835	102.414835	101.7121346	100.0271282	98.37784273	96.76322463	95.18224529	93.63391696
161031A00005	10/31/2016	1.56	11/2/2020	10/31/2016	100.99838	100.9983765	100.9983765	100.5386437	99.78313549	99.03893356	98.30578572	97.58344722	96.87168053
161206A00008	12/6/2016	2.6	12/6/2023	12/6/2016	108.93926	108.9392625	108.9392625	107.5122505	103.6658265	99.97866144	96.44345242	93.05317105	89.80114948
161213A00013	12/13/2016	1.85	12/14/2020	12/13/2016	101.52858	101.5285769	101.5285769	100.9902557	100.1180972	99.26095707	98.41844979	97.59020293	96.77585661
161222A00030	12/22/2016	3.09	12/22/2026	12/22/2016	120.68872	120.6887218	120.6887218	116.4371846	109.3863596	102.8190322	96.69953847	90.99491154	85.67477302
170109A00031	1/9/2017	2.29	1/10/2022	1/9/2017	103.92124	103.9212356	103.9212356	103.1701865	101.2413884	99.35818979	97.5193283	95.72349403	93.96942451
170119A00004	1/19/2017	2.36	1/18/2022	1/19/2017	104.10459	104.1045871	104.1045871	103.3472449	101.3957525	99.49087951	97.6313207	95.8157228	94.04278213
160203A00011	2/3/2016	1.35	2/3/2020	2/3/2016	100.01021	100.0102125	100.0102125	100.005611	99.99728572	99.98896777	99.9806571	99.9723537	99.96405755
160203A00014	2/3/2016	1.88	2/3/2022	2/3/2016	103.22016	103.2201638	103.2201638	102.4570282	100.4719889	98.53537349	96.64577147	94.80174909	93.00192646
160210A00006	2/10/2016	1.61	12/10/2020	2/10/2016	101.17043	101.1704343	101.1704343	100.6413583	99.78338565	98.93998618	98.11079098	97.29544349	96.49359901
160211A00035	2/11/2016	2.25	2/11/2025	2/11/2016	109.84871	109.8487143	109.8487143	107.7949115	102.8107383	98.08762777	93.61063157	89.36565252	85.33947314
160212A00043	2/12/2016	1.8	2/14/2022	2/12/2016	103.10246	103.1024575	103.1024575	102.3348944	100.3191273	98.35302226	96.43510534	94.56388806	92.73793875
160216A00002	2/16/2016	1.88	2/16/2022	2/16/2016	103.27609	103.2760898	103.2760898	102.5067526	100.4833693	98.50991149	96.58489637	94.70682433	92.87425312
160328A00013	3/28/2016	2.17	3/28/2024	3/28/2016	108.62819	108.6281878	108.6281878	107.0697522	102.9121547	98.93930939	95.14205504	91.51168435	88.03997161
160330A00007	3/30/2016	1.52	3/30/2020	3/30/2016	100.20967	100.2096715	100.2096715	100.1143179	99.95115426	99.78852087	99.62641514	99.46483453	99.30377652
160330A00033	3/30/2016	1.53	3/30/2020	3/30/2016	100.21131	100.2113099	100.2113099	100.1159551	99.95278947	99.79015406	99.62804631	99.46646369	99.30540368
160330A00042	3/30/2016	1.53	3/30/2021	3/30/2016	101.66082	101.6608209	101.6608209	101.0598105	99.92013098	98.78759652	97.68058373	96.59823817	95.53974315

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160401A00055	4/1/2016	1.66	4/1/2021	4/1/2016	101.62216	101.6221575	101.6221575	101.0227419	99.88160933	98.74701493	97.63805934	96.55388166	95.49365917
160407A00007	4/7/2016	1.6	3/25/2021	4/7/2016	101.52575	101.5257463	101.5257463	100.9267405	99.80152224	98.68555967	97.59442499	96.52729711	95.48339079
160420A00005	4/20/2016	1.48	4/20/2021	4/20/2016	101.68119	101.6811882	101.6811882	101.0799202	99.8888066	98.7020239	97.54327427	96.41157407	95.30598521
160422A00021	4/22/2016	2.17	4/21/2023	4/22/2016	106.09069	106.0906892	106.0906892	104.9179374	101.7209426	98.63793965	95.66422496	92.79527752	90.02679381
160429A00027	4/29/2016	1.33	4/29/2020	4/29/2016	100.29902	100.2990242	100.2990242	100.152216	99.90614711	99.66128513	99.41762121	99.1751466	98.93385261
160502A00002	5/2/2016	1.68	5/3/2021	5/2/2016	101.78162	101.7816183	101.7816183	101.1812501	99.95805826	98.73978185	97.55000329	96.38772749	95.25200535
160509A00020	5/9/2016	2.01	5/9/2023	5/9/2016	105.65551	105.655506	105.655506	104.4674246	101.2303668	98.11031218	95.10240687	92.20198332	89.40459781
160526A00010	5/26/2016	1.58	5/26/2021	5/26/2016	101.95073	101.9507305	101.9507305	101.3481308	100.0449112	98.76043778	97.49974192	96.26219459	95.04718895
160527A00024	5/27/2016	1.57	5/14/2020	5/27/2016	100.38143	100.3814306	100.3814306	100.2105193	99.92352438	99.63818287	99.35448041	99.07240282	98.79193609
160606A00040	6/8/2016	1.98	12/15/2020	6/8/2016	101.51655	101.516554	101.516554	100.9776142	100.1046207	99.24667944	98.4034037	97.57441969	96.75936628
160609A00010	6/9/2016	1.58	6/9/2022	6/9/2016	103.48581	103.4858054	103.4858054	102.6285542	100.2931038	98.02213537	95.81358254	93.6653961	91.57560591
160614A00064	6/14/2016	1.21	6/15/2020	6/14/2016	100.41191	100.411913	100.411913	100.1896239	99.81450468	99.44220077	99.07268041	98.70591233	98.34186576
160615A00043	6/15/2016	1.59	6/15/2021	6/15/2016	101.8239	101.8238981	101.8238981	101.2081387	99.85155121	98.51870623	97.2098006	95.92424568	94.66147164
160615A00045	6/15/2016	1.59	6/15/2021	6/15/2016	101.8239	101.8238981	101.8238981	101.2081387	99.85155121	98.51870623	97.2098006	95.92424568	94.66147164
160119A00027	1/19/2016	3.25	1/18/2030	1/19/2016	129.31223	129.3122259	129.3122259	121.1218718	111.1047556	102.030485	93.8045707	86.3423668	79.5681049
160129A00066	1/29/2016	3.04	1/29/2031	1/29/2016	132.37495	132.3749536	132.3749536	122.2550677	111.148682	101.1865424	92.24356574	84.20888509	76.98426427
160129A00067	1/29/2016	2.53	1/29/2026	1/29/2016	114.61664	114.6166425	114.6166425	111.5394087	105.5022672	99.83362684	94.50914959	89.50613429	84.80349027
160204A00024	2/4/2016	1.68	2/4/2021	2/4/2016	101.44102	101.4410229	101.4410229	100.842679	99.8339199	98.84489316	97.87537231	96.92478493	95.99258079
160210A00014	2/10/2016	2	2/9/2024	2/10/2016	107.66371	107.663714	107.663714	106.1665313	102.1565288	98.32036086	94.64965234	91.13640192	87.77303832
160302A00011	3/2/2016	1.47	3/2/2020	3/2/2016	100.11591	100.1159063	100.1159063	100.0680351	99.98208774	99.89629144	99.81064578	99.72515034	99.63980473
160307A00026	3/7/2016	2.2	3/7/2023	3/7/2016	105.95235	105.9523483	105.9523483	104.8265972	101.7501565	98.78001602	95.91197158	93.14193674	90.46601396
160330A00034	3/30/2016	1.95	3/30/2022	3/30/2016	103.61223	103.6122296	103.6122296	102.8126812	100.6723325	98.58683194	96.55443432	94.57341884	92.64213443
160427A00019	4/27/2016	1.78	4/27/2021	4/27/2016	101.88362	101.883617	101.883617	101.2829149	100.0762587	98.87309188	97.69870941	96.55208836	95.43225375
160505A00007	5/5/2016	1.45	5/5/2021	5/5/2016	101.69951	101.6995107	101.6995107	101.0980517	99.86577887	98.63965314	97.44170938	96.27097864	95.1265361
160516A00017	5/16/2016	1.29	5/15/2020	5/16/2016	100.34127	100.3412688	100.3412688	100.1685479	99.87848068	99.59010527	99.30340684	99.01837067	98.73498222
160523A00013	5/23/2016	2.11	5/23/2023	5/23/2016	106.05557	106.0555655	106.0555655	104.8500493	101.5704901	98.41060667	95.36546696	92.43030151	89.60056566
160606A00005	6/6/2016	2.92	6/6/2031	6/6/2016	129.56626	129.5662559	129.5662559	119.0720998	107.9492105	98.00326563	89.10233815	81.12986576	73.98287897
160610A00009	6/10/2016	1.89	6/12/2023	6/10/2016	105.40874	105.4087422	105.4087422	104.1876072	100.8666	97.66870865	94.58881559	91.62197117	88.76345909
160610A00035	6/10/2016	1.26	6/10/2020	6/10/2016	100.41497	100.4149743	100.4149743	100.200588	99.83913627	99.48029767	99.1240438	98.7703467	98.41917879
160620A00026	6/20/2016	1.39	6/21/2021	6/20/2016	101.78869	101.7886892	101.7886892	101.1656085	99.78927733	98.43766098	97.11063031	95.80757343	94.52789833
160624A00010	6/24/2016	1.66	6/24/2022	6/24/2016	103.30225	103.3022521	103.3022521	102.436915	100.0724489	97.77415227	95.53987665	93.36749132	91.25494894
160628A00068	6/28/2016	1.28	6/28/2021	6/28/2016	101.65642	101.6564228	101.6564228	101.0268579	99.63227021	98.26339109	96.91971737	95.6006144	94.30546841
160701A00009	7/1/2016	1.06	4/1/2020	7/1/2016	100.15922	100.1592159	100.1592159	100.0603729	99.89155843	99.72331333	99.5556347	99.38851969	99.22196546

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160701A00026	7/1/2016	1.43	7/1/2021	7/1/2016	101.63835	101.6383469	101.6383469	101.0074531	99.60879745	98.23609685	96.88874989	95.56611614	94.26757629
160706A00018	7/6/2016	1.29	7/6/2020	7/6/2016	100.45404	100.454036	100.454036	100.1986245	99.76670251	99.3384983	98.91396399	98.49305251	98.07571761
160706A00019	7/6/2016	1.41	7/6/2021	7/6/2016	101.6253	101.6253031	101.6253031	100.9895122	99.57796047	98.19284793	96.83355366	95.49941953	94.18980929
160707A00034	7/7/2016	1.25	7/7/2021	7/7/2016	101.6419	101.6418979	101.6418979	101.0034305	99.58520256	98.19365322	96.82814637	95.4880157	94.17261716
160714A00029	8/10/2016	2.27	8/10/2026	8/10/2016	112.8701	112.8701033	112.8701033	109.2137062	102.7952586	96.79896203	91.19492591	85.9554447	81.05490607
170530A00027	5/30/2017	1.97	5/31/2022	5/30/2017	104.37	104.3699955	104.3699955	103.5151869	101.193427	98.93507294	96.73813079	94.60060452	92.52057436
170601A00018	6/1/2017	1.96	6/1/2022	6/1/2017	104.35149	104.3514866	104.3514866	103.4959759	101.1717377	98.91104346	96.7118921	94.57228114	92.49028465
170602A00033	6/2/2017	2.09	6/2/2022	6/2/2017	104.23491	104.2349137	104.2349137	103.3820088	101.0651154	98.81147368	96.61909975	94.48600255	92.41026704
170605A00022	6/5/2017	1.62	6/5/2020	6/5/2017	100.52512	100.525119	100.525119	100.318501	99.97049172	99.62489822	99.28169533	98.94085825	98.60236253
170609A00043	6/9/2017	3.07	6/9/2032	6/9/2017	136.72476	136.7247567	136.7247567	123.8960043	111.4992577	100.5144107	90.77121738	82.12075124	74.43272712
170612A00013	6/12/2017	1.83	6/14/2021	6/12/2017	102.37462	102.3746172	102.3746172	101.7562185	100.3949204	99.05739128	97.74388848	96.45382097	95.18661669
170613A00021	6/13/2017	1.68	6/12/2020	6/13/2017	100.57643	100.5764272	100.5764272	100.3586612	99.99137137	99.62677715	99.26484875	98.90555691	98.54887276
170615A00015	6/15/2017	2.25	6/14/2024	6/15/2017	109.42409	109.4240942	109.4240942	107.7603031	103.3811718	99.20523187	95.22211318	91.42194308	87.79540367
170615A00037	6/15/2017	1.85	6/15/2020	6/15/2017	100.60474	100.6047404	100.6047404	100.3825169	100.0075003	99.63529055	99.26585618	98.89916614	98.53518982
170616A00016	6/16/2017	1.82	6/16/2021	6/16/2017	102.37017	102.3701676	102.3701676	101.7497746	100.3829935	99.04026648	97.72174478	96.42683093	95.15494669
170622A00030	6/22/2017	1.66	6/22/2020	6/22/2017	100.61179	100.6117904	100.6117904	100.3781514	99.98341759	99.59179111	99.20323524	98.81771389	98.43519153
170622A00040	6/22/2017	3.41	6/23/2036	6/22/2017	150.33859	150.338594	146.6716962	128.9588174	113.1281121	99.56734949	87.93137213	77.92944272	69.31649034
170623A00007	6/23/2017	1.64	6/23/2020	6/23/2017	100.60807	100.6080678	100.6080678	100.372852	99.97539255	99.58108222	99.18988366	98.80176007	98.41667522
170629A00016	6/29/2017	1.94	12/21/2020	6/29/2017	101.50906	101.5090633	101.5090633	100.9594928	100.0704802	99.19707558	98.33887052	97.49547085	96.66649586
170629A00020	6/29/2017	2.03	6/29/2021	6/29/2017	102.48848	102.488485	102.488485	101.8561327	100.4565441	99.08275293	97.73423697	96.41035976	95.11050576
170629A00073	6/29/2017	2.2	6/29/2023	6/29/2017	107.18281	107.1828077	107.1828077	105.927641	102.5159972	99.23250562	96.07177346	93.02857833	90.0979478
170706A00090	7/6/2017	2.48	7/6/2023	7/6/2017	107.55491	107.5549143	107.5549143	106.2952687	102.8749383	99.58332599	96.41501076	93.36473334	90.42748707
170719A00006	7/19/2017	1.93	1/19/2021	7/19/2017	101.62437	101.6243731	101.6243731	101.0375848	100.0704027	99.12167498	98.19087713	97.27750447	96.3810711
170724A00014	7/24/2017	2.14	7/25/2022	7/24/2017	104.62251	104.6225132	104.6225132	103.7223135	101.2610563	98.87084343	96.54930279	94.29407236	92.10288605
170725A00002	7/25/2017	2.03	7/26/2021	7/25/2017	102.61909	102.6190878	102.6190878	101.9593598	100.4882215	99.04560185	97.63082568	96.24315811	94.88188964
170725A00047	7/25/2017	2.19	7/25/2022	7/25/2017	104.74786	104.7478628	104.7478628	103.8469679	101.3841385	98.99238625	96.66933991	94.41263652	92.22000898
170731A00026	7/31/2017	1.85	7/30/2020	7/31/2017	100.80516	100.805162	100.805162	100.5102845	100.0120944	99.51882603	99.03040695	98.54676598	98.06783333
170803A00018	8/3/2017	1.85	8/3/2020	8/3/2017	100.823	100.8230029	100.8230029	100.5212918	100.0121789	99.50820926	99.00930536	98.5153911	98.02639192
170803A00021	8/3/2017	2.5	8/5/2024	8/3/2017	110.02081	110.0208068	110.0208068	108.2873275	103.7853363	99.4976563	95.41305552	91.52085645	87.81099871
150601A00280	6/1/2015	3.75	4/3/2020	6/1/2015	100.60328	100.603277	100.603277	100.500809	100.3261225	100.1520455	99.97857463	99.80570692	99.63343915
150601A00515	6/1/2015	2.95	1/16/2024	6/1/2015	111.17584	111.1758401	111.1758401	109.6774637	105.6617708	101.8167828	98.13445538	94.60705542	91.22725817
150601A00606	6/1/2015	2.39	3/31/2021	6/1/2015	102.43403	102.4340275	102.4340275	101.8316675	100.6879612	99.5509798	98.43959703	97.35295593	96.29023748
150601A00629	6/1/2015	2.22	6/30/2020	6/1/2015	100.81118	100.8111754	100.8111754	100.5649629	100.1484875	99.73544891	99.32580491	98.91951383	98.51653472

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00630	6/1/2015	2.27	9/30/2020	6/1/2015	101.33242	101.3324193	101.3324193	100.9282919	100.2603888	99.60129717	98.9508437	98.30885953	97.67518021
150601A00704	6/1/2015	2.3	3/25/2022	6/1/2015	104.27484	104.2748392	104.2748392	103.4757364	101.34119	99.26104327	97.23359236	95.25713903	93.33005347
150601A00756	6/1/2015	1.98	5/12/2020	6/1/2015	100.48098	100.4809792	100.4809792	100.313176	100.0314769	99.75136937	99.47283973	99.19587462	98.92046082
150601A01022	6/1/2015	5.28	2/22/2021	6/1/2015	105.29247	105.292472	105.292472	104.6808026	103.6032128	102.5459808	101.5104502	100.4959564	99.50186169
150601A01053	6/1/2015	5.28	2/26/2027	6/1/2015	136.32984	136.3298394	136.3298394	131.6199675	123.8678371	116.6494649	109.9250276	103.6577066	97.81362313
150603A00017	6/3/2015	2.84	6/3/2025	6/3/2015	114.69318	114.693178	114.693178	112.3228754	106.8922653	101.7602356	96.90893746	92.32157366	87.98243396
150610A00037	6/10/2015	2.48	6/10/2022	6/10/2015	105.63919	105.6391875	105.6391875	104.769521	102.4055929	100.1068057	97.87110787	95.69642751	93.58077283
150702A00009	7/2/2015	1.89	7/2/2020	7/2/2015	100.75228	100.7522819	100.7522819	100.5025311	100.0801142	99.66124149	99.24586846	98.83395141	98.42544733
150710A00029	7/10/2015	2.07	7/10/2020	7/10/2015	100.81427	100.8142661	100.8142661	100.5518106	100.1080488	99.66820467	99.23222644	98.80006317	98.37166484
150721A00027	7/21/2015	3.74	7/22/2030	7/21/2015	135.8986	135.8986026	135.8986026	126.7061845	115.9568387	106.2570823	97.49759547	89.58089779	82.42012976
150722A00031	7/22/2015	2.09	7/22/2020	7/22/2015	100.88473	100.8847258	100.8847258	100.6026851	100.1260368	99.65390326	99.18622051	98.72292576	98.26395739
150814A00004	8/14/2015	2.32	8/15/2022	8/14/2015	105.65966	105.6596628	105.6596628	104.7311848	102.1920296	99.72750687	97.33507206	95.01219458	92.75644917
150817A00003	8/17/2015	1.83	8/17/2020	8/17/2015	100.94562	100.9456174	100.9456174	100.6189897	100.0706277	99.52824004	98.99172924	98.46100001	97.93595913
150817A00015	8/17/2015	2.01	8/17/2020	8/17/2015	100.97382	100.9738167	100.9738167	100.6476556	100.1000658	99.55843031	99.02265212	98.49263652	97.96829077
150817A00077	8/17/2015	2.49	8/17/2023	8/17/2015	108.50532	108.5053233	108.5053233	107.1891364	103.6268201	100.2026319	96.91055851	93.74478961	90.69980327
150821A00017	8/21/2015	2.22	8/23/2022	8/21/2015	105.44917	105.4491718	105.4491718	104.5144777	101.9569107	99.47496724	97.06604446	94.72756247	92.45704951
150826A00038	8/26/2015	2.94	8/26/2026	8/26/2015	118.72697	118.726974	118.726974	114.9017141	108.2106255	101.9602069	96.11914709	90.6584181	85.55119696
150831A00002	8/31/2015	1.97	8/31/2020	8/31/2015	101.01297	101.0129677	101.0129677	100.6626125	100.0770006	99.49817739	98.9260255	98.36043021	97.80127945
150909A00018	9/9/2015	2.28	9/9/2021	9/9/2015	103.24315	103.2431469	103.2431469	102.5531801	100.9574956	99.39420018	97.86245009	96.36135544	94.89005958
150923A00012	9/23/2015	1.86	9/23/2020	9/23/2015	101.04998	101.0499779	101.0499779	100.6588509	100.0109017	99.37127364	98.739807	98.11634636	97.50074014
160616A00044	6/20/2016	2.31	6/18/2021	6/20/2016	102.8267	102.8267048	102.8267048	102.2040201	100.8321896	99.48461384	98.16135946	96.86182505	95.58542859
160624A00005	6/24/2016	1.52	6/24/2021	6/24/2016	101.74347	101.7434717	101.7434717	101.1191322	99.738707	98.3832909	97.05260493	95.74603169	94.46297385
160624A00011	6/24/2016	1.83	6/26/2023	6/24/2016	105.26402	105.2640211	105.2640211	104.0303971	100.6749564	97.44525324	94.33600113	91.34209397	88.45866904
160627A00023	6/27/2016	1.49	6/28/2021	6/27/2016	101.71434	101.714341	101.714341	101.0861248	99.69497232	98.32939912	96.98891462	95.67288831	94.38071032
160627A00025	6/27/2016	1.65	6/27/2022	6/27/2016	103.28921	103.2892051	103.2892051	102.4215647	100.0492741	97.7435825	95.50231967	93.32333459	91.20456071
160627A00040	6/27/2016	1.28	6/28/2021	6/27/2016	101.65642	101.6564228	101.6564228	101.0268579	99.63227021	98.26339109	96.91971737	95.6006144	94.30546841
160628A00049	6/28/2016	1.88	6/27/2025	6/28/2016	109.62666	109.6266593	109.6266593	107.2480139	101.8885203	96.8292315	92.05189446	87.5393864	83.27570776
160629A00004	6/29/2016	1.36	6/29/2020	6/29/2016	100.46285	100.4628544	100.4628544	100.2187302	99.80584645	99.39635153	98.99020392	98.58736279	98.18778795
160630A00012	6/30/2016	2.11	6/30/2025	6/30/2016	109.82398	109.8239773	109.8239773	107.4528253	102.1157629	97.07691683	92.31819425	87.82261106	83.57429576
160701A00020	7/1/2016	2.13	7/1/2026	7/1/2016	111.75356	111.7535586	111.7535586	108.246263	101.9569068	96.0755585	90.57374426	85.42503815	80.60498109
160701A00039	7/1/2016	1.92	7/1/2026	7/1/2016	111.67856	111.6785595	111.6785595	108.140607	101.8069897	95.88590329	90.34846052	85.16786684	80.3193275
160706A00010	7/6/2016	1.99	7/7/2025	7/6/2016	109.20287	109.2028678	109.2028678	106.8193058	101.4816543	96.44351087	91.68662932	87.19389178	82.94930595
160706A00028	7/6/2016	2.39	7/6/2029	7/6/2016	119.6484	119.6483974	119.6483974	112.4859756	103.3400631	95.02404202	87.45803087	80.57014417	74.29573425

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160714A00023	8/10/2016	2.49	8/10/2028	8/10/2016	118.64466	118.6446624	118.6446624	112.6148795	104.2615726	96.60134849	89.57294835	83.12074577	77.19428396
160727A00002	7/27/2016	1.87	7/27/2023	7/27/2016	105.5358	105.535802	105.535802	104.2681054	100.8288105	97.52137421	94.34011631	91.27956092	88.33449985
160727A00017	7/27/2016	2.03	7/29/2024	7/27/2016	107.85066	107.8506648	107.8506648	106.1463901	101.7102665	97.48523316	93.46023277	89.624768	85.9689466
160802A00003	8/2/2016	2.53	8/1/2031	8/2/2016	127.93878	127.9387753	127.9387753	117.0672512	105.7952072	95.74017895	86.76335661	78.74237593	71.56937342
160816A00003	8/16/2016	1.63	8/16/2023	8/16/2016	105.41665	105.4166526	105.4166526	104.123508	100.618354	97.24963009	94.01135532	90.89778433	87.90345724
160921A00020	9/21/2016	1.97	9/21/2023	9/21/2016	106.14542	106.145425	106.145425	104.8176201	101.2217316	97.76829577	94.45093316	91.26353632	88.20030823
160923A00002	9/23/2016	1.5	9/23/2020	9/23/2016	100.8142	100.8142038	100.8142038	100.4235906	99.77650545	99.13773344	98.50711512	97.88449512	97.26972199
160926A00016	9/26/2016	1.47	9/28/2020	9/26/2016	100.81133	100.811331	100.811331	100.411895	99.75133375	99.09942786	98.45600813	97.82090984	97.19397247
160930A00005	9/30/2016	2.03	9/30/2024	9/30/2016	108.10192	108.1019179	108.1019179	106.3028902	101.7005395	97.32392488	93.16081822	89.1996778	85.42964908
161003A00004	10/3/2016	1.91	10/3/2023	10/3/2016	105.97832	105.9783154	105.9783154	104.6400264	101.0156159	97.53589598	94.19432284	90.98464818	87.90094411
161208A00017	12/8/2016	2.6	12/8/2023	12/8/2016	108.95194	108.9519435	108.9519435	107.5225751	103.6707655	99.97864008	96.43886696	93.04439042	89.78851725
160815A00007	8/15/2016	2.23	8/17/2026	8/15/2016	112.64479	112.6447888	112.6447888	108.9682342	102.5401691	96.53604832	90.92577733	85.68147069	80.77735485
160825A00055	8/29/2016	2.32	8/30/2021	8/29/2016	103.25207	103.2520677	103.2520677	102.5663931	100.9978751	99.46083278	97.95447572	96.47795141	95.03043861
160830A00010	8/30/2016	1.65	8/30/2021	8/30/2016	102.1808	102.1807991	102.1807991	101.4997624	99.94001607	98.41161861	96.91375484	95.44557637	94.00626589
160830A00030	8/30/2016	1.52	8/28/2020	8/30/2016	100.7364	100.7363966	100.7363966	100.3917584	99.81519053	99.24522255	98.68174168	98.12463774	97.57380299
160830A00032	8/30/2016	1.82	8/30/2022	8/30/2016	103.97206	103.9720635	103.9720635	103.0425571	100.4958498	98.02476875	95.62668379	93.29900574	91.03925448
160926A00002	9/26/2016	1.6	9/27/2021	9/26/2016	102.20227	102.2022707	102.2022707	101.5095031	99.87361101	98.27167296	96.702725	95.16581148	93.66001362
160926A00004	9/26/2016	1.66	9/26/2023	9/26/2016	105.69893	105.6989272	105.6989272	104.3635259	100.7449941	97.27077507	93.93434863	90.72949332	87.65030586
160926A00022	9/26/2016	1.6	9/24/2021	9/26/2016	102.19141	102.1914073	102.1914073	101.4999122	99.87225289	98.27826095	96.7169886	95.18749201	93.68886363
160926A00074	9/26/2016	1.38	9/27/2021	9/26/2016	102.11758	102.1175807	102.1175807	101.423343	99.78330596	98.17739771	96.60463839	95.06406594	93.55475558
160929A00004	9/29/2016	1.74	9/29/2022	9/29/2016	103.88263	103.8826302	103.8826302	102.9277097	100.3017799	97.75575522	95.28674149	92.89193309	90.56864659
161006A00011	10/6/2016	1.64	10/6/2022	10/6/2016	104.13049	104.1304861	104.1304861	103.1638594	100.5057106	97.92910538	95.43105628	93.00867716	90.65920894
161006A00013	10/6/2016	2.07	10/6/2025	10/6/2016	111.20915	111.2091492	111.2091492	108.5305808	102.875585	97.55076927	92.53515415	87.80916932	83.35458558
161115A00010	11/15/2016	2.09	11/15/2021	11/15/2016	103.25005	103.2500495	103.2500495	102.5316027	100.7567361	99.02091731	97.32305906	95.66205737	94.03684966
161117A00015	11/17/2016	2.08	11/17/2021	11/17/2016	103.25997	103.2599742	103.2599742	102.5405963	100.7599109	99.01850849	97.31530412	95.64919257	94.0191096
170213A00011	2/13/2017	2.13	2/16/2021	2/13/2017	101.96362	101.963621	101.963621	101.3633962	100.3204601	99.29750061	98.29533928	97.3133466	96.3509183
170215A00031	2/15/2017	2.13	7/24/2020	2/15/2017	100.91441	100.91441	100.91441	100.6290756	100.1468978	99.66933677	99.19632627	98.72780147	98.26369876
170215A00033	2/15/2017	2.24	11/9/2020	2/15/2017	101.55755	101.5575521	101.5575521	101.0835704	100.3068759	99.54209214	98.7889465	98.04717474	97.31652057
170215A00040	2/15/2017	2.59	5/15/2023	2/15/2017	107.60746	107.607461	107.607461	106.3999644	103.1155114	99.94996512	96.89843371	93.95618009	91.11869246
170216A00009	2/16/2017	1.9	2/14/2020	2/16/2017	100.0626	100.0626046	100.0626046	100.0411589	100.0023673	99.96362077	99.92491938	99.88626301	99.84765158
170216A00010	2/16/2017	2.37	2/16/2022	2/16/2017	104.28959	104.2895929	104.2895929	103.515212	101.4812447	99.49739151	97.56218441	95.67411806	93.83174466
170216A00044	2/16/2017	3.52	2/17/2032	2/16/2017	138.55664	138.5566448	138.5566448	126.4417802	114.3120637	103.5215946	93.91319054	85.34885575	77.70745064
170228A00015	2/28/2017	2.87	5/28/2025	2/28/2017	113.73141	113.7314114	113.7314114	111.4027355	106.047326	100.9848735	96.1979395	91.670111	87.38603367

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170321A00002	3/21/2017	1.76	3/23/2020	3/21/2017	100.23674	100.2367366	100.2367366	100.1531272	100.0090428	99.865385	99.72215186	99.5793415	99.436952
170322A00026	3/22/2017	3.22	3/22/2028	3/22/2017	123.76288	123.7628825	123.7628825	118.0710558	109.846754	102.2722365	95.29248836	88.85736181	82.92119208
170417A00014	4/17/2017	1.95	4/18/2022	4/17/2017	104.1045	104.1045016	104.1045016	103.2861527	101.0811252	98.93379589	96.84227221	94.8047034	92.81931597
170418A00017	4/18/2017	1.75	4/15/2020	4/18/2017	100.31236	100.3123558	100.3123558	100.1896254	99.98232721	99.77589844	99.57033359	99.36562722	99.16177388
170509A00006	5/9/2017	2.3	5/9/2022	5/9/2017	104.59771	104.5977082	104.5977082	103.7630979	101.5045662	99.30618503	97.16600324	95.08209063	93.05259623
170511A00013	5/11/2017	1.71	5/11/2020	5/11/2017	100.44604	100.4460404	100.4460404	100.2796481	100.0003637	99.72264606	99.44648203	99.17185846	98.89876237
170515A00006	5/15/2017	1.84	5/15/2020	5/15/2017	100.46383	100.4638286	100.4638286	100.2912174	100.0013267	99.71312162	99.42658745	99.1417096	98.85847366
170515A00041	5/15/2017	3.02	5/17/2027	5/15/2017	119.84966	119.8496617	119.8496617	115.1899148	107.8588235	101.0551372	94.73808584	88.87018125	83.41701047
170516A00006	5/16/2017	1.85	5/18/2020	5/16/2017	100.48013	100.4801322	100.4801322	100.302677	100.0045342	99.70817277	99.41357682	99.1207305	98.82961818
170519A00010	5/19/2017	1.61	4/20/2020	5/19/2017	100.331	100.3309992	100.3309992	100.1995375	99.97816848	99.75778901	99.53839243	99.31997211	99.10252149
170601A00035	6/1/2017	1.59	2/28/2020	6/1/2017	100.11398	100.1139815	100.1139815	100.0710372	99.99338225	99.91584906	99.83843733	99.7611468	99.68397718
170602A00007	6/2/2017	1.94	6/2/2021	6/2/2017	102.25028	102.2502841	102.2502841	101.6458513	100.3219202	99.01993686	97.7407943	96.48394362	95.24885303
170608A00017	6/8/2017	1.95	6/8/2022	6/8/2017	104.36333	104.3633298	104.3633298	103.5021483	101.1588937	98.88018726	96.66397852	94.50821852	92.41093723
170609A00009	6/9/2017	1.82	6/9/2021	6/9/2017	102.33717	102.3371728	102.3371728	101.7239542	100.376715	99.05253047	97.75192112	96.47431216	95.21914705
170615A00017	6/15/2017	1.67	6/15/2020	6/15/2017	100.58564	100.5856421	100.5856421	100.3631155	99.98759366	99.61488931	99.24497073	98.87780664	98.51336623
170623A00001	6/23/2017	1.64	6/23/2020	6/23/2017	100.60807	100.6080678	100.6080678	100.372852	99.97539255	99.58108222	99.18988366	98.80176007	98.41667522
170629A00013	6/29/2017	1.83	4/27/2020	6/29/2017	100.38165	100.3816458	100.3816458	100.238375	99.99800106	99.75877969	99.52070269	99.28376187	99.04794913
170630A00083	6/30/2017	1.86	6/30/2020	6/30/2017	100.67553	100.6755257	100.6755257	100.4295127	100.0133755	99.60067319	99.19136336	98.78540445	98.38275552
170720A00009	7/20/2017	2.14	7/20/2022	7/20/2017	104.59702	104.597016	104.597016	103.7015367	101.2535252	98.87580898	96.56605492	94.32193786	92.14122648
170721A00007	7/21/2017	1.8	7/21/2021	7/21/2017	102.50555	102.5055535	102.5055535	101.8495817	100.3882319	98.95503733	97.54932831	96.17038406	94.81750858
170726A00033	7/26/2017	1.89	7/27/2020	7/26/2017	100.81154	100.8115424	100.8115424	100.5215167	100.0314678	99.54618663	99.06560381	98.58965137	98.11826266
170822A00018	8/22/2017	2.25	8/22/2023	8/22/2017	107.01237	107.0123655	107.0123655	105.7075075	102.175308	98.78034311	95.51662034	92.3783602	89.36007058
170824A00037	8/24/2017	1.98	8/24/2021	8/24/2017	102.68025	102.6802465	102.6802465	102.0006935	100.452676	98.93558181	97.44862854	95.99098552	94.56185228
170830A00029	8/30/2017	1.87	3/30/2021	8/30/2017	101.86143	101.8614337	101.8614337	101.2611678	100.123155	98.99225437	97.88678295	96.8058909	95.74876589
170831A00004	8/31/2017	2	8/31/2023	8/31/2017	106.82082	106.8208238	106.8208238	105.5021839	101.9331301	98.50389484	95.20831251	92.04045194	88.99467944
170831A00006	8/31/2017	1.87	8/31/2022	8/31/2017	104.58044	104.5804393	104.5804393	103.643293	101.0759759	98.58509382	96.16798127	93.82201432	91.54467988
160714A00054	7/14/2016	2.03	7/15/2024	7/14/2016	107.73796	107.7379571	107.7379571	106.0553826	101.6581809	97.46853583	93.47566642	89.66933067	86.03987184
160726A00005	7/26/2016	2.28	7/27/2026	7/26/2016	112.86017	112.8601736	112.8601736	109.2506199	102.8657881	96.89879157	91.32019162	86.10268711	81.22102953
160728A00035	7/28/2016	1.23	7/28/2020	7/28/2016	100.55225	100.5522502	100.5522502	100.2605912	99.76781129	99.27986224	98.79667332	98.31817514	97.84429966
160804A00014	8/4/2016	1.99	8/5/2024	8/4/2016	107.70218	107.702179	107.702179	105.988895	101.5383516	97.30037048	93.2637741	89.41795693	85.75292698
160815A00074	8/15/2016	1.57	8/13/2021	8/15/2016	101.99228	101.9922819	101.9922819	101.3223463	99.8088396	98.32530002	96.87096998	95.44505692	94.04679653
160830A00035	8/30/2016	2.06	8/30/2024	8/30/2016	108.14163	108.1416336	108.1416336	106.3874715	101.8636709	97.55833166	93.45983549	89.55717004	85.83996768
160922A00049	9/22/2016	1.79	9/22/2022	9/22/2016	103.98833	103.9883345	103.9883345	103.0388368	100.4302528	97.90058742	95.44700932	93.06676358	90.75721437

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160923A00033	9/23/2016	2.04	9/23/2026	9/23/2016	112.90159	112.9015865	112.9015865	109.0648792	102.4895149	96.355201	90.63008967	85.2847574	80.2920439
160926A00046	9/26/2016	1.66	9/26/2023	9/26/2016	105.69893	105.6989272	105.6989272	104.3635259	100.7449941	97.27077507	93.93434863	90.72949332	87.65030586
161004A00040	10/4/2016	1.45	10/4/2021	10/4/2016	102.26094	102.2609435	102.2609435	101.5630215	99.90305096	98.27790212	96.68656272	95.12804187	93.60138753
161027A00013	10/28/2016	1.66	3/15/2021	10/28/2016	101.56857	101.5685688	101.5685688	100.9694124	99.86523913	98.77467986	97.70782876	96.6639193	95.64221767
161031A00007	10/31/2016	1.91	10/31/2022	10/31/2016	104.4825	104.4825021	104.4825021	103.4925193	100.7755337	98.1433224	95.59271754	93.12066335	90.72424166
161123A00008	11/23/2016	2.2	11/23/2021	11/23/2016	103.49131	103.4913095	103.4913095	102.7686569	100.9699309	99.21117587	97.49132069	95.8092572	94.16391679
161214A00023	12/14/2016	3.3	12/15/2031	12/14/2016	138.04506	138.0450639	138.0450639	126.1022221	114.0033968	103.2312449	93.63141301	85.06821153	77.42237045
170111A00016	1/11/2017	3.51	1/11/2033	1/11/2017	141.25451	141.2545117	141.0915932	127.2839877	114.3375751	102.9110887	92.81503514	83.88446927	75.97580262
170119A00006	1/19/2017	2.85	1/21/2025	1/19/2017	112.74239	112.74239	112.74239	110.7000243	105.7008881	100.9598416	96.46231416	92.1945263	88.14354831
170203A00013	2/3/2017	3.67	2/1/2036	2/3/2017	153.28469	153.2846907	150.030537	132.512699	116.7231724	103.1418067	91.44040635	81.34141472	72.60995126
170203A00031	2/3/2017	2.09	2/3/2022	2/3/2017	104.0147	104.0147022	104.0147022	103.2453471	101.2452771	99.29407061	97.39030961	95.53254431	93.71937951
170215A00009	2/15/2017	2.21	2/16/2021	2/15/2017	102.04838	102.0483752	102.0483752	101.4478644	100.4044513	99.38102157	98.37839664	97.39594689	96.43306788
170215A00036	2/15/2017	2.61	7/30/2021	2/15/2017	103.51609	103.5160915	103.5160915	102.8486297	101.3600973	99.9005808	98.46941234	97.06583878	95.68913311
170215A00037	2/15/2017	2.71	5/23/2022	2/15/2017	105.63195	105.6319545	105.6319545	104.7799798	102.4728609	100.2279712	98.04336124	95.91706216	93.84718206
170224A00011	2/24/2017	1.83	2/24/2021	2/24/2017	101.85241	101.8524057	101.8524057	101.2510735	100.1854243	99.13997556	98.11624969	97.11357533	96.13130852
170228A00018	2/28/2017	2.25	2/28/2022	2/28/2017	104.10528	104.1052751	104.1052751	103.326315	101.2593377	99.24384401	97.27829496	95.36112418	93.49082624
170303A00020	3/3/2017	2	3/3/2021	3/3/2017	102.07289	102.0728852	102.0728852	101.4707041	100.386842	99.32195923	98.279579	97.25899409	96.25952659
170203A00012	2/3/2017	3.63	2/2/2035	2/3/2017	149.44813	149.4481259	147.2491436	130.9381418	116.0553649	103.1472364	91.93543968	82.18239395	73.68519539
170213A00010	2/13/2017	2	8/13/2020	2/13/2017	100.94342	100.9434199	100.9434199	100.624261	100.0876891	99.55683551	99.03160915	98.51192073	97.99768287
170215A00035	2/15/2017	2.51	5/7/2021	2/15/2017	102.86037	102.8603659	102.8603659	102.2558458	101.0123143	99.77616606	98.56778403	97.38623271	96.23061848
170216A00041	2/16/2017	2.37	2/16/2022	2/16/2017	104.28959	104.2895929	104.2895929	103.515212	101.4812447	99.49739151	97.56218441	95.67411806	93.83174466
170303A00021	3/3/2017	2.2	3/3/2022	3/3/2017	104.39949	104.3994894	104.3994894	103.6143534	101.5290329	99.49591555	97.51342551	95.5799663	93.69400399
170313A00035	3/13/2017	3.31	3/15/2027	3/13/2017	121.45629	121.4562864	121.4562864	116.9693268	109.7372089	103.0132961	96.75911813	90.93922405	85.52101917
170314A00005	3/14/2017	2.29	3/14/2022	3/14/2017	104.65599	104.655985	104.655985	103.8610097	101.7438054	99.68012782	97.6683307	95.70675825	93.79382058
170322A00010	3/22/2017	2.11	3/22/2022	3/22/2017	104.31418	104.3141848	104.3141848	103.5147437	101.3800943	99.29983897	97.27227261	95.29569886	93.36848963
170322A00011	3/22/2017	2.48	3/22/2024	3/22/2017	109.89283	109.8928278	109.8928278	108.3314181	104.1634532	100.1797752	96.37130186	92.7293803	89.24583423
170322A00024	3/22/2017	3.72	9/22/2036	3/22/2017	156.18585	156.1858549	152.2132726	133.8912235	117.4954535	103.4656493	91.43870793	81.10942975	72.22103862
170327A00047	3/27/2017	1.67	3/27/2020	3/27/2017	100.241	100.2409979	100.2409979	100.1505953	99.99546768	99.84082668	99.68667	99.53299535	99.37980048
170327A00070	3/29/2017	3.05	3/29/2027	3/29/2017	121.19304	121.1930359	121.1930359	116.6204055	109.3063848	102.5110496	96.19479659	90.32118774	84.85674265
170404A00033	4/4/2017	2.22	4/4/2022	4/4/2017	104.2285	104.2285033	104.2285033	103.4221475	101.2615704	99.15658598	97.10542256	95.10632671	93.15761663
170425A00068	4/25/2017	1.86	4/27/2020	4/25/2017	100.38889	100.3888928	100.3888928	100.2456151	100.0052293	99.76599609	99.52790731	99.29095477	99.05513035
170427A00058	4/27/2017	1.86	4/27/2020	4/27/2017	100.38889	100.3888928	100.3888928	100.2456151	100.0052293	99.76599609	99.52790731	99.29095477	99.05513035
170428A00030	4/28/2017	2.25	4/28/2022	4/28/2017	104.42356	104.4235649	104.4235649	103.5989383	101.3712676	99.20228228	97.0900474	95.03266508	93.02831745

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170428A00031	4/28/2017	1.86	4/28/2020	4/28/2017	100.39336	100.3933619	100.3933619	100.2483739	100.005235	99.76327332	99.52248033	99.28284764	99.04436691
170501A00006	5/1/2017	1.85	5/1/2020	5/1/2017	100.40427	100.4042652	100.4042652	100.254247	100.0028588	99.75272703	99.50384217	99.25619501	99.00977636
170511A00004	5/11/2017	1.71	5/11/2020	5/11/2017	100.44604	100.4460404	100.4460404	100.2796481	100.0003637	99.72264606	99.44648203	99.17185846	98.89876237
170515A00010	5/15/2017	2.58	5/15/2024	5/15/2017	109.87069	109.8706881	109.8706881	108.2513438	103.9639394	99.8713474	95.96375349	92.23181784	88.66672316
170515A00022	5/15/2017	2.04	5/17/2021	5/15/2017	102.30729	102.3072943	102.3072943	101.7047819	100.4320055	99.17253107	97.93865124	96.7295922	95.54461152
170524A00046	5/24/2017	1.84	5/24/2021	5/24/2017	102.28827	102.2882657	102.2882657	101.684366	100.3854095	99.10402747	97.84688007	96.61330395	95.40266008
170530A00058	5/30/2017	1.96	3/26/2021	5/30/2017	101.94865	101.9486457	101.9486457	101.3481067	100.2181551	99.09705995	98.00094591	96.92898529	95.88038662
170531A00003	5/31/2017	1.94	5/31/2022	5/31/2017	104.29918	104.2991818	104.2991818	103.4447526	101.1238313	98.86629924	96.67016173	94.53342327	92.45416455
150925A00023	9/25/2015	3.03	9/25/2025	9/25/2015	115.48122	115.481215	115.481215	112.8075756	107.1007815	101.722471	96.65203675	91.87019528	87.35897245
151001A00048	10/1/2015	1.74	10/1/2020	10/1/2015	101.00424	101.0042397	101.0042397	100.5991428	99.92977145	99.26927359	98.61747378	97.9742012	97.3392895
151001A00051	10/1/2015	1.75	10/1/2020	10/1/2015	101.01101	101.0110108	101.0110108	100.6058987	99.93650192	99.27597883	98.62415402	97.98085667	97.34592043
151002A00048	10/2/2015	1.68	11/2/2020	10/2/2015	101.09028	101.0902756	101.0902756	100.6303121	99.87441816	99.12983456	98.39630904	97.67359682	96.96146026
151008A00049	10/8/2015	1.75	10/8/2020	10/8/2015	101.04009	101.0400869	101.0400869	100.6230001	99.93461355	99.25562017	98.58582867	97.92505288	97.27311165
151014A00024	10/14/2015	1.51	10/14/2020	10/14/2015	100.99283	100.9928272	100.9928272	100.5648667	99.85922684	99.16346372	98.47737095	97.80074785	97.13339923
151116A00015	11/16/2015	2.02	11/16/2020	11/16/2015	101.41096	101.4109585	101.4109585	100.9245917	100.1298261	99.34754704	98.5774618	97.81928684	97.07274734
151223A00065	12/23/2015	2.15	12/23/2021	12/23/2015	103.90029	103.9002917	103.9002917	103.1582976	101.2703694	99.42614571	97.62444236	95.86402991	94.14372249
151223A00074	12/23/2015	3.01	12/23/2027	12/23/2015	123.04519	123.0451873	123.0451873	117.5871126	109.541942	102.118381	95.26504152	88.93493282	83.08516717
151229A00079	12/29/2015	3	12/30/2025	12/29/2015	116.01689	116.0168903	116.0168903	113.0447847	107.0823657	101.4771729	96.20603374	91.24728265	86.58076588
160107A00039	1/7/2016	2.06	2/10/2021	1/7/2016	101.86022	101.8602191	101.8602191	101.2604182	100.2337121	99.22686967	98.24018858	97.27306779	96.32492997
160108A00020	1/8/2016	2.04	1/8/2021	1/8/2016	101.68792	101.6879241	101.6879241	101.1119735	100.173843	99.25306612	98.34916475	97.46167812	96.5901621
160203A00001	2/3/2016	1.44	8/3/2020	2/3/2016	100.67868	100.6786771	100.6786771	100.376746	99.86727174	99.36295596	98.86372058	98.3694891	97.88018659
160204A00020	2/4/2016	1.88	2/6/2023	2/4/2016	105.38203	105.3820307	105.3820307	104.2809013	101.2817275	98.38448771	95.58522731	92.8800961	90.26541788
160211A00031	2/11/2016	1.37	2/11/2020	2/11/2016	100.033	100.0329988	100.0329988	100.0161555	99.98568685	99.95525113	99.92484832	99.89447835	99.86414118
160216A00028	2/16/2016	1.69	2/16/2022	2/16/2016	103.25641	103.2564082	103.2564082	102.4848422	100.4546062	98.47459891	96.54331715	94.65924913	92.82094107
160328A00014	3/28/2016	2.49	3/27/2026	3/28/2016	114.74631	114.7463082	114.7463082	111.4874383	105.2976251	99.49422768	94.05111778	88.9440169	84.15040749
160329A00043	3/29/2016	1.42	3/30/2020	3/29/2016	100.21298	100.2129765	100.2129765	100.1175018	99.95413304	99.79129744	99.62899236	99.46721522	99.30596346
160330A00054	3/30/2016	2.9	3/31/2031	3/30/2016	131.28799	131.2879904	131.2879904	120.9114001	109.7227849	99.70455726	90.72691071	82.67507191	75.44751763
160331A00022	3/31/2016	1.49	3/31/2020	3/31/2016	100.20825	100.2082484	100.2082484	100.1112008	99.94528476	99.77991467	99.61508791	99.45080182	99.28705381
160415A00014	4/15/2016	2.05	4/14/2023	4/15/2016	105.66693	105.6669326	105.6669326	104.5037696	101.3322438	98.27329912	95.32231282	92.47484109	89.72665264
160419A00005	4/19/2016	1.66	4/19/2021	4/19/2016	101.70267	101.7026721	101.7026721	101.1027186	99.91682104	98.73533377	97.5816454	96.454784	95.35382248
160422A00026	4/22/2016	2.62	4/22/2026	4/22/2016	114.46945	114.4694482	114.4694482	111.1574646	104.9549293	99.14226058	93.69288979	88.5821589	83.78721255
160516A00027	5/16/2016	2.01	5/16/2023	5/16/2016	105.68861	105.6886097	105.6886097	104.4929358	101.2373771	98.10008261	95.07616009	92.16089395	89.34979272
170814A00027	8/14/2017	1.81	8/14/2020	8/14/2017	100.84491	100.844909	100.844909	100.5242056	99.98522726	99.45202308	98.92450051	98.40256897	97.8861398

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170814A00084	8/14/2017	1.91	8/15/2022	8/14/2017	104.60558	104.6055778	104.6055778	103.683043	101.1574341	98.70617021	96.32669854	94.01649761	91.77315083
170818A00035	8/18/2017	1.77	8/18/2021	8/18/2017	102.58922	102.5892233	102.5892233	101.9119385	100.3760662	98.87078887	97.39533153	95.94887773	94.53064044
170829A00023	8/29/2017	1.83	8/29/2022	8/29/2017	104.46634	104.4663383	104.4663383	103.5316864	100.9711055	98.48666392	96.07570976	93.73563299	91.46393368
170830A00009	8/30/2017	1.94	3/2/2023	8/30/2017	105.68572	105.685723	105.685723	104.5625456	101.489835	98.52327026	95.65865263	92.89190589	90.2191419
170831A00048	8/31/2017	1.64	11/16/2020	8/31/2017	101.22495	101.2249521	101.2249521	100.7380888	99.94255623	99.15954912	98.38877333	97.62994387	96.88278453
170905A00071	9/5/2017	1.78	9/8/2020	9/5/2017	100.93437	100.9343652	100.9343652	100.5700097	99.96301421	99.36332929	98.77082341	98.18536817	97.60683824
170906A00039	9/6/2017	1.99	9/6/2022	9/6/2017	104.44775	104.4477473	104.4477473	103.5094315	100.9377678	98.44285026	96.02199198	93.67255019	91.39199436
170907A00050	9/7/2017	1.69	9/7/2021	9/7/2017	102.55097	102.5509721	102.5509721	101.8630376	100.2739193	98.7170941	97.19170009	95.69685161	94.23169599
170911A00032	9/11/2017	1.85	9/12/2022	9/11/2017	104.58561	104.5856087	104.5856087	103.6379817	101.0380657	98.51631788	96.06996669	93.69630089	91.39272544
170922A00006	9/22/2017	2.09	9/22/2021	9/22/2017	102.99878	102.9987848	102.9987848	102.3045328	100.6754398	99.0799275	97.51707611	95.98594638	94.48563502
170926A00031	9/26/2017	1.94	9/28/2020	9/26/2017	101.12566	101.1256636	101.1256636	100.7255305	100.0637979	99.41073157	98.76616214	98.12992472	97.50185864
170928A00044	9/28/2017	1.9	9/28/2021	9/28/2017	102.99549	102.9954878	102.9954878	102.296926	100.6466209	99.0306545	97.44806014	95.89786812	94.37914638
171003A00008	10/3/2017	2.88	10/4/2027	10/3/2017	119.80436	119.8043565	119.8043565	114.7117583	107.0448869	99.95555886	93.39709654	87.32678477	81.70556167
171006A00034	10/6/2017	2.27	10/6/2022	10/6/2017	105.3459	105.3458972	105.3458972	104.3756609	101.7117802	99.12925583	96.62514204	94.19656682	91.84078417
171012A00027	10/12/2017	2.21	10/12/2022	10/12/2017	105.21514	105.2151365	105.2151365	104.2396961	101.5619622	98.96642324	96.45008093	94.01001893	91.64344966
171013A00020	10/13/2017	1.9	10/15/2020	10/13/2017	101.17655	101.1765519	101.1765519	100.7472392	100.0394472	99.34157898	98.65342679	97.97478865	97.30546812
171026A00005	10/26/2017	2.16	10/26/2021	10/26/2017	103.29155	103.2915524	103.2915524	102.5808595	100.8590179	99.17410429	97.5250325	95.91072292	94.33013964
171027A00049	10/27/2017	2.04	10/27/2020	10/27/2017	101.33627	101.3362748	101.3362748	100.8861639	100.1453893	99.41546159	98.69614396	97.98720638	97.28842542
171031A00060	10/31/2017	1.98	10/30/2020	10/31/2017	101.3057	101.3056978	101.3056978	100.8505605	100.1018332	99.36418378	98.63736798	97.92114862	97.21529538
171101A00021	11/1/2017	2.51	11/1/2023	11/1/2017	108.37753	108.3775303	108.3775303	106.9908586	103.2475846	99.65592815	96.20893103	92.8999445	89.72266714
171116A00009	11/16/2017	2.17	10/20/2020	11/16/2017	101.39644	101.3964425	101.3964425	100.9580964	100.235944	99.5241037	98.82235577	98.13048653	97.44828838
171116A00022	11/16/2017	1.92	11/16/2020	11/16/2017	101.45039	101.4503879	101.4503879	100.9629295	100.1664045	99.38241604	98.61066969	97.85088028	97.10277142
171206A00029	12/6/2017	2.21	9/16/2020	12/6/2017	101.24135	101.2413541	101.2413541	100.8621996	100.2324823	99.61061825	98.99646115	98.38986823	97.79070026
161215A00001	12/15/2016	2.5	12/15/2021	12/15/2016	104.17549	104.1754889	104.1754889	103.4387171	101.5753493	99.75454759	97.97518998	96.23609304	94.53611464
161215A00014	12/15/2016	2.66	12/15/2022	12/15/2016	106.85816	106.8581622	106.8581622	105.8091063	102.9395365	100.1627547	97.47537621	94.87405572	92.35559143
161223A00028	12/23/2016	2.23	12/23/2021	12/23/2016	104.05389	104.0538864	104.0538864	103.3111568	101.4217331	99.57603893	97.77289285	96.01106463	94.28936765
170110A00021	1/10/2017	1.89	1/11/2021	1/10/2017	101.70168	101.7016837	101.7016837	101.1214173	100.1731694	99.24264508	98.32935097	97.43281177	96.55256954
170111A00009	1/11/2017	3.16	1/11/2028	1/11/2017	122.72519	122.725194	122.725194	117.2712903	109.2600723	101.8691159	95.04699856	88.7467069	82.92534604
170111A00011	1/11/2017	3.24	1/11/2029	1/11/2017	126.26856	126.2685603	126.2685603	119.5624014	110.5378457	102.2870313	94.73914678	87.83010746	81.50199244
170111A00013	1/11/2017	3.4	1/10/2031	1/11/2017	133.77553	133.7755281	133.7755281	123.8432122	112.8202917	102.9199271	94.02053168	86.01420999	78.80525989
170120A00008	1/20/2017	3.63	1/20/2034	1/20/2017	146.11144	146.1114426	144.9543301	129.8642525	115.8993684	103.6796391	92.97337212	83.58083222	75.32978482
170120A00011	1/20/2017	3.75	1/20/2037	1/20/2017	157.76998	157.7699792	153.4078928	134.670814	117.9632264	103.7039291	91.51126956	81.06535099	72.09782885
170130A00011	1/30/2017	2.15	2/1/2021	1/30/2017	101.90797	101.9079665	101.9079665	101.308127	100.3046508	99.32089435	98.35636791	97.41051204	96.48278883

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170130A00052	3/30/2017	2.02	4/30/2020	3/30/2017	100.44228	100.4422846	100.4422846	100.2938396	100.0451332	99.79765387	99.55139254	99.30634033	99.06248839
170206A00012	2/6/2017	2.04	2/5/2021	2/6/2017	101.81527	101.8152717	101.8152717	101.2156835	100.2022703	99.20863412	98.2346353	97.27969621	96.34326163
170217A00005	2/17/2017	1.83	2/18/2020	2/17/2017	100.07751	100.07751	100.07751	100.0499375	100.0000677	99.95026161	99.900519	99.8508398	99.80122388
170217A00035	2/17/2017	1.9	2/17/2021	2/17/2017	101.89379	101.8937917	101.8937917	101.292404	100.2448233	99.21731572	98.21079131	97.22461233	96.25816672
170307A00033	3/7/2017	2.2	3/7/2022	3/7/2017	104.42258	104.4225809	104.4225809	103.6342232	101.5380655	99.49457637	97.50215357	95.5591796	93.66410069
170315A00008	3/15/2017	1.85	3/16/2020	3/15/2017	100.21603	100.2160314	100.2160314	100.1443218	100.0195875	99.89518065	99.7710998	99.64734364	99.52391085
170316A00018	3/16/2017	2.8	3/18/2024	3/16/2017	110.42303	110.4230278	110.4230278	108.8700145	104.7232181	100.7586808	96.96748373	93.34110931	89.87150683
170321A00013	3/21/2017	2.18	3/21/2022	3/21/2017	104.46013	104.4601254	104.4601254	103.6607145	101.5271153	99.44782223	97.42113895	95.44537354	93.5189021
170322A00008	3/22/2017	1.7	3/23/2020	3/22/2017	100.22807	100.2280712	100.2280712	100.1444677	100.0003935	99.8567459	99.71352295	99.57072275	99.42834339
170323A00009	3/23/2017	2.1	3/23/2022	3/23/2017	104.29802	104.2980152	104.2980152	103.4978817	101.3607677	99.27816205	97.24835253	95.26963754	93.34038401
170330A00012	3/30/2017	2.11	3/30/2021	3/30/2017	102.14359	102.1435895	102.1435895	101.5423001	100.4025471	99.26992957	98.16276808	97.08021211	96.02144864
170331A00004	3/31/2017	2.12	3/31/2021	3/31/2017	102.16044	102.1604382	102.1604382	101.5590759	100.4170672	99.28176088	98.17202683	97.08700881	96.02588844
170405A00013	4/5/2017	2.07	4/5/2022	4/5/2017	104.30324	104.3032449	104.3032449	103.4932653	101.3213627	99.20554408	97.14400889	95.13498284	93.17676439
170417A00041	4/17/2017	1.77	4/17/2020	4/17/2017	100.32496	100.3249593	100.3249593	100.1988043	99.98599014	99.77409112	99.5631013	99.35301481	99.14382578
170831A00020	8/31/2017	1.86	2/26/2021	8/31/2017	101.72077	101.7207742	101.7207742	101.1212578	100.053646	99.00617642	97.98054288	96.97606833	95.9921035
170906A00020	9/6/2017	2.14	9/6/2023	9/6/2017	106.69369	106.6936887	106.6936887	105.3761736	101.8103455	98.38435183	95.09201623	91.92739874	88.88485796
170906A00036	9/6/2017	1.81	9/6/2022	9/6/2017	104.4516	104.4515972	104.4515972	103.5099615	100.9280672	98.42343458	95.99334453	93.63513079	91.34624061
170907A00002	9/7/2017	1.69	9/7/2021	9/7/2017	102.55097	102.5509721	102.5509721	101.8630376	100.2739193	98.7170941	97.19170009	95.69685161	94.23169599
170908A00017	9/9/2019	2.32	9/9/2024	9/9/2019	109.39684	109.3968444	109.3968444	107.6167481	103.0384524	98.68197237	94.53546106	90.58769399	86.82810717
170914A00054	9/14/2017	1.99	9/14/2021	9/14/2017	102.79494	102.7949423	102.7949423	102.1048793	100.4993026	98.92652663	97.38567092	95.87582808	94.396125
170919A00076	9/19/2017	1.97	9/19/2022	9/19/2017	104.93928	104.9392779	104.9392779	103.983517	101.3599342	98.81564187	96.34780804	93.95366666	91.63057112
170920A00028	9/21/2017	2.16	9/21/2022	9/21/2017	104.97096	104.9709631	104.9709631	104.0166639	101.3976871	98.85776976	96.39409554	94.00390784	91.68456903
170929A00023	9/29/2017	1.95	9/29/2020	9/29/2017	101.13704	101.1370376	101.1370376	100.7351113	100.070636	99.41489619	98.76772072	98.12894272	97.49839968
171010A00038	10/10/2017	2.23	10/11/2022	10/10/2017	105.26429	105.2642872	105.2642872	104.2895538	101.6137554	99.02002008	96.50535859	94.06686171	91.70174857
171016A00021	10/16/2017	2.2	10/17/2022	10/16/2017	105.21419	105.2141936	105.2141936	104.2337896	101.5430616	98.93526304	96.40735225	93.95637459	91.57950662
171030A00021	10/30/2017	2.29	11/30/2022	10/30/2017	105.70221	105.7022075	105.7022075	104.6763992	101.8622397	99.13805252	96.5005848	93.94663146	91.47312293
171030A00023	10/30/2017	2.9	11/1/2027	10/30/2017	120.15561	120.1556099	120.1556099	114.9698364	107.2237974	100.0661088	93.44881109	87.32806715	81.6638204
171103A00017	11/3/2017	2.09	11/3/2022	11/3/2017	105.50517	105.5051683	105.5051683	104.5026091	101.7522519	99.08805153	96.50679943	94.00538858	91.5808513
171127A00016	11/27/2017	2.28	11/27/2023	11/27/2017	108.36182	108.361821	108.361821	106.9423027	103.1112902	99.43858145	95.91690879	92.53929526	89.29912213
171128A00002	11/28/2017	2.06	11/29/2021	11/28/2017	103.59823	103.5982285	103.5982285	102.8706652	101.0487318	99.2676984	97.52648809	95.82398063	94.15909436
171205A00013	12/5/2017	2.4	12/6/2021	12/5/2017	103.93361	103.9336094	103.9336094	103.2029029	101.3653989	99.5693953	97.81381015	96.09750268	94.41937145
171206A00048	12/6/2017	3.04	12/6/2032	12/6/2017	137.79039	137.7903899	137.7210977	123.9439585	111.1222949	99.81139377	89.82293642	80.9929722	73.17874019
171208A00021	12/8/2017	2.24	12/8/2020	12/8/2017	101.70827	101.708266	101.708266	101.1812199	100.3260745	99.48534942	98.65868213	97.84572217	97.04613062

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
171215A00004	12/15/2017	2.29	12/15/2020	12/15/2017	101.79089	101.7908917	101.7908917	101.2511611	100.3768551	99.51761736	98.67306066	97.84281094	97.02650677
171219A00025	12/19/2017	2.33	12/19/2022	12/19/2017	106.45695	106.4569475	106.4569475	105.4020164	102.5158426	99.72362664	97.02190546	94.4072724	91.87646781
180103A00019	1/3/2018	2.51	1/3/2023	1/3/2018	106.53914	106.5391368	106.5391368	105.4713353	102.5571899	99.73885952	97.01278069	94.3754446	91.82349551
180103A00027	1/3/2018	2.51	1/3/2023	1/3/2018	106.53914	106.5391368	106.5391368	105.4713353	102.5571899	99.73885952	97.01278069	94.3754446	91.82349551
180108A00006	1/8/2018	2.18	1/8/2021	1/8/2018	101.96306	101.963056	101.963056	101.3850262	100.4435199	99.51945219	98.61234203	97.72172573	96.84715641
170317A00059	3/17/2017	2.47	3/17/2023	3/17/2017	107.43799	107.4379859	107.4379859	106.2872915	103.1479621	100.1179349	97.19284694	94.36846126	91.64073873
170320A00014	3/20/2017	2.22	3/21/2022	3/20/2017	104.54668	104.5466764	104.5466764	103.7468236	101.6122807	99.53206128	97.50447027	95.5278152	93.60047164
170322A00023	3/22/2017	3.82	9/22/2039	3/22/2017	167.9345	167.9344967	160.2785366	138.3275502	119.3212325	103.4444682	90.14770703	78.98160387	69.57825622
170323A00018	3/23/2017	1.69	3/23/2020	3/23/2017	100.22663	100.2266269	100.2266269	100.1430244	99.99895194	99.85530604	99.7120848	99.56928629	99.42690862
170327A00072	3/29/2017	3.09	3/29/2027	3/29/2017	121.48222	121.4822192	121.4822192	116.9049577	109.5809901	102.776212	96.45099106	90.56886058	85.09631353
170327A00075	3/27/2019	2.47	3/28/2022	3/27/2019	104.73603	104.7360307	104.7360307	103.9322688	101.7848218	99.69221921	97.65274244	95.66467443	93.72636748
170420A00004	4/20/2017	1.59	4/20/2020	4/20/2017	100.32656	100.3265556	100.3265556	100.195098	99.97373587	99.75336331	99.53397363	99.31556018	99.0981164
170501A00007	5/1/2017	2.04	5/3/2021	5/1/2017	102.23876	102.2387591	102.2387591	101.6366539	100.4104414	99.18918057	97.99646747	96.83130564	95.69274463
170508A00010	5/8/2017	2.43	5/8/2024	5/8/2017	109.98356	109.9835619	109.9835619	108.3641847	104.069593	99.96994638	96.05539318	92.31657707	88.74466805
170510A00013	5/10/2017	1.88	5/7/2020	5/10/2017	100.43912	100.4391213	100.4391213	100.2794095	100.0114987	99.74502472	99.47997602	99.21634112	98.95410868
170515A00056	5/15/2017	3.2	5/17/2032	5/15/2017	138.14831	138.1483117	138.1483117	125.3852274	112.9557325	101.9327897	92.14765303	83.45265571	75.71853131
170519A00034	5/19/2017	1.97	5/19/2022	5/19/2017	104.30838	104.3083795	104.3083795	103.4641139	101.1744467	98.94656991	96.77849766	94.66826302	92.61397727
170524A00047	5/24/2017	2.22	5/24/2023	5/24/2017	107.04263	107.042633	107.042633	105.8242606	102.5108294	99.31857684	96.24250498	93.27777579	90.41977949
170530A00060	5/30/2017	2.12	3/25/2022	5/30/2017	103.95831	103.9583117	103.9583117	103.1608374	101.029785	98.95306737	96.92897647	94.95581603	93.03195815
170531A00005	5/31/2017	1.94	5/31/2022	5/31/2017	104.29918	104.2991818	104.2991818	103.4447526	101.1238313	98.86629924	96.67016173	94.53342327	92.45416455
170602A00023	6/2/2017	2.09	6/2/2023	6/2/2017	106.65606	106.6560626	106.6560626	105.4308978	102.1003683	98.89250781	95.80225584	92.82470773	89.95518875
170612A00012	6/12/2017	1.67	6/12/2020	6/12/2017	100.57273	100.5727338	100.5727338	100.3549727	99.98769131	99.62310544	99.26118536	98.90190179	98.54522586
170615A00033	6/15/2017	2.01	6/15/2021	6/15/2017	102.4072	102.4072044	102.4072044	101.7891162	100.4283375	99.09135514	97.77838203	96.48882759	95.22212016
170616A00018	6/16/2017	2.4	6/16/2025	6/16/2017	112.39939	112.3993922	112.3993922	110.0196503	104.6153044	99.51090806	94.68837337	90.13070461	85.8220138
170616A00019	6/16/2017	2.64	6/16/2027	6/16/2017	118.77737	118.7773703	118.7773703	113.9934088	106.5682234	99.68579363	93.30363611	87.38270712	81.88719873
170619A00067	6/19/2017	1.84	9/20/2021	6/19/2017	102.85645	102.8564531	102.8564531	102.1618125	100.5345757	98.94089402	97.37984168	95.85048128	94.35191128
170619A00084	6/19/2017	1.95	6/20/2022	6/19/2017	104.42415	104.4241451	104.4241451	103.5530264	101.176708	98.86668437	96.62082002	94.43698446	92.31313046
170621A00013	6/21/2017	1.68	6/22/2020	6/21/2017	100.61973	100.6197326	100.6197326	100.3860822	99.99132931	99.59968381	99.21110903	98.82556888	98.44302783
170622A00015	6/22/2017	1.99	6/22/2021	6/22/2017	102.39847	102.3984681	102.3984681	101.7734912	100.3937721	99.03883845	97.70853433	96.40224669	95.1193824
170417A00068	4/17/2019	2.59	4/17/2024	4/17/2019	109.73768	109.7376783	109.7376783	108.1545502	103.9428846	99.91962461	96.07535616	92.40113176	88.8885037
170419A00022	4/19/2017	1.75	4/19/2021	4/19/2017	102.01016	102.0101559	102.0101559	101.4076662	100.2168887	99.03058635	97.87223043	96.74084271	95.63549009
170419A00025	4/19/2017	2.72	4/19/2027	4/19/2017	118.95763	118.9576338	118.9576338	114.3546553	107.0649539	100.2975406	94.01216177	88.17183862	82.74261859
170425A00056	4/25/2017	1.86	4/27/2020	4/25/2017	100.38889	100.3888928	100.3888928	100.2456151	100.0052293	99.76599609	99.52790731	99.29095477	99.05513035

Classification | Public

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170427A00044	4/27/2017	3.02	4/27/2027	4/27/2017	119.70202	119.7020221	119.7020221	115.10795	107.8299941	101.0722142	94.79456563	88.96025431	83.53549596
170427A00046	4/27/2017	3.1	4/27/2028	4/27/2017	123.05662	123.0566241	123.0566241	117.2674172	108.9832776	101.3613838	94.34500605	87.88253041	81.92700773
170502A00028	5/2/2017	2.84	5/3/2027	5/2/2017	119.93701	119.937006	119.937006	115.273833	107.9152549	101.0857244	94.74431828	88.85345132	83.37862535
170509A00005	5/9/2017	1.9	5/11/2020	5/9/2017	100.46291	100.462914	100.462914	100.2967395	100.0178158	99.74045222	99.46463567	99.19035314	98.9175918
170515A00005	5/15/2017	2.04	5/16/2022	5/15/2017	104.4553	104.4552992	104.4552992	103.6128079	101.3292771	99.10717234	96.94451165	94.8393339	92.78975679
170515A00007	5/15/2017	2.04	5/14/2021	5/15/2017	102.29261	102.2926081	102.2926081	101.6901829	100.4273819	99.17609101	97.95102429	96.75135946	95.57630883
170515A00019	5/15/2017	1.84	5/15/2020	5/15/2017	100.46383	100.4638286	100.4638286	100.2912174	100.0013267	99.71312162	99.42658745	99.1417096	98.85847366
170519A00002	5/19/2017	2.15	5/19/2022	5/19/2017	104.30481	104.3048055	104.3048055	103.4632726	101.1820965	98.96231674	96.80197248	94.69911337	92.65186647
170530A00006	5/30/2017	2.15	5/31/2022	5/30/2017	104.36636	104.3663621	104.3663621	103.5143467	101.2012611	98.95117511	96.76211995	94.63211672	92.55926186
170530A00025	5/30/2017	1.63	6/1/2020	5/30/2017	100.51185	100.5118513	100.5118513	100.3115831	99.97455936	99.63979487	99.30726704	98.97695353	98.6488323
170531A00018	5/31/2017	1.97	5/28/2021	5/31/2017	102.26741	102.2674128	102.2674128	101.664947	100.3562578	99.06744252	97.80191844	96.55909258	95.33839195
170606A00017	6/6/2017	1.9	6/6/2022	6/6/2017	104.23434	104.2343402	104.2343402	103.3754545	101.0391298	98.76703581	96.55713497	94.40739257	92.31585213
170608A00003	6/8/2017	1.97	6/8/2021	6/8/2017	102.31892	102.3189228	102.3189228	101.7082033	100.367293	99.04918024	97.75444425	96.48251705	95.23284865
170615A00004	6/15/2017	2.01	6/11/2021	6/15/2017	102.38806	102.3880596	102.3880596	101.774058	100.4244096	99.09798887	97.79521883	96.51552181	95.25833846
170626A00016	6/26/2017	1.64	6/26/2020	6/26/2017	100.62073	100.6207263	100.6207263	100.3807468	99.97505388	99.57263693	99.17345637	98.77747328	98.38464931
170629A00014	6/29/2017	1.89	8/25/2020	6/29/2017	100.93841	100.9384118	100.9384118	100.5985526	100.029447	99.46676674	98.91040355	98.36025144	97.81620682
170726A00034	7/26/2017	2.05	7/26/2021	7/26/2017	102.64913	102.6491303	102.6491303	101.9892769	100.5179065	99.0750579	97.66005674	96.27216801	94.91068212
170728A00031	7/28/2017	2.27	1/27/2023	7/28/2017	105.96113	105.9611347	105.9611347	104.8700444	101.9025674	99.03481688	96.26298413	93.58334034	90.99232321
170728A00033	7/28/2017	2.46	1/29/2024	7/28/2017	108.71768	108.7176834	108.7176834	107.2306931	103.2502104	99.44043597	95.79324518	92.3008495	88.95587497
170728A00040	7/28/2017	2.44	1/27/2025	7/28/2017	111.72026	111.7202619	111.7202619	109.662609	104.6423053	99.88326505	95.37062137	91.09033898	87.02925354
170323A00013	3/23/2017	2.1	3/23/2022	3/23/2017	104.29802	104.2980152	104.2980152	103.4978817	101.3607677	99.27816205	97.24835253	95.26963754	93.34038401
170328A00015	3/28/2017	2.75	11/29/2024	3/28/2017	111.93724	111.9372399	111.9372399	110.0027584	105.1554939	100.5520701	96.17907976	92.02381961	88.07434914
170419A00016	4/19/2017	1.57	4/20/2020	4/19/2017	100.32211	100.322112	100.322112	100.1906584	99.96930325	99.74893762	99.52955482	99.31114824	99.0937113
170425A00069	4/25/2017	2.06	4/26/2021	4/25/2017	102.22959	102.2295939	102.2295939	101.6275979	100.4211347	99.21830503	98.04417534	96.89772809	95.77799327
170504A00038	5/4/2017	2.09	5/4/2022	5/4/2017	104.50564	104.5056405	104.5056405	103.6731104	101.4204401	99.22762707	97.09269733	95.0137159	92.98882871
170517A00098	5/19/2017	2.32	5/19/2022	5/19/2017	104.69959	104.6995856	104.6995856	103.8559589	101.57018	99.34588733	97.18112439	95.07393808	93.02245279
170518A00005	5/18/2017	1.6	5/18/2020	5/18/2017	100.44402	100.4440235	100.4440235	100.2663552	99.96785999	99.67115348	99.3762195	99.08304211	98.79160554
170518A00011	5/18/2017	1.94	5/18/2022	5/18/2017	104.23351	104.2335115	104.2335115	103.3904947	101.1043172	98.87978023	96.71489793	94.60770618	92.55631925
170525A00059	5/25/2017	1.81	5/26/2020	5/25/2017	100.50295	100.5029526	100.5029526	100.312606	99.9925072	99.67445165	99.35841981	99.04439239	98.73235037
170530A00002	5/30/2017	2.15	5/31/2022	5/30/2017	104.36636	104.3663621	104.3663621	103.5143467	101.2012611	98.95117511	96.76211995	94.63211672	92.55926186
170530A00004	5/30/2017	1.81	5/29/2020	5/30/2017	100.51601	100.5160081	100.5160081	100.3208229	99.99248525	99.66629149	99.34222069	99.0202522	98.70036567
170601A00052	6/1/2017	1.76	2/12/2020	6/1/2017	100.049	100.0489955	100.0489955	100.0306151	99.99736667	99.96415508	99.93098031	99.89784231	99.864741
170602A00026	6/2/2017	2.25	6/3/2024	6/2/2017	109.35936	109.3593629	109.3593629	107.7105694	103.3619894	99.21389842	95.25613056	91.47900279	87.87337256

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170608A00013	6/8/2017	1.9	2/8/2022	6/8/2017	103.65234	103.6523391	103.6523391	102.8824751	100.8714982	98.90989474	96.99621285	95.12897947	93.3067774
170608A00021	6/8/2017	1.8	6/8/2021	6/8/2017	102.30504	102.3050385	102.3050385	101.6929538	100.3487017	99.02735955	97.72949989	96.4545512	95.20196006
170612A00003	6/12/2017	1.97	6/13/2022	6/12/2017	104.4366	104.4365987	104.4365987	103.5710174	101.2134078	98.92108309	96.69195826	94.52395015	92.41505644
170612A00039	6/12/2017	2.29	6/12/2024	6/12/2017	109.58896	109.5889628	109.5889628	107.9264011	103.5490146	99.37445299	95.39237994	91.5929523	87.96687935
170613A00007	6/13/2017	2.01	6/11/2021	6/13/2017	102.38806	102.3880596	102.3880596	101.774058	100.4244096	99.09798887	97.79521883	96.51552181	95.25833846
170615A00031	6/15/2017	1.85	6/15/2020	6/15/2017	100.60474	100.6047404	100.6047404	100.3825169	100.0075003	99.63529055	99.26585618	98.89916614	98.53518982
170628A00008	6/28/2017	2.04	9/15/2021	6/28/2017	102.8818	102.8817984	102.8817984	102.1909425	100.5819117	99.00578625	97.46168207	95.9486876	94.46592574
170630A00039	6/30/2017	1.86	6/29/2020	6/30/2017	100.67106	100.6710572	100.6710572	100.4266275	100.0132258	99.60321594	99.19655654	98.79320667	98.39312614
170705A00034	7/5/2017	1.75	7/6/2020	7/5/2017	100.71094	100.7109409	100.7109409	100.4547484	100.0215109	99.59200914	99.16619492	98.74402079	98.32544013
170706A00013	7/6/2017	2.27	7/6/2022	7/6/2017	104.84472	104.8447243	104.8447243	103.9607172	101.5458936	99.19936477	96.91890844	94.70229852	92.54739728
170714A00018	7/14/2017	1.67	7/14/2020	7/14/2017	100.71057	100.7105679	100.7105679	100.4413748	99.98630315	99.53535867	99.08848522	98.64562768	98.20673195
170622A00036	6/22/2017	3.23	6/22/2032	6/22/2017	136.06322	136.0632188	136.0632188	123.3930359	111.1438194	100.2862667	90.65274365	82.09659201	74.48950314
170629A00012	6/29/2017	1.81	3/24/2020	6/29/2017	100.2309	100.2309015	100.2309015	100.1457033	99.99904458	99.8528247	99.7070417	99.5616936	99.41677845
170629A00067	6/29/2017	2.19	6/29/2022	6/29/2017	104.61172	104.6117181	104.6117181	103.735286	101.3415442	99.01501736	96.753534	94.55491928	92.41708396
170630A00010	6/30/2017	2.63	6/30/2026	6/30/2017	116.27453	116.2745335	116.2745335	112.6784996	106.2045672	100.1494165	94.48385681	89.18077985	84.21509576
170630A00027	6/30/2017	2.35	6/28/2024	6/30/2017	109.9525	109.9524953	109.9524953	108.2658074	103.8381135	99.6173983	95.59301846	91.75484375	88.09331782
170706A00027	7/6/2017	1.75	7/6/2020	7/6/2017	100.71094	100.7109409	100.7109409	100.4547484	100.0215109	99.59200914	99.16619492	98.74402079	98.32544013
170706A00073	7/6/2017	1.93	7/6/2020	7/6/2017	100.73297	100.7329653	100.7329653	100.4771276	100.0444835	99.61556161	99.19031417	98.76869402	98.35065486
170719A00004	7/19/2017	1.67	7/20/2020	7/19/2017	100.73645	100.7364466	100.7364466	100.4574646	99.98595725	99.51887707	99.05616182	98.59775037	98.14358277
170724A00025	7/24/2017	1.66	7/24/2020	7/24/2017	100.74884	100.7488397	100.7488397	100.4633407	99.98089356	99.5030765	99.02982298	98.56106776	98.09674685
170728A00027	7/28/2017	1.87	7/28/2020	7/28/2017	100.80618	100.8061771	100.8061771	100.5145396	100.0217859	99.53385105	99.05066465	98.57215769	98.09826245
170731A00069	7/31/2017	1.75	1/29/2021	7/31/2017	101.6488	101.6487967	101.6487967	101.0504585	100.0540806	99.07726151	98.11942986	97.18003652	96.25855329
170802A00008	8/2/2017	1.96	6/6/2022	8/2/2017	104.37696	104.3769647	104.3769647	103.5173117	101.1792863	98.9055254	96.69399305	94.54265344	92.44954907
170803A00013	8/3/2017	2.14	8/3/2022	8/3/2017	104.66841	104.6684057	104.6684057	103.759701	101.274509	98.86164941	96.51868302	94.24318469	92.03282868
170803A00032	8/3/2017	2.12	8/3/2023	8/3/2017	107.10069	107.1006932	107.1006932	105.8090025	102.3081159	98.94216752	95.70531582	92.59192329	89.59662997
170808A00014	8/8/2017	1.67	8/10/2020	8/8/2017	100.82702	100.8270179	100.8270179	100.5127169	99.9837589	99.460364	98.94244458	98.42991492	97.92269106
170815A00006	8/15/2017	2.5	8/15/2024	8/15/2017	110.08135	110.0813454	110.0813454	108.3324171	103.8034033	99.49098112	95.38374472	91.47085757	87.7421125
170822A00011	8/22/2017	1.83	8/24/2020	8/22/2017	100.89956	100.8995638	100.8995638	100.5615046	99.99523609	99.4353323	98.88168631	98.33419361	97.792752
170823A00055	8/25/2017	2.44	8/25/2021	8/25/2017	103.41408	103.4140833	103.4140833	102.7307609	101.1741434	99.64861583	98.15340879	96.68768557	95.25063994
170828A00031	8/28/2017	2.07	8/1/2022	8/28/2017	104.48137	104.4813692	104.4813692	103.5755423	101.0979499	98.69238562	96.3564225	94.08764926	91.88375325
170829A00017	8/29/2017	1.76	8/31/2020	8/29/2017	100.88883	100.8888261	100.8888261	100.5387166	99.9535195	99.37510762	98.80336362	98.23817289	97.67942337
170829A00018	8/29/2017	1.9	8/30/2021	8/29/2017	102.58053	102.5805262	102.5805262	101.8977589	100.3347396	98.80311644	97.30208353	95.83079094	94.38841989
170829A00025	8/29/2017	1.9	8/30/2021	8/29/2017	102.58053	102.5805262	102.5805262	101.8977589	100.3347396	98.80311644	97.30208353	95.83079093	94.38841989

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170829A00044	8/29/2017	2.01	8/29/2022	8/29/2017	104.46251	104.462506	104.462506	103.5311298	100.9806464	98.50579602	96.10395842	93.77254649	91.50908201
170830A00034	8/30/2017	2.05	8/30/2022	8/30/2017	104.5715	104.5714954	104.5714954	103.6385839	101.0840761	98.6053617	96.19981508	93.86484174	91.59795652
170531A00004	5/31/2017	1.79	6/1/2021	5/31/2017	102.25892	102.2589157	102.2589157	101.6540572	100.3294449	99.02674996	97.74691342	96.489386	95.25363556
170531A00080	5/31/2017	2.3	5/31/2024	5/31/2017	109.56085	109.5608485	109.5608485	107.914301	103.5693663	99.42434076	95.46910948	91.69403452	88.09001492
170602A00015	6/2/2017	1.76	6/2/2021	6/2/2017	102.22291	102.2229142	102.2229142	101.6171912	100.2900719	98.98500751	97.70288535	96.44315308	95.20527566
170602A00034	6/2/2017	1.76	6/2/2021	6/2/2017	102.22291	102.2229142	102.2229142	101.6171912	100.2900719	98.98500751	97.70288535	96.44315308	95.20527566
170609A00026	6/9/2017	2.3	6/9/2023	6/9/2017	106.78359	106.783587	106.783587	105.5559735	102.2198896	99.00695907	95.91209528	92.93036097	90.05705103
170613A00033	6/13/2017	2.3	6/13/2024	6/13/2017	109.63915	109.6391451	109.6391451	107.9748436	103.5937224	99.41570409	95.43043282	91.62804681	87.99923811
170615A00034	6/15/2017	2.13	6/15/2022	6/15/2017	104.39495	104.3949496	104.3949496	103.5308365	101.1772043	98.8887139	96.66329165	94.49885929	92.39341904
170616A00017	6/16/2017	2.11	6/16/2023	6/16/2017	106.80065	106.8006526	106.8006526	105.5608229	102.1904191	98.94545587	95.820702	92.81109158	89.91179876
170622A00016	6/22/2017	2.11	6/22/2022	6/22/2017	104.38195	104.381954	104.381954	103.5123415	101.1401258	98.83405552	96.59200693	94.41185469	92.29155645
170622A00037	6/22/2017	3.27	6/22/2033	6/22/2017	139.44375	139.4437474	138.8673954	124.6841124	111.5254112	99.96304937	89.79181118	80.83387	72.93509926
170622A00038	6/22/2017	3.32	6/22/2034	6/22/2017	143.03591	143.0359133	141.4718933	126.1142932	112.0519974	99.80132677	89.11497817	79.78067949	71.61615541
170626A00042	6/26/2017	1.92	6/27/2022	6/26/2017	104.38656	104.3865636	104.3865636	103.5100476	101.1153427	98.78794273	96.52566092	94.32631902	92.18782462
170706A00028	7/6/2017	2.09	7/6/2022	7/6/2017	104.84972	104.849718	104.849718	103.9627288	101.5386338	99.18328091	96.89442013	94.66980587	92.507282
170712A00019	7/12/2017	2.18	7/12/2022	7/12/2017	104.65507	104.6550671	104.6550671	103.7665978	101.3385652	98.97966102	96.68761494	94.46015935	92.29511728
170717A00033	7/17/2017	2.19	7/18/2022	7/17/2017	104.7112	104.7112019	104.7112019	103.8169241	101.3726634	98.99843114	96.69191093	94.45079124	92.27285364
170724A00013	7/24/2017	1.99	7/26/2021	7/24/2017	102.559	102.5590027	102.5590027	101.8995256	100.4288515	98.98668977	97.57236357	96.1851383	94.82430468
170726A00011	7/26/2017	2.2	7/26/2022	7/26/2017	104.7782	104.7781976	104.7781976	103.8762182	101.4104217	99.01585921	96.69015186	94.43092907	92.23591656
170728A00029	7/28/2017	2.1	1/27/2022	7/28/2017	103.6326	103.6325959	103.6325959	102.8714924	100.9013476	98.97886035	97.10266587	95.27136491	93.4836102
170731A00012	7/31/2017	1.82	8/2/2021	7/31/2017	102.59204	102.5920446	102.5920446	101.9245186	100.4310393	98.96688805	97.53134944	96.12365828	94.74307623
170731A00029	7/31/2017	2.34	7/31/2023	7/31/2017	107.21143	107.2114335	107.2114335	105.927748	102.4491463	99.10398465	95.8865216	92.7912047	89.81275355
170801A00018	8/1/2017	1.87	8/3/2020	8/1/2017	100.83327	100.833273	100.833273	100.5315439	100.0224005	99.51840069	99.01946678	98.52552272	98.03649396
170801A00020	8/1/2017	2.02	8/2/2021	8/1/2017	102.63774	102.6377377	102.6377377	101.9717485	100.4821549	99.02173903	97.58979897	96.18557467	94.80833263
170808A00036	8/8/2017	2.04	11/15/2021	8/8/2017	103.15947	103.1594718	103.1594718	102.441445	100.6674129	98.93241527	97.23536314	95.57515294	93.95072248
170816A00012	8/16/2017	1.77	2/18/2020	8/16/2017	100.07451	100.0745107	100.0745107	100.0469397	99.99707245	99.94726889	99.89752885	99.84785221	99.79823886
171211A00033	12/11/2017	2.26	12/12/2022	12/11/2017	106.21103	106.2110266	106.2110266	105.1652247	102.3008476	99.52919382	96.84686422	94.2505158	91.73694886
171211A00045	12/11/2017	2.32	6/11/2021	12/11/2017	102.81516	102.8151645	102.8151645	102.1994654	100.8467712	99.51734348	98.21161718	96.92901321	95.6689709
171227A00018	12/27/2017	2.83	12/27/2024	12/27/2017	112.46924	112.4692374	112.4692374	110.4784626	105.5490742	100.870999	96.43023397	92.21352186	88.20841197
180104A00017	1/4/2018	2.77	1/3/2025	1/4/2018	112.22017	112.2201692	112.2201692	110.2183679	105.2772966	100.5891272	96.13971246	91.91566432	87.90441246
180109A00025	1/9/2018	2.33	1/11/2021	1/9/2018	101.9715	101.9714982	101.9714982	101.3917141	100.444202	99.51435916	98.60169465	97.70573555	96.82602615
180116A00048	1/16/2018	2.37	1/19/2021	1/16/2018	102.0564	102.0563997	102.0563997	101.4682415	100.4987899	99.54782297	98.61481553	97.69926224	96.80067656
180117A00017	1/17/2018	2.45	6/17/2021	1/17/2018	103.01631	103.0163129	103.0163129	102.3938735	101.0234276	99.67711181	98.35505039	97.05664463	95.78131503

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180122A00025	1/22/2018	2.46	1/22/2021	1/22/2018	102.16296	102.162959	102.162959	101.5714211	100.5933475	99.63407187	98.69305603	97.76978217	96.86375188
180123A00024	1/23/2018	2.44	2/16/2021	1/23/2018	102.29204	102.2920435	102.2920435	101.6907107	100.6459261	99.62114434	98.61718657	97.63342271	96.66924791
180124A00020	1/24/2018	2.53	1/24/2023	1/24/2018	107.28141	107.2814088	107.2814088	106.1811399	103.1889585	100.2971671	97.50194588	94.79954434	92.18637925
180124A00038	1/24/2018	2.51	9/1/2021	1/24/2018	103.56816	103.5681615	103.5681615	102.8800922	101.3035994	99.75879407	98.24488277	96.76100472	95.30633085
180125A00023	1/25/2018	2.57	1/25/2022	1/25/2018	104.56619	104.5661934	104.5661934	103.8018639	101.8274414	99.90059163	98.01997585	96.18420065	94.3919242
180202A00011	2/2/2018	2.45	2/2/2021	2/2/2018	102.38194	102.3819417	102.3819417	101.7791485	100.7681744	99.77705297	98.80537861	97.85258324	96.91812074
180214A00017	2/14/2018	2.41	2/14/2020	2/14/2018	100.08243	100.082433	100.082433	100.0609779	100.0221692	99.98340576	99.9446874	99.90601408	99.86738572
180220A00007	2/20/2018	2.51	2/20/2020	2/20/2018	100.12389	100.123891	100.123891	100.093238	100.0377988	99.98243346	99.92714178	99.87192363	99.81677887
180222A00024	2/22/2018	2.51	2/21/2020	2/22/2018	100.13009	100.1300856	100.1300856	100.0979004	100.0396915	99.98156159	99.92351068	99.86553858	99.80764511
180226A00034	2/26/2018	2.82	6/27/2022	2/26/2018	106.13206	106.1320639	106.1320639	105.2489478	102.8420518	100.5024562	98.2280177	96.01656365	93.86600656
180227A00016	2/27/2018	2.66	2/26/2021	2/27/2018	102.59047	102.5904704	102.5904704	101.987963	100.9153436	99.86293838	98.83244094	97.82317253	96.83448219
180315A00019	3/15/2018	2.61	3/16/2020	3/15/2018	100.29583	100.2958301	100.2958301	100.2241572	100.0994844	99.97513715	99.85111412	99.72741401	99.60403552
180402A00005	4/2/2018	2.94	4/3/2023	4/2/2018	108.46287	108.4628676	108.4628676	107.2921071	104.1056269	101.0309219	98.06349098	95.19896291	92.43317328
180403A00041	4/3/2018	2.91	4/3/2025	4/3/2018	114.60107	114.6010684	114.6010684	112.3800843	107.1103037	102.1221984	97.39925634	92.92595123	88.68774999
180417A00005	4/17/2018	2.67	4/19/2021	4/17/2018	103.14393	103.1439336	103.1439336	102.5372047	101.3391213	100.1456042	98.98015164	97.84178216	96.72955957
180420A00012	4/20/2018	2.91	4/20/2021	4/20/2018	103.24881	103.2488066	103.2488066	102.6430669	101.4447573	100.2508644	99.08505192	97.94633717	96.83378299
180425A00004	4/25/2018	2.97	4/26/2021	4/25/2018	103.36751	103.3675127	103.3675127	102.7612309	101.5473493	100.3371919	99.15585584	98.00232036	96.8756122
160524A00027	5/24/2016	3.06	5/27/2031	5/24/2016	131.07573	131.0757303	131.0757303	120.5779185	109.3974359	99.39503439	90.43906713	82.41318807	75.21458341
160606A00004	6/6/2016	2.43	6/8/2026	6/6/2016	113.55371	113.5537073	113.5537073	110.0978853	103.8091917	97.92366097	92.41346096	87.25272927	82.4175094
160610A00008	6/10/2016	1.75	6/10/2022	6/10/2016	103.46421	103.4642108	103.4642108	102.6090879	100.279973	98.01506281	95.81230974	93.66967567	91.58520102
160614A00066	6/14/2016	1.35	6/14/2021	6/14/2016	101.70853	101.7085343	101.7085343	101.0927969	99.73628496	98.40348047	97.09462237	95.80912184	94.54640892
160616A00027	6/16/2016	2.27	6/16/2026	6/16/2016	112.57552	112.5755163	112.5755163	109.1063776	102.8281069	96.95419675	91.45661732	86.30933623	81.48824651
160624A00065	6/28/2016	2.08	6/28/2021	6/28/2016	102.55491	102.5549057	102.5549057	101.9232862	100.5259523	99.1542791	97.80779826	96.4858764	95.18790095
160630A00021	6/30/2016	1.59	6/30/2023	6/30/2016	105.08172	105.0817194	105.0817194	103.8401145	100.4616023	97.21047201	94.08132787	91.0689698	88.16844703
160630A00100	6/30/2016	1.18	6/30/2020	6/30/2016	100.44472	100.4447186	100.4447186	100.1986741	99.78249112	99.36975237	98.96041528	98.55443799	98.15177931
160706A00029	7/6/2016	2.49	7/8/2030	7/6/2016	122.74998	122.749982	122.749982	114.0179203	103.9335185	94.84761719	86.65556656	79.26411664	72.59020348
160706A00067	7/6/2016	1.29	7/6/2020	7/6/2016	100.45404	100.454036	100.454036	100.1986245	99.76670251	99.3384983	98.91396399	98.49305251	98.07571761
160707A00001	7/7/2016	1.34	7/7/2020	7/7/2016	100.47887	100.4788734	100.4788734	100.2218033	99.78709479	99.35615269	98.92892816	98.5053732	98.08544063
160714A00020	9/6/2016	2.28	9/4/2026	9/6/2016	113.07023	113.0702295	113.0702295	109.328328	102.8436121	96.7890196	91.13383632	85.84962441	80.91011232
160718A00010	7/18/2016	1.65	7/18/2023	7/18/2016	105.36531	105.3653102	105.3653102	104.1027069	100.6732163	97.37474321	94.20165988	91.14854752	88.21025097
160727A00016	7/27/2016	1.78	7/27/2022	7/27/2016	103.72821	103.7282095	103.7282095	102.8311453	100.3759585	97.99187971	95.67651363	93.4274908	91.24253822
160728A00021	7/28/2016	1.23	7/28/2020	7/28/2016	100.55225	100.5522502	100.5522502	100.2605912	99.76781129	99.27986224	98.79667332	98.31817514	97.84429966
160729A00040	7/29/2016	1.19	7/29/2020	7/29/2016	100.53535	100.5353488	100.5353488	100.2420967	99.74664358	99.2560726	98.77031185	98.28929089	97.81294063

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160829A00039	8/29/2016	1.61	3/26/2021	8/29/2016	101.54104	101.5410444	101.5410444	100.9419749	99.81451753	98.69588282	97.60219107	96.53261559	95.48636586
160830A00031	8/30/2016	1.65	8/31/2021	8/30/2016	102.18459	102.1845856	102.1845856	101.502927	99.94051958	98.40954303	96.90917783	95.43857232	93.9969061
160830A00061	8/30/2018	1.89	8/30/2023	8/30/2018	105.75561	105.7556115	105.7556115	104.4515562	100.9210022	97.52848441	94.2679275	91.1334893	88.11961979
160913A00021	9/13/2016	1.52	9/14/2020	9/13/2016	100.79586	100.7958598	100.7958598	100.4211848	99.79845975	99.18343983	98.5759826	97.97594911	97.38320381
160920A00004	9/20/2016	1.68	9/20/2021	9/20/2016	102.30948	102.3094796	102.3094796	101.6190959	100.0012925	98.41679315	96.86467422	95.34400706	93.85389844
160922A00014	9/22/2016	2.06	9/22/2026	9/22/2016	113.03053	113.0305304	113.0305304	109.1952815	102.618262	96.48216077	90.75515599	85.40784487	80.41308529
160926A00018	9/26/2016	1.47	9/28/2020	9/26/2016	100.81133	100.811331	100.811331	100.411895	99.75133375	99.09942786	98.45600813	97.82090984	97.19397247
160926A00023	9/26/2016	1.74	9/26/2022	9/26/2016	103.87073	103.8707259	103.8707259	102.9184595	100.3007236	97.76245295	95.30077957	92.91292021	90.59621239
170831A00029	8/31/2017	1.87	8/31/2022	8/31/2017	104.58044	104.5804393	104.5804393	103.643293	101.0759759	98.58509382	96.16798127	93.82201432	91.54467988
170911A00044	9/11/2017	1.73	9/13/2021	9/11/2017	102.64268	102.6426819	102.6426819	101.9518722	100.3455828	98.77215931	97.23070969	95.72032468	94.24012939
170912A00007	9/12/2017	1.84	12/15/2020	9/12/2017	101.39266	101.3926595	101.3926595	100.8540769	99.98167606	99.12432038	98.28162314	97.45321074	96.63872219
170912A00008	9/12/2017	1.98	12/15/2021	9/12/2017	103.19039	103.1903896	103.1903896	102.4582958	100.6043948	98.79290284	97.02268089	95.29255033	93.60137367
170915A00001	9/15/2017	2.43	9/16/2024	9/15/2017	109.90011	109.9001069	109.9001069	108.1057003	103.4989905	99.11606838	94.94494123	90.97425316	87.19331878
170918A00108	9/18/2017	1.97	9/20/2022	9/18/2017	104.9444	104.9443997	104.9443997	103.9877377	101.3613747	98.81445006	96.34412281	93.94761943	91.62228628
170921A00063	9/21/2017	2.23	9/21/2022	9/21/2017	105.15764	105.1576426	105.1576426	104.2022674	101.5808067	99.03845968	96.57241129	94.17990315	91.85829599
170928A00020	9/29/2017	2.29	9/29/2022	9/29/2017	105.36152	105.3615223	105.3615223	104.3980338	101.7522742	99.18685576	96.69889346	94.28556778	91.94418194
171002A00012	10/2/2017	2.08	10/1/2021	10/2/2017	103.02672	103.026719	103.026719	102.3285975	100.6748499	99.05554524	97.46971608	95.91638752	94.39462251
171003A00007	10/3/2017	2.22	10/3/2022	10/3/2017	105.19454	105.1945406	105.1945406	104.2281685	101.574144	99.00099359	96.50579631	94.08570426	91.73799408
171005A00003	10/5/2017	2.02	10/5/2022	10/5/2017	105.15689	105.1568868	105.1568868	104.1852721	101.5158504	98.92813323	96.41914775	93.98600564	91.62594553
171010A00004	10/10/2017	1.92	10/12/2021	10/10/2017	103.09909	103.0990941	103.0990941	102.393758	100.705375	99.05270714	97.43471986	95.85038574	94.29871812
171012A00025	10/12/2017	1.93	10/13/2020	10/12/2017	101.18872	101.188724	101.188724	100.7627854	100.0603375	99.36766303	98.68455895	98.01082781	97.34627755
171018A00002	10/18/2017	1.82	10/19/2020	10/18/2017	101.23767	101.2376678	101.2376678	100.8006023	100.080483	99.37063016	98.67082535	97.98085618	97.30051624
171026A00045	10/30/2017	2.73	10/28/2022	10/30/2017	106.73952	106.7395219	106.7395219	105.7391853	102.9988353	100.3435163	97.77009734	95.27552351	92.85687692
171030A00094	10/30/2017	2.13	11/1/2021	10/30/2017	103.2695	103.2694979	103.2694979	102.5562455	100.8187547	99.11879601	97.4552596	95.82704456	94.23309466
171031A00061	10/31/2017	2.28	10/31/2022	10/31/2017	105.51001	105.5100125	105.5100125	104.5139507	101.7827574	99.13665907	96.5724928	94.08719251	91.67783014
171116A00012	11/16/2017	2.14	7/15/2020	11/16/2017	100.87188	100.8718781	100.8718781	100.6012162	100.1436717	99.69029161	99.24101922	98.79579873	98.35457538
171128A00028	11/28/2017	2.13	5/20/2020	11/28/2017	100.57457	100.5745711	100.5745711	100.3937903	100.0899831	99.78802274	99.48789231	99.18957516	98.89305483
171129A00010	11/29/2017	2.32	11/29/2021	11/29/2017	103.74483	103.7448293	103.7448293	103.0186748	101.2013525	99.42471053	97.68769161	95.98918352	94.32811237
171201A00025	12/1/2017	2.08	5/3/2021	12/1/2017	102.49297	102.4929675	102.4929675	101.888504	100.6575746	99.43166121	98.23444342	97.06491838	95.92212959
171205A00005	12/6/2017	2.27	12/6/2022	12/6/2017	106.20426	106.2042621	106.2042621	105.1650383	102.3163944	99.55949011	96.89098126	94.30757661	91.80612524
171206A00040	12/6/2017	2.23	12/6/2022	12/6/2017	106.08891	106.0889102	106.0889102	105.0503867	102.2033968	99.44810794	96.78117564	94.19930989	91.69936098
171207A00017	12/7/2017	2.23	10/16/2020	12/7/2017	101.41829	101.4182916	101.4182916	100.9867041	100.2752552	99.57381524	98.88217401	98.20012704	97.52747559
170731A00004	7/31/2017	2.16	7/29/2022	7/31/2017	104.69327	104.693272	104.693272	103.789016	101.3165328	98.91570803	96.58413924	94.31943434	92.11929877

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170731A00006	7/31/2017	2.16	8/1/2022	7/31/2017	104.70874	104.7087355	104.7087355	103.8016417	101.3211772	98.91280091	96.57408776	94.30262454	92.09609683
170804A00020	8/4/2017	2.13	8/1/2022	8/4/2017	104.63295	104.6329467	104.6329467	103.7262752	101.2467681	98.83932915	96.50153267	94.23096611	92.02531564
170818A00037	8/18/2017	2.08	8/18/2022	8/18/2017	104.59049	104.5904878	104.5904878	103.6684634	101.1450352	98.69584517	96.31835033	94.01003241	91.76847802
170821A00038	8/23/2017	2.39	8/23/2024	8/23/2017	110.48264	110.4826398	110.4826398	108.7084618	104.124615	99.76137959	95.60706061	91.65055885	87.88142379
170822A00017	8/22/2017	2.11	8/22/2022	8/22/2017	104.68774	104.687744	104.687744	103.7615045	101.2263726	98.76602421	96.37788927	94.05942332	91.80818832
170822A00019	8/22/2017	2.44	8/22/2024	8/22/2017	109.84815	109.8481485	109.8481485	108.090832	103.5490891	99.22533017	95.1080332	91.18625824	87.44970296
170831A00021	8/31/2017	1.99	2/25/2022	8/31/2017	103.54506	103.5450625	103.5450625	102.77028	100.7179359	98.7166169	96.76479276	94.86091593	93.00349886
170906A00037	9/6/2017	1.99	9/6/2022	9/6/2017	104.44775	104.4477473	104.4477473	103.5094315	100.9377678	98.44285026	96.02199198	93.67255019	91.39199436
170908A00016	9/10/2018	1.94	9/10/2021	9/10/2018	102.69468	102.6946798	102.6946798	102.0067002	100.412858	98.85143073	97.32155723	95.82234589	94.35293853
170913A00024	9/13/2017	1.8	8/17/2020	9/13/2017	100.85783	100.8578258	100.8578258	100.5318819	99.98465953	99.44338846	98.9079719	98.37831512	97.85432542
170915A00009	9/15/2017	1.86	9/15/2020	9/15/2017	101.01449	101.0144865	101.0144865	100.6375823	100.0113787	99.39295397	98.78216383	98.17886742	97.58292733
170926A00036	9/26/2017	1.7	9/25/2020	9/26/2017	101.04495	101.044946	101.044946	100.6495863	99.99509923	99.34910058	98.71142596	98.08191525	97.46041241
170928A00025	9/28/2017	1.73	9/28/2020	9/28/2017	101.07817	101.0781746	101.0781746	100.6774264	100.0146973	99.36066435	98.71515739	98.07801057	97.44906234
171010A00037	10/10/2017	2.09	10/12/2021	10/10/2017	103.0986	103.0985955	103.0985955	102.3951464	100.7118293	99.06403185	97.45073405	95.87091569	94.32359697
171016A00045	10/16/2017	2.2	10/17/2022	10/16/2017	105.21419	105.2141936	105.2141936	104.2337896	101.5430616	98.93526304	96.40735225	93.95637459	91.57950662
171018A00001	10/18/2017	1.96	10/18/2021	10/18/2017	103.19857	103.1985721	103.1985721	102.4900438	100.7849324	99.11614242	97.48261122	95.88328586	94.31715559
171018A00011	10/18/2017	2.68	10/18/2027	10/18/2017	119.9498	119.9498046	119.9498046	114.7566509	106.9874694	99.80853553	93.17177138	87.03322958	81.3527482
171026A00009	10/26/2017	2.75	10/27/2025	10/26/2017	114.10388	114.1038787	114.1038787	111.3506884	105.6020784	100.1894518	95.09139626	90.28793083	85.76045103
171030A00022	10/30/2017	2.28	10/31/2022	10/30/2017	105.51001	105.5100125	105.5100125	104.5139507	101.7827574	99.13665907	96.5724928	94.08719251	91.67783014
171121A00013	11/21/2017	1.98	11/23/2020	11/21/2017	101.53482	101.5348216	101.5348216	101.0342802	100.2185361	99.41592745	98.62613885	97.84886494	97.08380999
171129A00020	11/29/2017	2.89	11/30/2026	11/29/2017	117.7199	117.7199009	117.7199009	113.6260255	106.7792819	100.3982947	94.44900842	88.89992279	83.7219877
171205A00014	12/5/2017	2.49	12/5/2022	12/5/2017	106.30443	106.3044274	106.3044274	105.2695705	102.433885	99.6891769	97.03215079	94.45955288	91.96826765
171206A00038	12/6/2017	2.69	12/6/2027	12/6/2017	120.37439	120.3743949	120.3743949	115.0207686	107.1165215	99.821917	93.08671717	86.86497617	81.11474353
180109A00006	1/9/2018	2.18	1/8/2021	1/9/2018	101.96306	101.963056	101.963056	101.3850262	100.4435199	99.51945219	98.61234203	97.72172573	96.84715641
180110A00048	1/10/2018	2.37	1/7/2021	1/10/2018	101.99606	101.9960636	101.9960636	101.4201776	100.4831642	99.56342469	98.66048454	97.77388655	96.90318996
180116A00008	1/16/2018	2.37	1/15/2021	1/16/2018	102.0428	102.0427951	102.0427951	101.4586505	100.4998836	99.5591991	98.63608888	97.73006367	96.84065222
180116A00015	1/16/2018	3.06	1/18/2028	1/16/2018	121.98139	121.9813883	121.9813883	116.5196373	108.5200786	101.1418817	94.33338601	88.04737684	82.24078641
180116A00045	1/16/2018	2.49	1/11/2022	1/16/2018	104.32055	104.3205536	104.3205536	103.5668938	101.6315087	99.74191425	97.89684892	96.09499541	94.33508426
180119A00026	1/19/2018	2.87	1/21/2025	1/19/2018	112.84255	112.8425464	112.8425464	110.7992212	105.7976468	101.0542521	96.55446315	92.2844965	88.23141872
180125A00026	1/26/2018	2.46	1/25/2021	1/26/2018	102.18115	102.1811493	102.1811493	101.5865121	100.6002822	99.63315873	98.68459037	97.75404689	96.8410181
180130A00070	1/30/2018	3.14	1/29/2027	1/30/2018	119.89731	119.8973114	119.8973114	115.5723563	108.5098399	101.9369141	95.81705454	90.1165328	84.80429952
180201A00021	2/1/2018	2.38	2/3/2020	2/1/2018	100.01759	100.0175867	100.0175867	100.0129876	100.0046666	99.99635277	99.98804613	99.97974664	99.97145429
180201A00033	2/1/2018	2.53	2/1/2022	2/1/2018	104.89738	104.8973772	104.8973772	104.12459	102.1213271	100.1668575	98.2597879	96.3986738	94.58212482

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180206A00013	2/6/2018	2.72	2/6/2024	2/6/2018	110.57493	110.574933	110.574933	109.0577267	104.9980642	101.1133822	97.39530953	93.8358179	90.4273092
180214A00004	2/14/2018	2.71	2/14/2023	2/14/2018	107.97516	107.9751636	107.9751636	106.8510277	103.7891301	100.8315	97.9741044	95.21298734	92.5443726
180215A00009	2/15/2018	2.46	2/18/2020	2/15/2018	100.109	100.1090024	100.1090024	100.081415	100.0315182	99.98168511	99.93191556	99.88220945	99.83256665
180215A00016	2/15/2018	2.51	5/15/2020	2/15/2018	100.65915	100.6591518	100.6591518	100.486323	100.1960622	99.90748864	99.62058761	99.33534451	99.05174492
180215A00018	2/15/2018	2.57	9/15/2020	2/15/2018	101.46374	101.4637351	101.4637351	101.0858811	100.4580783	99.83806866	99.22570757	98.62085396	98.02337024
180227A00006	2/27/2018	2.5	3/24/2020	2/27/2018	100.33246	100.3324553	100.3324553	100.247188	100.1004085	99.95406812	99.80816492	99.66269693	99.51766218
180302A00017	3/2/2018	2.53	3/19/2020	3/2/2018	100.30497	100.304972	100.304972	100.2282036	100.0952442	99.96265177	99.83042481	99.69856174	99.56706105
180306A00010	3/6/2018	2.8	2/15/2022	3/6/2018	105.17215	105.172152	105.172152	104.3938412	102.3535863	100.3634931	98.42211237	96.52793884	94.67952475
180313A00026	3/13/2018	3.34	3/13/2028	3/13/2018	124.66725	124.6672528	124.6672528	118.985895	110.7482498	103.1589486	96.1632911	89.71138174	83.75777266
180315A00002	3/15/2018	2.61	3/16/2020	3/15/2018	100.29583	100.2958301	100.2958301	100.2241572	100.0994844	99.97513715	99.85111412	99.72741401	99.60403552
180319A00004	3/19/2018	2.47	3/19/2020	3/19/2018	100.31313	100.3131308	100.3131308	100.2362634	100.1031341	99.97037406	99.83798163	99.70595527	99.57429343
180320A00007	3/20/2018	2.92	3/21/2022	3/20/2018	105.66568	105.6656789	105.6656789	104.8625869	102.7234497	100.6385236	98.60615035	96.62464446	94.69238801
180322A00061	3/22/2018	2.46	3/23/2020	3/22/2018	100.33783	100.3378331	100.3378331	100.2541554	100.1099515	99.96617453	99.8228225	99.67989353	99.53738572
180323A00013	3/23/2018	3.18	3/23/2028	3/23/2018	125.16641	125.1664092	125.1664092	119.3808146	111.0294666	103.3398591	96.25581375	89.72614005	83.70423536
170721A00017	7/21/2017	1.8	7/21/2021	7/21/2017	102.50555	102.5055535	102.5055535	101.8495817	100.3882319	98.95503733	97.54932831	96.17038406	94.81750858
170724A00015	7/24/2017	2.32	7/24/2023	7/24/2017	107.10181	107.1018141	107.1018141	105.8262933	102.3675218	99.04076544	95.84037408	92.76088157	89.7970882
170803A00020	8/3/2017	2.84	8/3/2027	8/3/2017	119.07024	119.0702392	119.0702392	114.1800236	106.6896578	99.75325851	93.32690769	87.37028813	81.84646904
170803A00027	8/3/2017	1.67	8/3/2020	8/3/2017	100.79683	100.7968292	100.7968292	100.4946908	99.98486567	99.4802016	98.98062046	98.48604574	97.99640246
170810A00001	8/11/2017	1.66	8/11/2020	8/11/2017	100.82597	100.8259715	100.8259715	100.5099429	99.97826893	99.45221595	98.93169495	98.41661886	97.90690243
170818A00004	8/18/2017	1.95	8/18/2021	8/18/2017	102.60508	102.605083	102.605083	101.9294994	100.3979157	98.89676546	97.42528699	95.98266938	94.56813088
170824A00038	8/24/2017	2.23	8/24/2023	8/24/2017	106.95125	106.9512524	106.9512524	105.6447804	102.1084834	98.70974742	95.44255711	92.30111286	89.2799038
170825A00025	8/25/2017	2.12	8/25/2022	8/25/2017	104.72871	104.7287149	104.7287149	103.7994938	101.2559945	98.78768072	96.3919614	94.06627275	91.80815837
170829A00022	8/29/2017	1.72	8/30/2021	8/29/2017	102.56418	102.564182	102.564182	101.8796856	100.3122505	98.77637916	97.27125204	95.79601334	94.34983874
170829A00035	8/29/2017	1.58	8/31/2020	8/29/2017	100.86436	100.8643561	100.8643561	100.5136843	99.927561	99.34824751	98.77562579	98.20958051	97.64999897
170830A00044	8/30/2017	1.94	8/30/2021	8/30/2017	102.64448	102.6444825	102.6444825	101.9614384	100.3978954	98.86575609	97.36421612	95.89242527	94.44956453
170831A00010	8/31/2017	2.05	8/30/2022	8/31/2017	104.5715	104.5714954	104.5714954	103.6385839	101.0840761	98.6053617	96.19981508	93.86484174	91.59795652
170906A00033	9/6/2017	1.75	9/8/2020	9/6/2017	100.91597	100.9159651	100.9159651	100.5516475	99.94471567	99.34509389	98.7526506	98.16725744	97.58878904
170929A00057	9/29/2017	2.16	9/29/2023	9/29/2017	107.56447	107.5644686	107.5644686	106.212561	102.55202	99.03735313	95.66198275	92.41961539	89.30427999
171011A00013	10/11/2017	2.77	10/13/2026	10/11/2017	116.57545	116.5754481	116.5754481	112.6561234	105.9639619	99.71982649	93.89133152	88.4485545	83.3638811
171012A00020	10/12/2017	1.93	10/13/2020	10/12/2017	101.18872	101.188724	101.188724	100.7627854	100.0603375	99.36766303	98.68455895	98.01082781	97.34627755
171012A00026	10/12/2017	2.09	10/12/2021	10/12/2017	103.0986	103.0985955	103.0985955	102.3951464	100.7118293	99.06403185	97.45073405	95.87091569	94.32359697
171017A00024	10/17/2017	2.04	4/19/2021	10/17/2017	102.17048	102.1704839	102.1704839	101.5687846	100.3798781	99.19541937	98.03880811	96.90907104	95.80527981
171024A00069	10/24/2017	1.99	10/26/2020	10/24/2017	101.294	101.293996	101.293996	100.8456898	100.1077827	99.38064365	98.66403821	97.95773876	97.26152421

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					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	117.1361	117.1361014	117.1361014	113.1652393	106.4237111	100.1352637	94.26700324	88.7885559	83.67190124
171030A00020	10/30/2017	2.16	1/14/2022	10/30/2017	103.68628	103.6862756	103.6862756	102.9336677	100.9967933	99.10597101	97.25991194	95.45728629	93.69681273
171031A00037	10/31/2017	1.98	10/30/2020	10/31/2017	101.3057	101.3056978	101.3056978	100.8505605	100.1018332	99.36418378	98.63736798	97.92114862	97.21529538
171102A00001	11/3/2017	1.84	11/3/2020	11/3/2017	101.32394	101.323937	101.323937	100.8606892	100.0997285	99.35021186	98.61188274	97.88449211	97.16779831
171115A00006	11/15/2017	2.14	11/16/2020	11/15/2017	101.50751	101.5075099	101.5075099	101.0208887	100.2256988	99.44300003	98.67249977	97.91391433	97.16696879
170822A00020	8/22/2017	2.59	8/22/2025	8/22/2017	112.76902	112.7690212	112.7690212	110.2208495	104.6748737	99.44479303	94.51104231	89.85527708	85.46038204
170824A00031	8/24/2017	1.98	8/24/2021	8/24/2017	102.68025	102.6802465	102.6802465	102.0006935	100.452676	98.93558181	97.44862854	95.99098552	94.56185228
170825A00022	8/30/2017	1.75	2/25/2020	8/30/2017	100.10282	100.1028174	100.1028174	100.064525	99.99527676	99.92613034	99.85708554	99.78814215	99.71929996
170831A00050	8/31/2017	1.72	6/14/2021	8/31/2017	102.22197	102.2219732	102.2219732	101.6041844	100.2439831	98.90753672	97.59509833	96.30607742	95.03990241
170831A00051	8/31/2017	1.75	8/31/2021	8/31/2017	102.61675	102.6167466	102.6167466	101.9314124	100.360899	98.82203796	97.31400636	95.8359449	94.38702592
170905A00072	9/5/2017	1.84	3/5/2021	9/5/2017	101.72928	101.7292841	101.7292841	101.1296625	100.0460424	98.98041564	97.93739284	96.91626087	95.91633627
170905A00075	9/5/2017	1.72	3/5/2020	9/5/2017	100.13821	100.138206	100.138206	100.0852952	99.9911554	99.89720041	99.80342965	99.70984256	99.61643859
170906A00005	9/6/2017	1.69	9/7/2021	9/6/2017	102.55097	102.5509721	102.5509721	101.8630376	100.2739193	98.7170941	97.19170009	95.69685161	94.23169599
170906A00028	9/6/2017	1.57	9/8/2020	9/6/2017	100.89063	100.8906331	100.8906331	100.5257266	99.91782906	99.31726779	98.7239105	98.13762805	97.55829437
170912A00009	9/12/2017	2.11	12/15/2022	9/12/2017	105.26262	105.2626198	105.2626198	104.2232854	101.3767243	98.62241316	95.95696228	93.37704391	90.87947306
170913A00003	9/13/2017	2.08	9/13/2022	9/13/2017	104.71838	104.7183769	104.7183769	103.7724561	101.178381	98.66213439	96.22096944	93.85219038	91.55321678
170914A00052	9/14/2017	1.85	9/14/2020	9/14/2017	101.00375	101.0037504	101.0037504	100.6286376	100.0051754	99.38942485	98.78124339	98.180492	97.58703502
170926A00002	9/26/2017	1.73	12/3/2020	9/26/2017	101.37339	101.3733862	101.3733862	100.8550944	100.0132034	99.18531288	98.37107602	97.57015729	96.78223207
171002A00011	10/2/2017	1.9	8/31/2020	10/2/2017	100.97159	100.9715872	100.9715872	100.6213138	100.0358402	99.45715413	98.88513821	98.31967777	97.76066076
171002A00013	10/2/2017	2.23	11/30/2022	10/2/2017	105.53063	105.5306266	105.5306266	104.5058533	101.6941338	98.97233025	96.33718911	93.78550715	91.31421655
171004A00034	10/4/2017	1.73	10/5/2020	10/4/2017	101.1095	101.1095028	101.1095028	100.6966137	100.0148355	99.34226347	98.67871197	98.02400043	97.37795305
171010A00024	10/10/2017	2.38	10/10/2023	10/10/2017	107.7594	107.7594031	107.7594031	106.4006481	102.7256859	99.19769842	95.81003159	92.55631799	89.43051822
171016A00005	10/16/2017	2.2	10/17/2022	10/16/2017	105.21419	105.2141936	105.2141936	104.2337896	101.5430616	98.93526304	96.40735225	93.95637459	91.57950662
171016A00033	10/16/2017	2.2	10/17/2022	10/16/2017	105.21419	105.2141936	105.2141936	104.2337896	101.5430616	98.93526304	96.40735225	93.95637459	91.57950662
171018A00003	10/18/2017	2.23	10/18/2023	10/18/2017	107.9349	107.9348986	107.9348986	106.5600118	102.8431227	99.27602664	95.85187979	92.56414709	89.40663293
171025A00020	10/25/2017	2.02	10/26/2020	10/25/2017	101.31639	101.3163886	101.3163886	100.8680275	100.1300284	99.40279837	98.68610285	97.97971425	97.28341144
171027A00005	10/27/2017	1.88	10/27/2020	10/27/2017	101.32047	101.3204704	101.3204704	100.8695633	100.1275011	99.39632422	98.67579466	97.96568111	97.26575896
171030A00018	10/30/2017	1.88	3/16/2020	10/30/2017	100.2046	100.2046049	100.2046049	100.1329894	100.0084175	99.88417098	99.76024844	99.63664859	99.51337014
171030A00095	10/30/2017	2.28	10/31/2022	10/30/2017	105.51001	105.5100125	105.5100125	104.5139507	101.7827574	99.13665907	96.5724928	94.08719251	91.67783014
161006A00012	10/6/2016	1.98	10/7/2024	10/6/2016	108.82188	108.8218779	108.8218779	106.9938227	102.3295139	97.89532312	93.67870591	89.66783278	85.85158302
161020A00002	10/20/2016	1.96	8/15/2023	10/20/2016	105.93953	105.9395331	105.9395331	104.6494716	101.1542858	97.7945667	94.56440981	91.45812823	88.4703167
161031A00006	10/31/2016	1.76	11/1/2021	10/31/2016	102.61347	102.6134719	102.6134719	101.9032268	100.1716561	98.47752436	96.81970911	95.19711232	93.60868057
161031A00037	10/31/2016	1.47	4/17/2020	10/31/2016	100.26082	100.2608174	100.2608174	100.1347193	99.92200283	99.71020115	99.49930836	99.28931855	99.08022589

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
161115A00011	11/15/2016	2.46	11/15/2023	11/15/2016	108.27138	108.2713786	108.2713786	106.8713474	103.09283	99.46879112	95.99215383	92.65613452	89.45430025
161117A00014	11/17/2016	1.88	11/17/2020	11/17/2016	101.30278	101.3027771	101.3027771	100.8148646	100.017891	99.23348289	98.46134465	97.70119003	96.95274159
161213A00016	12/13/2016	2.06	12/14/2020	12/13/2016	101.58237	101.582367	101.582367	101.0450141	100.1743836	99.31871711	98.47763113	97.65075523	96.83773144
161214A00004	12/14/2016	1.91	5/14/2020	12/14/2016	100.47961	100.4796062	100.4796062	100.3085863	100.0214067	99.73588135	99.45199582	99.16973596	98.88908775
170110A00023	1/10/2017	2.08	1/10/2022	1/10/2017	103.86385	103.8638481	103.8638481	103.1108575	101.1760898	99.2871872	97.44286823	95.64181264	93.88274821
170117A00037	1/17/2017	2	1/18/2022	1/17/2017	103.74802	103.7480212	103.7480212	102.9901705	101.0356205	99.12791009	97.26570982	95.4476573	93.67244031
170123A00039	1/23/2017	2.79	1/23/2026	1/23/2017	116.1483	116.1482983	116.1482983	113.072152	107.0051913	101.3068191	95.95279055	90.92047558	86.1888443
170130A00031	1/30/2017	2.96	7/30/2025	1/30/2017	114.67023	114.6702306	114.6702306	112.1658749	106.6263495	101.3986224	96.46359909	91.80334117	87.40110046
170215A00032	2/15/2017	2.33	7/30/2020	2/15/2017	101.04632	101.0463189	101.0463189	100.7510275	100.2521364	99.75817207	99.26906196	98.78473484	98.30512089
170215A00043	2/15/2017	2.7	8/28/2024	2/15/2017	111.08192	111.0819155	111.0819155	109.3047779	104.7199373	100.3553852	96.19946413	92.24109903	88.46986188
170216A00045	2/16/2017	3.73	2/17/2037	2/16/2017	157.68614	157.6861356	153.2414395	134.4335887	117.6831739	103.3976699	91.19125456	80.74079476	71.77543828
170222A00025	2/22/2017	1.63	2/21/2020	2/22/2017	100.08782	100.0878191	100.0878191	100.0556073	99.99735076	99.93917429	99.88107771	99.82306085	99.76512354
170224A00044	5/24/2017	3.29	5/24/2029	5/24/2017	127.78656	127.7865578	127.7865578	120.5773922	111.1723607	102.6016286	94.78625411	87.65507281	81.1439837
170228A00014	2/28/2017	2.89	3/1/2027	2/28/2017	119.82243	119.8224258	119.8224258	115.3626045	108.1644154	101.4728917	95.24969338	89.4594799	84.06975536
170309A00024	3/9/2017	2.27	3/9/2021	3/9/2017	102.22722	102.2272188	102.2272188	101.6258084	100.5306418	99.45176183	98.39597499	97.3625457	96.35076934
170310A00025	3/10/2017	2.02	3/5/2020	3/10/2017	100.16653	100.1665325	100.1665325	100.113607	100.0194409	99.92545969	99.83166274	99.73804951	99.64461943
170310A00032	3/10/2017	2.27	3/10/2022	3/10/2017	104.58923	104.5892303	104.5892303	103.7977001	101.6918094	99.63896717	97.63755328	95.6859335	93.78253822
170313A00027	3/13/2017	2.27	3/14/2022	3/13/2017	104.6131	104.6130974	104.6130974	103.8183399	101.7015994	99.63837694	97.6270259	95.66589071	93.7533817
170313A00032	3/13/2017	3.69	6/14/2032	3/13/2017	141.66372	141.6637212	141.6637212	128.8075609	116.2614256	105.1284112	95.2392344	86.44569509	78.61806024
170314A00004	3/14/2017	1.84	3/16/2020	3/14/2017	100.21478	100.2147816	100.2147816	100.1430727	100.0183399	99.89393438	99.7698549	99.64610011	99.5226687
180430A00015	4/30/2018	3.02	4/15/2022	4/30/2018	106.06952	106.0695234	106.0695234	105.2457167	103.0347461	100.8811465	98.78309359	96.73875715	94.74638268
180507A00015	5/7/2018	2.77	5/7/2020	5/7/2018	100.67882	100.6788192	100.6788192	100.5188574	100.2505208	99.98362271	99.71815166	99.45409614	99.19144481
180522A00008	5/22/2018	2.98	5/24/2021	5/22/2018	103.58984	103.5898365	103.5898365	102.9822605	101.6776135	100.3905606	99.12778313	97.88861772	96.67242519
180522A00016	5/22/2018	2.83	5/22/2020	5/22/2018	100.80272	100.8027198	100.8027198	100.6184549	100.3087147	100.0008885	99.6949586	99.39090744	99.08871771
180522A00039	5/22/2018	3.43	5/22/2028	5/22/2018	127.768	127.7679963	127.7679963	121.736648	113.1354089	105.2256899	97.94795616	91.24800429	85.0765529
180523A00012	5/23/2018	2.8	5/22/2020	5/23/2018	100.79339	100.7933911	100.7933911	100.6091372	100.2994154	99.99160767	99.68569611	99.3816632	99.07949164
180524A00029	5/24/2018	2.74	5/24/2021	5/24/2018	103.48476	103.4847588	103.4847588	102.8761921	101.568976	100.2794372	99.0142703	97.77280806	96.55440783
180525A00005	5/25/2018	3.32	5/25/2028	5/25/2018	126.87203	126.8720339	126.8720339	120.8492927	112.2761589	104.3936974	97.14237146	90.46797732	84.32123702
180529A00007	5/29/2018	2.83	6/1/2021	5/29/2018	103.44727	103.447272	103.447272	102.8391405	101.5095893	100.2019507	98.91720416	97.65480024	96.41420644
180529A00066	5/29/2018	2.99	5/26/2023	5/29/2018	109.01573	109.015735	109.015735	107.7870598	104.450846	101.2361348	98.13796795	95.15151041	92.27215405
180530A00003	5/30/2018	2.49	5/29/2020	5/30/2018	100.78346	100.7834603	100.7834603	100.5876658	100.2583034	99.93109637	99.60602358	99.2830642	98.96219769
180530A00012	5/30/2018	2.64	5/29/2020	5/30/2018	100.79023	100.7902264	100.7902264	100.594708	100.2658046	99.93904779	99.6144167	99.29189065	98.97144925
180530A00118	5/30/2018	2.9	11/30/2022	5/30/2018	107.44661	107.4466142	107.4466142	106.4102823	103.5713162	100.8228956	98.16177432	95.58472862	93.08867112

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180604A00027	6/4/2018	2.87	6/4/2021	6/4/2018	103.52277	103.5227722	103.5227722	102.9113182	101.5729367	100.2568964	98.96402108	97.69375141	96.44554576
180604A00044	6/4/2018	2.74	6/4/2020	6/4/2018	100.86477	100.8647671	100.8647671	100.6596013	100.3140995	99.97096846	99.63018377	99.29172144	98.95555778
180605A00010	6/5/2018	2.87	6/5/2023	6/5/2018	109.31246	109.3124612	109.3124612	108.0662612	104.6833091	101.424782	98.28557363	95.26070452	92.34542891
180615A00066	6/15/2018	3	6/14/2024	6/15/2018	112.7402	112.7401997	112.7401997	111.048271	106.5975539	102.3524024	98.30237719	94.43750966	90.74839054
180618A00024	6/18/2018	2.91	4/13/2021	6/18/2018	103.18565	103.1856521	103.1856521	102.5803475	101.3998955	100.2246783	99.07668351	97.95497279	96.85865055
180621A00051	6/25/2018	3.63	6/23/2023	6/25/2018	111.41416	111.4141639	111.4141639	110.1411503	106.6896455	103.3660864	100.1651968	97.08180752	94.11099437
180622A00018	6/22/2018	2.92	6/22/2023	6/22/2018	109.61336	109.613364	109.613364	108.3483026	104.9142231	101.6080313	98.42441009	95.35817954	92.40440627
180705A00003	7/5/2018	3.04	7/5/2023	7/5/2018	109.48467	109.4846745	109.4846745	108.2127243	104.7620497	101.4407883	98.24352283	95.16497442	92.20011752
180705A00059	7/5/2018	2.93	7/6/2021	7/5/2018	103.82446	103.8244604	103.8244604	103.1796848	101.751725	100.3504229	98.97521471	97.62543481	96.30043978
180705A00062	7/5/2018	3.04	7/6/2023	7/5/2018	109.49223	109.4922324	109.4922324	108.2191624	104.7657587	101.4419671	98.24235717	95.16163829	92.19477365
180719A00061	7/19/2018	3.07	7/19/2023	7/19/2018	109.69534	109.6953421	109.6953421	108.4069852	104.9163123	101.557896	98.32613693	95.21558592	92.22105795
171207A00036	12/7/2017	2.23	12/7/2022	12/7/2017	106.09476	106.0947609	106.0947609	105.0551127	102.2054337	99.4476208	96.77832055	94.19423427	91.69220406
171208A00006	12/8/2017	2.67	12/8/2026	12/8/2017	117.66602	117.666021	117.666021	113.5069591	106.5903592	100.1475888	94.14378386	88.54672123	83.32669851
171220A00004	12/20/2017	2.52	12/20/2021	12/20/2017	104.24417	104.2441666	104.2441666	103.5043334	101.6272183	99.79325581	98.00130044	96.25014492	94.53862451
180111A00044	1/11/2018	2.34	1/11/2021	1/11/2018	101.9811	101.9810954	101.9810954	101.4012815	100.45372	99.52382841	98.6111158	97.71510921	96.83535293
180112A00025	1/12/2018	2.39	1/12/2021	1/12/2018	102.04452	102.0445215	102.0445215	101.4634137	100.5127038	99.57977333	98.66412689	97.76528728	96.88279472
180116A00009	1/16/2018	2.49	1/14/2022	1/16/2018	104.33877	104.3387739	104.3387739	103.582996	101.6395926	99.74235341	97.89000008	96.08119934	94.31466657
180116A00012	1/16/2018	2.4	1/15/2021	1/16/2018	102.21689	102.2168888	102.2168888	101.6309454	100.669247	99.7257127	98.79983125	97.89111047	96.99907634
180116A00014	1/16/2018	3.01	1/19/2027	1/16/2018	118.91107	118.9110681	118.9110681	114.6340897	107.628479	101.1073958	95.03479673	89.37739216	84.10452793
180116A00046	1/16/2018	2.58	1/11/2023	1/16/2018	106.79629	106.7962915	106.7962915	105.7179201	102.7792906	99.93793272	97.1902029	94.53251457	91.96143881
180118A00037	1/18/2018	2.88	1/21/2025	1/18/2018	112.89262	112.8926246	112.8926246	110.8488196	105.8460261	101.1014574	96.60053764	92.3294816	88.27535393
180130A00091	1/30/2018	2.74	1/25/2023	1/30/2018	107.36675	107.3667521	107.3667521	106.2691025	103.2857475	100.4022808	97.6149167	94.91992877	92.31375661
180207A00012	2/7/2018	2.53	2/7/2022	2/7/2018	104.9373	104.9372963	104.9372963	104.1615246	102.1401801	100.1683288	98.24454364	96.36734962	94.53532736
180212A00042	2/12/2018	2.57	2/11/2022	2/12/2018	105.04625	105.0462486	105.0462486	104.2680781	102.2338257	100.2495516	98.31380747	96.42509723	94.58198158
180213A00013	2/13/2018	2.35	2/13/2020	2/13/2018	100.07438	100.0743787	100.0743787	100.0544569	100.0184208	99.98242565	99.94647141	99.91055801	99.87468537
180214A00015	2/14/2018	2.41	2/14/2020	2/14/2018	100.08243	100.082433	100.082433	100.0609779	100.0221692	99.98340576	99.9446874	99.90601408	99.86738572
180215A00043	2/15/2018	2.63	1/7/2021	2/15/2018	102.24272	102.2427222	102.2427222	101.666078	100.7278091	99.80683024	98.90266665	98.01486076	97.14297148
180216A00014	2/16/2018	2.33	2/18/2020	2/16/2018	100.11027	100.1102698	100.1102698	100.0826421	100.032673	99.98276836	99.93292816	99.88315221	99.83344039
180220A00030	2/20/2018	2.36	2/20/2020	2/20/2018	100.12419	100.1241885	100.1241885	100.0934909	100.0379719	99.98252759	99.92715791	99.87186267	99.81664173
180226A00015	2/26/2018	2.85	9/28/2022	2/26/2018	106.86028	106.860276	106.860276	105.8889775	103.2258358	100.6433309	98.13859499	95.70880197	93.35124859
180308A00015	3/8/2018	2.82	12/15/2021	3/8/2018	104.7817	104.7817039	104.7817039	104.0420533	102.1728598	100.346329	98.56134942	96.81673471	95.11133985
180314A00005	3/14/2018	2.74	3/15/2021	3/14/2018	102.7935	102.7934956	102.7934956	102.1899992	101.0785002	99.98071691	98.90675109	97.85583341	96.82722742
180315A00017	3/15/2018	2.72	3/15/2021	3/15/2018	102.77081	102.7708118	102.7708118	102.1673957	101.0560324	99.95838289	98.88454882	97.83376093	96.80528279

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180320A00006	3/20/2018	2.66	3/20/2020	3/20/2018	100.32904	100.3290412	100.3290412	100.2505607	100.1148154	99.97945133	99.84446679	99.70986016	99.57562985
180323A00009	3/23/2018	2.64	3/23/2020	3/23/2018	100.34638	100.3463752	100.3463752	100.2627945	100.1187556	99.97514125	99.83194945	99.68917835	99.54682608
180329A00033	4/2/2018	2.79	4/1/2021	4/2/2018	102.9569	102.956897	102.956897	102.3526251	101.2032264	100.0604752	98.94349095	97.85140941	96.78340461
180403A00006	4/3/2018	3.07	4/3/2028	4/3/2018	124.3515	124.3515043	124.3515043	118.5470803	110.2004637	102.5180863	95.44332981	88.92463974	82.91509863
180406A00009	4/6/2018	2.58	4/6/2021	4/6/2018	102.94433	102.9443291	102.9443291	102.3385428	101.173905	100.0153617	98.88329462	97.77680395	96.69503008
180411A00001	4/11/2018	2.84	1/25/2022	4/11/2018	105.10826	105.1082563	105.1082563	104.3412718	102.3613476	100.4290918	98.54317412	96.70219828	94.90481962
180412A00016	4/12/2018	2.79	4/12/2021	4/12/2018	103.03301	103.0330054	103.0330054	102.4282813	101.2512653	100.0795903	98.93500213	97.8165692	96.72340209
180416A00027	4/16/2018	2.86	4/16/2021	4/16/2018	103.15855	103.1585488	103.1585488	102.5532093	101.3653479	100.182367	99.02697385	97.89821128	96.79516587
180425A00008	4/25/2018	2.89	4/25/2022	4/25/2018	106.26508	106.2650759	106.2650759	105.4303746	103.1817792	100.9922536	98.85988171	96.78275581	94.7590485
180426A00017	4/26/2018	2.85	4/26/2022	4/26/2018	106.18221	106.1822087	106.1822087	105.3472115	103.0968172	100.905605	98.77165057	96.69304074	94.66794279
180426A00053	4/26/2018	2.94	4/26/2023	4/26/2018	109.237	109.2369997	109.2369997	108.0335732	104.7578677	101.5992041	98.55276034	95.61387468	92.77811103
180427A00030	4/27/2018	2.62	4/27/2020	4/27/2018	100.60399	100.6039931	100.6039931	100.4603089	100.2192386	99.97932764	99.74056775	99.50295063	99.26646809
180507A00019	5/7/2018	2.77	5/7/2020	5/7/2018	100.67882	100.6788192	100.6788192	100.5188574	100.2505208	99.98362271	99.71815166	99.45409614	99.19144481
180511A00035	5/11/2018	2.93	5/11/2023	5/11/2018	109.32099	109.3209879	109.3209879	108.1011894	104.7842375	101.587082	98.50479247	95.53258842	92.6659181
180514A00011	5/14/2018	2.8	5/14/2020	5/14/2018	100.7366	100.7365951	100.7365951	100.5652912	100.2776282	99.99162149	99.70725676	99.42451978	99.14339652
180516A00002	5/16/2018	2.84	5/17/2021	5/16/2018	103.56483	103.5648274	103.5648274	102.9560567	101.671519	100.4004643	99.1552582	97.9351184	96.73929433
180524A00006	5/24/2018	2.71	2/16/2021	5/24/2018	102.74779	102.7477925	102.7477925	102.1435309	101.0937509	100.0640942	99.05538249	98.06698129	97.09828147
180524A00050	5/24/2018	2.9	5/24/2021	5/24/2018	103.4836	103.4836004	103.4836004	102.876438	101.572523	100.286193	99.02412627	97.78565981	96.57015475
180529A00042	5/29/2018	3.42	5/30/2028	5/29/2018	125.9757	125.9756966	125.9756966	120.0215594	111.5450642	103.7501628	96.57821186	89.97579159	83.89432805
180529A00059	5/29/2018	2.7	5/29/2020	5/29/2018	100.81005	100.8100495	100.8100495	100.6145069	100.2855626	99.95876511	99.63409352	99.31152716	98.99104566
180529A00063	5/29/2018	2.95	5/31/2022	5/29/2018	106.25063	106.2506317	106.2506317	105.3885431	103.0531973	100.7812908	98.57087467	96.41995662	94.32661996
180530A00007	5/30/2018	2.66	11/30/2021	5/30/2018	104.71732	104.7173208	104.7173208	103.9841073	102.1489117	100.3549009	98.60101973	96.88614211	95.20918048
180530A00027	5/30/2018	3.61	6/1/2032	5/30/2018	140.56421	140.5642052	140.5642052	127.8212749	115.3635134	104.307089	94.484443	85.74884361	77.97180472
180531A00015	5/31/2018	2.95	5/31/2023	5/31/2018	108.91844	108.9184388	108.9184388	107.6850887	104.3374798	101.1122401	98.00438352	95.00904093	92.12157031
180531A00032	5/31/2018	2.8	6/1/2021	5/31/2018	103.40677	103.4067692	103.4067692	102.7987969	101.4695289	100.1621699	98.87769837	97.61556485	96.375237
180601A00006	6/1/2018	2.59	6/1/2020	6/1/2018	100.8371	100.8371018	100.8371018	100.6364303	100.2987222	99.96327677	99.63007146	99.29908385	98.97029189
171031A00012	10/31/2017	2.28	10/31/2022	10/31/2017	105.51001	105.5100125	105.5100125	104.5139507	101.7827574	99.13665907	96.5724928	94.08719251	91.67783014
171116A00013	11/16/2017	2.2	1/15/2021	11/16/2017	101.87775	101.8777507	101.8777507	101.2941243	100.3362157	99.39637817	98.47410385	97.56890368	96.68030666
171122A00009	11/22/2017	2.2	11/22/2022	11/22/2017	105.92173	105.9217292	105.9217292	104.8984357	102.0910143	99.37295462	96.74099183	94.19192718	91.7226999
171130A00048	11/30/2017	2.15	5/15/2020	11/30/2017	100.5542	100.554202	100.554202	100.3814902	100.0914282	99.80305263	99.51634872	99.23130187	98.94789767
171130A00053	11/30/2017	2.19	8/17/2020	11/30/2017	101.07324	101.0732376	101.0732376	100.7468901	100.1989855	99.6570376	99.12094946	98.59062629	98.06597535
171205A00004	12/6/2017	2.07	12/7/2020	12/6/2017	101.68485	101.6848523	101.6848523	101.1585604	100.3044704	99.46476311	98.63907757	97.82706467	97.02838686
171206A00008	12/6/2017	2.36	12/6/2021	12/6/2017	103.85883	103.8588268	103.8588268	103.1284729	101.2916785	99.4963729	97.74147275	96.02583767	94.34836656

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
171206A00041	12/6/2017	2.44	12/6/2024	12/6/2017	111.38662	111.3866185	111.3866185	109.4329054	104.5528686	99.92019859	95.52119565	91.34289655	87.37312085
171206A00042	12/6/2017	2.24	12/7/2020	12/6/2017	101.70278	101.7027835	101.7027835	101.1775315	100.3250939	99.486985	98.66284572	97.85232891	97.05509883
171207A00019	12/7/2017	2.41	6/16/2022	12/7/2017	105.07184	105.0718446	105.0718446	104.2032772	101.8388243	99.5398199	97.30418999	95.12984456	93.01477465
171211A00024	12/11/2017	2.26	12/11/2020	12/11/2017	101.74219	101.7421911	101.7421911	101.2097133	100.346363	99.49770983	98.66338067	97.84301503	97.03626441
171212A00023	12/12/2017	2.3	2/12/2021	12/12/2017	102.12157	102.1215705	102.1215705	101.5208697	100.4874896	99.47402817	98.48095728	97.50766611	96.55356799
171212A00024	12/12/2017	2.29	12/12/2022	12/12/2017	106.29804	106.2980387	106.2980387	105.2517065	102.3860748	99.61319583	96.92967063	94.33215527	91.81744914
171213A00019	12/13/2017	2.17	12/13/2021	12/13/2017	103.88178	103.8817757	103.8817757	103.1453546	101.2838628	99.46491392	97.68737379	95.95006026	94.2518325
171213A00032	12/13/2017	2.17	12/13/2021	12/13/2017	103.88178	103.8817757	103.8817757	103.1453546	101.2838628	99.46491392	97.68737379	95.95006026	94.2518325
180103A00011	1/3/2018	2.35	1/3/2023	1/3/2018	106.60809	106.6080851	106.6080851	105.5357545	102.6082993	99.77735661	97.03932119	94.39065079	91.8279581
180109A00028	1/9/2018	2.6	1/9/2025	1/9/2018	112.40458	112.4045775	112.4045775	110.3762822	105.3850444	100.6508993	96.15937148	91.8967764	87.85027035
180110A00029	1/10/2018	3.13	1/10/2028	1/10/2018	122.47868	122.4786793	122.4786793	117.0326104	109.0330427	101.6528427	94.8406685	88.54958057	82.73675042
180123A00023	1/23/2018	2.43	1/29/2021	1/23/2018	102.17512	102.1751158	102.1751158	101.5764448	100.5795053	99.60208306	98.64360929	97.7035371	96.78134044
180123A00045	1/23/2018	2.43	1/25/2021	1/23/2018	102.15119	102.1511944	102.1511944	101.5566535	100.5705833	99.60361733	98.65520437	97.72481423	96.81193675
180124A00018	1/24/2018	2.3	1/25/2021	1/24/2018	102.18031	102.180312	102.180312	101.584311	100.5958432	99.62656047	98.67590815	97.74335299	96.8283819
180126A00028	1/26/2018	2.69	1/26/2023	1/26/2018	107.22266	107.2226647	107.2226647	106.1247936	103.1410053	100.2572266	97.46966138	94.77457519	92.16840027
180126A00029	1/26/2018	2.88	1/27/2025	1/26/2018	112.93496	112.934962	112.934962	110.878885	105.8599178	101.1007979	96.58681104	92.30404514	88.23944872
180130A00084	1/30/2018	2.59	1/30/2023	1/30/2018	107.50365	107.5036539	107.5036539	106.3951982	103.3840365	100.4743945	97.66239197	94.94421714	92.31622946
170315A00023	3/15/2017	2.04	3/16/2020	3/15/2017	100.2246	100.2245995	100.2245995	100.1529713	100.0283774	99.90410877	99.78016421	99.65654238	99.533242
170322A00015	3/22/2017	2.31	3/22/2022	3/22/2017	104.35398	104.3539846	104.3539846	103.5568021	101.4293064	99.3558752	97.33482602	95.36447613	93.44321033
170412A00045	4/12/2017	2.01	4/12/2022	4/12/2017	104.20757	104.2075712	104.2075712	103.393023	101.2031424	99.07021484	96.99239043	94.96785384	92.99486491
170417A00099	4/17/2017	1.58	4/17/2020	4/17/2017	100.31217	100.3121727	100.3121727	100.1858553	99.97277096	99.76060627	99.54935521	99.33901182	99.12957017
170424A00009	4/24/2017	2.04	4/25/2022	4/24/2017	104.34345	104.3434506	104.3434506	103.518797	101.2920474	99.12394942	97.01256413	94.95599672	92.95243215
170426A00018	4/26/2017	1.89	4/27/2020	4/26/2017	100.39614	100.3961398	100.3961398	100.2528552	100.0124575	99.77321248	99.53511194	99.29814767	99.06231157
170427A00047	4/27/2017	3.18	4/27/2029	4/27/2017	126.5526	126.5525954	126.5525954	119.4730211	110.1832666	101.7130782	93.98524546	86.93019811	80.48524463
170504A00039	5/4/2017	1.7	5/4/2020	5/4/2017	100.41245	100.4124546	100.4124546	100.2573803	99.99738398	99.73873963	99.48143666	99.22546462	98.97081316
170515A00043	5/15/2017	3.1	5/15/2028	5/15/2017	123.19298	123.1929802	123.1929802	117.3439048	109.0120352	101.349659	94.29921458	87.80831198	81.82930941
170517A00027	5/17/2017	1.99	5/17/2022	5/17/2017	104.34454	104.3445438	104.3445438	103.5017886	101.2169313	98.99360721	96.82983254	94.72364465	92.67315951
170518A00023	5/18/2017	1.78	5/18/2020	5/18/2017	100.45914	100.4591425	100.4591425	100.2817112	99.98360891	99.68728794	99.39273223	99.09992597	98.80885354
170518A00034	5/18/2017	2.15	5/18/2023	5/18/2017	106.77427	106.7742707	106.7742707	105.5641031	102.2706939	99.09725721	96.03883021	93.09062119	90.24806617
170524A00064	5/24/2017	1.65	5/26/2020	5/24/2017	100.49309	100.4930877	100.4930877	100.3024773	99.98194019	99.6634547	99.34700108	99.03255989	98.72011195
170530A00003	5/30/2017	1.99	5/28/2021	5/30/2017	102.29419	102.2941932	102.2941932	101.6916227	100.3827476	99.09374878	97.82804422	96.58504089	95.36416571
170531A00039	5/31/2017	1.61	5/29/2020	5/31/2017	100.49264	100.4926442	100.4926442	100.2972035	99.968442	99.64183287	99.31735505	98.99498775	98.67471042
170608A00020	6/8/2017	2.27	6/10/2024	6/8/2017	109.48876	109.488764	109.488764	107.8296794	103.4597557	99.29210168	95.31641997	91.52290454	87.90229908

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170613A00032	6/13/2017	2.45	6/13/2025	6/13/2017	112.65185	112.6518492	112.6518492	110.2771436	104.8739307	99.77006769	94.94753379	90.38939225	86.07980862
170614A00012	6/14/2017	1.9	6/14/2022	6/14/2017	104.27378	104.2737758	104.2737758	103.4082744	101.0499288	98.75697313	96.52731351	94.3588613	92.24960894
170621A00014	6/21/2017	1.82	6/21/2021	6/21/2017	102.39374	102.3937354	102.3937354	101.7682183	100.3874833	99.03152051	97.70021715	96.3929593	95.10915301
170622A00014	6/22/2017	1.84	6/22/2020	6/22/2017	100.63185	100.6318468	100.6318468	100.3985278	100.0043284	99.61322479	99.22518053	98.84015977	98.45812725
170622A00039	6/22/2017	3.36	6/22/2035	6/22/2017	146.56352	146.5635199	143.9892867	127.4611139	112.5146017	99.60369125	88.43455733	78.75736523	70.3595661
170626A00017	6/26/2017	1.8	6/28/2021	6/26/2017	102.3982	102.3982004	102.3982004	101.765626	100.3655723	98.99129932	97.64232356	96.31800787	95.01773605
170628A00056	6/28/2017	1.97	6/28/2022	6/28/2017	104.51345	104.5134489	104.5134489	103.6354401	101.2364947	98.90503187	96.63885876	94.43578923	92.29372339
170629A00017	6/29/2017	2	4/26/2021	6/29/2017	102.15457	102.1545663	102.1545663	101.5528528	100.3468788	99.14453227	97.97087773	96.82489783	95.70562279
171213A00034	12/13/2017	2.05	12/15/2020	12/13/2017	101.71051	101.710507	101.710507	101.1698796	100.2941649	99.43357172	98.58771074	97.75620594	96.938694
171220A00003	12/20/2017	2.36	12/21/2020	12/20/2017	101.88773	101.8877294	101.8877294	101.3370481	100.4461939	99.5709703	98.71096855	97.86579394	97.03506534
180102A00020	1/2/2018	2.5	1/3/2023	1/2/2018	106.5096	106.5096038	106.5096038	105.4419844	102.5282722	99.7103647	96.9846984	94.34776483	91.79620857
180102A00021	1/2/2018	2.82	1/2/2026	1/2/2018	114.96749	114.9674918	114.9674918	111.9981731	106.0585253	100.4757148	95.22653909	90.28931587	85.64387848
180110A00027	1/10/2018	2.6	1/10/2023	1/10/2018	106.84944	106.84944	106.84944	105.7718619	102.8350358	99.99532865	97.24910725	94.59279379	92.02296757
180110A00028	1/10/2018	2.85	1/10/2025	1/10/2018	112.66567	112.6656746	112.6656746	110.645797	105.6762906	100.961913	96.48834511	92.24203814	88.21027378
180117A00011	1/17/2018	2.4	1/14/2021	1/17/2018	102.066	102.065996	102.065996	101.4827927	100.5265938	99.58837764	98.66764046	97.76389692	96.87667958
180118A00004	1/18/2018	2.88	1/17/2025	1/18/2018	112.8644	112.8643997	112.8643997	110.8287777	105.8367711	101.10191	96.60971064	92.3464717	88.29933505
180118A00010	1/18/2018	2.51	8/18/2021	1/18/2018	103.48189	103.4818905	103.4818905	102.8025556	101.2639273	99.7558329	98.27753112	96.82820779	95.40707802
180124A00019	1/24/2018	2.41	1/24/2022	1/24/2018	104.60287	104.6028706	104.6028706	103.8367619	101.857834	99.92664824	98.0418533	96.20204973	94.40588998
180129A00004	1/29/2018	2.63	1/31/2022	1/29/2018	104.72541	104.7254138	104.7254138	103.9562416	101.9645308	100.0211731	98.1247977	96.27397767	94.46733929
180130A00085	1/30/2018	2.79	1/30/2025	1/30/2018	113.50937	113.5093706	113.5093706	111.4284554	106.3566536	101.5485456	96.9891361	92.66425431	88.56060962
180201A00003	2/1/2018	2.54	2/1/2021	2/1/2018	102.30494	102.3049429	102.3049429	101.7038056	100.6981778	99.71229936	98.74567993	97.79775944	96.86799931
180205A00049	2/5/2018	2.55	2/5/2021	2/5/2018	102.34004	102.3400439	102.3400439	101.7387253	100.7224377	99.72596705	98.74917294	97.79147681	96.85232259
180205A00050	2/5/2018	2.81	2/6/2023	2/5/2018	107.66043	107.6604333	107.6604333	106.5492738	103.5285333	100.609843	97.78929644	95.06305155	92.42743925
180207A00022	2/7/2018	2.79	2/7/2023	2/7/2018	107.60629	107.6062888	107.6062888	106.4946512	103.4718242	100.551197	97.72885304	95.00094184	92.36378643
180215A00029	2/15/2018	2.65	2/16/2021	2/15/2018	102.51452	102.5145232	102.5145232	101.9124398	100.8664031	99.84038686	98.83521215	97.85024847	96.88489056
180216A00004	2/16/2018	2.75	2/16/2023	2/16/2018	108.11277	108.1127734	108.1127734	106.9861094	103.9162537	100.9510625	98.08648247	95.31853721	92.64343142
180223A00022	2/23/2018	2.93	2/23/2023	2/23/2018	108.1481	108.148101	108.148101	107.0199074	103.9423455	100.9699215	98.09855758	95.32424901	92.6431742
180226A00040	2/26/2018	2.79	2/28/2022	2/26/2018	105.24009	105.2400855	105.2400855	104.4554314	102.3764295	100.3491282	98.37200458	96.44348559	94.56205949
180227A00004	2/27/2018	2.67	3/26/2021	2/27/2018	102.77549	102.7754942	102.7754942	102.171974	101.0369627	99.91087641	98.80984858	97.73304954	96.67968588
180302A00020	3/2/2018	2.79	3/17/2022	3/2/2018	105.35736	105.3573562	105.3573562	104.558933	102.4337169	100.3621835	98.34269747	96.37359659	94.45328471
180321A00005	3/21/2018	2.65	3/22/2021	3/21/2018	102.92272	102.9227183	102.9227183	102.3172518	101.1871348	100.0677542	98.97309765	97.90235236	96.85474104
180321A00006	3/21/2018	2.52	3/20/2020	3/21/2018	100.32647	100.326472	100.326472	100.2478973	100.1119908	99.97646774	99.84132644	99.70656526	99.57218255
180723A00028	1/23/2019	3.22	1/23/2024	1/23/2019	111.73076	111.7307597	111.7307597	110.2271662	106.2027081	102.3494569	98.65934224	95.1245951	91.73785788

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180724A00025	7/24/2018	2.93	7/25/2022	7/24/2018	107.06431	107.0643095	107.0643095	106.1474775	103.6460238	101.2167219	98.85719107	96.56502862	94.33792961
180730A00002	7/30/2018	3.03	7/30/2021	7/30/2018	104.15163	104.1516318	104.1516318	103.4815049	101.9880301	100.5236394	99.087681	97.67939928	96.2980651
180730A00004	7/30/2018	3.14	7/28/2023	7/30/2018	110.0105	110.010504	110.010504	108.7103343	105.1908268	101.8055036	98.54864588	95.41469004	92.39834434
180801A00010	8/1/2018	2.99	4/15/2021	8/1/2018	103.29775	103.297749	103.297749	102.691996	101.5058936	100.3247984	99.17117769	98.04408029	96.94259867
180801A00015	8/1/2018	3.16	8/1/2023	8/1/2018	110.11246	110.1124562	110.1124562	108.8073193	105.2756152	101.8789152	98.6114498	95.46760679	92.44204888
180808A00009	8/8/2018	3.12	8/7/2023	8/8/2018	110.01787	110.0178725	110.0178725	108.7071633	105.1612912	101.7514456	98.47178862	95.31664675	92.28062551
180809A00030	8/9/2018	2.94	2/9/2021	8/9/2018	102.77058	102.7705828	102.7705828	102.1677669	101.1386323	100.1294149	99.14032381	98.17076102	97.22015211
180814A00033	8/14/2018	3.25	8/13/2027	8/14/2018	123.82029	123.8202926	123.8202926	118.7650047	111.0180986	103.8446502	97.19908105	91.03955439	85.32775986
180815A00009	8/15/2018	2.93	8/16/2021	8/15/2018	104.12485	104.1248454	104.1248454	103.4439886	101.9055116	100.3974816	98.91918017	97.46979711	96.04855137
180815A00024	8/15/2018	2.71	8/17/2020	8/15/2018	101.43188	101.4318757	101.4318757	101.1043357	100.5544317	100.010514	99.47248519	98.94024973	98.41371422
180816A00024	8/16/2018	3.01	8/16/2023	8/16/2018	109.69491	109.6949149	109.6949149	108.3771497	104.8132675	101.3868642	98.09199946	94.92291019	91.87411857
180821A00021	8/21/2018	2.68	8/21/2020	8/21/2018	101.44376	101.4437639	101.4437639	101.1092678	100.5484272	99.9938103	99.44531367	98.90283627	98.36627926
180823A00020	8/23/2018	2.96	4/20/2023	8/23/2018	108.65127	108.6512736	108.6512736	107.462579	104.2271093	101.1065097	98.09608386	95.19128493	92.38778434
180824A00023	8/24/2018	2.79	8/24/2021	8/24/2018	104.23296	104.2329601	104.2329601	103.5449253	101.9798013	100.4459491	98.94260887	97.4689384	96.02412597
180827A00031	8/27/2018	2.9	8/27/2021	8/27/2018	104.15771	104.1577064	104.1577064	103.4699525	101.9019811	100.3653496	98.85929781	97.38297968	95.93557998
180905A00011	9/5/2018	2.85	9/8/2020	9/5/2018	101.59063	101.5906325	101.5906325	101.2249292	100.6156622	100.0137253	99.41898674	98.83131784	98.25059298
180906A00013	9/6/2018	2.81	9/7/2021	9/6/2018	104.36912	104.3691247	104.3691247	103.6732404	102.0690034	100.4972815	98.9572533	97.44802609	95.96874028
180906A00020	9/6/2018	2.81	9/7/2021	9/6/2018	104.36912	104.3691247	104.3691247	103.6732404	102.0690034	100.4972815	98.9572533	97.44802608	95.96874028
180910A00007	9/10/2018	2.96	9/8/2023	9/10/2018	110.36397	110.3639701	110.3639701	109.0120561	105.3578642	101.8468398	98.47267961	95.22929256	92.11089451
180910A00033	9/10/2018	3.43	9/8/2028	9/10/2018	126.91333	126.9133307	126.9133307	120.6121008	111.8563685	103.8247759	96.45322469	89.68352047	83.46289728
180911A00011	9/11/2018	3	9/10/2021	9/11/2018	104.42176	104.421756	104.421756	103.7262181	102.1179739	100.5423564	98.99854274	97.48563443	96.00276675
180918A00012	9/18/2018	3.06	9/17/2021	9/18/2018	104.57311	104.5731141	104.5731141	103.8739846	102.2452421	100.6498048	99.08681448	97.55534501	96.05450545
180918A00023	9/18/2018	3.17	9/18/2023	9/18/2018	110.52709	110.5270909	110.5270909	109.170376	105.5034312	101.9805978	98.59550365	95.34199567	92.2142325
180207A00003	2/7/2018	3.28	2/7/2028	2/7/2018	123.8982	123.8981951	123.8981951	118.3380172	110.2173343	102.7297506	95.82238007	89.44690929	83.55929076
180226A00004	2/26/2018	2.63	2/25/2022	2/26/2018	105.26678	105.266782	105.266782	104.4810053	102.4032264	100.3771167	98.40114973	96.47375528	94.5934241
180226A00013	2/26/2018	2.5	2/26/2020	2/26/2018	100.16108	100.1610843	100.1610843	100.1212351	100.0491731	99.97721911	99.90537282	99.83363404	99.76200253
180306A00005	3/6/2018	2.65	3/4/2022	3/6/2018	105.35777	105.3577658	105.3577658	104.5670203	102.4688213	100.4231261	98.42836584	96.48293313	94.58528364
180316A00010	3/16/2018	2.58	3/16/2021	3/16/2018	102.80089	102.8008857	102.8008857	102.1959534	101.0796002	99.97659329	98.89761578	97.84188856	96.80866583
180327A00012	3/27/2018	2.63	3/27/2020	3/27/2018	100.37156	100.3715608	100.3715608	100.2811792	100.1260828	99.97147077	99.81734076	99.66369058	99.51051799
180406A00014	4/6/2018	2.95	4/6/2023	4/6/2018	108.51675	108.5167454	108.5167454	107.342685	104.1472302	101.0641021	98.08876517	95.2168174	92.44406533
180412A00034	4/12/2018	3.23	4/15/2030	4/12/2018	132.01377	132.013769	132.013769	123.2635431	112.8168483	103.3764736	94.8391913	87.11286411	80.11523442
180416A00016	4/16/2018	2.85	4/17/2023	4/16/2018	108.87436	108.8743606	108.8743606	107.6822533	104.436945	101.3069005	98.28740399	95.37389303	92.56202404
180425A00020	4/25/2018	3.11	10/25/2022	4/25/2018	107.76836	107.7683582	107.7683582	106.7649544	104.0183087	101.3565638	98.7766208	96.27543786	93.85010933

Classification | Public

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180430A00012	4/30/2018	2.95	7/15/2021	4/30/2018	103.91984	103.9198384	103.9198384	103.2656708	101.8133486	100.3885827	98.99077542	97.61922816	96.27326599
180430A00069	4/30/2018	2.75	3/30/2021	4/30/2018	103.09663	103.0966327	103.0966327	102.4904036	101.3418515	100.2005632	99.08493373	97.99410506	96.92725706
180514A00034	5/14/2018	3.07	5/14/2024	5/14/2018	112.79684	112.7968434	112.7968434	111.1459873	106.7762793	102.6048279	98.62165713	94.81725722	91.18265134
180516A00019	5/16/2018	3.19	5/16/2023	5/16/2018	109.60535	109.6053461	109.6053461	108.3833743	105.0635503	101.8636686	98.77882675	95.80425101	92.9353945
180522A00004	5/22/2018	2.98	5/21/2021	5/22/2018	103.56735	103.5673461	103.5673461	102.9599037	101.6653303	100.3865547	99.13267808	97.90298771	96.69679838
180522A00019	5/22/2018	3.16	5/22/2023	5/22/2018	109.55312	109.5531186	109.5531186	108.3250857	104.9904338	101.7767903	98.67921827	95.692903	92.81325661
180522A00035	5/22/2018	2.83	5/21/2021	5/22/2018	103.58183	103.5818305	103.5818305	102.9729314	101.6750001	100.3929531	99.13591674	97.9031742	96.69403609
180522A00038	5/22/2018	3.23	5/22/2025	5/22/2018	116.69571	116.6957102	116.6957102	114.3352436	108.8833759	103.7287838	98.85378447	94.24173414	89.87706447
180523A00002	5/23/2018	2.66	5/26/2020	5/23/2018	100.81845	100.818452	100.818452	100.6274521	100.3062534	99.98710949	99.67000062	99.35490731	99.04181036
180523A00025	5/23/2018	2.86	12/15/2021	5/23/2018	105.20261	105.2026147	105.2026147	104.4588102	102.5793427	100.7428604	98.94824199	97.19428952	95.47984693
180524A00024	5/24/2018	3	3/21/2022	5/24/2018	105.83844	105.8384353	105.8384353	105.0344635	102.8934469	100.8066762	98.77249522	96.78921749	94.85522407
180525A00001	5/25/2018	3.04	5/25/2023	5/25/2018	109.17551	109.1755116	109.1755116	107.9468236	104.6105743	101.3957151	98.29729315	95.31047803	92.43066634
180529A00026	5/29/2018	2.67	6/1/2021	5/29/2018	103.44834	103.4483442	103.4483442	102.8388053	101.5058602	100.194937	98.9070109	97.64152864	96.39795446
180529A00043	5/29/2018	2.99	5/30/2023	5/29/2018	109.04543	109.0454341	109.0454341	107.8122927	104.4651776	101.2403043	98.13269344	95.13748104	92.25003029
180326A00012	3/26/2018	2.74	12/28/2020	3/26/2018	102.27841	102.2784084	102.2784084	101.7141157	100.8025774	99.90734958	99.02799742	98.16410135	97.3152565
180328A00014	3/28/2018	2.55	3/29/2021	3/28/2018	102.8545	102.8545029	102.8545029	102.2491697	101.1042813	99.9670729	98.85538493	97.76836569	96.70520097
180329A00034	4/2/2018	2.67	4/1/2020	4/2/2018	100.4116	100.4116009	100.4116009	100.3126974	100.1437721	99.97541398	99.80762024	99.64038808	99.4737147
180403A00009	4/3/2018	2.91	4/3/2025	4/3/2018	114.60107	114.6010684	114.6010684	112.3800843	107.1103037	102.1221984	97.39925634	92.92595123	88.68774999
180425A00019	4/25/2018	3.02	10/25/2021	4/25/2018	104.79454	104.7945386	104.7945386	104.077451	102.3448105	100.6492081	98.98959209	97.36488053	95.77403515
180426A00018	4/26/2018	2.94	4/26/2023	4/26/2018	109.237	109.2369997	109.2369997	108.0335732	104.7578677	101.5992041	98.55276034	95.61387468	92.77811103
180427A00010	4/27/2018	2.95	4/27/2023	4/27/2018	109.27757	109.2775697	109.2775697	108.0728824	104.7937915	101.6319411	98.58249724	95.64078711	92.80236423
180430A00070	4/30/2018	2.91	3/30/2023	4/30/2018	108.93035	108.9303515	108.9303515	107.7558165	104.5586728	101.4736031	98.49610076	95.62178635	92.84648735
180503A00040	5/3/2018	3.3	5/5/2025	5/3/2018	115.84553	115.8455281	115.8455281	113.5527191	108.2007376	103.137611	98.34624368	93.81056435	89.51553967
180507A00025	5/7/2018	2.92	5/7/2021	5/7/2018	103.38554	103.385537	103.385537	102.7790118	101.5319807	100.2923752	99.08059377	97.89569922	96.73679643
180514A00036	5/14/2018	2.64	5/14/2020	5/14/2018	100.72792	100.7279209	100.7279209	100.5563823	100.2683303	99.98194157	99.69720177	99.41409653	99.13261167
180518A00012	5/18/2018	3.1	5/18/2022	5/18/2018	106.50318	106.5031794	106.5031794	105.6508417	103.3466637	101.1042501	98.92166478	96.79694442	94.72820366
180518A00014	5/18/2018	3.17	5/18/2023	5/18/2018	109.5548	109.5547992	109.5547992	108.3310292	105.0068046	101.8028632	98.71429083	95.73630085	92.86433319
180521A00005	5/21/2018	3.02	5/22/2023	5/21/2018	109.70775	109.707752	109.707752	108.4735056	105.1212174	101.8909022	98.77756543	95.77634306	92.88260091
180521A00022	5/21/2018	2.99	5/21/2021	5/21/2018	103.58054	103.5805425	103.5805425	102.973049	101.6783852	100.3995203	99.14555585	97.91577914	96.70950488
180522A00022	5/22/2018	2.69	5/22/2020	5/22/2018	100.79953	100.7995315	100.7995315	100.6150051	100.3048302	99.99657731	99.69022854	99.38576618	99.08317275
180523A00014	5/23/2018	2.79	5/24/2021	5/23/2018	103.55123	103.5512306	103.5512306	102.9424046	101.6347297	100.3447378	99.07912531	97.83722495	96.61839382
180524A00005	5/24/2018	2.86	5/24/2022	5/24/2018	106.4176	106.4176024	106.4176024	105.5578328	103.2303023	100.9657155	98.76210537	96.61747822	94.52991828
180530A00005	5/30/2018	2.78	5/30/2023	5/30/2018	108.96368	108.9636804	108.9636804	107.7258693	104.3649014	101.1270494	98.00727599	95.00067096	92.10255396

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180530A00014	5/30/2018	2.93	5/30/2023	5/30/2018	108.84397	108.8439679	108.8439679	107.6121908	104.2684177	101.0467982	97.94235368	94.95022321	92.06577291
180530A00016	5/30/2018	2.76	5/28/2021	5/30/2018	103.32524	103.3252393	103.3252393	102.7186371	101.4026054	100.1065396	98.83388679	97.58405074	96.35645524
180530A00030	5/30/2018	3.68	5/30/2034	5/30/2018	147.96978	147.9697836	146.4639132	130.9118753	116.5804148	104.0768429	93.1534508	83.59740128	75.22575156
180530A00057	5/30/2018	2.76	5/28/2021	5/30/2018	103.32524	103.3252393	103.3252393	102.7186371	101.4026054	100.1065396	98.83388679	97.58405074	96.35645524
180530A00072	5/30/2018	3.06	5/30/2024	5/30/2018	112.05895	112.0589511	112.0589511	110.4014064	106.0289837	101.8563024	97.87333079	94.07047815	90.43868628
170629A00022	6/29/2017	2.2	6/29/2023	6/29/2017	107.18281	107.1828077	107.1828077	105.927641	102.5159972	99.23250562	96.07177346	93.02857833	90.0979478
170630A00008	6/30/2017	2.35	7/1/2024	6/30/2017	109.97099	109.9709902	109.9709902	108.2800399	103.8440871	99.61585512	95.5846443	91.7402715	88.07313148
170724A00016	7/24/2017	2.5	7/24/2024	7/24/2017	109.94815	109.9481461	109.9481461	108.2329458	103.7631339	99.504775	95.44685908	91.57891297	87.89106476
170731A00028	7/31/2017	2.16	8/1/2022	7/31/2017	104.70874	104.7087355	104.7087355	103.8016417	101.3211772	98.91280091	96.57408776	94.30262454	92.09609683
170802A00027	8/2/2017	2.16	8/2/2022	8/2/2017	104.71389	104.7138886	104.7138886	103.8058481	101.3226993	98.9117674	96.57062055	94.29683935	92.08810352
170811A00018	8/11/2017	1.63	8/11/2020	8/11/2017	100.80989	100.8098942	100.8098942	100.4938949	99.96227061	99.4362669	98.9157948	98.40076724	97.89109898
170818A00003	8/18/2017	2.23	8/20/2024	8/18/2017	109.72674	109.726744	109.726744	107.9637471	103.4046505	99.06489926	94.93286992	90.99753583	87.24851401
170818A00025	8/18/2017	1.77	8/18/2021	8/18/2017	102.58922	102.5892233	102.5892233	101.9119385	100.3760662	98.87078887	97.39533153	95.94887773	94.53064044
170822A00001	8/22/2017	1.65	8/24/2020	8/22/2017	100.87596	100.8759557	100.8759557	100.5373574	99.9701986	99.40942766	98.85493705	98.30662163	97.76437859
170822A00012	8/22/2017	2.11	8/22/2022	8/22/2017	104.68774	104.687744	104.687744	103.7615045	101.2263726	98.76602421	96.37788927	94.05942332	91.80818832
170823A00056	8/25/2017	2.47	8/25/2021	8/25/2017	103.46164	103.4616358	103.4616358	102.7781085	101.2211047	99.69519626	98.19961506	96.73352417	95.29611716
170828A00029	8/28/2017	1.75	4/1/2020	8/28/2017	100.25576	100.2557601	100.2557601	100.15697	99.98824177	99.82008016	99.65248238	99.48544563	99.31896711
170828A00030	8/28/2017	1.96	9/1/2021	8/28/2017	102.68572	102.6857206	102.6857206	102.0014791	100.4322356	98.89457429	97.38768171	95.91070052	94.4628049
170829A00021	8/29/2017	1.58	8/31/2020	8/29/2017	100.86436	100.8643561	100.8643561	100.5136843	99.927561	99.34824751	98.77562579	98.20958051	97.64999897
170830A00033	8/30/2017	1.93	8/30/2021	8/30/2017	102.62849	102.6284935	102.6284935	101.9455185	100.3821064	98.85009617	97.34868297	95.87701668	94.43427837
170831A00009	8/31/2017	1.93	8/30/2021	8/31/2017	102.62849	102.6284935	102.6284935	101.9455185	100.3821064	98.85009617	97.34868297	95.87701668	94.43427837
170831A00052	8/31/2017	1.78	11/30/2021	8/31/2017	103.08387	103.0838721	103.0838721	102.3583403	100.5385447	98.75968255	97.02066903	95.32038578	93.65775277
170831A00053	8/31/2017	1.81	3/1/2022	8/31/2017	103.56568	103.5656823	103.5656823	102.7862952	100.7151387	98.69579513	96.72669023	94.80624278	92.93293336
170906A00006	9/6/2017	1.81	9/6/2022	9/6/2017	104.4516	104.4515972	104.4515972	103.5099615	100.9280672	98.42343458	95.99334453	93.63513079	91.34624061
170906A00034	9/6/2017	1.87	9/7/2021	9/6/2017	102.56753	102.5675254	102.5675254	101.8813333	100.2967188	98.74422532	97.22300482	95.73217769	94.27089705
170907A00059	9/7/2017	1.99	9/7/2022	9/7/2017	104.4524	104.452404	104.452404	103.5131967	100.9387797	98.4412534	96.01792201	93.66613558	91.38335678
170912A00031	9/12/2017	1.89	9/12/2022	9/12/2017	104.69155	104.6915476	104.6915476	103.7433121	101.1419956	98.61887762	96.17118746	93.79621287	91.4913579
170914A00039	9/14/2017	2.23	9/16/2024	9/14/2017	109.88422	109.8842164	109.8842164	108.0792665	103.4456075	99.03781037	94.84372896	90.85187236	87.05142998
170915A00005	9/15/2017	1.81	9/15/2021	9/15/2017	102.78325	102.7832494	102.7832494	102.0909959	100.4780548	98.89818566	97.35048853	95.83404586	94.34797489
180327A00013	3/27/2018	2.77	3/26/2021	3/27/2018	102.89195	102.8919518	102.8919518	102.2880117	101.1522877	100.0254985	98.92377854	97.84629802	96.79226324
180327A00027	3/27/2018	2.88	3/28/2022	3/27/2018	105.62933	105.629328	105.629328	104.820995	102.6637493	100.56153	98.51263015	96.51532716	94.56796795
180402A00028	4/2/2018	2.58	4/1/2021	4/2/2018	102.91022	102.910217	102.910217	102.3046338	101.1525885	100.0072352	98.88775745	97.79328594	96.72298994
180402A00047	4/2/2018	2.63	4/2/2020	4/2/2018	100.41146	100.4114596	100.4114596	100.310846	100.139165	99.96807191	99.79756369	99.62763737	99.45828999

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180410A00016	4/10/2018	2.89	4/11/2022	4/10/2018	105.75124	105.7512434	105.7512434	104.9319835	102.7354781	100.5957667	98.51104884	96.47952016	94.49945062
180412A00036	4/12/2018	3.54	4/15/2038	4/12/2018	162.50309	162.5030865	156.4804573	135.8838555	117.8552093	102.6450419	89.78543437	78.88909093	69.63504109
180416A00015	4/16/2018	2.79	4/14/2022	4/16/2018	105.95765	105.9576466	105.9576466	105.1325694	102.9176093	100.7602293	98.65858729	96.61084453	94.61523857
180424A00035	4/24/2018	2.8	4/24/2020	4/24/2018	100.59707	100.5970694	100.5970694	100.4587002	100.2261947	99.99477079	99.76442086	99.53513747	99.30691321
180426A00011	4/26/2018	2.94	4/26/2023	4/26/2018	109.237	109.2369997	109.2369997	108.0335732	104.7578677	101.5992041	98.55276034	95.61387468	92.77811103
180430A00013	4/30/2018	3.01	2/15/2022	4/30/2018	105.60593	105.6059308	105.6059308	104.8254628	102.7806838	100.7861469	98.8404094	96.94196355	95.0893592
180430A00014	4/30/2018	3.01	3/15/2022	4/30/2018	105.815	105.8149969	105.8149969	105.0158022	102.8909294	100.8195973	98.80019045	96.83105425	94.91059992
180430A00078	10/30/2018	3.24	10/30/2023	10/30/2018	111.12347	111.123471	111.123471	109.7184782	105.9294368	102.2930912	98.80248051	95.45092338	92.2320871
180514A00033	5/14/2018	3.36	5/15/2028	5/14/2018	127.11858	127.118577	127.118577	121.1236007	112.5649407	104.693539	97.45027855	90.78135226	84.63783547
180517A00059	5/17/2018	3.13	5/17/2022	5/17/2018	106.56493	106.564931	106.564931	105.7131204	103.410854	101.1702334	98.98932393	96.86616412	94.79887066
180522A00005	5/22/2018	3.16	5/22/2023	5/22/2018	109.55312	109.5531186	109.5531186	108.3250857	104.9904338	101.7767903	98.67921827	95.692903	92.81325661
180522A00018	5/22/2018	3.1	5/23/2022	5/22/2018	106.54193	106.5419295	106.5419295	105.685116	103.3673399	101.112002	98.91716274	96.78084677	94.70115599
180522A00037	5/22/2018	3.01	5/22/2023	5/22/2018	109.67429	109.6742925	109.6742925	108.4402721	105.0885371	101.8587604	98.74594778	95.74523559	92.85199018
180525A00016	5/25/2018	2.72	5/25/2021	5/25/2018	103.46539	103.4653909	103.4653909	102.8568849	101.5464863	100.2543642	98.98640281	97.74195161	96.52038356
180530A00026	5/30/2018	3.55	5/30/2031	5/30/2018	136.63039	136.6303888	136.6303888	125.9250571	114.4505978	104.1773766	94.97162346	86.71505842	79.30313079
180530A00039	5/30/2018	2.93	5/30/2023	5/30/2018	108.84397	108.8439679	108.8439679	107.6121908	104.2684177	101.0467982	97.94235368	94.95022321	92.06577291
180530A00077	5/30/2018	2.93	5/30/2023	5/30/2018	108.84397	108.8439679	108.8439679	107.6121908	104.2684177	101.0467982	97.94235368	94.95022321	92.06577291
180614A00033	6/15/2018	2.82	7/10/2020	6/15/2018	101.14946	101.1494592	101.1494592	100.8864798	100.4418301	100.0011039	99.56424921	99.13121508	98.70195144
180615A00063	6/15/2018	3.2	6/15/2026	6/15/2018	119.84091	119.8409101	119.8409101	116.2478218	109.7015989	103.5742427	97.83682237	92.46243358	87.42616045
180618A00025	6/18/2018	3.01	4/13/2022	6/18/2018	106.03229	106.0322854	106.0322854	105.2101222	103.0050245	100.8570345	98.7643415	96.72512738	94.73764915
180924A00043	9/24/2018	2.99	9/24/2020	9/24/2018	101.79762	101.7976165	101.7976165	101.4030864	100.7496872	100.1047025	99.46797043	98.83933327	98.2186373
180924A00055	9/24/2018	3.1	9/24/2021	9/24/2018	104.69343	104.6934342	104.6934342	103.9908456	102.3418586	100.726859	99.14495232	97.59518441	96.07663792
180925A00045	9/25/2018	3.31	9/25/2025	9/25/2018	118.23478	118.2347791	118.2347791	115.5101076	109.6890682	104.2030704	99.03108289	94.15341858	89.55172884
181002A00019	10/2/2018	2.98	10/4/2021	10/2/2018	104.85919	104.8591886	104.8591886	104.1496182	102.4671133	100.8197731	99.20663941	97.62671057	96.079024
181004A00008	10/4/2018	2.99	4/6/2020	10/4/2018	100.50214	100.5021377	100.5021377	100.3946252	100.211821	100.029689	99.84822547	99.66742672	99.48728906
181004A00049	10/4/2018	3.06	11/4/2020	10/4/2018	102.16264	102.1626367	102.1626367	101.6962988	100.9305013	100.1762269	99.43321709	98.70122071	97.97999418
181009A00008	10/9/2018	3.24	10/7/2022	10/9/2018	107.98096	107.9809587	107.9809587	106.9943791	104.2922807	101.672473	99.13201661	96.66800696	94.27766676
181009A00036	10/9/2018	3.07	10/8/2021	10/9/2018	105.04478	105.0447759	105.0447759	104.332513	102.637718	100.9785055	99.35390107	97.76288551	96.20447995
181022A00051	10/22/2018	3.11	10/22/2020	10/22/2018	102.09829	102.0982903	102.0982903	101.6548399	100.9244477	100.2045495	99.49492008	98.79534075	98.10559891
181025A00021	10/25/2018	2.97	10/26/2020	10/25/2018	102.12964	102.129644	102.129644	101.6784535	100.9357634	100.2039158	99.48267423	98.7718094	98.07109839
181026A00021	10/29/2018	3.11	1/15/2021	10/29/2018	102.76122	102.7612235	102.7612235	102.1748235	101.2123204	100.267949	99.34120022	98.43158363	97.53862699
181030A00012	10/30/2018	3.32	10/30/2023	10/30/2018	111.42573	111.4257292	111.4257292	110.0184909	106.2238344	102.5820369	99.0861347	95.72944046	92.50561567
181030A00019	10/30/2018	3.06	4/30/2020	10/30/2018	100.70218	100.7021757	100.7021757	100.5534785	100.3043418	100.0564338	99.80974549	99.5642679	99.31999222

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
181109A00027	11/13/2018	3.48	4/15/2024	11/13/2018	113.49809	113.4980938	113.4980938	111.8865472	107.60217	103.5082468	99.59533219	95.85441091	92.2769701
181114A00010	11/14/2018	3.08	11/15/2021	11/14/2018	105.37387	105.3738678	105.3738678	104.6434847	102.8432127	101.0825341	99.36038493	97.67564291	96.02722781
181115A00061	11/15/2018	2.95	11/16/2020	11/15/2018	102.27967	102.2796695	102.2796695	101.790022	100.9898465	100.2022479	99.42693129	98.66361065	97.91200889
181121A00015	11/21/2018	3.24	11/21/2022	11/21/2018	108.34603	108.346026	108.346026	107.3129363	104.4855386	101.7475123	99.09564349	96.52674186	94.03775441
181127A00026	11/27/2018	3.2	11/26/2021	11/27/2018	105.349	105.3489985	105.3489985	104.6164987	102.7922811	101.0086518	99.26457753	97.55894	95.89066019
181129A00023	11/29/2018	3.16	11/29/2021	11/29/2018	105.29902	105.2990231	105.2990231	104.5655812	102.7336569	100.9426508	99.19153358	97.47918574	95.80452626
181130A00025	11/30/2018	3	6/1/2022	11/30/2018	106.80924	106.8092428	106.8092428	105.9405541	103.5871764	101.2979202	99.07081039	96.90382652	94.79502558
181206A00012	12/6/2018	3.14	12/6/2023	12/6/2018	111.03437	111.0343694	111.0343694	109.5914509	105.7050987	101.9791926	98.40640607	94.97966614	91.6922626
181213A00024	12/13/2018	3.05	12/11/2020	12/13/2018	102.43255	102.4325538	102.4325538	101.8981099	101.0314947	100.1796156	99.34209888	98.51858319	97.7087193
181218A00033	12/18/2018	2.96	12/18/2020	12/18/2018	102.40625	102.406248	102.406248	101.8593937	100.974079	100.1041464	99.24919745	98.40884704	97.58272331
181221A00015	12/21/2018	2.96	12/21/2020	12/21/2018	102.42868	102.4286809	102.4286809	101.8764127	100.9829276	100.1051056	99.24253716	98.39482693	97.56159318
180611A00030	6/11/2018	2.91	6/12/2023	6/11/2018	109.50187	109.5018713	109.5018713	108.2474588	104.8423572	101.5631304	98.40458557	95.36166034	92.42953118
180622A00006	6/22/2018	3.53	12/21/2029	6/22/2018	131.8561	131.856096	131.856096	123.7145167	113.6419409	104.5076871	96.21854984	88.69094356	81.84997812
180625A00041	6/25/2018	3.06	6/20/2023	6/25/2018	109.43986	109.439858	109.439858	108.1833556	104.7732814	101.4896737	98.32730196	95.28106248	92.34609349
180627A00026	6/27/2018	2.87	6/27/2023	6/27/2018	109.47981	109.4798131	109.4798131	108.2107345	104.7653868	101.448852	98.25575097	95.18084765	92.21915605
180706A00013	7/6/2018	3.01	7/6/2023	7/6/2018	109.38845	109.3884475	109.3884475	108.1160966	104.6644648	101.342397	98.14446361	95.06537552	92.10009759
180713A00011	7/13/2018	2.95	7/13/2021	7/13/2018	103.90507	103.9050735	103.9050735	103.2529666	101.8060091	100.3864079	98.99357315	97.62681354	96.28546121
180713A00013	7/13/2018	2.88	7/13/2023	7/13/2018	109.63655	109.6365534	109.6365534	108.3494345	104.8592417	101.5010898	98.26939379	95.15872403	92.1639136
180713A00030	7/13/2018	2.8	7/13/2021	7/13/2018	103.93629	103.9362941	103.9362941	103.282397	101.831152	100.4074112	99.0105736	97.63994315	96.29484734
180716A00054	7/16/2018	3.59	7/16/2040	7/16/2018	171.17025	171.1702462	162.1942184	138.8222374	118.8479372	102.2996193	88.55212157	77.09850906	67.52718363
180717A00047	7/17/2018	3.3	9/17/2025	7/17/2018	116.95024	116.9502398	116.9502398	114.282968	108.5566741	103.1582087	98.06711475	93.26422327	88.73166118
180726A00032	7/26/2018	2.95	10/26/2020	7/26/2018	102.01056	102.0105599	102.0105599	101.5604956	100.819646	100.0895947	99.37010683	98.66095433	97.96191556
180807A00017	8/7/2018	2.77	8/7/2020	8/7/2018	101.39137	101.3913687	101.3913687	101.081246	100.5587374	100.0416317	99.52984535	99.02329648	98.52190482
180809A00029	8/9/2018	2.99	9/9/2021	8/9/2018	104.398	104.3979993	104.3979993	103.7029835	102.0976844	100.5249156	98.9838589	97.47361996	95.99333772
180810A00006	8/10/2018	2.73	8/10/2020	8/10/2018	101.39214	101.3921416	101.3921416	101.0768133	100.5461181	100.0209991	99.50136862	98.98714073	98.47823134
180821A00016	8/21/2018	2.76	8/20/2021	8/21/2018	104.15611	104.1561059	104.1561059	103.4708697	101.9170439	100.3941552	98.90145766	97.43812239	96.00335047
180823A00013	8/23/2018	2.97	8/23/2023	8/23/2018	109.60357	109.6035735	109.6035735	108.2792022	104.6985567	101.2566028	97.9473189	94.76486897	91.70370716
180827A00060	8/27/2018	2.9	8/27/2021	8/27/2018	104.15771	104.1577064	104.1577064	103.4699525	101.9019811	100.3653496	98.85929781	97.38297968	95.93557998
180828A00032	8/28/2018	3.49	8/29/2033	8/28/2018	146.06302	146.0630152	145.2793413	130.3544306	116.5093834	104.3617174	93.69062916	84.30516228	76.04012393
180830A00006	8/30/2018	2.99	8/30/2022	8/30/2018	107.02135	107.0213474	107.0213474	106.0745196	103.4881313	100.9782199	98.54217774	96.17738889	93.88134745
180831A00016	8/31/2018	2.99	8/31/2023	8/31/2018	109.73476	109.734755	109.734755	108.4011503	104.7972041	101.3334577	98.00379523	94.80229238	91.72332094
180905A00015	9/5/2018	2.85	9/1/2022	9/5/2018	107.15094	107.1509386	107.1509386	106.1982655	103.5946341	101.0683049	98.61662177	96.23693085	93.92669031
180910A00013	9/10/2018	3.08	9/11/2023	9/10/2018	110.14397	110.143972	110.143972	108.7967967	105.1557267	101.6572015	98.29494994	95.06290993	91.95532487

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180912A00028	9/12/2018	2.93	9/14/2020	9/12/2018	101.68412	101.6841197	101.6841197	101.3075741	100.6816994	100.0635576	99.453006	98.8499051	98.25411899
180912A00030	9/12/2018	3	9/13/2021	9/12/2018	104.44423	104.4442294	104.4442294	103.747339	102.1306664	100.5469051	98.99521619	97.47468956	95.98444947
180531A00014	5/31/2018	2.8	5/31/2023	5/31/2018	109.03847	109.0384673	109.0384673	107.7990712	104.434238	101.1927381	98.06952707	95.05968626	92.15852706
180531A00065	5/31/2018	2.65	6/1/2021	5/31/2018	103.42131	103.4213118	103.4213118	102.8118792	101.4791235	100.1683873	98.88064505	97.61534358	96.37194721
180601A00003	6/1/2018	2.65	12/1/2020	6/1/2018	102.14344	102.1434438	102.1434438	101.6265878	100.7865317	99.96033553	99.14765856	98.34817098	97.56155369
180612A00050	6/12/2018	2.8	6/12/2020	6/12/2018	100.94219	100.9421934	100.9421934	100.7242582	100.3566726	99.99177666	99.62954071	99.26993572	98.91293298
180614A00038	6/14/2018	3.08	6/14/2023	6/14/2018	109.46231	109.4623094	109.4623094	108.2115352	104.8172109	101.5481971	98.39933651	95.36559381	92.44217107
180627A00016	6/27/2018	2.8	6/26/2020	6/27/2018	101.04125	101.0412515	101.0412515	100.8010234	100.3949007	99.99204764	99.59242502	99.19599406	98.80271664
180627A00027	6/27/2018	2.87	6/27/2023	6/27/2018	109.47981	109.4798131	109.4798131	108.2107345	104.7653868	101.448852	98.25575097	95.18084765	92.21915605
180627A00030	6/27/2018	3.02	6/27/2023	6/27/2018	109.35559	109.3555852	109.3555852	108.0928056	104.6653628	101.3657145	98.1885439	95.12866803	92.18115092
180629A00008	6/29/2018	3.02	6/29/2023	6/29/2018	109.37054	109.3705428	109.3705428	108.1057009	104.6726429	101.3677764	98.18576084	95.12138989	92.16970562
180702A00012	7/2/2018	3.01	7/3/2023	7/2/2018	109.36602	109.3660213	109.3660213	108.0970268	104.6535742	101.3390903	98.14818362	95.07560109	92.11634099
180706A00010	7/6/2018	2.92	7/6/2021	7/6/2018	103.80999	103.8099923	103.8099923	103.1652757	101.7374239	100.3362284	98.96112484	97.61144787	96.28655406
180712A00002	7/12/2018	3.06	7/12/2023	7/12/2018	109.6071	109.6070995	109.6070995	108.3268278	104.8558614	101.5157345	98.30093895	95.20611096	92.22614527
180713A00027	7/13/2018	3.23	7/13/2028	7/13/2018	126.53582	126.5358183	126.5358183	120.3600064	111.6802794	103.7105728	96.38879477	89.6584837	83.4683806
180713A00035	7/13/2018	3.02	7/13/2022	7/13/2018	106.73836	106.7383604	106.7383604	105.8375102	103.3810872	100.9944704	98.67540034	96.4215857	94.23082684
180719A00004	7/19/2018	3.07	7/19/2023	7/19/2018	109.69534	109.6953421	109.6953421	108.4069852	104.9163123	101.557896	98.32613693	95.21558592	92.22105795
180719A00065	7/19/2018	3.36	7/20/2026	7/19/2018	119.83693	119.8369257	119.8369257	116.1566928	109.5707915	103.4105585	97.64627412	92.25032282	87.19715308
180727A00002	7/27/2018	2.93	7/28/2020	7/27/2018	101.33285	101.3328504	101.3328504	101.0403163	100.5460438	100.0566009	99.57191703	99.09192313	98.61655134
180727A00028	7/27/2018	3.25	7/27/2026	7/27/2018	120.52545	120.525453	120.525453	116.7785533	110.1056381	103.8665138	98.030724	92.5699879	87.45814957
180727A00038	7/27/2018	3.36	7/25/2025	7/27/2018	116.83926	116.839259	116.839259	114.3254167	108.7404107	103.468102	98.48942806	93.78646298	89.34246596
180803A00009	8/3/2018	2.93	10/30/2020	8/3/2018	102.02533	102.0253325	102.0253325	101.5684076	100.8166898	100.0760812	99.34633699	98.62721938	97.91849758
180807A00016	8/7/2018	2.86	8/6/2021	8/7/2018	104.20696	104.206956	104.206956	103.5301489	102.0133193	100.5263099	99.06842972	97.63889487	96.23694931
180813A00026	8/13/2018	2.87	8/11/2023	8/13/2018	109.82254	109.8225382	109.8225382	108.5032388	104.9335479	101.501548	98.20128807	95.02699852	91.97319529
180817A00013	8/17/2018	2.94	2/15/2022	8/17/2018	105.46134	105.4613379	105.4613379	104.6815889	102.638318	100.6452623	98.70097706	96.80395531	94.95274771
180820A00054	8/20/2018	3	8/18/2023	8/20/2018	109.67409	109.6740854	109.6740854	108.3543942	104.7856261	101.3546854	98.05560852	94.88261164	91.8301974
170915A00031	9/15/2017	2.1	9/15/2023	9/15/2017	107.26548	107.2654841	107.2654841	105.9292186	102.3117989	98.83734361	95.49947465	92.29207403	89.20933396
170918A00007	9/18/2017	2.8	9/20/2027	9/18/2017	119.09424	119.0942393	119.0942393	114.0568611	106.4497987	99.41378239	92.90285014	86.87490964	81.29145411
170919A00073	9/19/2017	2.28	9/19/2024	9/19/2017	110.13617	110.1361719	110.1361719	108.324465	103.6770728	99.2564763	95.05046136	91.04747534	87.23665069
170921A00062	9/21/2017	1.95	9/21/2020	9/21/2017	101.09955	101.0995494	101.0995494	100.7118513	100.0691246	99.43458451	98.80807525	98.18944504	97.57854587
170928A00026	9/28/2017	1.73	9/28/2020	9/28/2017	101.07817	101.0781746	101.0781746	100.6774264	100.0146973	99.36066435	98.71515739	98.07801057	97.44906234
171005A00006	10/5/2017	2.32	10/7/2024	10/5/2017	110.4332	110.4331952	110.4331952	108.5905586	103.8890813	99.41902965	95.16781506	91.12355287	87.27506994
171010A00005	10/10/2017	2.06	10/11/2022	10/10/2017	105.29766	105.2976602	105.2976602	104.3192189	101.632168	99.02774837	96.50293558	94.05479405	91.68051796

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
171016A00060	10/16/2017	1.93	10/16/2020	10/16/2017	101.20268	101.2026824	101.2026824	100.7716066	100.0610152	99.36042419	98.66962348	97.98840878	97.31658145
171017A00023	10/17/2017	1.97	10/19/2020	10/17/2017	101.24572	101.2457214	101.2457214	100.8094392	100.0905893	99.3819692	98.68336166	97.99455542	97.3153452
171026A00007	10/26/2017	2.47	10/26/2023	10/26/2017	108.19029	108.1902865	108.1902865	106.811341	103.0871143	99.51321463	96.08276309	92.78918666	89.62625476
171026A00011	10/26/2017	2.94	10/26/2027	10/26/2017	120.42344	120.4234423	120.4234423	115.2513694	107.5096976	100.3547267	93.73872672	87.61806108	81.95284979
171026A00023	10/26/2017	2	10/26/2020	10/26/2017	101.30146	101.3014602	101.3014602	100.8531357	100.115198	99.38802856	98.67139309	97.96506392	97.26881995
171027A00029	10/27/2017	2.04	10/27/2020	10/27/2017	101.33627	101.3362748	101.3362748	100.8861639	100.1453893	99.41546159	98.69614396	97.98720638	97.28842542
171030A00019	10/30/2017	2.04	3/16/2021	10/30/2017	101.99311	101.9931078	101.9931078	101.3925221	100.2838206	99.18832846	98.11668887	97.06812918	96.04190977
171031A00006	10/31/2017	2.02	1/25/2021	10/31/2017	101.74181	101.7418099	101.7418099	101.148586	100.1646981	99.1998849	98.25359577	97.32530119	96.41449163
171031A00028	10/31/2017	2.13	10/29/2021	10/31/2017	103.25419	103.2541917	103.2541917	102.5423049	100.8129142	99.12074503	97.46469605	95.84367507	94.25663431
171101A00023	11/1/2017	2.78	11/3/2025	11/1/2017	114.32426	114.3242629	114.3242629	111.5476028	105.7753512	100.3413637	95.22403914	90.40321832	85.86013269
171130A00005	11/30/2017	2.45	11/30/2022	11/30/2017	106.15976	106.1597568	106.1597568	105.1311882	102.3105221	99.57997858	96.93630664	94.37629629	91.89687328
171205A00018	12/5/2017	2.2	5/11/2020	12/5/2017	100.54704	100.5470416	100.5470416	100.3807763	100.1016979	99.82418037	99.54821049	99.2737753	99.00086194
171207A00029	12/7/2017	2.04	12/7/2020	12/7/2017	101.65895	101.6589502	101.6589502	101.1327314	100.2787626	99.4391751	98.61360796	97.80171208	97.00314995
171208A00008	12/8/2017	2.25	12/8/2022	12/8/2017	106.1584	106.1583983	106.1583983	105.1172741	102.2640759	99.5029286	96.83046961	94.24339099	91.73852612
171212A00027	12/12/2017	2.21	12/13/2021	12/12/2017	103.95746	103.9574645	103.9574645	103.2206837	101.3584649	99.53880107	97.76055937	96.02255728	94.32365361
171218A00020	12/18/2017	2.99	12/20/2027	12/18/2017	121.21135	121.2113481	121.2113481	115.8551804	107.9525425	100.6587566	93.92363647	87.70127607	81.94976575
171219A00063	12/19/2017	2.8	12/20/2027	12/19/2017	121.34933	121.3493283	121.3493283	115.9328495	107.9586844	100.6014662	93.810172	87.53815147	81.74282685
171116A00021	11/16/2017	2.16	11/16/2022	11/16/2017	105.77405	105.774047	105.774047	104.7574022	101.9682392	99.26741454	96.65168156	94.11787132	91.66295318
171204A00020	12/4/2017	2.48	12/5/2022	12/4/2017	106.27569	106.2756929	106.2756929	105.2410099	102.405735	99.66142791	97.00479321	94.43257739	91.94166522
171205A00012	12/5/2017	2.28	12/7/2020	12/5/2017	101.7373	101.7372952	101.7372952	101.2119462	100.3593473	99.52107902	98.69678224	97.88610976	97.0887258
171219A00051	12/19/2017	2.34	1/21/2021	12/19/2017	102.04822	102.0482197	102.0482197	101.4579768	100.4830582	99.52683221	98.58876485	97.66834243	96.76507047
171221A00003	12/21/2017	2.35	12/21/2020	12/21/2017	101.87871	101.8787135	101.8787135	101.3280587	100.4372483	99.56206805	98.70210907	97.85697672	97.02628988
180103A00018	1/3/2018	2.29	1/4/2021	1/3/2018	101.90331	101.9033093	101.9033093	101.33075	100.4022767	99.49077149	98.59577234	97.71683402	96.85352713
180110A00005	1/10/2018	2.22	1/11/2021	1/10/2018	102.01865	102.018653	102.018653	101.4374001	100.4875183	99.55538148	98.64049581	97.74238553	96.86059225
180116A00039	1/16/2018	2.37	1/19/2021	1/16/2018	102.0564	102.0563997	102.0563997	101.4682415	100.4987899	99.54782297	98.61481553	97.69926224	96.80067656
180117A00016	1/17/2018	2.46	7/19/2021	1/17/2018	103.22281	103.2228118	103.2228118	102.567535	101.1100333	99.68041404	98.2780455	96.90221681	95.5522413
180118A00039	1/18/2018	3.09	1/19/2027	1/18/2018	119.47048	119.4704826	119.4704826	115.1849742	108.160667	101.6218099	95.53230801	89.85882048	84.57064534
180123A00025	1/23/2018	2.44	3/1/2021	1/23/2018	102.36917	102.3691663	102.3691663	101.7673751	100.6886606	99.62974308	98.59303903	97.57785512	96.5835266
180129A00006	1/29/2018	2.49	11/30/2020	1/29/2018	101.87526	101.8752553	101.8752553	101.3619843	100.5275435	99.70680481	98.89943298	98.10510364	97.32350279
180202A00012	2/2/2018	2.57	2/2/2022	2/2/2018	104.98537	104.9853724	104.9853724	104.2116861	102.2045733	100.2463847	98.3357227	96.47113723	94.65123269
180222A00023	2/22/2018	2.84	2/22/2022	2/22/2018	105.30344	105.3034408	105.3034408	104.5212394	102.4591084	100.4479832	98.48637577	96.57274413	94.70560564
180222A00025	2/22/2018	3.48	2/22/2033	2/22/2018	144.19865	144.1986458	143.9280483	129.6376908	116.2823524	104.5119875	94.12695312	84.95374522	76.84154818
180222A00027	2/22/2018	3.24	2/22/2028	2/22/2018	125.40202	125.4020171	125.4020171	119.7068333	111.4208018	103.7853153	96.74566423	90.25191017	84.25855259

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180223A00026	2/23/2018	2.92	12/15/2022	2/23/2018	107.61242	107.6124186	107.6124186	106.5587671	103.6783205	100.8909162	98.19317188	95.58173403	93.05339284
180227A00005	2/27/2018	2.59	9/22/2020	2/27/2018	101.52161	101.5216147	101.5216147	101.1312316	100.4842614	99.8455598	99.21496896	98.592335	97.97750794
180305A00021	3/5/2018	2.52	3/5/2020	3/5/2018	100.21374	100.2137434	100.2137434	100.1607933	100.0665835	99.9725585	99.87871789	99.78506108	99.69158751
180308A00011	3/8/2018	2.9	9/15/2022	3/8/2018	106.90145	106.9014456	106.9014456	105.9412595	103.3129217	100.7633287	98.28973028	95.88939618	93.55971323
180323A00005	3/23/2018	2.79	3/23/2021	3/23/2018	102.8944	102.8944032	102.8944032	102.2905029	101.161252	100.0422393	98.94795399	97.87758287	96.83034799
180326A00010	3/26/2018	2.6	3/26/2021	3/26/2018	102.89254	102.8925407	102.8925407	102.2871174	101.148502	100.018877	98.91443114	97.83432962	96.77777405
180327A00024	3/27/2018	2.79	5/26/2023	3/27/2018	108.96777	108.9677721	108.9677721	107.7342299	104.3836781	101.1555109	98.04471261	95.0464018	92.1559266
180328A00018	3/28/2018	2.73	3/28/2023	3/28/2018	108.34001	108.3400105	108.3400105	107.1715091	103.9889859	100.917965	97.95396038	95.09261973	92.32979589
180912A00032	9/12/2018	2.89	3/12/2020	9/12/2018	100.30015	100.3001457	100.3001457	100.2352648	100.121639	100.0082853	99.89520296	99.78239079	99.66984784
180914A00013	9/14/2018	3.48	9/14/2028	9/14/2018	127.39546	127.3954579	127.3954579	121.0643208	112.2743018	104.2120461	96.81304102	90.0187341	83.77604246
180918A00041	9/18/2018	3.18	9/18/2024	9/18/2018	114.34823	114.3482251	114.3482251	112.5003064	107.7594415	103.2484777	98.95511104	94.8676662	90.97515849
180920A00028	9/20/2018	3.12	9/20/2023	9/20/2018	111.04712	111.047115	111.047115	109.6785316	105.9791593	102.4256809	99.01161746	95.73071974	92.57705615
180920A00049	9/20/2018	2.96	3/20/2020	9/20/2018	100.36986	100.369863	100.369863	100.2913557	100.1555634	100.0201525	99.88512113	99.75046783	99.61619095
180920A00063	9/20/2018	3	9/20/2021	9/20/2018	104.78134	104.7813446	104.7813446	104.078183	102.4346041	100.8248246	99.24796042	97.70306621	96.18923294
180926A00004	9/26/2018	3.04	9/26/2022	9/26/2018	107.85047	107.8504735	107.8504735	106.8717394	104.1901572	101.5897514	99.06764442	96.62099067	94.24706834
180926A00031	9/26/2018	3.24	9/26/2023	9/26/2018	110.84811	110.8481071	110.8481071	109.481318	105.7868594	102.2382547	98.82901591	95.55288737	92.40393192
180928A00029	9/28/2018	2.87	9/28/2020	9/28/2018	101.841	101.8409977	101.8409977	101.4385554	100.7729793	100.1161259	99.46782477	98.8279095	98.19621821
180928A00050	9/28/2018	2.98	9/28/2020	9/28/2018	101.82121	101.8212081	101.8212081	101.4195325	100.755208	100.0995738	99.45246036	98.81370231	98.18313866
181001A00059	10/1/2018	3.02	11/2/2020	10/1/2018	102.11648	102.1164827	102.1164827	101.6539428	100.8937412	100.1448956	99.40715283	98.6802673	97.96400064
181004A00028	10/4/2018	3.31	10/4/2023	10/4/2018	111.1723	111.172304	111.172304	109.7949576	106.0732431	102.4991231	99.06599615	95.7675028	92.59760938
181005A00011	10/5/2018	3.2	10/5/2023	10/5/2018	111.46938	111.4693769	111.4693769	110.0824862	106.3347642	102.7361412	99.27992232	95.95966569	92.76926022
181005A00041	10/5/2018	3.06	10/5/2020	10/5/2018	101.92917	101.9291692	101.9291692	101.5151612	100.8314659	100.1569733	99.49149848	98.83486132	98.18688656
181012A00012	10/12/2018	3.05	10/9/2020	10/12/2018	101.95332	101.9533184	101.9533184	101.5324185	100.8377926	100.1526689	99.47685324	98.81015677	98.15239559
181018A00011	10/18/2018	3.35	10/18/2023	10/18/2018	111.43823	111.4382284	111.4382284	110.0438314	106.280439	102.6675348	99.19832102	95.86626019	92.66515321
181023A00021	10/23/2018	3.28	10/23/2023	10/23/2018	111.21712	111.2171171	111.2171171	109.8189665	106.0465286	102.4254502	98.94886545	95.61017902	92.40313797
181025A00010	10/25/2018	3.07	10/25/2022	10/25/2018	108.1682	108.1681999	108.1681999	107.1587961	104.3955188	101.7178458	99.12264329	96.60683833	94.16749557
181102A00006	11/2/2018	3.07	11/2/2021	11/2/2018	105.24944	105.249437	105.249437	104.5247674	102.7613235	101.0360122	99.34774844	97.69541431	96.07793716
181114A00014	11/14/2018	3.17	11/14/2023	11/14/2018	111.69532	111.6953195	111.6953195	110.2639897	106.4050246	102.7034502	99.15207988	95.74399956	92.47265324
181114A00024	11/14/2018	3.27	12/14/2021	11/14/2018	105.62596	105.6259645	105.6259645	104.8828571	103.008187	101.1761987	99.38580074	97.63580704	95.92507308
181115A00051	11/15/2018	2.98	5/17/2021	11/15/2018	103.74823	103.7482307	103.7482307	103.1387502	101.8529632	100.5806746	99.33425528	98.11292242	96.91592488
181116A00015	11/19/2018	3.29	2/15/2024	11/19/2018	112.20007	112.2000701	112.2000701	110.6685523	106.5719484	102.651855	98.89983668	95.3077849	91.86802658
181119A00018	11/19/2018	3.28	11/17/2023	11/19/2018	111.42192	111.4219192	111.4219192	109.9962111	106.1531107	102.4666505	98.92970288	95.53539968	92.27722683
181221A00022	12/21/2018	2.95	6/26/2020	12/21/2018	101.10246	101.1024637	101.1024637	100.862147	100.455874	100.0528717	99.65310068	99.25652217	98.86309806

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
181226A00035	12/26/2018	2.95	12/27/2022	12/26/2018	107.78733	107.7873292	107.7873292	106.7195626	103.8053277	100.9861692	98.25859349	95.61914069	93.06450077
181227A00029	12/27/2018	2.91	12/27/2021	12/27/2018	105.03902	105.0390216	105.0390216	104.2915527	102.3883653	100.5292727	98.71310726	96.93862461	95.20462454
181231A00007	12/31/2018	2.86	12/31/2021	12/31/2018	104.97103	104.9710327	104.9710327	104.2216929	102.3086788	100.4402145	98.6151115	96.83210662	95.08998175
190102A00050	1/2/2019	3.38	1/3/2034	1/2/2019	145.69192	145.6919221	144.5534254	129.2817249	115.2095618	102.9031504	92.12766231	82.68068919	74.38771146
190103A00014	1/3/2019	2.8	1/4/2021	1/3/2019	102.3829	102.3829012	102.3829012	101.8088798	100.8779858	99.96409085	99.06673236	98.18546442	97.319857
190107A00020	1/7/2019	2.8	1/7/2021	1/7/2019	102.404	102.403999	102.403999	101.826859	100.8877692	99.96598002	99.06101649	98.17242082	97.2997517
190110A00001	1/10/2019	2.88	1/10/2022	1/10/2019	105.08131	105.0813072	105.0813072	104.3246391	102.3842951	100.4897478	98.63975391	96.83299737	95.06820992
190122A00008	1/22/2019	2.98	1/20/2023	1/22/2019	108.05306	108.0530588	108.0530588	106.9567482	103.976129	101.0947782	98.30896314	95.61499701	93.00935663
190123A00034	1/23/2019	2.98	1/23/2025	1/23/2019	114.4148	114.4148028	114.4148028	112.3391966	107.2631484	102.4497392	97.88410368	93.55218359	89.44079025
190130A00010	1/30/2019	2.89	7/30/2020	1/30/2019	101.32767	101.3276687	101.3276687	101.0318944	100.5321854	100.0374091	99.5474928	99.06236519	98.58195639
190130A00019	1/30/2019	3.01	1/30/2024	1/30/2019	110.94058	110.9405788	110.9405788	109.4350147	105.408041	101.5533435	97.86275163	94.32841054	90.94288326
190131A00017	1/31/2019	2.83	3/25/2022	1/31/2019	105.49936	105.4993629	105.4993629	104.6940187	102.5461218	100.4528716	98.41258029	96.42354205	94.4841198
190201A00006	2/1/2019	2.76	2/3/2020	2/1/2019	100.02075	100.0207526	100.0207526	100.016152	100.0078283	99.99951177	99.99120241	99.98290021	99.97460516
190201A00016	2/1/2019	2.8	2/1/2022	2/1/2019	105.07637	105.0763705	105.0763705	104.3050091	102.3067767	100.3570741	98.45453056	96.59771208	94.78523843
190204A00036	2/4/2019	2.86	11/4/2021	2/4/2019	104.58512	104.5851214	104.5851214	103.8646649	102.1071261	100.3876335	98.70510761	97.05844094	95.44657029
190208A00009	2/8/2019	2.67	2/8/2024	2/8/2019	110.38576	110.3857579	110.3857579	108.868055	104.8065401	100.9203241	97.20100753	93.64053846	90.23129697
190214A00008	2/14/2019	2.64	2/14/2023	2/14/2019	107.75974	107.7597354	107.7597354	106.6369685	103.578358	100.6239343	97.76966424	95.01159455	92.34595158
190215A00003	2/15/2019	2.82	2/15/2022	2/15/2019	105.21346	105.2134643	105.2134643	104.434948	102.3942623	100.4037459	98.46195018	96.56736977	94.7185566
190222A00028	2/22/2019	2.62	2/22/2022	2/22/2019	105.2251	105.2251014	105.2251014	104.4409276	102.3724185	100.3552145	98.38780592	96.46863866	94.59621856
190313A00011	3/13/2019	2.53	3/11/2022	3/13/2019	105.15057	105.1505748	105.1505748	104.3554226	102.2408371	100.1795266	98.16987216	96.21023075	94.29902458
190321A00021	3/21/2019	2.67	3/21/2024	3/21/2019	109.90149	109.9014867	109.9014867	108.3490568	104.2051285	100.2437616	96.4559961	92.83328507	89.36755069
190326A00004	3/26/2019	2.58	9/26/2023	3/26/2019	108.41611	108.4161149	108.4161149	107.0670344	103.4166873	99.91093752	96.54331697	93.30761572	90.19794032
190326A00014	3/26/2019	2.56	9/28/2020	3/26/2019	101.54032	101.5403151	101.5403151	101.1392625	100.4759847	99.82138753	99.17530146	98.53756136	97.90800634
180823A00044	8/23/2018	2.69	8/21/2020	8/23/2018	101.4494	101.4494005	101.4494005	101.1148937	100.554035	99.99940004	99.45088553	98.90839039	98.37181578
180829A00008	8/29/2018	3.23	8/30/2027	8/29/2018	123.81386	123.8138569	123.8138569	118.7045238	110.9157452	103.7065181	97.03055111	90.84537664	85.11212404
180830A00005	8/30/2018	2.88	8/28/2020	8/30/2018	101.52904	101.5290449	101.5290449	101.1828548	100.6036668	100.0311001	99.4650417	98.90538116	98.35201043
180831A00017	8/31/2018	2.77	3/2/2020	8/31/2018	100.21629	100.2162916	100.2162916	100.1684345	100.0825114	99.9967381	99.91111429	99.82563953	99.74031344
180906A00047	9/6/2018	2.81	9/7/2021	9/6/2018	104.36912	104.3691247	104.3691247	103.6732404	102.0690034	100.4972815	98.9572533	97.44802609	95.96874028
180912A00011	9/12/2018	3.41	9/11/2026	9/12/2018	120.60998	120.6099764	120.6099764	116.7398802	109.9979642	103.699743	97.81365418	92.31044179	87.1630768
180914A00011	9/14/2018	3.01	4/12/2021	9/14/2018	103.29956	103.299564	103.299564	102.6938546	101.5151484	100.3418046	99.19557461	98.07552597	96.98076858
180917A00054	9/17/2018	3.17	9/15/2023	9/17/2018	110.50344	110.503437	110.503437	109.1497959	105.4914174	101.9765493	98.59886149	95.35223766	92.23087031
180918A00037	9/18/2018	3.06	9/17/2021	9/18/2018	104.57311	104.5731141	104.5731141	103.8739846	102.2452421	100.6498048	99.08681448	97.55534501	96.05450545
180920A00030	9/20/2018	3.12	9/20/2023	9/20/2018	111.04712	111.047115	111.047115	109.6785316	105.9791593	102.4256809	99.01161746	95.73071974	92.57705615

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180921A00024	9/21/2018	2.99	9/21/2021	9/21/2018	104.77271	104.7727063	104.7727063	104.0691624	102.4228966	100.8105252	99.23115805	97.68384605	96.16767642
180925A00060	9/25/2018	3.23	8/25/2023	9/25/2018	110.5535	110.5534994	110.5534994	109.2202703	105.6175441	102.15434	98.8246063	95.62246874	92.54234533
180927A00008	9/27/2018	3.14	9/27/2022	9/27/2018	107.63143	107.6314304	107.6314304	106.6565425	103.9857972	101.3957681	98.88360118	96.44647058	94.08167318
180928A00011	9/28/2018	3.12	7/15/2022	9/28/2018	107.00135	107.0013538	107.0013538	106.097206	103.6322868	101.237538	98.91068696	96.64942568	94.45153878
181002A00055	10/2/2018	3.14	10/3/2022	10/2/2018	107.67846	107.6784635	107.6784635	106.6976622	104.0102019	101.4043533	98.87721015	96.42590116	94.04768035
181004A00029	10/4/2018	3.7	10/4/2028	10/4/2018	129.47754	129.4775385	129.4775385	123.0353204	114.1115797	105.9288735	98.42122454	91.52880376	85.1973961
181005A00012	10/5/2018	3.33	10/4/2024	10/5/2018	115.19313	115.1931278	115.1931278	113.3125221	108.5091477	103.9403232	99.59339181	95.45635995	91.5179497
181010A00017	10/10/2018	3.08	10/1/2020	10/10/2018	101.91157	101.9115694	101.9115694	101.50444	100.8316549	100.1677753	99.51262556	98.86603418	98.22783437
181010A00019	10/10/2018	3.21	9/15/2021	10/10/2018	104.80427	104.8042709	104.8042709	104.1049615	102.4797701	100.8877235	99.32797943	97.79961875	96.30175695
181015A00024	10/15/2018	3.29	10/16/2023	10/15/2018	111.19703	111.1970344	111.1970344	109.8065714	106.0528728	102.4491394	98.9886034	95.66475712	92.47142893
181023A00020	10/23/2018	3.15	10/22/2021	10/23/2018	104.99873	104.9987296	104.9987296	104.2820964	102.555587	100.8658441	99.21183549	97.59249108	96.00678372
181102A00007	11/2/2018	3.01	11/2/2020	11/2/2018	102.21571	102.2157099	102.2157099	101.7520574	100.9900428	100.2394295	99.49996294	98.77139613	98.05348935
181106A00003	11/6/2018	3.31	11/5/2021	11/6/2018	105.39506	105.395065	105.395065	104.670492	102.9028749	101.1735296	99.48139373	97.82535599	96.20434918
181115A00076	11/15/2018	3.22	12/31/2021	11/15/2018	105.66893	105.6689329	105.6689329	104.9162389	102.9963737	101.1211741	99.28946313	97.49997415	95.75148563
180406A00005	4/6/2018	2.76	4/6/2021	4/6/2018	102.95564	102.9556409	102.9556409	102.3512949	101.1895657	100.0338851	98.90456613	97.80071404	96.72147435
180425A00007	4/25/2018	2.98	4/25/2023	4/25/2018	109.36005	109.3600475	109.3600475	108.1567947	104.8818271	101.7237714	98.67781692	95.73931074	92.90382486
180426A00016	4/26/2018	2.77	4/26/2021	4/26/2018	103.31862	103.3186162	103.3186162	102.7111205	101.4945796	100.2817976	99.09795175	97.94201564	96.81301075
180430A00009	4/30/2018	2.73	2/18/2020	4/30/2018	100.1225	100.1224991	100.1224991	100.0949053	100.044997	99.99515232	99.94537123	99.89565358	99.84599927
180430A00010	4/30/2018	2.88	1/15/2021	4/30/2018	102.53793	102.5379282	102.5379282	101.9522292	100.9908873	100.0476619	99.12204399	98.21354365	97.32168888
180507A00005	5/7/2018	3.06	5/5/2023	5/7/2018	109.09006	109.0900577	109.0900577	107.8832882	104.6006433	101.4357394	98.38373645	95.43994401	92.59989739
180507A00039	5/7/2018	2.97	11/8/2021	5/7/2018	104.79259	104.7925888	104.7925888	104.0697268	102.2997178	100.5682108	98.87413754	97.21638896	95.59389947
180522A00017	5/22/2018	2.98	5/24/2021	5/22/2018	103.58984	103.5898365	103.5898365	102.9822605	101.6776135	100.3905606	99.12778313	97.88861772	96.67242519
180524A00009	5/24/2018	3.02	5/24/2022	5/24/2018	106.3628	106.3627973	106.3627973	105.5060831	103.187779	100.9320052	98.73681951	96.60024535	94.52038338
180529A00014	5/29/2018	2.83	5/30/2023	5/29/2018	109.13208	109.1320846	109.1320846	107.8931301	104.5293612	101.2887821	98.16635512	95.15716746	92.25653626
180530A00028	5/30/2018	3.67	5/31/2033	5/30/2018	144.56926	144.569256	144.0495595	129.6898581	116.2685016	104.4583579	94.05387157	84.87673962	76.77227292
180530A00043	5/30/2018	2.76	6/1/2021	5/30/2018	103.35277	103.3527656	103.3527656	102.7450054	101.4161151	100.1091289	98.825024	97.563251	96.32327774
180530A00044	5/30/2018	2.87	5/31/2022	5/30/2018	106.0622	106.0622047	106.0622047	105.2011234	102.8680037	100.5982792	98.3899992	96.24117263	94.14988415
180530A00067	5/30/2018	2.76	5/28/2021	5/30/2018	103.32524	103.3252393	103.3252393	102.7186371	101.4026054	100.1065396	98.83388679	97.58405074	96.35645524
180530A00069	5/30/2018	2.87	5/31/2022	5/30/2018	106.0622	106.0622047	106.0622047	105.2011234	102.8680037	100.5982792	98.3899992	96.24117263	94.14988415
180530A00074	5/30/2018	2.87	5/31/2022	5/30/2018	106.0622	106.0622047	106.0622047	105.2011234	102.8680037	100.5982792	98.3899992	96.24117263	94.14988415
180531A00069	5/31/2018	2.67	6/1/2020	5/31/2018	100.82033	100.8203305	100.8203305	100.6199722	100.2827861	99.94785336	99.61515162	99.28465864	98.95635253
180601A00007	6/1/2018	2.74	6/1/2020	6/1/2018	100.84404	100.8440401	100.8440401	100.6436525	100.3064165	99.97143427	99.6386832	99.30814115	98.97978621
180607A00026	6/7/2018	2.92	6/7/2021	6/7/2018	103.6126	103.6126034	103.6126034	102.9977689	101.6504528	100.3259093	99.02480635	97.74657512	96.49066457

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180612A00005	6/12/2018	3.09	6/12/2023	6/12/2018	109.48096	109.4809583	109.4809583	108.2320183	104.8427606	101.5784341	98.43390575	95.40416264	92.48442787
180614A00008	6/14/2018	2.94	6/14/2021	6/14/2018	103.69145	103.6914521	103.6914521	103.0692448	101.7020035	100.3585349	99.0391398	97.74322657	96.47022266
180619A00020	6/19/2018	3.1	6/19/2025	6/19/2018	116.2285	116.2285009	116.2285009	113.8009168	108.2880099	103.0799064	98.15827399	93.50586071	89.1065388
180621A00017	6/21/2018	3.42	6/21/2028	6/21/2018	126.16088	126.1608788	126.1608788	120.1330739	111.5957242	103.749312	96.53400677	89.89534193	83.78382294
180621A00052	6/25/2018	3.35	6/23/2023	6/25/2018	110.45551	110.455512	110.455512	109.1890883	105.7537879	102.4459989	99.26044931	96.19198502	93.23569648
190327A00010	3/27/2019	2.59	3/27/2020	3/27/2019	100.36534	100.3653405	100.3653405	100.2749632	100.1198743	99.96526981	99.81114732	99.65750463	99.50433952
190328A00019	3/28/2019	2.56	3/28/2024	3/28/2019	109.48629	109.4862896	109.4862896	107.928786	103.7752687	99.80553472	96.01051528	92.38157386	88.91055025
190328A00024	3/28/2019	2.5	4/23/2021	3/28/2019	102.76136	102.7613618	102.7613618	102.1574031	100.9548528	99.75632876	98.5861973	97.44345835	96.32715829
190328A00032	4/25/2019	2.48	4/26/2021	4/25/2019	102.75479	102.7547872	102.7547872	102.1508131	100.9409261	99.73471433	98.55725865	97.40753991	96.28458662
190329A00017	3/29/2019	2.59	3/29/2023	3/29/2019	107.31097	107.3109661	107.3109661	106.1528204	102.9978785	99.9533901	97.01491149	94.1781359	91.43895944
190410A00005	4/10/2019	2.49	10/13/2020	4/10/2019	101.68552	101.685517	101.685517	101.2576316	100.5519607	99.8561181	99.16989922	98.49310519	97.82554263
190423A00049	4/23/2019	2.6	4/23/2021	4/23/2019	102.88558	102.8855774	102.8855774	102.2811526	101.0777972	99.87847788	98.70756425	97.56405587	96.44699877
190424A00004	4/24/2019	2.55	4/23/2021	4/24/2019	102.82347	102.8234696	102.8234696	102.2192779	101.016325	99.81740332	98.64688077	97.50375711	96.38707853
190424A00009	4/24/2019	2.48	4/24/2020	4/24/2019	100.55051	100.5505076	100.5505076	100.4120045	100.1792787	99.94763894	99.71707764	99.48758722	99.2591602
190424A00022	4/24/2019	2.62	4/24/2023	4/24/2019	107.57256	107.5725627	107.5725627	106.3870848	103.1581953	100.0444445	97.04109163	94.14356383	91.34750871
190430A00013	4/30/2019	2.52	4/30/2021	4/30/2019	102.82961	102.8296091	102.8296091	102.225299	101.005093	99.78810061	98.6003595	97.44082476	96.30850069
190502A00009	5/2/2019	2.56	5/3/2021	5/2/2019	102.89907	102.8990736	102.8990736	102.2944595	101.0638837	99.83831205	98.64136019	97.47202963	96.32936803
190502A00027	5/2/2019	2.42	5/2/2022	5/2/2019	105.24715	105.2471486	105.2471486	104.4124283	102.1565064	99.96034365	97.82197609	95.73946785	93.71096462
190507A00023	5/7/2019	2.52	5/7/2021	5/7/2019	102.87317	102.873175	102.873175	102.2686059	101.0249891	99.78875653	98.58029159	97.39865873	96.24296428
190509A00030	5/9/2019	2.48	11/9/2021	5/9/2019	103.92042	103.9204239	103.9204239	103.2011953	101.4364263	99.71014302	98.02126175	96.36867728	94.7513273
190510A00004	5/10/2019	2.54	11/10/2020	5/10/2019	101.79944	101.7994398	101.7994398	101.3229988	100.5425713	99.77414909	99.01745661	98.27222665	97.53820005
190514A00012	5/14/2019	2.55	5/14/2020	5/14/2019	100.66441	100.6644072	100.6644072	100.4931831	100.2056559	99.91978438	99.63555425	99.35295129	99.07196148
190514A00021	5/14/2019	2.72	11/14/2025	5/14/2019	114.04923	114.0492347	114.0492347	111.2427458	105.4502862	99.99903649	94.86716023	90.03426136	85.48135066
190515A00011	5/15/2019	2.38	5/17/2021	5/15/2019	102.75221	102.7522113	102.7522113	102.1479801	100.8721788	99.60971656	98.37289899	97.1609509	95.97312849
190516A00027	5/16/2019	2.43	5/17/2021	5/16/2019	102.81764	102.8176403	102.8176403	102.2131563	100.9369102	99.67400854	98.43675895	97.224386	96.0361457
190520A00036	5/20/2019	2.43	11/19/2021	5/20/2019	103.90784	103.9078375	103.9078375	103.1846749	101.3925804	99.64008699	97.92612471	96.24958456	94.6093982
190522A00017	5/23/2019	2.53	3/1/2023	5/23/2019	106.94719	106.9471881	106.9471881	105.8214985	102.7453161	99.77483862	96.90592661	94.13453499	91.45680467
190523A00017	5/23/2019	2.51	3/15/2024	5/23/2019	109.19764	109.1976367	109.1976367	107.6581006	103.5440304	99.6107962	95.84954799	92.2518415	88.80969453
190523A00020	5/23/2019	2.5	2/9/2024	5/23/2019	108.94501	108.9450074	108.9450074	107.4451086	103.4301196	99.58833844	95.91146884	92.39156325	89.02109996
171229A00007	12/29/2017	2.12	12/30/2020	12/29/2017	101.85589	101.8558928	101.8558928	101.2881068	100.3714035	99.47123635	98.58716112	97.71874943	96.86558796
180103A00007	1/3/2018	2.44	1/7/2022	1/3/2018	104.19836	104.198363	104.198363	103.4480006	101.5242791	99.64583551	97.81142891	96.01976368	94.26959095
180104A00013	1/4/2018	2.39	1/4/2023	1/4/2018	106.73283	106.7328301	106.7328301	105.6585976	102.7267014	99.89153315	97.14947788	94.49698247	91.93064939
180111A00007	1/11/2018	2.66	1/14/2025	1/11/2018	112.73962	112.7396197	112.7396197	110.6981253	105.6859903	100.9325768	96.42328358	92.14430847	88.0826995

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180111A00016	1/11/2018	2.57	1/11/2023	1/11/2018	106.76654	106.7665382	106.7665382	105.6883513	102.7501614	99.90923259	97.16192128	94.50464124	91.93396389
180116A00010	1/16/2018	2.58	1/17/2023	1/16/2018	106.83411	106.8341094	106.8341094	105.7487683	102.7940573	99.93766168	97.17587701	94.50505953	91.92172665
180116A00031	1/16/2018	2.58	1/17/2023	1/16/2018	106.83411	106.8341094	106.8341094	105.7487683	102.7940573	99.93766168	97.17587701	94.50505953	91.92172665
180123A00026	1/23/2018	2.57	1/14/2022	1/23/2018	104.49696	104.4969553	104.4969553	103.7404089	101.7954227	99.89662793	98.04274872	96.23245099	94.46444932
180202A00004	2/2/2018	2.57	2/2/2022	2/2/2018	104.98537	104.9853724	104.9853724	104.2116861	102.2045733	100.2463847	98.3357227	96.47113723	94.65123269
180205A00018	2/5/2018	2.66	2/3/2023	2/5/2018	107.74423	107.7442317	107.7442317	106.6306479	103.604466	100.6805791	97.85506551	95.12407342	92.4839246
180207A00002	2/7/2018	3.13	2/6/2026	2/7/2018	117.08235	117.0823542	117.0823542	113.9762493	107.8880674	102.170067	96.79785708	91.74866498	87.00133271
180212A00009	2/12/2018	2.34	2/12/2020	2/12/2018	100.06832	100.068324	100.068324	100.0499345	100.0166694	99.98344128	99.95024997	99.91709544	99.88397763
180214A00003	2/14/2018	2.45	2/16/2021	2/14/2018	102.47209	102.4720916	102.4720916	101.8687619	100.8205364	99.79241224	98.78521126	97.79829947	96.83106829
180216A00001	2/16/2018	2.5	2/16/2021	2/16/2018	102.52511	102.525111	102.525111	101.9216021	100.8730777	99.84465877	98.83716726	97.84996905	96.88245544
180220A00035	2/20/2018	2.69	2/19/2021	2/20/2018	102.57676	102.5767554	102.5767554	101.974411	100.920175	99.8860192	98.87302666	97.88055241	96.90797752
180222A00014	2/22/2018	2.68	2/19/2021	2/22/2018	102.56608	102.566078	102.566078	101.9637699	100.9095944	99.87549826	98.86256452	97.87014825	96.89763052
180222A00026	2/22/2018	2.98	2/21/2025	2/22/2018	114.64336	114.6433628	114.6433628	112.5111942	107.348575	102.4567862	97.82028023	93.42437656	89.25531563
180306A00009	3/6/2018	2.68	1/15/2021	3/6/2018	102.34376	102.3437583	102.3437583	101.7586689	100.7983368	99.85610785	98.93147336	98.02394366	97.13304705
180306A00038	3/6/2018	2.7	3/5/2021	3/6/2018	102.68088	102.6808779	102.6808779	102.0779419	100.988758	99.91764659	98.86922023	97.84276374	96.83759175
180308A00010	3/8/2018	2.72	4/8/2021	3/8/2018	102.92129	102.9212904	102.9212904	102.3170396	101.1505932	99.98995409	98.85591182	97.74755966	96.66403163
180308A00014	3/8/2018	2.79	9/15/2021	3/8/2018	104.11415	104.1141525	104.1141525	103.4178778	101.7984876	100.2121563	98.65802653	97.13518193	95.64274062
180323A00004	3/23/2018	2.64	3/23/2020	3/23/2018	100.34638	100.3463752	100.3463752	100.2627945	100.1187556	99.97514125	99.83194945	99.68917835	99.54682608
180328A00010	3/28/2018	3.1	3/28/2025	3/28/2018	114.49714	114.497145	114.497145	112.3055569	107.0871085	102.1458855	97.46573875	93.03146455	88.82882653
180328A00019	3/28/2018	2.55	3/29/2021	3/28/2018	102.8545	102.8545029	102.8545029	102.2491697	101.1042813	99.9670729	98.85538493	97.76836569	96.70520097
180530A00002	5/30/2018	2.75	11/30/2022	5/30/2018	107.54474	107.5447446	107.5447446	106.5039539	103.6518453	100.890942	98.21795944	95.62964322	93.1228769
180530A00024	5/30/2018	3.44	5/30/2029	5/30/2018	129.23404	129.2340367	129.2340367	121.9667147	112.48487	103.8438702	95.96415208	88.77397063	82.20870372
180530A00025	5/30/2018	3.49	5/30/2030	5/30/2018	132.83151	132.8315146	132.8315146	123.9716272	113.4880877	104.0190186	95.45986861	87.71728833	80.70798533
180530A00038	5/30/2018	2.77	5/28/2021	5/30/2018	103.33863	103.3386295	103.3386295	102.7319749	101.4158504	100.1196927	98.84694968	97.5970249	96.36934212
180530A00041	5/30/2018	2.64	6/1/2020	5/30/2018	100.81017	100.8101692	100.8101692	100.6098235	100.2726587	99.93774726	99.60506665	99.27459471	98.94630953
180531A00031	5/31/2018	2.67	5/29/2020	5/31/2018	100.80014	100.800138	100.800138	100.6046075	100.2756836	99.94890645	99.62425511	99.3017089	98.98124745
180601A00018	6/1/2018	2.87	6/1/2023	6/1/2018	109.28203	109.2820337	109.2820337	108.0399943	104.6683948	101.4204299	98.29104196	95.27529743	92.36849353
180601A00023	6/1/2018	3.3	6/1/2028	6/1/2018	126.76544	126.7654394	126.7654394	120.7219651	112.1360967	104.2434555	96.98419272	90.30381269	84.15277778
180604A00048	6/4/2018	3.01	6/5/2023	6/4/2018	109.15732	109.1573229	109.1573229	107.9174518	104.5524294	101.3108424	98.18764369	95.17790458	92.27692703
180612A00018	6/12/2018	2.88	6/10/2022	6/12/2018	106.59445	106.5944493	106.5944493	105.719629	103.3442583	101.0342572	98.78758396	96.60215956	94.4759854
180615A00061	6/15/2018	3.28	6/15/2028	6/15/2018	126.71882	126.7188228	126.7188228	120.6310485	112.0122322	104.0923371	96.81076436	90.11235979	83.94700832
180618A00011	6/18/2018	3.02	6/20/2022	6/18/2018	106.56552	106.5655177	106.5655177	105.6856635	103.2924189	100.9655625	98.70300624	96.50262195	94.36236428
180618A00012	6/18/2018	2.9	6/19/2023	6/18/2018	109.52166	109.5216601	109.5216601	108.260194	104.8357916	101.5386451	98.36347511	95.30513809	92.35873461

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180618A00032	6/18/2018	2.93	6/18/2021	6/18/2018	103.69286	103.6928588	103.6928588	103.0667048	101.6886168	100.3348646	99.0055381	97.70003319	96.41776506
180619A00019	6/19/2018	2.89	6/18/2021	6/19/2018	103.63698	103.6369779	103.6369779	103.0110477	101.6333634	100.2800097	98.95107496	97.64595524	96.36406594
180620A00015	6/20/2018	3.04	6/20/2023	6/20/2018	109.37155	109.3715478	109.3715478	108.1155142	104.7065919	101.4241055	98.26282441	95.21764617	92.28370999
180620A00044	6/20/2018	2.89	6/20/2023	6/20/2018	109.49509	109.4950883	109.4950883	108.2328169	104.8061555	101.5069346	98.32986232	95.26978405	92.32178988
180622A00005	6/22/2018	3.5	7/2/2029	6/22/2018	130.07774	130.0777431	130.0777431	122.6666295	113.0702007	104.3314927	96.36867955	89.1080404	82.4832343
180628A00034	6/28/2018	2.72	6/28/2021	6/28/2018	103.71058	103.710576	103.710576	103.0726772	101.6629528	100.279137	98.92078068	97.58724247	96.27790188
180705A00058	7/5/2018	2.93	7/6/2021	7/5/2018	103.82446	103.8244604	103.8244604	103.1796848	101.751725	100.3504229	98.97521471	97.62543481	96.30043978
180716A00037	7/16/2018	3.01	7/18/2022	7/16/2018	106.75111	106.7511112	106.7511112	105.8455703	103.3759109	100.9768046	98.64595278	96.3810276	94.17979493
180719A00059	7/19/2018	2.98	7/19/2021	7/19/2018	103.99385	103.9938513	103.9938513	103.3353783	101.871989	100.4365622	99.02848573	97.64704596	96.29155362
180719A00060	7/19/2018	3.05	7/19/2022	7/19/2018	106.85823	106.8582272	106.8582272	105.9511706	103.4775615	101.0746823	98.74022722	96.47186037	94.26733985
180720A00008	7/20/2018	3	7/20/2022	7/20/2018	106.74118	106.7411751	106.7411751	105.8338415	103.3590772	100.9551618	98.61978079	96.35059171	94.14534669
181120A00006	11/20/2018	3.08	11/16/2020	11/20/2018	102.26383	102.2638292	102.2638292	101.7752148	100.9767009	100.1907151	99.41696389	98.65516297	97.90503678
181123A00007	11/23/2018	3.08	11/23/2020	11/23/2018	102.31834	102.318343	102.318343	101.8167132	100.9990897	100.1945911	99.40290301	98.62372108	97.8567505
181211A00009	12/11/2018	3.14	12/11/2023	12/11/2018	111.07348	111.0734843	111.0734843	109.6245718	105.7244779	101.9859062	98.40145662	94.96398744	91.66672442
181211A00020	12/11/2018	3.04	12/11/2020	12/11/2018	102.42381	102.423815	102.423815	101.889396	101.0228221	100.1709839	99.33350751	98.5100317	97.70020722
181211A00043	12/11/2018	3.14	12/11/2023	12/11/2018	111.07348	111.0734843	111.0734843	109.6245718	105.7244779	101.9859062	98.40145662	94.96398744	91.66672442
181219A00022	12/19/2018	2.94	12/18/2020	12/19/2018	102.38838	102.3883826	102.3883826	101.8415802	100.9563517	100.0865043	99.23163936	98.39137204	97.56533042
181220A00020	12/20/2018	2.78	12/20/2021	12/20/2018	105.0877	105.0877037	105.0877037	104.3416818	102.4501129	100.6020922	98.79647107	97.03202846	95.30758632
181221A00024	12/21/2018	2.96	12/28/2020	12/21/2018	102.48102	102.4810244	102.4810244	101.9161259	101.0035842	100.1073655	99.22703489	98.36217242	97.512373
181226A00061	12/26/2018	2.95	12/27/2022	12/26/2018	107.78733	107.7873292	107.7873292	106.7195626	103.8053277	100.9861692	98.25859349	95.61914069	93.06450077
181227A00027	12/27/2018	3.24	12/26/2025	12/27/2018	117.4115	117.4115011	117.4115011	114.435611	108.4430875	102.8083084	97.50813523	92.52092374	87.82653648
190102A00004	1/2/2019	2.8	2/24/2021	1/2/2019	102.72882	102.7288212	102.7288212	102.1258726	101.0576889	100.009692	98.98340127	97.97814727	96.993288
190107A00029	1/7/2019	2.59	1/7/2021	1/7/2019	102.34659	102.3465908	102.3465908	101.7683969	100.8276319	99.90423034	98.99771464	98.10762462	97.23351668
190107A00036	1/7/2019	2.84	4/15/2022	1/7/2019	105.6684	105.6684043	105.6684043	104.8466762	102.6402022	100.4910141	98.39728292	96.35718082	94.36895587
190108A00002	1/8/2019	2.89	1/8/2021	1/8/2019	102.49666	102.4966628	102.4966628	101.9182194	100.9759609	100.0511095	99.14318593	98.25172832	97.37629146
190108A00039	1/8/2019	3.04	4/30/2024	1/8/2019	111.74552	111.7455237	111.7455237	110.1305736	105.8423414	101.7468164	97.83432163	94.09565283	90.52212365
190109A00023	1/9/2019	2.92	10/9/2020	1/9/2019	101.86241	101.8624106	101.8624106	101.441721	100.7474478	100.0626734	99.38720371	98.72084985	98.06342803
190110A00015	1/10/2019	2.88	1/18/2022	1/10/2019	105.13851	105.1385095	105.1385095	104.3761291	102.4142366	100.499143	98.62955942	96.80412714	95.0215372
190110A00022	1/10/2019	2.86	5/10/2021	1/10/2019	103.33018	103.3301767	103.3301767	102.7238171	101.4672305	100.2198535	98.99965991	97.80576026	96.63730399
190110A00071	1/10/2019	2.67	2/8/2021	1/10/2019	102.64898	102.6489802	102.6489802	102.0451977	101.0169935	100.0087629	99.02062627	98.05198717	97.10227258
190114A00061	1/14/2019	2.98	1/31/2024	1/14/2019	110.82704	110.8270383	110.8270383	109.3211979	105.2938918	101.439015	97.74838088	94.21412241	90.82879132
190115A00042	1/15/2019	2.81	2/14/2020	1/15/2019	100.09798	100.0979846	100.0979846	100.0765222	100.0377002	99.99892339	99.96019173	99.92150511	99.88286348
190115A00063	1/15/2019	2.96	1/16/2024	1/15/2019	110.63646	110.6364577	110.6364577	109.1495373	105.1646769	101.3488251	97.69403823	94.19267584	90.8375001

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190117A00002	1/17/2019	2.87	1/7/2021	1/17/2019	102.47041	102.4704071	102.4704071	101.893063	100.9536351	100.0315123	99.12621937	98.23729849	97.36430826
190117A00004	1/17/2019	2.9	1/18/2022	1/17/2019	105.17828	105.1782757	105.1782757	104.4157016	102.4534091	100.5379224	98.66795322	96.8421427	95.05918163
181120A00007	11/20/2018	3.15	11/15/2021	11/20/2018	105.1703	105.1702985	105.1702985	104.4429467	102.6503882	100.8971605	99.18221256	97.50443139	95.86274593
181128A00031	11/28/2018	3.29	11/28/2023	11/28/2018	111.55051	111.5505088	111.5505088	110.1125752	106.2374027	102.521281	98.95698223	95.53752407	92.25628129
181130A00037	11/30/2018	3.05	11/30/2023	11/30/2018	111.36501	111.3650066	111.3650066	109.91965	106.0234644	102.2879187	98.70568517	95.26969255	91.97323154
181207A00018	12/7/2018	3.21	7/15/2024	12/7/2018	113.03352	113.0335199	113.0335199	111.3053652	106.7921009	102.4902951	98.38904909	94.47796137	90.74722379
181210A00015	12/10/2018	3.12	12/11/2023	12/10/2018	110.99561	110.9956132	110.9956132	109.5472936	105.6486889	101.911562	98.32851363	94.89240384	91.59645997
181211A00021	12/11/2018	3	6/11/2020	12/11/2018	101.00841	101.0084095	101.0084095	100.7919694	100.4269725	100.0646257	99.70490016	99.34776742	98.99319943
181212A00027	12/12/2018	2.99	12/12/2023	12/12/2018	111.22773	111.2277263	111.2277263	109.7696125	105.8445579	102.0826186	98.47629099	95.01834224	91.70191256
181226A00045	12/26/2018	2.87	12/28/2020	12/26/2018	102.39814	102.3981361	102.3981361	101.8334854	100.9213541	100.0255408	99.14561047	98.28114335	97.43173443
181226A00059	12/26/2018	2.87	12/28/2020	12/26/2018	102.39814	102.3981361	102.3981361	101.8334854	100.9213541	100.0255408	99.14561047	98.28114335	97.43173443
181226A00060	12/26/2018	2.9	12/27/2021	12/26/2018	105.01975	105.019746	105.019746	104.2723694	102.3693703	100.5104628	98.69447891	96.92017445	95.18634928
181226A00062	12/26/2018	3.02	12/26/2023	12/26/2018	110.71866	110.7186619	110.7186619	109.255399	105.3232279	101.5555525	97.94475501	94.48349556	91.16481566
181227A00022	12/27/2019	2.91	12/27/2022	12/27/2019	107.66997	107.6699681	107.6699681	106.6029221	103.6903979	100.8729096	98.14696349	95.50910092	92.95601311
190102A00003	1/2/2019	2.8	1/27/2021	1/2/2019	102.53465	102.5346494	102.5346494	101.9368428	100.9433478	99.96919048	99.01381013	98.07666763	97.15724435
190102A00043	1/2/2019	2.79	1/4/2021	1/2/2019	102.3735	102.3734974	102.3734974	101.7995047	100.8686582	99.95481008	99.05749785	98.17627558	97.31071327
190104A00003	1/4/2019	2.81	1/4/2022	1/4/2019	104.90193	104.9019298	104.9019298	104.1502047	102.2273757	100.3495746	98.51558931	96.72413621	94.97397781
190104A00021	1/4/2019	2.58	1/4/2021	1/4/2019	102.31659	102.3165909	102.3165909	101.7415498	100.8090455	99.89360125	98.9947521	98.11204978	97.24506205
190110A00016	1/10/2019	2.88	1/25/2022	1/10/2019	105.18856	105.1885619	105.1885619	104.4211841	102.4404448	100.5073881	98.62068497	96.77893867	94.98080412
190115A00025	1/15/2019	2.96	1/12/2024	1/15/2019	110.60715	110.6071496	110.6071496	109.1251051	105.1511473	101.3453032	97.69969346	94.2067368	90.85925051
190115A00043	1/15/2019	2.82	3/13/2020	1/15/2019	100.29933	100.2993336	100.2993336	100.2327561	100.1163707	100.0002706	99.88445468	99.76892192	99.65367123
190122A00041	1/22/2019	2.71	1/22/2021	1/22/2019	102.56846	102.5684598	102.5684598	101.9742673	100.9918264	100.0282898	99.08311545	98.15578193	97.2457874
190128A00035	1/28/2019	3.04	1/26/2024	1/28/2019	111.03131	111.031314	111.031314	109.5296918	105.511247	101.6642508	97.98059388	94.45247875	91.07252179
190131A00007	1/31/2019	2.67	1/31/2023	1/31/2019	107.7536	107.7536049	107.7536049	106.6424411	103.624905	100.7091563	97.89130329	95.16752164	92.53415864
190131A00014	1/31/2019	2.79	1/29/2021	1/31/2019	102.53856	102.5385641	102.5385641	101.9387131	100.9398179	99.96046668	99.00009015	98.05814076	97.13409191
190208A00005	2/8/2019	2.63	2/8/2023	2/8/2019	107.68743	107.6874283	107.6874283	106.5700736	103.5301159	100.5932871	97.75561486	95.01320226	92.36232865
180622A00003	6/22/2018	2.87	6/22/2022	6/22/2018	106.66196	106.6619606	106.6619606	105.7770707	103.3682049	101.0264738	98.749749	96.53586928	94.38275813
180622A00009	6/22/2018	2.82	6/22/2020	6/22/2018	101.02089	101.0208888	101.0208888	100.7870178	100.3918826	99.99984847	99.61087909	99.22493854	98.84199149
180625A00039	6/25/2018	2.93	6/25/2021	6/25/2018	103.74398	103.7439798	103.7439798	103.1105673	101.7127715	100.3403196	98.99293307	97.66998466	96.37086745
180625A00040	6/25/2018	3	6/24/2022	6/25/2018	106.54709	106.5470901	106.5470901	105.6641233	103.2602842	100.9234104	98.65138455	96.44205124	94.29333947
180626A00033	6/26/2018	2.79	6/26/2020	6/26/2018	101.03717	101.0371707	101.0371707	100.7969485	100.3908358	99.9879927	99.58837998	99.19195885	98.79869121
180627A00014	6/27/2018	2.8	6/26/2020	6/27/2018	101.04125	101.0412515	101.0412515	100.8010234	100.3949007	99.99204764	99.59242502	99.19599406	98.80271664
180628A00027	6/28/2018	2.72	6/28/2021	6/28/2018	103.71058	103.710576	103.710576	103.0726772	101.6629528	100.279137	98.92078068	97.58724247	96.27790188

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180629A00004	6/29/2018	2.65	6/29/2020	6/29/2018	101.05409	101.0540913	101.0540913	100.8087304	100.3937575	99.98219504	99.57400119	99.16913473	98.76755511
180629A00071	6/29/2018	3.02	6/29/2023	6/29/2018	109.37054	109.3705428	109.3705428	108.1057009	104.6726429	101.3677764	98.18576084	95.12138989	92.16970562
180705A00061	7/5/2018	3	7/6/2022	7/5/2018	106.63659	106.6365898	106.6365898	105.7427686	103.3059207	100.9378175	98.6362532	96.39898769	94.22386985
180719A00011	7/19/2018	3	11/12/2021	7/19/2018	104.87619	104.8761894	104.8761894	104.1513757	102.3697008	100.6269812	98.92215586	97.25411426	95.62178833
180720A00029	7/20/2018	2.71	7/20/2020	7/20/2018	101.23028	101.2302802	101.2302802	100.9504852	100.4776004	100.0091521	99.5450781	99.08531708	98.62980897
180720A00049	7/20/2018	2.93	7/20/2021	7/20/2018	103.92704	103.92704	103.92704	103.2678446	101.8023407	100.3648925	98.95488169	97.57159136	96.21432888
180720A00068	7/20/2018	2.89	7/20/2023	7/20/2018	109.72516	109.7251569	109.7251569	108.42989	104.919841	101.5432644	98.29448275	95.16798008	92.15850869
180723A00030	6/21/2019	3.24	6/21/2024	6/21/2019	112.9751	112.975097	112.975097	111.2813395	106.8319932	102.5882441	98.53964877	94.67622586	90.98855512
180727A00026	7/27/2018	3.11	7/26/2024	7/27/2018	113.57378	113.5737793	113.5737793	111.8148039	107.2350866	102.8718654	98.71387446	94.75037637	90.97125154
180731A00002	7/31/2018	2.83	2/16/2021	7/31/2018	102.87504	102.875039	102.875039	102.2703474	101.2198499	100.1894859	99.18007691	98.19098828	97.22161063
180731A00004	7/31/2018	2.97	7/31/2023	7/31/2018	110.09272	110.0927199	110.0927199	108.7830293	105.237805	101.8284242	98.54906237	95.39406222	92.35804415
180731A00046	7/31/2018	2.84	3/26/2021	7/31/2018	103.17233	103.1723325	103.1723325	102.5658985	101.4255676	100.2942504	99.18813862	98.1063968	97.04822587
180802A00006	8/2/2018	2.99	8/2/2023	8/2/2018	110.17941	110.1794078	110.1794078	108.8670082	105.3149536	101.8991431	98.61372833	95.45302936	92.41164546
180809A00016	8/9/2018	3.1	8/9/2023	8/9/2018	109.96237	109.9623652	109.9623652	108.6499701	105.0998017	101.6859899	98.402674	95.24416037	92.20503582
180814A00032	8/14/2018	3.1	8/14/2025	8/14/2018	116.68945	116.6894476	116.6894476	114.1022587	108.4333912	103.0858242	98.03973445	93.27651192	88.77879103
180820A00002	8/20/2018	2.91	8/20/2021	8/20/2018	104.12272	104.1227218	104.1227218	103.4394165	101.890324	100.3719997	98.8837097	97.42463084	95.9939698
180821A00014	8/21/2018	2.68	8/21/2020	8/21/2018	101.44376	101.4437639	101.4437639	101.1092678	100.5484272	99.9938103	99.44531367	98.90283627	98.36627926
190528A00007	5/28/2019	2.44	11/15/2023	5/28/2019	108.19494	108.1949353	108.1949353	106.7954775	103.0183962	99.39575129	95.9204666	92.58576009	89.3852003
190529A00002	5/29/2019	2.32	5/28/2021	5/29/2019	102.73607	102.7360701	102.7360701	102.1317717	100.8198295	99.52780198	98.25911961	97.01318797	95.78943265
190529A00016	5/29/2019	2.32	5/28/2021	5/29/2019	102.73607	102.7360701	102.7360701	102.1317717	100.8198295	99.52780198	98.25911961	97.01318797	95.78943265
190529A00022	5/29/2019	2.32	5/28/2021	5/29/2019	102.73607	102.7360701	102.7360701	102.1317717	100.8198295	99.52780198	98.25911961	97.01318797	95.78943265
190529A00037	5/29/2019	2.47	5/29/2020	5/29/2019	100.73406	100.7340612	100.7340612	100.5386111	100.2098235	99.88318204	99.55866571	99.23625386	98.91592611
190530A00009	5/30/2019	2.25	5/30/2024	5/30/2019	109.33581	109.3358124	109.3358124	107.6924955	103.3549464	99.2169177	95.26831221	91.4995112	87.90143217
190530A00021	5/30/2019	2.21	5/27/2022	5/30/2019	104.91331	104.913307	104.913307	104.059001	101.7412857	99.48656756	97.29286119	95.15817635	93.08059989
190530A00030	5/30/2019	2.36	5/28/2021	5/30/2019	102.78963	102.7896309	102.7896309	102.1851231	100.8728092	99.58041449	98.31137117	97.06508459	95.84098016
190530A00064	5/30/2019	2.51	6/1/2020	5/30/2019	100.76614	100.7661369	100.7661369	100.5658458	100.2287735	99.89395415	99.56136514	99.23098433	98.90278984
190531A00009	6/5/2019	2.1	6/3/2022	6/5/2019	104.69331	104.6933051	104.6933051	103.8343569	101.5006624	99.23087808	97.02299217	94.87498655	92.78492037
190531A00049	5/31/2019	2.29	6/1/2022	5/31/2019	104.7016	104.7015967	104.7015967	103.8469913	101.5272584	99.27074492	97.07547869	94.93947186	92.86081234
190604A00033	6/4/2019	2.23	6/4/2021	6/4/2019	102.6534	102.6534023	102.6534023	102.0453752	100.7131096	99.40310804	98.11616984	96.85173852	95.6092751
190604A00048	6/4/2019	2.23	6/4/2021	6/4/2019	102.6534	102.6534023	102.6534023	102.0453752	100.7131096	99.40310804	98.11616984	96.85173852	95.6092751
190606A00027	6/6/2019	2.51	6/5/2026	6/6/2019	114.04618	114.0461793	114.0461793	110.5937445	104.2973521	98.40384582	92.88545864	87.71638283	82.87270982
190607A00011	6/7/2019	1.94	6/7/2021	6/7/2019	102.49194	102.491937	102.491937	101.8801178	100.5372993	99.21726588	97.92064827	96.6468775	95.3954026
190610A00018	6/10/2019	2.52	6/10/2026	6/10/2019	114.13999	114.1399908	114.1399908	110.6699005	104.3582979	98.45132057	92.92102772	87.74145416	82.88854917

Classification | Public

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190611A00006	6/11/2019	2.26	6/11/2021	6/11/2019	102.7325	102.732499	102.732499	102.1171285	100.7650238	99.43617807	98.13102395	96.84898261	95.58949366
190611A00047	6/11/2019	2.26	6/11/2021	6/11/2019	102.7325	102.732499	102.732499	102.1171285	100.7650238	99.43617807	98.13102395	96.84898261	95.58949366
190618A00002	6/18/2019	2.11	6/18/2025	6/18/2019	110.83425	110.8342501	110.8342501	108.4658013	103.0974681	98.0280291	93.23941241	88.71465026	84.43788261
190620A00027	6/20/2019	2.14	6/20/2024	6/20/2019	108.10587	108.1058666	108.1058666	106.4547546	102.1132316	97.97357337	94.02545701	90.25905964	86.6651111
190620A00044	6/20/2019	2.04	6/20/2022	6/20/2019	104.20324	104.2032373	104.2032373	103.3361842	100.9714805	98.67259034	96.43740272	94.26380714	92.14977535
190625A00013	6/25/2019	2.01	6/24/2022	6/25/2019	104.14978	104.1497844	104.1497844	103.2798426	100.9050925	98.59671969	96.35258394	94.17054801	92.0485584
190626A00009	6/26/2019	2.08	6/25/2021	6/26/2019	102.54005	102.5400508	102.5400508	101.9114976	100.5225091	99.15874925	97.81990736	96.50536015	95.21450458
190626A00019	6/26/2019	2.1	6/24/2022	6/26/2019	104.36772	104.3677213	104.3677213	103.4965954	101.1192008	98.80823703	96.56156581	94.37704831	92.25262941
180720A00011	7/20/2018	2.93	7/20/2021	7/20/2018	103.92704	103.92704	103.92704	103.2678446	101.8023407	100.3648925	98.95488169	97.57159136	96.21432888
180723A00024	10/23/2018	3.1	10/22/2021	10/23/2018	104.91146	104.9114593	104.9114593	104.1952228	102.4694897	100.780511	99.12725287	97.50864548	95.92366209
180726A00023	7/26/2018	3.07	3/25/2022	7/26/2018	106.02028	106.0202816	106.0202816	105.2122772	103.0586863	100.9598477	98.91408018	96.91967479	94.97499135
180731A00009	7/31/2018	2.97	7/31/2023	7/31/2018	110.09272	110.0927199	110.0927199	108.7830293	105.237805	101.8284242	98.54906237	95.39406222	92.35804415
180801A00012	8/1/2018	3.03	8/16/2021	8/1/2018	104.28087	104.2808652	104.2808652	103.5993422	102.0596158	100.5503542	99.0708425	97.62027004	96.19785518
180801A00020	8/1/2018	3.02	8/1/2023	8/1/2018	110.27773	110.2777305	110.2777305	108.9656856	105.4145735	101.9995733	98.71484765	95.55472559	92.5138146
180806A00009	8/6/2018	2.9	8/6/2020	8/6/2018	101.3843	101.3843011	101.3843011	101.0764102	100.5574589	100.0438341	99.53545406	99.03223862	98.53410933
180809A00021	8/9/2018	2.89	8/10/2020	8/9/2018	101.40316	101.403159	101.403159	101.0883461	100.5585081	100.0342254	99.51541103	99.00197954	98.49384735
180813A00013	8/13/2018	2.99	12/5/2022	8/13/2018	107.74115	107.7411528	107.7411528	106.6975994	103.8413859	101.0766262	98.40002971	95.80832733	93.29838866
180813A00016	8/13/2018	2.92	8/13/2021	8/13/2018	104.08735	104.0873503	104.0873503	103.4084971	101.8782968	100.3782999	98.90779814	97.4659913	96.05210761
180813A00037	8/13/2018	2.95	2/14/2022	8/13/2018	105.47474	105.4747383	105.4747383	104.6953862	102.6549087	100.6645325	98.72281862	96.82826525	94.97942777
180815A00010	8/15/2018	3.02	8/15/2023	8/15/2018	109.72314	109.7231357	109.7231357	108.4062073	104.8444558	101.4200177	98.12696428	94.95954249	91.91228395
180816A00032	8/16/2018	3.02	8/16/2023	8/16/2018	109.73064	109.7306368	109.7306368	108.4126177	104.8481067	101.4210919	98.12563287	94.95596595	91.90661271
180816A00038	8/16/2018	3.38	8/16/2028	8/16/2018	126.29126	126.2912571	126.2912571	120.078263	111.4029967	103.4412587	96.13025779	89.41293596	83.23752751
180820A00036	8/20/2018	3	8/21/2023	8/20/2018	109.69642	109.6964238	109.6964238	108.3734632	104.7964241	101.3577625	98.05147941	94.87175875	91.81307294
180827A00030	8/27/2018	2.84	8/27/2020	8/27/2018	101.49855	101.4985529	101.4985529	101.1541513	100.5777805	100.00797	99.44460817	98.88758612	98.33679721
180829A00044	8/29/2018	2.98	8/26/2022	8/29/2018	106.96563	106.9656298	106.9656298	106.0228183	103.4477105	100.9485387	98.52272095	96.16766767	93.88089769
180904A00014	9/4/2018	3.37	9/1/2028	9/4/2018	126.33857	126.3385749	126.3385749	120.0724341	111.3571364	103.3617358	96.02261692	89.28200314	83.0874984
180911A00042	9/11/2018	2.99	9/11/2023	9/11/2018	110.4972	110.4972032	110.4972032	109.141399	105.476603	101.9556341	98.57214557	95.32000787	92.19340082
180913A00029	9/13/2018	3.11	9/13/2023	9/13/2018	110.26872	110.2687204	110.2687204	108.9187109	105.2699786	101.7642455	98.39521143	95.15678819	92.04319475
180914A00026	9/14/2018	3.15	9/14/2023	9/14/2018	110.42251	110.4225149	110.4225149	109.0704267	105.4162174	101.9052813	98.53130292	95.28817943	92.1701159
180914A00029	9/14/2018	3.48	9/14/2028	9/14/2018	127.39546	127.3954579	127.3954579	121.0643208	112.2743018	104.2120461	96.81304103	90.0187341	83.77604246
180919A00018	9/19/2018	3.12	6/20/2022	9/19/2018	106.80657	106.8065667	106.8065667	105.9254063	103.5292493	101.1995392	98.93419027	96.73107245	94.58813866
180920A00014	9/20/2018	3.59	9/20/2028	9/20/2018	128.39799	128.3979921	128.3979921	122.0255105	113.1799665	105.0670825	97.62184269	90.78525314	84.503837
180328A00035	3/28/2018	2.73	3/29/2021	3/28/2018	102.86571	102.8657109	102.8657109	102.261818	101.1197712	99.98535409	98.87634704	97.79190339	96.73121369

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180402A00041	4/2/2018	2.77	4/6/2021	4/2/2018	102.96759	102.9675911	102.9675911	102.3632013	101.2013973	100.0456429	98.91625121	97.81232759	96.73301748
180409A00003	4/9/2018	2.62	4/9/2020	4/9/2018	100.45598	100.4559847	100.4559847	100.3433687	100.1523465	99.9620613	99.77250884	99.58368483	99.39558504
180410A00017	4/10/2018	3.02	10/10/2023	4/10/2018	110.14231	110.1423115	110.1423115	108.7660591	105.0474423	101.4770544	98.04822031	94.75452679	91.58989057
180411A00014	4/11/2018	2.88	6/27/2022	4/11/2018	106.27785	106.2778516	106.2778516	105.3939418	102.9852711	100.6439369	98.36779708	96.15467796	94.00249097
180430A00016	4/30/2018	3.07	12/15/2022	4/30/2018	108.04757	108.0475665	108.0475665	106.9912637	104.104542	101.3110093	98.60728477	95.99000998	93.45597058
180430A00066	4/30/2018	2.84	3/30/2022	4/30/2018	105.95613	105.9561307	105.9561307	105.1420571	102.9681938	100.8500039	98.78575064	96.77368427	94.81212597
180510A00003	5/10/2018	2.77	5/11/2020	5/10/2018	100.70688	100.706884	100.706884	100.5404461	100.261074	99.98326384	99.70700266	99.4322774	99.15907519
180514A00032	5/14/2018	3.27	5/14/2026	5/14/2018	120.01361	120.013605	120.013605	116.5274093	110.0569285	103.9951587	98.31413326	92.98785906	87.99225092
180515A00018	5/15/2018	2.98	5/14/2021	5/15/2018	103.51487	103.5148686	103.5148686	102.907738	101.6366756	100.3772246	99.14413431	97.93657874	96.75376656
180518A00020	5/21/2018	3.08	3/15/2022	5/21/2018	105.965	105.9649997	105.9649997	105.1650442	103.0385514	100.9656291	98.94466369	96.97399975	95.05204761
180524A00020	5/24/2018	2.74	5/24/2021	5/24/2018	103.48476	103.4847588	103.4847588	102.8761921	101.568976	100.2794372	99.0142703	97.77280806	96.55440783
180529A00037	5/29/2018	2.83	5/28/2021	5/29/2018	103.41897	103.4189707	103.4189707	102.812002	101.4953198	100.1986115	98.92532702	97.67486982	96.44666338
180529A00044	5/29/2018	3.11	5/29/2024	5/29/2018	112.26935	112.2693536	112.2693536	110.6113789	106.23705	102.0623816	98.07734875	94.27236756	90.63838663
180529A00056	5/29/2018	3	5/26/2023	5/29/2018	109.0492	109.0492027	109.0492027	107.8203014	104.4835342	101.268284	98.1695927	95.18262464	92.30277123
180601A00022	6/1/2018	3.03	6/1/2023	6/1/2018	109.19479	109.194786	109.194786	107.9585824	104.6036951	101.3714902	98.25696857	95.25524574	92.36166522
180614A00034	6/15/2018	2.89	1/11/2021	6/15/2018	102.50894	102.5089406	102.5089406	101.9274868	100.9772093	100.0446372	99.12927881	98.23066039	97.34832551
180615A00006	6/15/2018	3.01	6/15/2022	6/15/2018	106.50405	106.5040473	106.5040473	105.6285428	103.2495675	100.9362418	98.68651305	96.49828728	94.36955166
180615A00031	6/15/2018	2.92	6/15/2021	6/15/2018	103.67103	103.6710349	103.6710349	103.0479008	101.678041	100.3320944	99.01030846	97.7120884	96.43685863
180618A00023	6/18/2018	2.79	4/13/2020	6/18/2018	100.51687	100.5168715	100.5168715	100.3973679	100.1952462	99.99395029	99.79347496	99.59381517	99.39496588
180618A00026	6/18/2018	3.05	4/13/2023	6/18/2018	108.89062	108.8906207	108.8906207	107.7072265	104.4868626	101.3802186	98.38267855	95.48976401	92.69721021
180620A00038	6/20/2018	3.4	6/20/2028	6/20/2018	125.98451	125.9845121	125.9845121	119.9635475	111.4356211	103.5978194	96.39039227	89.7589457	83.65405006
180702A00034	7/2/2018	2.86	7/3/2023	7/2/2018	109.49087	109.4908651	109.4908651	108.2155168	104.7540179	101.422518	98.21556245	95.12784417	92.15431073
180712A00033	7/12/2018	2.86	7/13/2020	7/12/2018	101.18913	101.189125	101.189125	100.9212053	100.4682579	100.0193818	99.5745222	99.13362516	98.69663781
180619A00021	6/19/2018	3.24	6/19/2028	6/19/2018	126.41508	126.415082	126.415082	120.3207387	111.7040858	103.7873114	96.50964659	89.81579109	83.65550382
180619A00023	6/19/2018	3.04	6/19/2023	6/19/2018	109.36401	109.3640147	109.3640147	108.1090124	104.7029031	101.4230315	98.26417965	95.22125647	92.2894121
180620A00014	6/20/2018	3.4	6/20/2028	6/20/2018	125.98451	125.9845121	125.9845121	119.9635475	111.4356211	103.5978194	96.39039227	89.7589457	83.65405006
180620A00017	6/20/2018	3.24	6/20/2028	6/20/2018	126.42366	126.4236606	126.4236606	120.3259119	111.7064414	103.7872843	96.50761608	89.81208726	83.6504138
180620A00026	6/20/2018	2.91	6/18/2021	6/20/2018	103.66492	103.6649183	103.6649183	103.0388762	101.6609901	100.3074371	98.97830653	97.67299421	96.3909155
180622A00004	6/22/2018	3.47	12/22/2028	6/22/2018	128.15619	128.1561913	128.1561913	121.4761142	112.4185953	104.1313984	96.54451707	89.59454306	83.22412814
180627A00057	6/27/2018	2.98	6/27/2022	6/27/2018	106.52083	106.520831	106.520831	105.6355985	103.2239701	100.879738	98.60076273	96.38486848	94.22996497
180705A00057	7/5/2018	2.81	7/6/2020	7/5/2018	101.11649	101.116493	101.116493	100.8600694	100.4264323	99.99652367	99.57029568	99.1477011	98.72869356
180705A00060	7/5/2018	3	7/6/2022	7/5/2018	106.63659	106.6365898	106.6365898	105.7427686	103.3059207	100.9378175	98.6362532	96.39898769	94.22386985
180716A00034	7/16/2018	2.89	7/14/2023	7/16/2018	109.67912	109.6791236	109.6791236	108.390632	104.8970872	101.5358016	98.30117666	95.18776997	92.19040268

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180717A00076	7/17/2018	3.03	7/17/2023	7/17/2018	109.54047	109.540472	109.540472	108.2553297	104.7725193	101.421499	98.19669648	95.09268912	92.10431681
180719A00058	7/19/2018	2.9	7/20/2020	7/19/2018	101.25895	101.2589526	101.2589526	100.9795412	100.507297	100.039474	99.57601012	99.11684454	98.66191757
180720A00006	7/20/2018	3.03	7/17/2023	7/20/2018	109.54047	109.540472	109.540472	108.2553297	104.7725193	101.421499	98.19669648	95.09268912	92.10431681
180720A00010	7/20/2018	2.86	7/20/2020	7/20/2018	101.23997	101.2399659	101.2399659	100.9605858	100.4883945	100.020624	99.55721223	99.09809848	98.64322298
180720A00050	7/20/2018	2.86	7/20/2020	7/20/2018	101.23997	101.2399659	101.2399659	100.9605858	100.4883945	100.020624	99.55721223	99.09809848	98.64322298
180726A00026	7/26/2018	3.1	11/25/2022	7/26/2018	107.97999	107.9799877	107.9799877	106.9452467	104.1121957	101.3690496	98.71257982	96.13958094	93.64698441
180727A00022	7/27/2018	2.78	7/27/2020	7/27/2018	101.31528	101.3152813	101.3152813	101.0239491	100.5316972	100.0442402	99.56150835	99.08343312	98.60994733
180730A00036	7/30/2018	3.14	7/31/2023	7/30/2018	110.03401	110.0340062	110.0340062	108.7304617	105.2027606	101.8098486	98.545968	95.40551841	92.38317356
180730A00078	7/30/2018	3.14	7/28/2023	7/30/2018	110.0105	110.010504	110.010504	108.7103343	105.1908268	101.8055036	98.54864588	95.41469004	92.39834434
180801A00013	8/1/2018	3.04	10/15/2021	8/1/2018	104.75335	104.753354	104.753354	104.0410636	102.335289	100.6655523	99.030852	97.43014847	95.86244331
180801A00014	8/1/2018	3.03	8/2/2021	8/1/2018	104.17444	104.1744397	104.1744397	103.5019856	102.0003787	100.5281167	99.08453494	97.6688679	96.28037676
180806A00008	8/6/2018	2.95	8/7/2023	8/6/2018	110.07679	110.0767898	110.0767898	108.7598751	105.1963312	101.7698809	98.4746183	95.30481212	92.25501381
180810A00028	8/10/2018	2.91	8/10/2023	8/10/2018	109.95761	109.957612	109.957612	108.6384003	105.0689862	101.6371486	98.3369471	95.16262068	92.10869289
180813A00059	8/13/2018	3.01	8/11/2023	8/13/2018	109.65755	109.657547	109.657547	108.3452334	104.7951463	101.3816252	98.09878816	94.9409257	91.90261
190118A00023	1/18/2019	2.9	1/19/2021	1/18/2019	102.5768	102.5767953	102.5767953	101.9869871	101.0148018	100.0611376	99.1254686	98.20728864	97.30611042
190122A00046	1/22/2019	3.29	1/22/2029	1/22/2019	128.7305	128.7305007	128.7305007	121.8480222	112.6115232	104.1706031	96.45209725	89.38982866	82.92401718
190131A00019	1/31/2019	3.44	1/30/2034	1/31/2019	146.7776	146.7776016	145.5591504	130.1573261	115.9666743	103.5628276	92.70719791	83.19427688	74.84699298
190211A00016	2/11/2019	3.01	2/11/2025	2/11/2019	113.6983	113.6983007	113.6983007	111.6071729	106.5282573	101.7139363	97.14912849	92.81958068	88.71192765
190214A00004	2/14/2019	2.6	2/14/2022	2/14/2019	105.12854	105.1285447	105.1285447	104.3485707	102.304627	100.3110274	98.36630777	96.46895589	94.61751749
190214A00006	2/14/2019	2.67	2/14/2024	2/14/2019	110.42798	110.4279768	110.4279768	108.9039733	104.8247615	100.9221821	97.18774239	93.61330458	90.19116923
190215A00017	2/15/2019	2.89	2/15/2024	2/15/2019	110.57019	110.570189	110.570189	109.0515623	104.9875176	101.0989745	97.37752146	93.81508881	90.40404051
190226A00006	2/26/2019	2.64	2/26/2024	2/26/2019	110.38881	110.3888075	110.3888075	108.8531912	104.741097	100.8082412	97.04594395	93.44589734	90.00024411
190326A00002	3/26/2019	2.56	9/26/2022	3/26/2019	106.06884	106.0688406	106.0688406	105.1038637	102.4567381	99.88972268	97.39996296	94.98465514	92.64111708
190326A00039	3/26/2019	2.56	9/28/2020	3/26/2019	101.54032	101.5403151	101.5403151	101.1392625	100.4759847	99.82138753	99.17530146	98.53756136	97.90800634
190327A00006	3/27/2019	2.53	3/27/2024	3/27/2019	109.35445	109.3544478	109.3544478	107.7992144	103.6509809	99.68623179	95.89591707	92.27141789	88.80459047
190328A00003	3/28/2019	2.64	9/30/2024	3/28/2019	110.96808	110.9680805	110.9680805	109.1432998	104.4753116	100.035354	95.81112309	91.7909806	87.9639804
190328A00022	3/28/2019	2.53	11/20/2020	3/28/2019	101.84636	101.8463553	101.8463553	101.3515005	100.544061	99.74946734	98.96741464	98.1976076	97.4397601
190328A00083	3/28/2019	2.37	3/28/2024	3/28/2019	109.46937	109.4693732	109.4693732	107.9041064	103.7291993	99.73959508	95.92611806	92.28003941	88.79311286
190329A00034	3/29/2019	2.56	3/29/2022	3/29/2019	104.93838	104.9383846	104.9383846	104.1328141	101.9805167	99.88322146	97.83920683	95.84674898	93.90419397
190403A00006	4/3/2019	2.48	4/3/2024	4/3/2019	109.97119	109.9711894	109.9711894	108.3946313	104.1935069	100.1793398	96.34284438	92.67518885	89.16803145
190403A00024	4/3/2019	2.61	7/29/2022	4/3/2019	105.82638	105.8263816	105.8263816	104.9158244	102.4290719	100.0142756	97.66904247	95.39097111	93.17775807
190417A00005	4/17/2019	2.64	4/17/2020	4/17/2019	100.51097	100.5109708	100.5109708	100.3846508	100.1715534	99.95937201	99.74810084	99.53773394	99.32826547
190426A00008	4/26/2019	2.57	4/26/2022	4/26/2019	105.13562	105.1356173	105.1356173	104.3087112	102.0783603	99.90659193	97.79149361	95.73117485	93.72382465

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190429A00004	4/29/2019	2.65	4/15/2024	4/29/2019	109.97948	109.9794759	109.9794759	108.3967174	104.1853526	100.1621029	96.3175847	92.64287504	89.12954886
190508A00003	5/8/2019	2.55	11/2/2020	5/8/2019	101.75654	101.7565444	101.7565444	101.2949081	100.5362175	99.78886674	99.05260314	98.32718138	97.61236334
190509A00019	5/9/2019	2.5	10/12/2021	5/9/2019	103.80288	103.802881	103.802881	103.096258	101.406769	99.75289424	98.13362818	96.54794762	94.99486987
190515A00024	5/15/2019	2.38	5/17/2021	5/15/2019	102.75221	102.7522113	102.7522113	102.1479801	100.8721788	99.60971656	98.37289899	97.1609509	95.97312849
190515A00059	5/15/2019	2.38	5/14/2021	5/15/2019	102.7347	102.7347023	102.7347023	102.1305752	100.864786	99.61054359	98.38257472	97.1800558	96.0021978
180823A00033	8/23/2018	2.85	8/23/2023	8/23/2018	109.84187	109.8418677	109.8418677	108.5098802	104.9080628	101.4461207	98.11796089	94.91768458	91.83968694
180823A00035	8/23/2018	3.05	8/22/2025	8/23/2018	116.47432	116.4743174	116.4743174	113.866656	108.1830762	102.8227555	97.76568174	92.99307676	88.48742206
180827A00034	8/27/2018	2.99	8/28/2023	8/27/2018	109.7125	109.7124955	109.7124955	108.3821653	104.7864738	101.3304298	98.00795226	94.81314949	91.74042376
180831A00019	8/31/2018	3.21	9/2/2025	8/31/2018	116.32205	116.3220457	116.3220457	113.704227	108.0341902	102.6869619	97.64253205	92.88212452	88.38822481
180905A00024	9/5/2018	2.9	9/5/2023	9/5/2018	110.12206	110.12206	110.12206	108.7748169	105.1331688	101.6339755	98.27097758	95.03812454	91.92966997
180910A00032	9/10/2018	3.22	9/10/2024	9/10/2018	113.58284	113.5828374	113.5828374	111.7640547	107.0883118	102.6379072	98.40086729	94.36581337	90.5220353
180911A00012	9/11/2018	3.06	9/9/2022	9/11/2018	107.27986	107.2798648	107.2798648	106.3227577	103.7057833	101.1667902	98.7030844	96.311976	93.99088976
180913A00040	9/13/2018	2.89	9/13/2021	9/13/2018	104.54506	104.545063	104.545063	103.845887	102.2236234	100.6344624	99.07755342	97.55197981	96.05685936
180914A00012	9/14/2018	2.97	10/13/2020	9/14/2018	101.92752	101.9275193	101.9275193	101.4998461	100.7944902	100.0989364	99.41298118	98.73642666	98.06908032
180920A00027	9/20/2018	3.04	9/20/2022	9/20/2018	107.80197	107.8019665	107.8019665	106.8288056	104.1643625	101.5801912	99.07346874	96.64139517	94.28129141
180920A00062	9/20/2018	3.12	9/20/2023	9/20/2018	111.04712	111.047115	111.047115	109.6785316	105.9791593	102.4256809	99.01161746	95.73071974	92.57705615
180924A00056	9/24/2018	3.14	9/23/2022	9/24/2018	107.60013	107.6001273	107.6001273	106.6289222	103.9695055	101.3902064	98.88820721	96.46071213	94.10504633
181005A00010	10/5/2018	2.95	10/5/2020	10/5/2018	101.94956	101.9495593	101.9495593	101.5347543	100.8497604	100.1740034	99.5072973	98.84946106	98.20031838
181009A00024	10/9/2018	3.06	10/9/2020	10/9/2018	101.96031	101.9603113	101.9603113	101.5393953	100.8447422	100.1595916	99.48374936	98.81702653	98.15923925
181009A00035	10/9/2018	3.12	10/11/2022	10/9/2018	108.19015	108.1901533	108.1901533	107.1947796	104.4683841	101.8254957	99.26310612	96.77825175	94.36809986
181010A00020	10/10/2018	3.27	12/1/2022	10/10/2018	108.5129	108.5129013	108.5129013	107.4690445	104.6122922	101.8465982	99.16871132	96.57538805	94.06352208
181015A00008	10/15/2018	3.15	9/15/2021	10/15/2018	104.70568	104.7056825	104.7056825	104.0068067	102.382444	100.7912139	99.23227188	97.70469921	96.20761176
181018A00014	10/18/2018	3.21	10/18/2021	10/18/2018	105.07107	105.0710713	105.0710713	104.355958	102.6394208	100.9592619	99.31447093	97.70399435	96.1268206
181022A00026	10/22/2018	3.18	10/15/2021	10/22/2018	104.995	104.9950025	104.9950025	104.2816202	102.5737183	100.9018869	99.26512973	97.66240588	96.09271602
181115A00036	11/15/2018	3.2	11/15/2021	11/15/2018	105.26088	105.2608763	105.2608763	104.5331044	102.7397114	100.9856626	99.26990848	97.59133582	95.94887311
181115A00054	11/15/2018	2.87	5/15/2020	11/15/2018	100.802	100.8019962	100.8019962	100.6287614	100.33782	100.0485743	99.76100937	99.47511056	99.19086326
181126A00050	11/26/2018	3.29	11/24/2023	11/26/2018	111.51767	111.5176676	111.5176676	110.0840747	106.2203004	102.514706	98.96010017	95.54954224	92.27644727
181130A00019	11/30/2018	3.06	6/1/2020	11/30/2018	100.95243	100.9524271	100.9524271	100.7519053	100.4144416	100.0792327	99.74625616	99.41548976	99.08691159
181206A00011	12/6/2018	3.11	12/6/2022	12/6/2018	108.09373	108.0937307	108.0937307	107.0469532	104.1830867	101.4109537	98.72725579	96.12871156	93.6121789
190211A00017	2/11/2019	3.12	2/11/2026	2/11/2019	117.05987	117.0598667	117.0598667	113.939131	107.8378354	102.1082887	96.7259466	91.66789892	86.91286331
190215A00005	2/15/2019	2.89	2/15/2024	2/15/2019	110.57019	110.570189	110.570189	109.0515623	104.9875176	101.0989745	97.37752146	93.81508881	90.40404051
190215A00046	2/15/2019	2.7	2/15/2024	2/15/2019	110.55771	110.5577085	110.5577085	109.0316819	104.9470629	101.0393757	97.30010976	93.72111017	90.29466134
190222A00021	2/22/2019	2.95	8/21/2024	2/22/2019	112.18324	112.1832434	112.1832434	110.4068951	105.8154188	101.443494	97.2795594	93.31261659	89.53230738

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190314A00018	3/14/2019	2.53	3/14/2022	3/14/2019	105.17064	105.1706362	105.1706362	104.3730466	102.2502781	100.1811384	98.1639883	96.19716883	94.2790871
190315A00014	3/15/2019	2.74	3/15/2024	3/15/2019	110.15312	110.1531184	110.1531184	108.6059	104.4723854	100.5203192	96.7408359	93.12546754	89.66620915
190315A00026	3/15/2019	2.66	1/19/2021	3/15/2019	102.34114	102.3411444	102.3411444	101.7520835	100.7811361	99.82869325	98.89422947	97.97723895	97.07723471
190320A00005	3/20/2019	2.75	3/20/2024	3/20/2019	110.2284	110.2283975	110.2283975	108.6745374	104.5265235	100.561069	96.76922524	93.14245112	89.67267424
190322A00004	3/22/2019	2.54	3/23/2020	3/22/2019	100.34939	100.349387	100.349387	100.2657015	100.121484	99.97769333	99.83432771	99.69138519	99.54886386
190326A00003	3/26/2019	2.57	3/27/2023	3/26/2019	107.23468	107.2346757	107.2346757	106.0791771	102.9306502	99.89221495	96.95944882	94.12806471	91.39397717
190327A00013	3/27/2019	2.53	3/27/2024	3/27/2019	109.35445	109.3544478	109.3544478	107.7992144	103.6509809	99.68623179	95.89591707	92.27141789	88.80459047
190328A00023	3/28/2019	2.51	2/24/2021	3/28/2019	102.41516	102.4151625	102.4151625	101.8132886	100.7469029	99.70067839	98.67613427	97.67260189	96.68943979
190402A00014	4/2/2019	2.64	4/2/2024	4/2/2019	109.85366	109.8536585	109.8536585	108.2872069	104.1130756	100.1240538	96.31098375	92.6651458	89.17830281
190404A00024	4/5/2019	2.61	2/15/2022	4/5/2019	104.77969	104.7796855	104.7796855	104.0033264	101.9671648	99.98109206	98.04365315	96.15334506	94.30872215
190409A00020	4/9/2019	2.41	4/8/2022	4/9/2019	105.07209	105.0720871	105.0720871	104.2559629	102.0673277	99.93531786	97.85812212	95.83394339	93.86105859
190409A00033	4/9/2019	2.62	6/9/2023	4/9/2019	107.86687	107.8668719	107.8668719	106.6318755	103.2776786	100.0471158	96.93509657	93.93666691	91.04710566
190409A00041	4/9/2019	2.57	4/5/2021	4/9/2019	102.72228	102.7222763	102.7222763	102.1188	100.9609959	99.80934083	98.68390535	97.58380152	96.50818111
190411A00019	5/1/2019	2.63	5/2/2022	5/1/2019	105.30977	105.3097691	105.3097691	104.4773632	102.2289517	100.0399359	97.90837676	95.83235418	93.8100286
190412A00014	4/12/2019	2.63	4/12/2021	4/12/2019	102.83914	102.8391447	102.8391447	102.2351371	101.0593504	99.88888892	98.74549486	97.62823701	96.53622647
190424A00019	4/24/2019	2.67	4/24/2024	4/24/2019	110.12276	110.1227584	110.1227584	108.5282491	104.2899458	100.2418902	96.37453924	92.67882642	89.1461936
190424A00023	4/24/2019	2.43	4/24/2023	4/24/2019	107.55447	107.5544705	107.5544705	106.3641954	103.1211426	99.99406747	96.97817477	94.06884786	91.26169325
190426A00009	4/26/2019	2.63	4/26/2024	4/26/2019	109.96498	109.9649791	109.9649791	108.3694188	104.1290901	100.0793568	96.21064406	92.51385805	88.98041579
190430A00001	4/30/2019	2.47	5/2/2024	4/30/2019	110.11731	110.1173078	110.1173078	108.5048447	104.2229642	100.1347573	96.23043918	92.50072503	88.93685368
190506A00017	5/6/2019	2.56	5/6/2020	5/6/2019	100.61583	100.615828	100.615828	100.4575431	100.1920644	99.92799336	99.66531882	99.40402966	99.14411493
190627A00052	6/27/2019	2.1	6/27/2022	6/27/2019	104.38261	104.3826124	104.3826124	103.5090197	101.1234194	98.80468775	96.55066506	94.35919192	92.22819373
190703A00022	7/3/2019	2.08	7/5/2022	7/3/2019	104.37341	104.3734145	104.3734145	103.4929048	101.0864614	98.74804819	96.47544619	94.26644008	92.1189024
190708A00001	7/8/2019	1.99	7/8/2022	7/8/2019	104.61408	104.6140793	104.6140793	103.7265392	101.300137	98.94271298	96.65199939	94.42573809	92.26176108
190711A00016	7/11/2019	2.17	7/11/2022	7/11/2019	104.62517	104.6251735	104.6251735	103.7377852	101.3127113	98.95661101	96.66722157	94.44228275	92.27962463
190722A00027	7/22/2019	2.25	7/22/2020	7/22/2019	100.96156	100.9615603	100.9615603	100.6793922	100.2025279	99.73017983	99.26228405	98.79877773	98.33959922
190724A00005	7/24/2019	2.12	7/26/2021	7/24/2019	102.75428	102.7542793	102.7542793	102.0939868	100.6218039	99.17815405	97.76236544	96.37370267	95.0114558
190729A00006	7/29/2019	2.14	7/29/2022	7/29/2019	104.64291	104.6429115	104.6429115	103.7389356	101.2670866	98.8668828	96.53592132	94.27181048	92.07225614
190730A00007	7/30/2019	2.19	7/30/2024	7/30/2019	108.58022	108.5802153	108.5802153	106.8681627	102.4134045	98.17052258	94.12842444	90.27657263	86.60503727
190802A00016	8/2/2019	2.01	7/12/2023	8/2/2019	105.95731	105.9573111	105.9573111	104.7024244	101.2940546	98.01482574	94.85924805	91.82201751	88.89808625
190802A00032	8/2/2019	2.01	8/2/2024	8/2/2019	107.77897	107.7789717	107.7789717	106.0694632	101.6248365	97.39216762	93.36032822	89.51875692	85.85750245
190805A00029	8/5/2019	1.93	8/5/2022	8/5/2019	104.14577	104.145765	104.145765	103.2381454	100.754348	98.34299903	96.00164153	93.72784227	91.51926804
190807A00005	8/7/2019	1.77	8/7/2024	8/7/2019	106.71009	106.7100942	106.7100942	105.0024994	100.5689181	96.34759135	92.32733071	88.49753048	84.84819936
190808A00011	8/8/2019	1.86	8/8/2023	8/8/2019	105.5524	105.5523962	105.5523962	104.2722216	100.8018673	97.4655597	94.25747644	91.17201048	88.20383116

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190808A00023	8/8/2019	1.68	11/8/2023	8/8/2019	105.95867	105.9586724	105.9586724	104.5765096	100.8414454	97.25933838	93.82311403	90.5260358	87.36171831
190809A00005	8/9/2019	1.88	7/11/2022	8/9/2019	103.90934	103.9093389	103.9093389	103.0258846	100.6096571	98.26222184	95.98130937	93.76466517	91.61012475
190809A00010	8/9/2019	1.88	8/8/2024	8/9/2019	107.21515	107.2151483	107.2151483	105.5016712	101.0543385	96.81986301	92.78702725	88.94519427	85.28434349
190813A00022	8/13/2019	1.88	8/13/2024	8/13/2019	107.23692	107.2369243	107.2369243	105.5158664	101.0553947	96.80890256	92.76508656	88.91323111	85.24324308
190815A00012	8/15/2019	1.81	8/15/2024	8/15/2019	106.92547	106.9254738	106.9254738	105.2041883	100.7456078	96.50121249	92.45967221	88.61024988	84.94283284
190816A00013	8/16/2019	2.2	8/16/2029	8/16/2019	118.06737	118.0673652	118.0673652	110.7927811	101.6284629	93.30642845	85.74465067	78.86941954	72.61452867
190816A00031	8/16/2019	1.77	8/16/2024	8/16/2019	106.74658	106.7465786	106.7465786	105.0253848	100.5682736	96.32543276	92.28551897	88.43778522	84.77210978
190819A00026	8/19/2019	1.62	8/19/2024	8/19/2019	106.91258	106.9125764	106.9125764	105.17586	100.6824916	96.40607427	92.335071	88.4585611	84.76626179
190822A00016	8/22/2019	1.84	8/22/2022	8/22/2019	103.99002	103.9900169	103.9900169	103.0677203	100.5415967	98.09006478	95.71054912	93.4005114	91.15751933
190826A00006	8/26/2019	1.72	8/26/2024	8/26/2019	106.55692	106.5569242	106.5569242	104.8226534	100.3445862	96.08286302	92.02597293	88.1630178	84.48373675
190829A00011	8/30/2019	1.98	12/15/2020	8/30/2019	101.51655	101.516554	101.516554	100.9776142	100.1046207	99.24667944	98.4034037	97.57441969	96.75936628
180815A00011	8/15/2018	2.97	8/15/2022	8/15/2018	106.85843	106.8584332	106.8584332	105.9264007	103.3817379	100.9115413	98.51330615	96.18451375	93.92274997
180816A00043	8/16/2018	2.83	8/16/2022	8/16/2018	106.97836	106.9783563	106.9783563	106.0415117	103.4827488	100.9991095	98.58805227	96.24702878	93.9735969
180817A00026	8/17/2018	2.83	8/17/2020	8/17/2018	101.42673	101.4267339	101.4267339	101.0997241	100.5507	100.0076413	99.4704511	98.93903438	98.4132983
180821A00002	8/22/2018	2.89	8/23/2021	8/22/2018	104.11294	104.112941	104.112941	103.4278355	101.8708515	100.3448769	98.84916615	97.38288635	95.94523493
180821A00011	8/21/2018	2.98	8/21/2023	8/21/2018	109.62471	109.6247053	109.6247053	108.3022558	104.7264841	101.2890544	97.98396862	94.80541163	91.74785716
180821A00024	8/21/2018	2.85	8/21/2023	8/21/2018	109.82675	109.8267461	109.8267461	108.4969576	104.9007024	101.4439513	98.12063509	94.92487693	91.85109238
180823A00001	8/23/2018	2.88	8/23/2021	8/23/2018	104.09715	104.0971455	104.0971455	103.4121079	101.8552518	100.3294033	98.83381647	97.36765843	95.93012667
180827A00010	8/27/2018	2.99	8/25/2023	8/27/2018	109.69024	109.6902394	109.6902394	108.3631769	104.7757498	101.3274175	98.0121344	94.82404149	91.75757145
180827A00032	8/27/2018	2.96	8/29/2022	8/27/2018	106.9358	106.9358016	106.9358016	105.9903851	103.407747	100.9014311	98.46883485	96.10734968	93.81447644
180829A00042	8/29/2018	2.81	3/2/2020	8/29/2018	100.21974	100.2197353	100.2197353	100.1718765	100.0859504	100.0001742	99.91454748	99.82906979	99.74374076
180904A00036	9/4/2018	2.83	9/4/2020	9/4/2018	101.54986	101.5498614	101.5498614	101.1913411	100.5930719	100.0018679	99.41760437	98.84015969	98.26941493
180914A00028	9/14/2018	3.37	9/12/2025	9/14/2018	117.30474	117.3047374	117.3047374	114.6477456	108.9248208	103.5286767	98.43897835	93.63665818	89.10393491
180914A00034	9/14/2018	2.85	9/15/2020	9/14/2018	101.72912	101.7291188	101.7291188	101.350033	100.7201869	100.0981711	99.48383987	98.87705126	98.27766676
180917A00032	9/17/2018	3.17	9/15/2023	9/17/2018	110.50344	110.503437	110.503437	109.1497959	105.4914174	101.9765493	98.59886149	95.35223766	92.23087031
180917A00078	9/17/2018	3.05	9/15/2023	9/17/2018	110.74896	110.748958	110.748958	109.3874253	105.7071416	102.1716053	98.77441089	95.50937567	92.37063
180920A00011	9/20/2018	2.89	9/18/2020	9/20/2018	101.7775	101.7775041	101.7775041	101.3929796	100.7548043	100.1246638	99.50240682	98.88788584	98.28095708
180921A00021	9/21/2018	2.99	9/21/2021	9/21/2018	104.77271	104.7727063	104.7727063	104.0691624	102.4228966	100.8105252	99.23115805	97.68384605	96.16767642
180924A00052	9/24/2018	3.22	9/22/2023	9/24/2018	110.74232	110.742322	110.742322	109.3801745	105.6984881	102.1618111	98.76371301	95.49798855	92.35874763
180927A00015	9/27/2018	3.02	9/27/2022	9/27/2018	107.80476	107.8047579	107.8047579	106.8254071	104.1416907	101.5392861	99.01530625	96.56689843	94.19133414
180927A00029	9/27/2018	3.01	10/27/2020	9/27/2018	102.06299	102.0629921	102.0629921	101.6110927	100.8673247	100.1344347	99.41218519	98.70034569	97.99869223
180928A00033	9/28/2018	2.87	9/28/2020	9/28/2018	101.841	101.8409977	101.8409977	101.4385554	100.7729793	100.1161259	99.46782476	98.8279095	98.19621821
181001A00019	10/1/2018	3.02	10/1/2020	10/1/2018	101.87094	101.8709427	101.8709427	101.4639043	100.791272	100.1275439	99.47254413	98.82610136	98.18804878

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
181005A00017	10/5/2018	3.27	4/11/2023	10/5/2018	109.58455	109.5845519	109.5845519	108.3985667	105.1725525	102.0601847	99.05686949	96.15813911	93.35973866
181010A00023	10/10/2018	3.41	4/1/2024	10/10/2018	113.08194	113.0819369	113.0819369	111.4904571	107.2525941	103.2017276	99.32866226	95.62461118	92.08127243
180716A00016	7/16/2018	3.03	7/14/2023	7/16/2018	109.51788	109.5178807	109.5178807	108.2360958	104.7614644	101.4180231	98.20023873	95.10272483	92.12035528
180716A00056	7/16/2018	3.1	7/16/2025	7/16/2018	116.45069	116.4506927	116.4506927	113.9477951	108.3593996	103.0838683	98.10214037	93.39629843	88.94960801
180718A00026	7/18/2018	3.03	7/18/2023	7/18/2018	109.548	109.5480025	109.5480025	108.2617411	104.7762047	101.4226586	98.1955176	95.08934678	92.09897476
180719A00063	7/19/2018	3.21	7/19/2024	7/19/2018	113.11269	113.1126861	113.1126861	111.3774553	106.8507876	102.5367104	98.42423839	94.50289078	90.76278584
180723A00026	10/23/2018	3.2	10/23/2023	10/23/2018	110.9164	110.9163971	110.9163971	109.5204715	105.7535935	102.1379139	98.66656984	95.33297181	92.13087255
180727A00025	7/27/2018	2.95	7/27/2022	7/27/2018	107.13026	107.1302605	107.1302605	106.2112012	103.7036532	101.2685771	98.90357649	96.60623326	94.37422779
180731A00022	7/31/2018	3.47	7/31/2028	7/31/2018	126.92373	126.9237325	126.9237325	120.7494904	112.0870478	104.1334041	96.82647467	90.10980917	83.93217117
180816A00044	8/16/2018	2.83	8/17/2020	8/16/2018	101.42673	101.4267339	101.4267339	101.0997241	100.5507	100.0076413	99.4704511	98.93903438	98.4132983
180821A00028	8/21/2018	2.99	8/21/2023	8/21/2018	109.66056	109.6605646	109.6605646	108.3378595	104.7614541	101.3234084	98.01772402	94.83858519	91.78046505
180823A00055	8/23/2018	3.44	8/23/2033	8/23/2018	145.32539	145.3253939	144.5585028	129.6863926	115.8980919	103.7999389	93.17218235	83.82475644	75.59322255
180830A00039	8/30/2018	3.03	8/30/2023	8/30/2018	109.87176	109.8717613	109.8717613	108.538215	104.9344527	101.4707768	98.14108348	94.93945687	91.86027637
180831A00018	8/31/2018	2.95	8/31/2022	8/31/2018	106.92443	106.9244301	106.9244301	105.9772266	103.389461	100.8782781	98.44106117	96.07518855	93.77814917
180910A00028	9/10/2018	3.56	9/9/2033	9/10/2018	147.1228	147.1228044	146.3092072	131.3006972	117.3687793	105.1461351	94.41012368	84.96826365	76.65407942
180911A00080	9/11/2018	2.94	9/9/2022	9/11/2018	107.44902	107.4490206	107.4490206	106.487592	103.8580643	101.3070884	98.83193854	96.42989971	94.09837256
180918A00038	9/18/2018	3.11	9/16/2022	9/18/2018	107.46576	107.465755	107.465755	106.5014531	103.8629219	101.3034437	98.82026302	96.41063708	94.07194089
180924A00047	9/24/2018	3.14	9/23/2022	9/24/2018	107.60013	107.6001273	107.6001273	106.6289222	103.9695055	101.3902064	98.88820721	96.46071213	94.10504633
180925A00095	9/25/2018	3.01	9/25/2020	9/25/2018	101.8184	101.8183958	101.8183958	101.4220466	100.7658608	100.1181587	99.47877661	98.84755484	98.22433786
180927A00042	9/27/2018	3.02	9/27/2022	9/27/2018	107.80476	107.8047579	107.8047579	106.8254071	104.1416907	101.5392861	99.01530625	96.56689843	94.19133414
181001A00049	10/1/2018	3.01	10/1/2020	10/1/2018	101.86417	101.8641716	101.8641716	101.4571483	100.7845415	100.1208387	99.4658639	98.81944589	98.18141785
181001A00074	10/1/2018	3.03	10/3/2022	10/1/2018	107.88003	107.8800303	107.8800303	106.894561	104.1936311	101.574925	99.03550301	96.57246613	94.18304238
181005A00005	10/5/2018	3.31	10/5/2023	10/5/2018	111.1806	111.1805978	111.1805978	109.8021123	106.0776167	102.5009159	99.06539431	95.76468026	92.59272851
181005A00016	10/5/2018	3.26	1/10/2023	10/5/2018	108.81134	108.8113378	108.8113378	107.7216019	104.7558179	101.8878435	99.11404998	96.43083671	93.83476125
181009A00060	10/9/2018	3.07	10/12/2021	10/9/2018	105.07753	105.0775252	105.0775252	104.3632551	102.6574976	100.9877223	99.3529353	97.75210053	96.18422327
181010A00021	10/10/2018	3.29	3/15/2023	10/10/2018	109.42648	109.4264838	109.4264838	108.2697351	105.1183375	102.0759021	99.1381374	96.30083843	93.55999588
181206A00027	12/6/2018	2.98	6/8/2020	12/6/2018	100.97836	100.9783553	100.9783553	100.7667071	100.4099967	100.0558161	99.7041385	99.3549373	99.00818635
181211A00018	12/11/2018	3.14	12/11/2023	12/11/2018	111.07348	111.0734843	111.0734843	109.6245718	105.7244779	101.9859062	98.40145662	94.96398744	91.66672442
181212A00019	12/12/2018	3.19	12/12/2023	12/12/2018	111.27612	111.2761222	111.2761222	109.8245268	105.917957	102.1732364	98.58294759	95.1399311	91.83739579
181213A00025	12/13/2018	3.05	12/11/2020	12/13/2018	102.43255	102.4325538	102.4325538	101.8981099	101.0314947	100.1796156	99.34209888	98.51858319	97.7087193
181214A00023	12/14/2018	3.07	12/14/2021	12/14/2018	105.24763	105.2476325	105.2476325	104.5063203	102.6352809	100.8068633	99.01996918	97.27341446	95.56605639
181218A00077	12/18/2018	3.09	12/18/2023	12/18/2018	110.93261	110.9326068	110.9326068	109.4767999	105.5612343	101.8085904	98.21136649	94.76232845	91.45461579
181220A00009	12/20/2018	2.95	12/21/2020	12/20/2018	102.41967	102.419665	102.419665	101.8674233	100.9739821	100.0962034	99.23367768	98.38600971	97.55281771

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
181224A00038	12/24/2018	3.04	12/22/2023	12/24/2018	110.76716	110.7671623	110.7671623	109.3080729	105.3853225	101.6262464	98.02328565	94.56915459	91.25694506
181231A00016	12/31/2018	2.84	2/20/2020	12/31/2018	100.14222	100.1422199	100.1422199	100.1115582	100.0561033	100.0007223	99.94541492	99.89018111	99.83502071
190102A00058	1/2/2019	2.91	1/2/2024	1/2/2019	110.33618	110.3361823	110.3361823	108.8678546	104.9250024	101.14792	97.52888948	94.06048112	90.73565319
190103A00005	1/3/2019	2.61	1/4/2021	1/3/2019	102.34482	102.3448236	102.3448236	101.7696964	100.8370493	99.92146414	99.02247587	98.13963619	97.27251282
190107A00010	1/7/2019	2.66	1/9/2023	1/7/2019	107.56833	107.5683303	107.5683303	106.483259	103.5259813	100.6665879	97.90141475	95.22685191	92.63944807
190107A00019	1/7/2019	2.92	1/5/2024	1/7/2019	110.39737	110.3973733	110.3973733	108.9250874	104.9732979	101.1879679	97.56133154	94.08591422	90.75463254
190110A00002	1/10/2019	2.93	1/10/2023	1/10/2019	107.83039	107.8303889	107.8303889	106.7467319	103.7954268	100.9415861	98.18157862	95.51181525	92.92886441
190110A00009	1/10/2019	2.97	1/16/2024	1/10/2019	110.67638	110.6763814	110.6763814	109.1891506	105.2035082	101.3868981	97.73137632	94.22930137	90.87343458
190110A00075	1/10/2019	2.67	4/7/2021	1/10/2019	103.05907	103.0590691	103.0590691	102.4528453	101.2850107	100.1231604	98.98791754	97.87837583	96.79366961
190110A00087	1/10/2019	2.89	8/7/2020	1/10/2019	101.38643	101.3864275	101.3864275	101.076801	100.5551196	100.0388219	99.52782499	99.02204736	98.52140927
190115A00028	1/15/2019	2.86	11/8/2021	1/15/2019	104.59544	104.5954448	104.5954448	103.8734918	102.1052806	100.3755429	98.68320666	97.0271637	95.40634932
190122A00042	1/22/2019	2.79	1/23/2023	1/22/2019	108.05906	108.0590594	108.0590594	106.9550502	103.9538358	101.0531177	98.24908816	95.53799681	92.91626066
190123A00005	1/23/2019	2.94	1/24/2022	1/23/2019	105.3017	105.3017043	105.3017043	104.5344516	102.5551848	100.6234952	98.73806143	96.89749145	95.10044479
190123A00033	1/23/2019	2.8	1/23/2023	1/23/2019	108.08923	108.0892259	108.0892259	106.9850278	103.9833618	101.0822031	98.27774385	95.5662334	92.9440884
190123A00035	1/23/2019	3.18	1/22/2027	1/23/2019	121.57695	121.5769513	121.5769513	117.2075198	110.0510724	103.3903702	97.1884521	91.41118481	86.02714488
190131A00053	1/31/2019	2.67	1/31/2023	1/31/2019	107.7536	107.7536049	107.7536049	106.6424411	103.624905	100.7091563	97.89130329	95.16752164	92.53415864
190205A00013	2/5/2019	2.85	2/5/2021	2/5/2019	102.64873	102.6487335	102.6487335	102.0463969	101.0284185	100.0302805	99.05184214	98.09252423	97.15177022
190516A00016	5/16/2019	2.53	6/29/2020	5/16/2019	100.95005	100.9500489	100.9500489	100.7052099	100.291114	99.88041425	99.47306905	99.06903748	98.66827931
190521A00068	5/21/2019	2.47	9/15/2021	5/21/2019	103.58835	103.5883481	103.5883481	102.8943854	101.2794152	99.69743839	98.14758623	96.62894435	95.14063294
190522A00003	5/22/2019	2.55	5/22/2024	5/22/2019	109.78441	109.78441	109.78441	108.1565254	103.8530439	99.7458982	95.82519393	92.08150566	88.50593374
190523A00014	5/23/2019	2.5	11/15/2023	5/23/2019	108.42427	108.4242652	108.4242652	107.0230873	103.2416976	99.61487078	96.13552828	92.79688338	89.59250016
190523A00016	5/23/2019	2.48	2/15/2023	5/23/2019	106.70842	106.7084209	106.7084209	105.5959249	102.5635492	99.63439975	96.80447898	94.06987423	91.42685059
190524A00004	5/24/2019	2.27	5/24/2021	5/24/2019	102.85992	102.8599235	102.8599235	102.253794	100.9508913	99.66561213	98.40463318	97.16728925	95.95293956
190528A00015	5/28/2019	2.42	5/27/2022	5/28/2019	104.9788	104.9788038	104.9788038	104.1269092	101.8170096	99.56972053	97.38308226	95.2551211	93.1839395
190528A00042	5/28/2019	2.38	11/29/2021	5/28/2019	103.85584	103.8558432	103.8558432	103.1291681	101.3108028	99.53313484	97.79510889	96.09561225	94.43357051
190529A00012	5/29/2019	2.34	11/29/2021	5/29/2019	103.78183	103.7818339	103.7818339	103.0555059	101.2378359	99.46085196	97.72349737	96.02465976	94.36326508
190530A00024	5/30/2019	2.25	5/30/2024	5/30/2019	109.33581	109.3358124	109.3358124	107.6924955	103.3549464	99.2169177	95.26831221	91.4995112	87.90143217
190530A00034	5/30/2019	2.44	5/30/2024	5/30/2019	109.35408	109.3540803	109.3540803	107.719228	103.4044937	99.28760758	95.35859148	91.60793049	88.02663878
190530A00074	5/30/2019	2.4	5/31/2022	5/30/2019	104.9552	104.9551963	104.9551963	104.100033	101.7799912	99.52308624	97.3273558	95.19081669	93.11156126
190531A00035	5/31/2019	2.29	5/31/2022	5/31/2019	104.69611	104.6961093	104.6961093	103.842331	101.5253499	99.27144534	97.07865202	94.9449887	92.86854953
190531A00037	5/31/2019	2.61	5/31/2029	5/31/2019	123.45292	123.4529223	123.4529223	116.2377406	106.9187537	98.43681464	90.71207392	83.67260268	77.25365391
190603A00002	6/3/2019	2.03	6/2/2023	6/3/2019	106.45348	106.4534797	106.4534797	105.2296929	101.902541	98.69796863	95.61091601	92.63648163	89.7699937
190603A00041	6/3/2019	2.01	6/3/2021	6/3/2019	102.56675	102.5667537	102.5667537	101.9586683	100.6263714	99.31630097	98.02930104	96.76481509	95.52230403

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190604A00031	6/4/2019	2.25	6/5/2023	6/4/2019	106.59288	106.5928795	106.5928795	105.370442	102.0481622	98.84818629	95.76547624	92.79514256	89.93252491
190605A00004	6/5/2019	2.11	1/12/2022	6/5/2019	103.57736	103.5773638	103.5773638	102.8266326	100.8960519	99.01125815	97.17097208	95.37387501	93.61869622
190605A00055	6/5/2019	2.11	6/6/2022	6/5/2019	104.3021	104.3020952	104.3020952	103.4456459	101.1172354	98.85265979	96.64990796	94.5069621	92.42188179
190606A00009	6/6/2019	2	6/4/2021	6/6/2019	102.55839	102.5583947	102.5583947	101.9493346	100.6143332	99.30169857	98.01222183	96.7453433	95.5005209
190606A00023	6/6/2019	2.23	6/6/2024	6/6/2019	108.47497	108.4749746	108.4749746	106.8383926	102.5241738	98.40883933	94.4823072	90.73497424	87.1577731
190606A00025	6/6/2019	2.18	6/4/2021	6/6/2019	102.58548	102.5854828	102.5854828	101.9777235	100.6459356	99.33640582	98.04993146	96.78595627	95.54394145
190607A00003	6/7/2019	1.92	6/7/2022	6/7/2019	104.28687	104.2868665	104.2868665	103.4268976	101.0872516	98.811992	96.59907482	94.44645826	92.35217916
190607A00005	6/7/2019	1.92	6/7/2022	6/7/2019	104.28687	104.2868665	104.2868665	103.4268976	101.0872516	98.811992	96.59907482	94.44645826	92.35217916
180924A00021	9/24/2018	2.88	9/24/2020	9/24/2018	101.81705	101.8170496	101.8170496	101.4217704	100.7671466	100.1209687	99.48307398	98.85330373	98.23150337
180927A00017	9/27/2018	3	9/29/2020	9/27/2018	101.84218	101.8421815	101.8421815	101.4386863	100.7715747	100.1132233	99.46346049	98.82211905	98.18903609
181001A00020	10/1/2018	3.16	10/3/2022	10/1/2018	107.73246	107.7324618	107.7324618	106.7513468	104.0631596	101.4566002	98.92876262	96.476775	94.09789092
181002A00018	10/2/2018	3.1	10/4/2021	10/2/2018	104.77121	104.7712099	104.7712099	104.0639182	102.3871768	100.7453968	99.13763276	97.56289017	96.0202135
181003A00021	10/3/2018	3.1	4/5/2021	10/3/2018	103.35417	103.3541721	103.3541721	102.7483831	101.5866311	100.4310796	99.30180942	98.19793103	97.11859463
181005A00037	10/9/2018	3.4	10/3/2025	10/9/2018	118.82142	118.8214241	118.8214241	116.0665984	110.2084108	104.6882802	99.48491979	94.5784125	89.95019977
181015A00069	10/15/2018	2.97	4/15/2020	10/15/2018	100.56643	100.5664261	100.5664261	100.4434744	100.2357959	100.0289882	99.82304557	99.61796272	99.41373416
181016A00011	10/16/2018	3.06	10/15/2021	10/16/2018	105.0848	105.0848003	105.0848003	104.3691032	102.6552774	100.977733	99.33546056	97.7274116	96.15257944
181017A00023	10/17/2018	3.07	10/14/2020	10/17/2018	102.00637	102.0063706	102.0063706	101.5768039	100.86843	100.1699369	99.48111858	98.80177489	98.13171104
181023A00036	10/23/2018	2.98	10/23/2020	10/23/2018	102.11327	102.1132702	102.1132702	101.6672541	100.9327636	100.2088828	99.49538274	98.79204114	98.09864197
181026A00002	10/26/2018	3.28	10/26/2023	10/26/2018	111.24175	111.2417517	111.2417517	109.8401887	106.0594276	102.4306339	98.94689958	95.60159115	92.38842035
181029A00081	10/29/2018	3.27	4/28/2023	10/29/2018	109.72344	109.7234356	109.7234356	108.5197726	105.2453525	102.087684	99.04197527	96.10358147	93.26808208
181101A00020	11/1/2018	3.26	11/1/2021	11/1/2018	105.27304	105.2730368	105.2730368	104.5506001	102.795029	101.0772743	99.39626515	97.75089169	96.14008905
181107A00008	11/7/2018	3.42	11/7/2023	11/7/2018	111.87212	111.8721195	111.8721195	110.453292	106.6287631	102.9590078	99.43698193	96.05590771	92.80935943
181108A00025	11/8/2018	3.44	7/31/2023	11/8/2018	111.09247	111.0924709	111.0924709	109.7814793	106.235366	102.8245476	99.5432604	96.38588606	93.34708107
181109A00023	11/9/2018	3.39	11/9/2022	11/9/2018	108.66914	108.669136	108.669136	107.6456893	104.846329	102.1344973	99.50701971	96.96075797	94.49271248
181114A00021	11/14/2018	3.17	11/14/2023	11/14/2018	111.69532	111.6953195	111.6953195	110.2639897	106.4050246	102.7034502	99.15207988	95.74399956	92.47265324
181121A00014	11/21/2018	3.18	11/19/2021	11/21/2018	105.27492	105.2749206	105.2749206	104.545397	102.7406333	100.9756745	99.24947591	97.56092226	95.90893907
181123A00016	11/23/2018	3.19	11/23/2022	11/23/2018	108.2202	108.2202005	108.2202005	107.18594	104.3549019	101.6135204	98.95857468	96.38686611	93.89533344
181123A00021	11/23/2018	3.25	11/22/2023	11/23/2018	111.34759	111.3475916	111.3475916	109.9173263	106.0621528	102.3646391	98.81761373	95.41415973	92.14771534
181126A00047	11/26/2018	3.19	11/26/2021	11/26/2018	105.33058	105.3305791	105.3305791	104.5981655	102.7741202	100.9906605	99.24675259	97.54127844	95.87315904
181127A00027	11/27/2018	3.25	11/28/2022	11/27/2018	108.43125	108.4312487	108.4312487	107.3909046	104.5433389	101.7863161	99.11659967	96.53096489	94.02632406
181129A00027	11/29/2018	3.16	11/29/2021	11/29/2018	105.29902	105.2990231	105.2990231	104.5655812	102.7336569	100.9426508	99.19153358	97.47918574	95.80452626
181211A00031	12/11/2018	2.95	12/11/2023	12/11/2018	111.06349	111.0634861	111.0634861	109.6077756	105.6884923	101.9320167	98.33086203	94.87781275	91.56602532
190830A00023	8/30/2019	1.78	9/15/2022	8/30/2019	103.93309	103.9330916	103.9330916	102.9899486	100.4008736	97.8896897	95.45362745	93.08998357	90.79617083

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190906A00012	9/6/2019	1.76	9/6/2024	9/6/2019	106.78521	106.7852065	106.7852065	105.0327201	100.5213392	96.22901516	92.14402669	88.25528633	84.55235868
190909A00029	9/9/2019	1.83	9/8/2023	9/9/2019	105.57683	105.5768291	105.5768291	104.2654565	100.7142917	97.30278305	94.02473493	90.87420424	87.84554713
190909A00030	9/9/2019	1.83	9/9/2024	9/9/2019	107.12216	107.1221581	107.1221581	105.3622668	100.8354652	96.5286977	92.43017487	88.52874659	84.81391947
190910A00017	9/16/2019	1.86	9/16/2024	9/16/2019	107.24374	107.2437383	107.2437383	105.4730157	100.9266698	96.60201587	92.48712968	88.57074299	84.84225363
190910A00027	9/10/2019	1.86	9/9/2022	9/10/2019	104.11933	104.1193257	104.1193257	103.1802936	100.6048722	98.10653339	95.68256164	93.33029554	91.04718707
190917A00029	9/17/2019	2.02	12/6/2022	9/17/2019	104.95867	104.9586681	104.9586681	103.9308796	101.1118489	98.38351057	95.74255545	93.18573578	90.70994195
190919A00007	9/19/2019	2.04	9/19/2024	9/19/2019	108.0968	108.0968004	108.0968004	106.3140455	101.7404847	97.39000866	93.25061094	89.31094285	85.56032743
190923A00020	9/23/2019	2.05	9/24/2029	9/23/2019	118.79688	118.7968778	118.7968778	111.2624893	101.888587	93.38818351	85.67509868	78.67205359	72.30972982
190925A00011	9/25/2019	1.89	9/25/2024	9/25/2019	107.42248	107.4224779	107.4224779	105.6369148	101.0631042	96.71328402	92.57534476	88.63785523	84.8900633
190926A00006	9/26/2019	1.7	9/26/2022	9/26/2019	104.24958	104.2495767	104.2495767	103.2917134	100.6583979	98.10519693	95.62921105	93.2276285	90.89775993
190927A00036	9/27/2019	1.94	9/6/2024	9/27/2019	107.61933	107.6193264	107.6193264	105.8594435	101.3292123	97.01868919	92.91613188	89.01042578	85.29110972
190930A00041	9/30/2019	1.94	10/25/2021	9/30/2019	102.90055	102.9005451	102.9005451	102.1920891	100.47637	98.79742482	97.15416466	95.5455159	93.97044828
191002A00013	10/2/2019	1.78	10/3/2022	10/2/2019	104.00658	104.0065774	104.0065774	103.0471063	100.4090729	97.85156072	95.37164186	92.96647966	90.63336152
191007A00018	10/8/2019	1.77	7/16/2021	10/8/2019	102.18734	102.187345	102.187345	101.5393358	100.0975483	98.68323826	97.29576003	95.93441735	94.59853757
191010A00012	10/10/2019	1.61	10/8/2021	10/10/2019	102.54922	102.5492166	102.5492166	101.8481826	100.1751685	98.53740355	96.93386193	95.36353507	93.82545424
191018A00006	10/18/2019	1.89	6/1/2022	10/18/2019	103.75836	103.7583589	103.7583589	102.9087994	100.6002226	98.35464469	96.17008347	94.04455795	91.97616257
191025A00005	10/28/2019	1.98	10/28/2024	10/28/2019	107.99574	107.9957369	107.9957369	106.1515597	101.4813194	97.04338955	92.82499068	88.81408904	84.99937852
191025A00010	10/25/2019	2.24	7/25/2028	10/25/2019	116.42682	116.426816	116.426816	110.4950027	102.2669736	94.72069911	87.7960802	81.43852999	75.59851818
191104A00019	11/5/2019	1.9	2/1/2022	11/5/2019	103.2521	103.2520993	103.2520993	102.4897183	100.5101655	98.57881543	96.69426902	94.85510238	93.05994488
191104A00024	11/4/2019	2.26	8/3/2029	11/4/2019	118.57091	118.5709129	118.5709129	111.3317768	102.1733717	93.8534291	86.29057501	79.41165337	73.15093199
191120A00002	11/20/2019	1.73	11/20/2020	11/20/2019	101.31528	101.3152821	101.3152821	100.8208382	100.0141477	99.22032594	98.43906671	97.67007355	96.91305923
191121A00010	11/21/2019	2.59	11/20/2037	11/21/2019	144.16816	144.168164	138.7708733	119.8617671	103.4531712	89.61558219	77.92520002	68.03040524	59.63915978
191122A00018	11/26/2019	3.11	11/22/2039	11/26/2019	154.65684	154.6568445	146.9633704	125.9217141	107.8999508	92.91342836	80.42063793	69.98004499	61.23118063
190507A00006	5/7/2019	2.57	5/8/2023	5/7/2019	107.49725	107.4972467	107.4972467	106.2979145	103.0333981	99.88648702	96.85232846	93.92623477	91.10374321
190507A00027	5/7/2019	2.59	5/7/2024	5/7/2019	109.86346	109.8634623	109.8634623	108.2547679	103.9880032	99.91424371	96.02376732	92.30733398	88.7562224
190514A00073	5/14/2019	2.53	5/14/2024	5/14/2019	109.64847	109.6484691	109.6484691	108.0322961	103.7521455	99.66642889	95.76534773	92.03958081	88.48032865
190517A00005	5/17/2019	2.31	5/17/2024	5/17/2019	109.51981	109.5198099	109.5198099	107.8922796	103.5842678	99.47293143	95.54832258	91.80098389	88.22198812
190520A00025	5/20/2019	2.32	5/20/2021	5/20/2019	102.90195	102.9019495	102.9019495	102.2957062	101.0057519	99.73102396	98.48143918	97.25626626	96.05480255
190523A00009	5/23/2019	2.43	5/21/2021	5/23/2019	102.84154	102.8415391	102.8415391	102.2369132	100.9473126	99.67344836	98.42440063	97.19945909	95.99794066
190523A00015	5/23/2019	2.51	4/1/2024	5/23/2019	109.30112	109.3011239	109.3011239	107.740333	103.5802318	99.60465492	95.80447096	92.17098983	88.69600195
190524A00005	5/24/2019	2.34	11/24/2020	5/24/2019	101.83782	101.8378204	101.8378204	101.3346224	100.5148216	99.70825731	98.91461076	98.13357344	97.36484655
190524A00014	5/24/2019	2.24	5/24/2022	5/24/2019	104.96614	104.9661407	104.9661407	104.1141119	101.8036403	99.55577647	97.36853803	95.23994159	93.16808134
190524A00017	5/28/2019	2.52	5/28/2020	5/28/2019	100.74426	100.744258	100.744258	100.5504045	100.2243355	99.90037897	99.5785145	99.25872187	98.94098113

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190524A00044	5/24/2019	2.27	5/24/2021	5/24/2019	102.85992	102.8599235	102.8599235	102.253794	100.9508913	99.66561213	98.40463318	97.16728925	95.95293956
190529A00006	5/29/2019	2.32	5/28/2021	5/29/2019	102.73607	102.7360701	102.7360701	102.1317717	100.8198295	99.52780198	98.25911961	97.01318797	95.78943265
190529A00011	5/29/2019	2.36	5/30/2023	5/29/2019	106.93004	106.9300389	106.9300389	105.7112234	102.3991984	99.20849015	96.13412592	93.17127382	90.3153278
190529A00089	5/29/2019	2.38	5/29/2024	5/29/2019	109.08659	109.0865882	109.0865882	107.4553001	103.1488126	99.03976013	95.11818079	91.37457988	87.79999097
190530A00025	5/30/2019	2.36	6/1/2021	5/30/2019	102.81273	102.8127295	102.8127295	102.2070904	100.8819762	99.57871896	98.29828024	97.04011248	95.80368515
190530A00042	5/30/2019	2.3	11/30/2020	5/30/2019	101.84102	101.8410213	101.8410213	101.3267861	100.4908129	99.66859273	98.8597885	98.06407401	97.28113357
190531A00013	5/31/2019	2.31	12/6/2022	5/31/2019	105.79277	105.7927673	105.7927673	104.7599267	101.9289672	99.18897708	96.53665004	93.96872933	91.48209674
190531A00038	5/31/2019	2.82	5/31/2034	5/31/2019	138.93809	138.9380901	137.3955978	122.0554554	108.1238609	96.00161714	85.44084904	76.22886751	68.18308949
190603A00018	6/3/2019	2.44	6/3/2020	6/3/2019	100.75458	100.7545804	100.7545804	100.5511372	100.208611	99.86841515	99.53052607	99.19492033	98.86157484
190603A00031	6/3/2019	1.98	6/3/2022	6/3/2019	104.40905	104.4090531	104.4090531	103.5516311	101.2213146	98.9548411	96.75019599	94.60536319	92.51840385
190603A00040	6/3/2019	2.11	6/3/2022	6/3/2019	104.28712	104.2871219	104.2871219	103.4331412	101.112949	98.85616231	96.6607909	94.52483677	92.4463783
190604A00030	6/4/2019	2.2	6/3/2022	6/4/2019	104.49985	104.4998468	104.4998468	103.6447265	101.3220125	99.06275395	96.86496286	94.72663969	92.64586134
190605A00005	6/5/2019	2.01	6/5/2024	6/5/2019	108.31595	108.3159466	108.3159466	106.6733342	102.3418527	98.21060245	94.26940223	90.50856479	86.91894452
190605A00017	6/5/2019	2.12	6/4/2021	6/5/2019	102.50398	102.5039793	102.5039793	101.8965413	100.5653268	99.25636316	97.9704454	96.70701756	95.46554108
190607A00018	6/7/2019	2.19	6/7/2024	6/7/2019	108.30488	108.3048798	108.3048798	106.668434	102.3552454	98.24105867	94.31577735	90.56978627	86.99400718
190613A00022	6/13/2019	2.2	6/14/2021	6/13/2019	102.66577	102.6657692	102.6657692	102.0476524	100.6877672	99.35156032	98.03930429	96.75041093	95.48431088
190617A00004	6/17/2019	2.2	6/15/2021	6/17/2019	102.67108	102.6710811	102.6710811	102.0519393	100.6892646	99.35041059	98.03559744	96.74423369	95.47574688
190619A00007	6/19/2019	2.21	6/20/2022	6/19/2019	104.61302	104.6130206	104.6130206	103.743747	101.3740922	99.07035081	96.83041558	94.65217297	92.5335918
190619A00009	6/19/2019	2.26	6/19/2024	6/19/2019	108.63084	108.6308368	108.6308368	106.9765651	102.6263165	98.47806944	94.52150844	90.74681237	87.14471232
190620A00055	6/25/2019	2.08	4/17/2023	6/25/2019	105.77856	105.7785587	105.7785587	104.6117502	101.4304386	98.36228267	95.40262537	92.54699084	89.79111786
190621A00015	6/21/2019	2.2	6/21/2024	6/21/2019	108.3762	108.3762015	108.3762015	106.7215001	102.3715308	98.22385934	94.26813876	90.49452135	86.8937138
190621A00023	6/21/2019	1.93	6/21/2022	6/21/2019	104.38084	104.3808406	104.3808406	103.5091568	101.1306704	98.81861355	96.57084288	94.38522146	92.25969592
190701A00028	7/1/2019	2.11	7/1/2021	7/1/2019	102.61278	102.612777	102.612777	101.9779253	100.5720674	99.19225948	97.83792596	96.50842312	95.20312849
190703A00014	7/3/2019	2.23	10/5/2020	7/3/2019	101.35796	101.3579622	101.3579622	100.945255	100.263743	99.5914128	98.92807981	98.27356425	97.62769117
190708A00021	7/8/2019	1.99	7/8/2022	7/8/2019	104.61408	104.6140793	104.6140793	103.7265392	101.300137	98.94271298	96.65199939	94.42573809	92.26176108
190711A00026	7/11/2019	2.17	7/11/2022	7/11/2019	104.62517	104.6251735	104.6251735	103.7377852	101.3127113	98.95661101	96.66722157	94.44228275	92.27962463
190711A00028	7/11/2019	2.22	7/11/2024	7/11/2019	108.5696	108.5695956	108.5695956	106.8856548	102.480302	98.2821633	94.28051487	90.46515946	86.82648077
190712A00018	7/12/2019	2.25	7/12/2024	7/12/2019	108.70924	108.7092413	108.7092413	107.0226524	102.6117249	98.40835274	94.40179009	90.58181809	86.93880045
190719A00003	7/19/2019	2.07	7/20/2020	7/19/2019	100.92638	100.9263826	100.9263826	100.6470879	100.1750508	99.7074444	99.24420654	98.78527603	98.33059284
190724A00021	7/24/2019	2.33	7/23/2027	7/24/2019	116.6941	116.6940993	116.6940993	111.8290133	104.3890652	97.50151791	91.122502	85.21176417	79.73243309
190805A00048	8/5/2019	1.88	8/5/2022	8/5/2019	104.0189	104.0188992	104.0188992	103.1119884	100.6298004	98.22002711	95.88021045	93.60791829	91.40081841
190805A00050	8/5/2019	1.91	8/5/2024	8/5/2019	107.33847	107.3384727	107.3384727	105.6283566	101.1858834	96.9556982	92.92663192	89.08809033	85.4300922
190807A00020	8/7/2019	1.57	2/7/2024	8/7/2019	105.90422	105.9042228	105.9042228	104.4228954	100.4535072	96.65643846	93.02336986	89.54636979	86.21793264

Classification | Public

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190807A00054	8/7/2019	1.66	8/6/2021	8/7/2019	102.3654	102.3653968	102.3653968	101.6963865	100.1940853	98.72140061	97.27759683	95.86189689	94.47355118
190808A00050	8/8/2019	1.7	8/8/2024	8/8/2019	107.23276	107.2327585	107.2327585	105.5096375	101.0371785	96.77945206	92.72510474	88.86337978	85.18414536
190808A00052	8/8/2019	1.7	8/8/2024	8/8/2019	107.23276	107.2327585	107.2327585	105.5096375	101.0371785	96.77945206	92.72510474	88.86337978	85.18414536
190814A00010	8/14/2019	1.84	4/5/2023	8/14/2019	104.95025	104.9502459	104.9502459	103.8005047	100.6643592	97.63892697	94.71968765	91.90229802	89.18262085
190815A00004	8/15/2019	1.82	8/15/2022	8/15/2019	103.90882	103.9088206	103.9088206	102.9933807	100.4865302	98.05334521	95.69129833	93.397896	91.17074819
181016A00004	10/16/2018	3.07	10/16/2020	10/16/2018	102.022	102.0219972	102.0219972	101.588977	100.8751271	100.1713102	99.47731547	98.79293819	98.11797918
181016A00087	10/16/2018	3.31	10/16/2023	10/16/2018	111.27183	111.2718299	111.2718299	109.8808157	106.125741	102.5206712	99.05883779	95.73373164	92.53917973
181022A00029	10/22/2018	3.22	10/24/2022	10/22/2018	108.06394	108.0639449	108.0639449	107.059803	104.3117277	101.6484948	99.06701569	96.56425348	94.13730702
181023A00025	10/23/2018	3.27	10/23/2023	10/23/2018	111.17953	111.1795271	111.1795271	109.7816546	106.0099118	102.3895082	98.91357849	95.57552812	92.36910479
181023A00052	10/23/2018	3.15	10/23/2023	10/23/2018	111.43427	111.4342704	111.4342704	110.0280645	106.2332819	102.5911633	99.0947614	95.73740924	92.51278681
181102A00023	11/2/2018	3.09	5/1/2020	11/2/2018	100.71758	100.7175768	100.7175768	100.5672512	100.3153386	100.0646843	99.81527894	99.56711333	99.32017823
181109A00029	11/9/2018	3.72	11/9/2026	11/9/2018	123.21626	123.2162579	123.2162579	119.1108535	112.137119	105.6306413	99.55755376	93.88653397	88.58868592
181115A00012	11/15/2018	3.14	11/16/2020	11/15/2018	102.3121	102.3121049	102.3121049	101.8233633	101.0246373	100.2384416	99.46448288	98.70247671	97.95214751
181115A00028	11/15/2018	2.95	11/16/2020	11/15/2018	102.27967	102.2796695	102.2796695	101.790022	100.9898465	100.2022479	99.42693129	98.66361065	97.91200889
181115A00055	11/15/2018	3.01	11/15/2021	11/15/2018	105.24684	105.2468446	105.2468446	104.5170518	102.7179528	100.9584284	99.23741216	97.55378246	95.90645965
181116A00010	11/16/2018	3.04	5/15/2020	11/16/2018	100.81366	100.8136611	100.8136611	100.6406603	100.3501067	100.0612417	99.77405042	99.4885184	99.20463114
181120A00023	11/20/2018	3.15	11/19/2021	11/20/2018	105.22024	105.2202373	105.2202373	104.4909681	102.6867112	100.922251	99.19654186	97.50846875	95.85695743
181206A00010	12/6/2018	3.09	12/6/2021	12/6/2018	105.22361	105.2236094	105.2236094	104.4868202	102.6370754	100.8290317	99.0616303	97.33372412	95.64420577
181207A00004	12/7/2018	3.05	12/7/2020	12/7/2018	102.40165	102.401646	102.401646	101.8744287	101.0187252	100.177389	99.35006024	98.53639107	97.73604502
181211A00019	12/11/2018	3.04	12/11/2020	12/11/2018	102.42381	102.423815	102.423815	101.889396	101.0228221	100.1709839	99.33350751	98.5100317	97.70020722
181213A00031	12/13/2018	2.97	12/13/2023	12/13/2018	111.15741	111.1574129	111.1574129	109.6986872	105.7723618	102.0093248	98.40205866	94.94331805	91.62623189
181219A00005	12/19/2018	3.06	12/19/2023	12/19/2018	110.82283	110.8228271	110.8228271	109.3667223	105.4506738	101.6976956	98.10027268	94.65115938	91.34348475
181226A00033	12/26/2018	2.87	12/28/2020	12/26/2018	102.39814	102.3981361	102.3981361	101.8334854	100.9213541	100.0255408	99.14561047	98.28114335	97.43173443
181228A00008	12/28/2018	2.9	12/28/2021	12/28/2018	105.02695	105.0269534	105.0269534	104.2789931	102.3732991	100.5118147	98.69336692	96.91670664	95.18062918
190102A00037	1/2/2019	2.8	7/2/2021	1/2/2019	103.6085	103.6085045	103.6085045	102.9686088	101.5527642	100.1631643	98.79925581	97.46038802	96.14593188
190104A00027	1/4/2019	2.76	1/4/2021	1/4/2019	102.34529	102.3452861	102.3452861	101.7713794	100.8406753	99.92696776	99.02979432	98.14870909	97.2832821
190107A00034	1/7/2019	2.8	4/15/2021	1/7/2019	103.06596	103.0659618	103.0659618	102.461069	101.2764454	100.0968104	98.94462616	97.81894225	96.71885171
190110A00013	1/10/2019	2.97	1/17/2024	1/10/2019	110.68374	110.6837359	110.6837359	109.1952858	105.2069172	101.3878049	97.72998892	94.22581289	90.86802433
190114A00030	1/14/2019	2.85	1/14/2021	1/14/2019	102.50163	102.5016315	102.5016315	101.9170641	100.9586055	100.0181595	99.09522154	98.18930571	97.29994395
190215A00004	2/15/2019	2.84	2/15/2023	2/15/2019	107.81422	107.8142202	107.8142202	106.6947102	103.6454914	100.6999116	97.85397411	95.10375261	92.44549898
190215A00006	2/15/2019	2.89	2/15/2024	2/15/2019	110.57019	110.570189	110.570189	109.0515623	104.9875176	101.0989745	97.37752146	93.81508881	90.40404051
190219A00020	2/19/2019	2.88	2/16/2024	2/19/2019	110.53649	110.5364925	110.5364925	109.0171466	104.9509906	101.0605316	97.33734327	93.77334271	90.36088163
190219A00026	2/19/2019	2.8	2/22/2022	2/19/2019	105.22004	105.2200433	105.2200433	104.4382587	102.3770053	100.3667418	98.40597919	96.49317592	94.6268498

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190220A00007	2/20/2019	2.87	2/20/2024	2/20/2019	110.52381	110.5238108	110.5238108	109.0006232	104.9235872	101.023107	97.2906949	93.71821191	90.29795791
190225A00026	2/25/2019	3.43	2/27/2034	2/25/2019	146.88925	146.8892484	145.6044792	130.1100061	115.8521389	103.3986138	92.50731223	82.9698595	74.60685052
190308A00007	3/8/2019	2.8	3/8/2024	3/8/2019	110.35418	110.3541835	110.3541835	108.8138078	104.6943824	100.7550505	96.98705811	93.38203098	89.93205095
190313A00019	3/13/2019	2.73	7/15/2022	3/13/2019	106.03438	106.0343788	106.0343788	105.1355594	102.6826416	100.2996472	97.98429468	95.73428385	93.54740672
190313A00029	3/13/2019	2.56	3/13/2023	3/13/2019	107.69564	107.6956374	107.6956374	106.5476144	103.4147938	100.3907109	97.47104721	94.65159923	91.92835935
190321A00020	3/21/2019	2.62	3/22/2021	3/21/2019	102.69136	102.6913612	102.6913612	102.0882048	100.9623495	99.84715017	98.75654583	97.6897292	96.64592803
190327A00012	3/27/2019	2.55	6/15/2020	3/27/2019	100.86903	100.8690307	100.8690307	100.6464465	100.2708181	99.898	99.52796062	99.1606689	98.7960942
190327A00031	3/27/2019	2.53	3/27/2024	3/27/2019	109.35445	109.3544478	109.3544478	107.7992144	103.6509809	99.68623179	95.89591707	92.27141789	88.80459047
190328A00007	3/28/2019	2.38	3/26/2021	3/28/2019	102.63606	102.6360648	102.6360648	102.0315681	100.8945253	99.76645137	98.66353262	97.58493471	96.52985988
190328A00011	3/28/2019	2.37	3/28/2024	3/28/2019	109.46937	109.4693732	109.4693732	107.9041064	103.7291993	99.73959508	95.92611806	92.28003941	88.79311286
190328A00030	4/25/2019	2.48	4/26/2021	4/25/2019	102.75479	102.7547872	102.7547872	102.1508131	100.9409261	99.73471433	98.55725865	97.40753991	96.28458662
190328A00031	4/25/2019	2.56	4/25/2024	4/25/2019	109.65992	109.6599185	109.6599185	108.0680421	103.8367412	99.79560372	95.9350776	92.24609285	88.72008868
190329A00016	3/29/2019	2.56	3/29/2022	3/29/2019	104.93838	104.9383846	104.9383846	104.1328141	101.9805167	99.88322146	97.83920683	95.84674898	93.90419397
190404A00023	4/5/2019	2.62	5/16/2022	4/5/2019	105.37698	105.3769784	105.3769784	104.5323097	102.2464783	100.0218911	97.85660141	95.74865807	93.69618825
190408A00004	4/8/2019	2.6	10/8/2021	4/8/2019	103.94902	103.9490189	103.9490189	103.243571	101.5633709	99.91841327	98.30771572	96.73027086	95.18511098
190409A00009	4/9/2019	2.57	4/9/2021	4/9/2019	102.74752	102.7475166	102.7475166	102.1438902	100.9760731	99.81393014	98.67848627	97.56882906	96.48408721
190416A00026	4/16/2019	2.63	10/14/2021	4/16/2019	104.03918	104.0391764	104.0391764	103.3305714	101.6337264	99.97272377	98.34655297	96.75418143	95.19461765
190426A00012	5/1/2019	2.57	7/15/2022	5/1/2019	105.63767	105.637671	105.637671	104.7410377	102.2930436	99.91487146	97.6042363	95.35884105	93.17648075
190429A00012	4/29/2019	2.59	4/29/2020	4/29/2019	100.57823	100.5782276	100.5782276	100.4313546	100.1851642	99.94017678	99.6963837	99.45377624	99.21234583
190430A00002	4/30/2019	2.4	11/2/2022	4/30/2019	106.36451	106.3645149	106.3645149	105.3578126	102.5982155	99.92488527	97.33462064	94.82431023	92.39098256
190605A00058	6/5/2019	2.14	12/5/2022	6/5/2019	105.29872	105.2987197	105.2987197	104.2699503	101.4486343	98.71796241	96.07463554	93.51541076	91.03718293
190620A00056	6/25/2019	2.07	1/17/2023	6/25/2019	105.30827	105.3082697	105.3082697	104.2324275	101.3003784	98.46610121	95.72588853	93.07611455	90.51331384
190621A00003	6/21/2019	2.08	6/22/2020	6/21/2019	100.77858	100.7785752	100.7785752	100.5446992	100.1495637	99.75753774	99.36858475	98.98266857	98.59975364
190621A00061	6/21/2019	2.12	6/21/2021	6/21/2019	102.57646	102.5764573	102.5764573	101.9517668	100.5735	99.21989255	97.89084607	96.58575023	95.30401445
190624A00026	6/24/2019	2.08	6/24/2022	6/24/2019	104.31929	104.3192909	104.3192909	103.4484281	101.0716212	98.76123318	96.5151254	94.33115935	92.2072803
190625A00012	6/25/2019	2.12	6/25/2024	6/25/2019	108.04228	108.0422771	108.0422771	106.3852393	102.0320737	97.88192365	93.92437578	90.14952394	86.54802111
190626A00004	6/26/2019	2.15	6/26/2024	6/26/2019	108.18031	108.1803077	108.1803077	106.5208017	102.1620423	98.00663786	94.04415337	90.26466167	86.65879613
190626A00010	6/26/2019	2.1	6/26/2023	6/26/2019	106.19066	106.1906624	106.1906624	104.9506572	101.5795173	98.33453666	95.21042455	92.20206012	89.3045665
190626A00033	6/26/2019	2.08	6/22/2021	6/26/2019	102.5252	102.525196	102.525196	101.8997092	100.519068	99.1632242	97.83202533	96.52485794	95.24112849
190628A00027	6/28/2019	2.09	6/29/2020	6/28/2019	100.82083	100.8208283	100.8208283	100.5758101	100.1614183	99.75043349	99.3428138	98.93851804	98.53750572
190703A00015	7/3/2019	2.02	1/6/2021	7/3/2019	101.80014	101.8001425	101.8001425	101.224647	100.289363	99.3713061	98.47000351	97.5849998	96.71585589
190708A00011	7/8/2019	2.2	7/8/2024	7/8/2019	108.46445	108.4644463	108.4644463	106.7857518	102.3902545	98.20117894	94.20786043	90.40015686	86.76850298
190710A00022	7/10/2019	2.22	7/10/2024	7/10/2019	108.56434	108.5643365	108.5643365	106.8818889	102.4791709	98.28342447	94.28394496	90.47055258	86.83364725

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190711A00027	7/11/2019	2.19	7/11/2023	7/11/2019	106.57777	106.5777676	106.5777676	105.3196199	101.9031684	98.61595258	95.45249228	92.4074852	89.47588475
190717A00008	7/17/2019	2.22	7/17/2024	7/17/2019	108.64736	108.6473646	108.6473646	106.9535566	102.5300401	98.3153289	94.29857647	90.46947219	86.81829518
190719A00002	7/19/2019	2.12	4/21/2022	7/19/2019	104.09406	104.0940556	104.0940556	103.2761765	101.071147	98.92383367	96.83234654	94.79483227	92.80951493
190724A00022	7/24/2019	1.94	7/23/2021	7/24/2019	102.7243	102.7243045	102.7243045	102.0654261	100.5971592	99.15727138	97.74509021	96.35988668	95.00095687
190724A00046	7/24/2019	2.12	7/23/2021	7/24/2019	102.73902	102.7390184	102.7390184	102.0817709	100.6175288	99.18151769	97.77307749	96.39148418	95.03603855
190805A00021	8/5/2019	1.89	1/16/2024	8/5/2019	106.36462	106.3646168	106.3646168	104.9109088	101.0097291	97.27500927	93.69886228	90.27374455	86.99251075
190805A00049	8/5/2019	1.88	8/4/2023	8/5/2019	105.60593	105.6059271	105.6059271	104.3294553	100.8684707	97.5408577	94.34083901	91.26284814	88.30159226
190807A00017	8/7/2019	1.76	3/12/2024	8/7/2019	106.06984	106.0698413	106.0698413	104.5590194	100.5162242	96.65163356	92.95649634	89.42248826	86.04174033
190807A00021	8/7/2019	2	8/7/2026	8/7/2019	111.08717	111.0871691	111.0871691	107.4651135	101.1098224	95.1731663	89.6254853	84.43929598	79.58919108
190807A00039	8/7/2019	2.02	8/7/2020	8/7/2019	100.93002	100.9300249	100.9300249	100.6212147	100.1009144	99.58598761	99.07635136	98.57192435	98.07262695
190808A00009	8/8/2019	1.89	8/8/2024	8/8/2019	107.26069	107.2606938	107.2606938	105.5468193	101.0984743	96.86302083	92.82924055	88.98649502	85.32476231
191126A00023	11/26/2019	1.81	5/27/2025	11/26/2019	109.09948	109.0994818	109.0994818	106.8048933	101.5379263	96.56186758	91.85925608	87.41370616	83.2098939
191210A00009	12/10/2019	1.92	12/10/2020	12/10/2019	101.44048	101.4404771	101.4404771	100.9106345	100.0513885	99.20673081	98.37629233	97.55971615	96.75665729
191212A00028	12/13/2019	1.93	1/17/2023	12/13/2019	104.88941	104.8894118	104.8894118	103.8161771	100.8903489	98.06214343	95.32785248	92.68385515	90.12669072
191218A00013	12/18/2019	1.94	12/19/2022	12/18/2019	104.78762	104.7876213	104.7876213	103.7468772	100.8968948	98.13965173	95.47172021	92.88974335	90.39050879
191223A00009	12/23/2019	1.95	12/23/2022	12/23/2019	104.83502	104.8350208	104.8350208	103.7896835	100.9287463	98.16121599	95.48362828	92.89259118	90.38485927
200108A00018	1/8/2020	1.68	1/18/2022	1/8/2020	103.11059	103.1105862	103.1105862	102.3558485	100.4077252	98.50633033	96.6503243	94.83834813	93.06909286
200109A00014	1/14/2020	1.93	8/15/2022	1/14/2020	104.19096	104.1909575	104.1909575	103.2739304	100.7634631	98.32673788	95.96122951	93.66444205	91.43398315
200110A00013	1/10/2020	1.76	1/10/2024	1/10/2020	106.55002	106.5500225	106.5500225	105.0946646	101.1852584	97.44246799	93.85840663	90.42553507	87.13671134
200127A00019	1/27/2020	1.8	1/27/2025	1/27/2020	107.5088	107.5087966	107.5087966	105.5048748	100.6184124	95.98689175	91.59578113	87.43138396	83.4808529
200127A00030	1/27/2020	1.8	1/27/2025	1/27/2020	107.5088	107.5087966	107.5087966	105.5048748	100.6184124	95.98689175	91.59578113	87.43138396	83.4808529
200130A00012	1/30/2020	1.72	1/30/2023	1/30/2020	104.31229	104.3122882	104.3122882	103.2281931	100.2777705	97.42699189	94.67201675	92.00910724	89.434693
200130A00021	1/30/2020	1.54	1/30/2023	1/30/2020	104.31582	104.3158201	104.3158201	103.2274237	100.2642653	97.40146139	94.63512682	91.96148857	89.37694315
200131A00007	1/31/2020	1.68	1/31/2023	1/31/2020	104.19501	104.1950092	104.1950092	103.1105378	100.159329	97.307894	94.55238111	91.88904432	89.31430565
200131A00017	1/31/2020	1.51	1/31/2024	1/31/2020	105.63335	105.6333487	105.6333487	104.1609725	100.2162213	96.44212987	92.83048876	89.37346946	86.06366229
200131A00029	1/31/2020	1.78	10/31/2024	1/31/2020	107.05284	107.0528386	107.0528386	105.2123411	100.5565549	96.13301707	91.92891518	87.9321949	84.13153224
181212A00036	12/12/2018	2.86	6/12/2020	12/12/2018	101.01225	101.0122517	101.0122517	100.7939009	100.4256192	100.0600385	99.69712901	99.33686138	98.97920671
181217A00010	12/17/2018	3.11	12/15/2023	12/17/2018	110.98764	110.9876402	110.9876402	109.5348272	105.6259893	101.8794698	98.28781057	94.84381734	91.54066675
181218A00072	12/18/2018	3.04	12/19/2022	12/18/2018	107.99082	107.9908218	107.9908218	106.9305103	104.0341684	101.2316532	98.51954661	95.89445625	93.3531357
181219A00006	12/19/2018	3.06	12/19/2023	12/19/2018	110.82283	110.8228271	110.8228271	109.3667223	105.4506738	101.6976956	98.10027268	94.65115938	91.34348475
181220A00027	12/20/2018	2.97	2/28/2022	12/20/2018	105.61836	105.6183556	105.6183556	104.8318035	102.7487935	100.7175563	98.73657445	96.80427273	94.91913724
181221A00018	12/21/2018	2.98	12/21/2021	12/21/2018	105.12938	105.1293811	105.1293811	104.3847781	102.4964697	100.6515729	98.84895205	97.0873909	95.36571594
181226A00024	12/26/2018	2.9	12/27/2021	12/26/2018	105.01975	105.019746	105.019746	104.2723694	102.3693703	100.5104628	98.69447891	96.92017445	95.18634928

Classification | Public

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190103A00010	1/3/2019	2.7	1/3/2024	1/3/2019	110.25093	110.25093	110.25093	108.7750177	104.8114065	101.0150716	97.37818952	93.89324024	90.55309746
190107A00006	1/7/2019	2.82	3/29/2021	1/7/2019	102.97127	102.9712702	102.9712702	102.3669949	101.2242984	100.0892402	98.97960207	97.8945371	96.83323558
190107A00021	1/7/2019	2.79	1/7/2021	1/7/2019	102.39451	102.3945122	102.3945122	101.8174013	100.8783598	99.95661827	99.0517018	98.16315258	97.29052933
190107A00024	1/7/2019	2.91	1/5/2024	1/7/2019	110.35775	110.3577515	110.3577515	108.8857717	104.9347526	101.1501698	97.52425775	94.04954285	90.71894249
190110A00004	1/10/2019	3.09	1/10/2025	1/10/2019	113.86033	113.8603303	113.8603303	111.8290803	106.8306586	102.0884275	97.58802916	93.31586836	89.25918287
190110A00005	1/10/2019	3.2	1/9/2026	1/10/2019	117.28487	117.284867	117.284867	114.2654341	108.2419964	102.5803735	97.25701785	92.24991546	87.53859448
190110A00010	1/10/2019	2.97	1/16/2024	1/10/2019	110.67638	110.6763814	110.6763814	109.1891506	105.2035082	101.3868981	97.73137632	94.22930137	90.87343458
190110A00073	1/10/2019	2.68	8/6/2021	1/10/2019	103.93072	103.9307221	103.9307221	103.2550845	101.7404342	100.2555735	98.79980478	97.37234517	95.97243959
190110A00078	1/10/2019	2.69	12/7/2021	1/10/2019	104.82293	104.8229345	104.8229345	104.0853552	102.2306661	100.4179787	98.64620513	96.9141866	95.22080444
190110A00079	1/10/2019	2.68	10/7/2021	1/10/2019	104.37105	104.3710476	104.3710476	103.6622784	101.9760241	100.3251639	98.70871472	97.12566431	95.57504046
190110A00090	1/10/2019	2.88	10/7/2020	1/10/2019	101.81987	101.819866	101.819866	101.4026905	100.7139968	100.0346508	99.36446308	98.70324914	98.05082951
190115A00034	1/15/2019	2.91	1/17/2023	1/15/2019	107.82142	107.8214174	107.8214174	106.72993	103.7605554	100.8898479	98.11410485	95.42967099	92.83305258
190131A00027	1/31/2019	2.86	1/31/2023	1/31/2019	107.77086	107.7708615	107.7708615	106.6639286	103.658969	100.755086	97.94843291	95.23522053	92.61182953
190131A00048	1/31/2019	2.8	7/31/2020	1/31/2019	101.28955	101.2895485	101.2895485	100.9922154	100.4898922	99.9925528	99.50012331	99.01253142	98.52970619
190201A00009	2/1/2019	2.8	2/4/2022	2/1/2019	105.09689	105.096895	105.096895	104.3240443	102.3168041	100.3584408	98.44756675	96.58273288	94.76254463
190201A00011	2/1/2019	2.8	2/4/2022	2/1/2019	105.09689	105.096895	105.096895	104.3240443	102.3168041	100.3584408	98.44756675	96.58273288	94.76254463
190208A00008	2/8/2019	2.86	2/8/2024	2/8/2019	110.39898	110.398978	110.398978	108.8886044	104.8474691	100.9802199	97.27855473	93.73450574	90.34053137
190816A00020	8/16/2019	1.79	8/16/2024	8/16/2019	106.83811	106.8381079	106.8381079	105.1161119	100.6569569	96.41214191	92.37032172	88.52074634	84.85329131
190816A00022	8/16/2019	1.77	8/16/2024	8/16/2019	106.74658	106.7465786	106.7465786	105.0253848	100.5682736	96.32543276	92.28551897	88.43778522	84.77210978
190816A00033	8/16/2019	1.77	8/16/2024	8/16/2019	106.74658	106.7465786	106.7465786	105.0253848	100.5682736	96.32543276	92.28551897	88.43778522	84.77210978
190816A00035	8/16/2019	1.77	8/16/2023	8/16/2019	105.26541	105.2654062	105.2654062	103.9791134	100.4932181	97.14263675	93.92145761	90.8239951	87.84484547
190819A00007	8/19/2019	1.62	8/19/2024	8/19/2019	106.91258	106.9125764	106.9125764	105.17586	100.6824916	96.40607427	92.335071	88.4585611	84.76626179
190819A00022	8/19/2019	1.8	8/19/2024	8/19/2019	106.89628	106.8962807	106.8962807	105.1693474	100.7013197	96.44834182	92.39901527	88.54254128	84.86875028
190820A00054	8/20/2019	1.76	8/18/2022	8/20/2019	103.76708	103.7670799	103.7670799	102.8496967	100.3368565	97.89802978	95.53066718	93.23225753	91.00039422
190821A00017	8/21/2019	1.8	8/21/2024	8/21/2019	106.90455	106.9045529	106.9045529	105.1745955	100.7013351	96.44357487	92.38988168	88.52942508	84.85200628
190821A00021	8/21/2019	1.79	8/18/2022	8/21/2019	103.84427	103.8442744	103.8442744	102.9264561	100.4126233	97.97282498	95.60451247	93.30517393	91.07240208
190822A00002	8/22/2019	1.89	8/20/2021	8/22/2019	102.52004	102.5200388	102.5200388	101.8436043	100.3074303	98.8018399	97.32606179	95.87927899	94.46070392
190826A00004	8/26/2019	1.74	8/26/2022	8/26/2019	103.74758	103.747582	103.747582	102.8230032	100.2896099	97.83126043	95.44534986	93.12931649	90.88070612
190826A00028	8/26/2019	1.56	8/26/2022	8/26/2019	103.74972	103.749724	103.749724	102.8219059	100.2785092	97.81065794	95.41571566	93.09109804	90.83432943
190827A00001	8/27/2019	1.74	8/27/2024	8/27/2019	106.65297	106.6529732	106.6529732	104.9163821	100.433639	96.16753672	92.10654449	88.23974536	84.55686098
190827A00022	8/27/2019	1.83	8/27/2021	8/27/2019	102.45575	102.4557504	102.4557504	101.7753434	100.2212444	98.69828469	97.2056655	95.74254718	94.30812079
190827A00039	8/27/2019	1.78	8/26/2022	8/27/2019	103.85139	103.85139	103.85139	102.926223	100.3914841	97.93181779	95.5446199	93.22732781	90.97748649
190828A00009	8/28/2019	1.71	8/28/2024	8/28/2019	106.51866	106.5186646	106.5186646	104.7817846	100.2995428	96.03406066	91.97379339	88.10781253	84.42582927

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190829A00029	8/29/2019	1.75	7/14/2023	8/29/2019	105.06158	105.0615781	105.0615781	103.8108257	100.4127399	97.14376453	93.99838887	90.97129999	88.05744202
190903A00004	9/3/2019	1.77	9/6/2022	9/3/2019	103.87013	103.8701338	103.8701338	102.9351147	100.3710219	97.88351199	95.46989396	93.12753025	90.85389529
190910A00013	9/10/2019	1.9	9/9/2022	9/10/2019	104.22468	104.224677	104.224677	103.2850424	100.7082359	98.20854195	95.78324573	93.42968489	91.14531049
190912A00026	9/12/2019	1.94	9/12/2022	9/12/2019	104.34359	104.3435852	104.3435852	103.4006777	100.8142391	98.30537772	95.8713531	93.50948012	91.21718841
190912A00031	9/12/2019	1.75	9/12/2024	9/12/2019	107.61925	107.6192509	107.6192509	105.8405136	101.2690184	96.92061941	92.78331032	88.84574604	85.09725228
190913A00014	9/13/2019	2.08	9/13/2024	9/13/2019	108.30221	108.3022138	108.3022138	106.5259288	101.9619488	97.61988509	93.48783823	89.55455023	85.80942722
190913A00025	9/13/2019	2.04	3/15/2022	9/13/2019	103.73639	103.7363868	103.7363868	102.9477345	100.8453095	98.79601397	96.79820415	94.85023808	92.95053904
190919A00017	9/19/2019	1.8	9/19/2022	9/19/2019	104.48574	104.4857427	104.4857427	103.5325987	100.9150538	98.3766673	95.91460442	93.52610326	91.20852124
190114A00042	1/14/2019	2.92	1/13/2023	1/14/2019	107.82238	107.82238	107.82238	106.7353923	103.7764024	100.9153901	98.14869368	95.47269588	92.88393855
190115A00029	1/15/2019	2.86	11/8/2021	1/15/2019	104.59544	104.5954448	104.5954448	103.8734918	102.1052806	100.3755429	98.68320666	97.0271637	95.40634932
190118A00020	1/18/2019	2.89	7/15/2020	1/18/2019	101.21747	101.2174749	101.2174749	100.9462583	100.487774	100.0334605	99.58326071	99.13711895	98.69498035
190122A00043	1/22/2019	2.96	1/22/2025	1/22/2019	114.3062	114.3062028	114.3062028	112.2336488	107.1628248	102.3542728	97.7931545	93.4654372	89.3579557
190129A00028	1/30/2019	2.92	2/1/2022	1/30/2019	105.31961	105.3196067	105.3196067	104.5470479	102.5463248	100.5941753	98.68923209	96.83006004	95.01527757
190130A00020	1/30/2019	2.97	4/17/2023	1/30/2019	108.66172	108.661718	108.661718	107.4759002	104.2483736	101.1351859	98.13167523	95.23332555	92.4358369
190131A00036	1/31/2019	2.69	7/31/2023	1/31/2019	109.10163	109.1016346	109.1016346	107.798935	104.2709984	100.8784292	97.61540865	94.47629632	91.45572889
190211A00010	2/11/2019	2.79	2/11/2021	2/11/2019	102.62837	102.6283668	102.6283668	102.0259879	100.9924016	99.9787561	98.98543544	98.01183255	97.05736436
190212A00017	2/12/2019	2.86	6/30/2023	2/12/2019	108.82714	108.8271445	108.8271445	107.565072	104.1385756	100.8402174	97.66464644	94.60665373	91.66127883
190221A00002	2/21/2019	2.81	2/22/2022	2/21/2019	105.24089	105.2408927	105.2408927	104.4590039	102.3975311	100.3870521	98.42607834	96.51306797	94.64653876
190227A00002	2/27/2019	2.61	2/28/2022	2/27/2019	105.24546	105.2454637	105.2454637	104.4584027	102.3720425	100.3377036	98.35384218	96.41887239	94.53127017
190228A00037	2/28/2019	2.85	2/28/2023	2/28/2019	107.93541	107.9354083	107.9354083	106.8044751	103.7156892	100.732822	97.85174514	95.06840997	92.37895371
190313A00018	3/13/2019	2.68	3/12/2021	3/13/2019	102.70544	102.7054352	102.7054352	102.1022987	100.9978171	99.90835218	98.84235883	97.79908425	96.77780754
190318A00008	3/18/2019	2.76	3/18/2024	3/18/2019	110.25653	110.2565279	110.2565279	108.7048556	104.5614539	100.6002044	96.81219054	93.1888992	89.72228357
190318A00021	3/18/2019	2.76	3/18/2024	3/18/2019	110.25653	110.2565279	110.2565279	108.7048556	104.5614539	100.6002044	96.81219054	93.1888992	89.72228357
190321A00044	3/21/2019	2.45	3/21/2022	3/21/2019	105.04434	105.0443443	105.0443443	104.2419513	102.1019816	100.0164359	97.9836254	96.00185475	94.06949652
190322A00022	3/22/2019	2.56	7/22/2021	3/22/2019	103.39	103.3900002	103.3900002	102.7310395	101.2644092	99.82597839	98.41510729	97.03107329	95.67317854
190326A00021	3/26/2019	2.52	3/26/2021	3/26/2019	102.60081	102.6008079	102.6008079	101.9979175	100.8639752	99.73894336	98.63895365	97.56317681	96.51081984
190327A00011	3/27/2019	2.51	9/28/2020	3/27/2019	101.50688	101.5068755	101.5068755	101.105897	100.4427438	99.78827011	99.14230635	98.50468744	97.87525249
190327A00032	3/27/2019	2.53	1/26/2024	3/27/2019	108.98121	108.9812055	108.9812055	107.495613	103.5175905	99.7097782	96.06409487	92.57279036	89.22852614
190328A00009	3/28/2019	2.33	3/28/2022	3/28/2019	104.82762	104.8276228	104.8276228	104.0208991	101.8647606	99.76382828	97.71636263	95.72063174	93.77497393
190328A00079	3/28/2019	2.37	3/28/2024	3/28/2019	109.46937	109.4693732	109.4693732	107.9041064	103.7291993	99.73959508	95.92611806	92.28003941	88.79311286
190401A00009	4/1/2019	2.39	4/1/2022	4/1/2019	104.9838	104.9837992	104.9837992	104.1732147	102.0046856	99.8918759	97.83302108	95.82636615	93.87022761
190401A00010	4/1/2019	2.62	4/1/2024	4/1/2019	109.76322	109.7632232	109.7632232	108.1986815	104.029076	100.0442971	96.23520545	92.5930991	89.10975723
190808A00015	8/8/2019	1.92	8/9/2021	8/8/2019	102.51732	102.5173172	102.5173172	101.847578	100.3404432	98.86301961	97.41457661	95.99433252	94.60153325

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190808A00049	8/8/2019	1.89	8/8/2024	8/8/2019	107.26069	107.2606938	107.2606938	105.5468193	101.0984743	96.86302083	92.82924055	88.98649502	85.32476231
190809A00008	8/9/2019	1.87	8/3/2023	8/9/2019	105.56619	105.5661943	105.5661943	104.291023	100.8333085	97.50877163	94.31164659	91.23637794	88.27768314
190809A00015	8/9/2019	1.88	8/9/2022	8/9/2019	104.03642	104.0364248	104.0364248	103.1257558	100.6329117	98.21299771	95.86352865	93.58204738	91.36619815
190815A00007	8/15/2019	1.81	7/6/2023	8/15/2019	105.23705	105.2370516	105.2370516	103.9934674	100.6127066	97.35959468	94.22872129	91.21486492	88.31305491
190815A00032	8/15/2019	1.83	8/13/2021	8/15/2019	102.39578	102.3957766	102.3957766	101.7241235	100.2074017	98.72069259	97.26324799	95.83427391	94.43300459
190816A00021	8/16/2019	1.77	8/16/2023	8/16/2019	105.26541	105.2654062	105.2654062	103.9791134	100.4932181	97.14263675	93.92145761	90.8239951	87.84484547
190816A00036	8/16/2019	1.77	8/16/2024	8/16/2019	106.74658	106.7465786	106.7465786	105.0253848	100.5682736	96.32543276	92.28551897	88.43778522	84.77210978
190819A00030	8/19/2019	2.01	8/20/2029	8/19/2019	118.22588	118.2258768	118.2258768	110.8394229	101.5699762	93.15733448	85.51768675	78.57576204	72.26398097
190821A00016	8/21/2019	1.79	8/22/2022	8/21/2019	103.86081	103.8608081	103.8608081	102.9392418	100.4147864	97.9648871	95.58696762	93.27849067	91.03702507
190823A00005	8/23/2019	1.62	8/23/2024	8/23/2019	106.92919	106.9291919	106.9291919	105.1863684	100.6824354	96.39636511	92.31655028	88.43200592	84.73239
190826A00025	8/26/2019	1.76	11/26/2024	8/26/2019	107.10986	107.109862	107.109862	105.2252134	100.4999056	96.01356356	91.75297047	87.70564861	83.8598714
190826A00056	8/26/2019	1.72	8/26/2024	8/26/2019	106.55692	106.5569242	106.5569242	104.8226534	100.3445862	96.08286302	92.02597293	88.1630178	84.48373675
190828A00008	8/28/2019	1.75	8/29/2022	8/28/2019	103.7856	103.7856041	103.7856041	102.8580704	100.3163873	97.85014854	95.45672908	93.13354772	90.87813195
190828A00031	8/28/2019	1.71	8/28/2024	8/28/2019	106.51866	106.5186646	106.5186646	104.7817846	100.2995428	96.03406066	91.97379339	88.10781253	84.42582927
190829A00024	8/29/2019	1.54	8/29/2024	8/29/2019	106.5836	106.5835999	106.5835999	104.8348964	100.3234842	96.03101713	91.94579159	88.05673781	84.35343586
190830A00021	8/30/2019	1.76	8/30/2024	8/30/2019	106.75719	106.7571862	106.7571862	105.0152515	100.5226126	96.24736233	92.17791658	88.30330759	84.61321007
190906A00005	9/6/2019	1.77	9/6/2023	9/6/2019	105.35063	105.3506293	105.3506293	104.0427783	100.5009613	97.09830327	93.82863768	90.68604895	87.66491899
190906A00014	9/6/2019	1.57	9/6/2024	9/6/2019	106.7546	106.7546027	106.7546027	104.9924911	100.4563953	96.14126822	92.03524673	88.12711914	84.40633475
190912A00027	9/12/2019	1.95	9/12/2023	9/12/2019	106.03121	106.0312067	106.0312067	104.7127658	101.1428376	97.71356428	94.41869186	91.25222183	88.2084586
190912A00034	9/12/2019	1.76	9/12/2022	9/12/2019	104.34725	104.3472462	104.3472462	103.4009882	100.8042235	98.28555847	95.84221995	93.47149892	91.17080241
190918A00016	9/18/2019	1.78	9/18/2024	9/18/2019	107.78686	107.7868623	107.7868623	105.9976911	101.406582	97.04015525	92.88627873	88.933496	85.17103028
190925A00024	9/25/2019	1.88	4/14/2022	9/25/2019	103.52474	103.5247432	103.5247432	102.71484	100.5350908	98.41204681	96.3438593	94.32872047	92.36489737
190926A00010	9/26/2019	2.11	9/30/2020	9/26/2019	101.24962	101.2496193	101.2496193	100.8456765	100.1780837	99.51929946	98.86915048	98.22746798	97.59408755
181016A00084	10/16/2018	3.21	10/17/2022	10/16/2018	107.98006	107.9800637	107.9800637	106.9834429	104.2549686	101.6102663	99.04630881	96.56011473	94.14883467
181114A00012	11/14/2018	3.13	11/14/2022	11/14/2018	108.50096	108.5009624	108.5009624	107.4699161	104.6478306	101.9146359	99.26710324	96.70204463	94.21641161
181121A00013	11/21/2018	3.11	11/20/2020	11/21/2018	102.31945	102.3194503	102.3194503	101.8233329	101.0137891	100.2171148	99.43300461	98.66116282	97.9013029
181123A00013	11/23/2018	3.14	11/23/2021	11/23/2018	105.21495	105.2149457	105.2149457	104.4842488	102.6694613	100.8949045	99.1595388	97.46224796	95.80195563
181126A00046	11/26/2018	3.13	11/25/2020	11/26/2018	102.3754	102.3753953	102.3753953	101.869935	101.0466665	100.2366967	99.43970517	98.65538179	97.88342609
181204A00023	12/4/2018	3.16	12/3/2021	12/4/2018	105.3307	105.330703	105.330703	104.5950646	102.7522129	100.9507371	99.18959517	97.46765322	95.78381642
181206A00009	12/6/2018	3.03	12/4/2020	12/6/2018	102.36138	102.3613756	102.3613756	101.8396265	100.9921881	100.1588409	99.3392354	98.53303375	97.73990896
181214A00016	12/14/2018	3.03	12/14/2020	12/14/2018	102.43809	102.4380909	102.4380909	101.8982784	101.0235658	100.1638664	99.31879581	98.48798263	97.67106793
181219A00023	12/19/2018	2.97	12/20/2021	12/19/2018	105.10287	105.1028705	105.1028705	104.358944	102.4735202	100.6313877	98.83141576	97.07239273	95.35314979
181224A00015	12/24/2018	2.72	6/24/2020	12/24/2018	101.04716	101.0471593	101.0471593	100.8097316	100.4084693	100.0104045	99.61549901	99.22371529	98.83501635

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
181226A00036	12/26/2018	3.02	12/26/2023	12/26/2018	110.71866	110.7186619	110.7186619	109.255399	105.3232279	101.5555525	97.94475501	94.48349556	91.16481566
181231A00052	12/31/2018	2.64	6/30/2020	12/31/2018	101.05692	101.0569226	101.0569226	100.8099762	100.3922646	99.97800646	99.56715919	99.15968083	98.75553012
190104A00012	1/4/2019	2.76	1/4/2021	1/4/2019	102.34529	102.3452861	102.3452861	101.7713794	100.8406753	99.92696776	99.02979432	98.14870909	97.2832821
190104A00033	1/4/2019	3.37	1/31/2029	1/4/2019	127.59816	127.5981599	127.5981599	120.7908762	111.6644091	103.3234489	95.69577143	88.71604672	82.32526025
190107A00022	1/7/2019	2.83	1/7/2022	1/7/2019	104.96196	104.9619594	104.9619594	104.2079069	102.2766164	100.3907327	98.54902733	96.75020086	94.99300056
190107A00023	1/7/2019	2.87	1/6/2023	1/7/2019	107.62363	107.6236294	107.6236294	106.5457588	103.6079043	100.7667553	98.01872098	95.36025198	92.78795436
190110A00003	1/10/2019	2.97	1/10/2024	1/10/2019	110.63225	110.6322546	110.6322546	109.1523403	105.1830591	101.3814686	97.73972069	94.25026293	90.90593917
190110A00006	1/10/2019	2.73	11/15/2022	1/10/2019	107.37903	107.3790288	107.3790288	106.3537313	103.5446922	100.8243461	98.18945635	95.63684188	93.16346074
190110A00028	1/10/2019	2.78	1/10/2024	1/10/2019	110.62015	110.6201523	110.6201523	109.1331741	105.1441262	101.3241173	97.66520749	94.15976522	90.80056067
190110A00077	1/10/2019	2.68	12/8/2020	1/10/2019	102.21864	102.2186403	102.2186403	101.6890568	100.8297717	99.98499074	99.15434894	98.33749326	97.53408242
190111A00013	1/11/2019	2.87	1/7/2022	1/11/2019	105.04028	105.040277	105.040277	104.285846	102.3537792	100.4671324	98.62467845	96.82511749	95.06719642
190111A00026	1/11/2019	3.48	1/11/2034	1/11/2019	147.16637	147.1663659	146.0035934	130.6353626	116.4564816	104.0561006	93.19759561	83.67703374	75.3186026
190114A00045	1/14/2019	2.84	1/14/2021	1/14/2019	102.49195	102.4919507	102.4919507	101.9074136	100.9490052	100.0086088	99.08571974	98.17985218	97.29053807
190123A00036	1/23/2019	3.32	1/23/2029	1/23/2019	129.01107	129.0110702	129.0110702	122.1184185	112.8676803	104.4136822	96.68314733	89.60979709	83.13376083
190920A00021	9/20/2019	1.96	9/18/2026	9/20/2019	112.33908	112.3390818	112.3390818	108.526734	101.9818088	95.87543764	90.1760005	84.85427597	79.88328682
190923A00012	9/23/2019	2.43	9/25/2034	9/23/2019	134.05511	134.0551075	132.1888666	116.7999626	102.9714843	90.98686695	80.58759116	71.5527087	63.69321735
190923A00081	9/23/2019	1.96	9/20/2024	9/23/2019	107.72784	107.727837	107.727837	105.9469037	101.3791369	97.03440273	92.90068419	88.9666274	85.22155094
190924A00010	9/24/2019	1.95	9/24/2021	9/24/2019	102.77521	102.7752136	102.7752136	102.08113	100.4484942	98.8496005	97.28351347	95.7492869	94.24601096
190930A00011	9/30/2019	1.89	10/24/2022	9/30/2019	104.39611	104.3961112	104.3961112	103.4135715	100.7158856	98.10191102	95.56854051	93.11277352	90.73174373
190930A00069	9/30/2019	1.9	9/29/2023	9/30/2019	105.92361	105.9236135	105.9236135	104.58984	100.9767529	97.50755821	94.17576706	90.97518035	87.89991589
190930A00077	9/30/2019	2.23	9/28/2029	9/30/2019	118.57647	118.5764681	118.5764681	111.1284992	101.8465481	93.42639579	85.78321865	78.84093751	72.53129513
191002A00006	10/2/2019	1.84	10/2/2024	10/2/2019	107.21761	107.2176086	107.2176086	105.4232388	100.8361285	96.47451765	92.32616262	88.3795165	84.62372094
191002A00017	10/2/2019	1.84	10/2/2024	10/2/2019	107.21761	107.2176086	107.2176086	105.4232388	100.8361285	96.47451765	92.32616262	88.3795165	84.62372094
191003A00014	10/3/2019	1.71	9/20/2024	10/3/2019	106.56003	106.5600252	106.5600252	104.7895272	100.2483577	95.9292956	91.82035423	87.91021846	84.1882437
191003A00020	10/3/2019	1.72	10/3/2022	10/3/2019	103.84458	103.8445824	103.8445824	102.8860524	100.2501996	97.69481987	95.21698444	92.81385812	90.4827298
191004A00003	10/4/2019	1.89	10/5/2026	10/4/2019	110.62179	110.6217918	110.6217918	106.8138761	100.3322214	94.2869295	88.64638335	83.38139732	78.46503664
191004A00005	10/4/2019	1.54	10/4/2024	10/4/2019	106.72485	106.7248475	106.7248475	104.9207436	100.3123769	95.93171048	91.76631661	87.80449095	84.03522996
191007A00027	10/7/2019	1.69	10/7/2022	10/7/2019	103.77901	103.779008	103.779008	102.8169035	100.1715931	97.60731645	95.12111005	92.71010928	90.3715754
191008A00006	10/8/2019	1.73	10/8/2021	10/8/2019	102.46418	102.4641771	102.4641771	101.7653967	100.0981286	98.46590583	96.86771509	95.30255533	93.76946486
191009A00017	10/9/2019	1.76	10/4/2024	10/9/2019	106.84927	106.8492725	106.8492725	105.0549324	100.4712667	96.11327618	91.96868791	88.0259325	84.27413131
191009A00026	10/9/2019	1.74	10/7/2022	10/9/2019	103.91455	103.9145548	103.9145548	102.9516607	100.3045186	97.73845054	95.25049413	92.8377834	90.49757834
191015A00026	10/15/2019	1.69	10/15/2021	10/15/2019	102.71649	102.7164941	102.7164941	102.0115198	100.3185876	98.66161416	97.03954214	95.45133325	93.89599064
191017A00022	10/17/2019	2.25	7/17/2028	10/17/2019	116.46953	116.4695341	116.4695341	110.5621495	102.3502304	94.81706715	87.90297106	81.55371351	75.72007696

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191021A00002	10/21/2019	1.9	10/21/2020	10/21/2019	101.20397	101.2039697	101.2039697	100.7643861	100.0403151	99.3266247	98.62309283	97.92950366	97.24564744
191021A00021	10/21/2019	2.22	12/21/2027	10/21/2019	115.13207	115.1320657	115.1320657	109.8869366	102.2097706	95.12930092	88.59608581	82.56494027	76.99462488
191025A00002	10/25/2019	1.75	10/26/2020	10/25/2019	101.21849	101.218485	101.218485	100.7695335	100.0305908	99.30245181	98.58488086	97.87764918	97.18053451
191031A00019	10/31/2019	1.88	10/31/2022	10/31/2019	104.39919	104.3991905	104.3991905	103.4097006	100.693867	98.06278158	95.51327631	93.04229612	90.64692367
191101A00002	11/1/2019	1.85	11/1/2022	11/1/2019	104.32015	104.3201476	104.3201476	103.3301762	100.6127723	97.98024994	95.42943776	92.95727722	90.56084732
190211A00002	2/11/2019	2.88	2/12/2024	2/11/2019	110.50829	110.5082902	110.5082902	108.9931107	104.938657	101.0590186	97.34583081	93.79106738	90.38713262
190211A00011	2/11/2019	2.8	2/11/2022	2/11/2019	105.14479	105.1447857	105.1447857	104.3684602	102.3402083	100.3616485	98.43135404	96.54784038	94.70967914
190214A00013	2/14/2019	2.64	2/14/2023	2/14/2019	107.75974	107.7597354	107.7597354	106.6369685	103.578358	100.6239343	97.76966424	95.01159455	92.34595158
190222A00029	2/22/2019	2.62	2/22/2021	2/22/2019	102.69382	102.6938229	102.6938229	102.0896372	101.0244056	99.97940518	98.95598322	97.95347636	96.97124822
190225A00039	2/25/2019	2.62	2/25/2022	2/25/2019	105.24581	105.2458092	105.2458092	104.4601377	102.3825808	100.3566892	98.38093592	96.453751	94.57362527
190228A00035	2/28/2019	2.8	2/26/2021	2/28/2019	102.74267	102.7426673	102.7426673	102.1396364	101.0661407	100.0128717	98.9815231	97.97141577	96.98189847
190228A00036	2/28/2019	2.81	2/28/2022	2/28/2019	105.28212	105.2821155	105.2821155	104.4972505	102.4178033	100.3900647	98.41251234	96.48357305	94.6017348
190301A00012	3/1/2019	3.41	3/1/2029	3/1/2019	128.19953	128.1995277	128.1995277	121.283027	112.0562531	103.6295019	95.9286658	88.88677486	82.44338049
190311A00003	3/11/2019	2.68	9/10/2021	3/11/2019	103.90037	103.9003745	103.9003745	103.2071184	101.6032219	100.0318883	98.49228296	96.98350959	95.5047054
190314A00027	3/22/2019	2.92	3/21/2025	3/22/2019	113.51312	113.5131227	113.5131227	111.3468015	106.170921	101.2695154	96.62663532	92.22726088	88.05732493
190318A00024	3/18/2019	2.57	3/18/2024	3/18/2019	110.24274	110.2427422	110.2427422	108.6833721	104.5186955	100.5376726	96.73128195	93.09091949	89.60845383
190319A00008	3/19/2019	2.72	3/21/2022	3/19/2019	105.23379	105.2337877	105.2337877	104.4328954	102.2984565	100.2181421	98.19028819	96.21321189	94.28529785
190321A00003	3/21/2019	2.67	3/21/2024	3/21/2019	109.90149	109.9014867	109.9014867	108.3490568	104.2051285	100.2437616	96.4559961	92.83328507	89.36755069
190321A00029	3/21/2019	2.62	3/22/2021	3/21/2019	102.69136	102.6913612	102.6913612	102.0882048	100.9623495	99.84715017	98.75654583	97.6897292	96.64592803
190328A00033	4/25/2019	2.56	4/25/2024	4/25/2019	109.65992	109.6599185	109.6599185	108.0680421	103.8367412	99.79560372	95.9350776	92.24609285	88.72008868
190328A00053	3/28/2019	2.33	3/28/2022	3/28/2019	104.82762	104.8276228	104.8276228	104.0208991	101.8647606	99.76382828	97.71636263	95.72063174	93.77497393
190329A00018	3/29/2019	2.6	3/29/2024	3/29/2019	109.66022	109.6602236	109.6602236	108.1001067	103.9404418	99.96488586	96.16435157	92.53018364	89.05420437
190401A00006	4/1/2019	2.58	4/1/2022	4/1/2019	105.00094	105.0009447	105.0009447	104.1927837	102.0318154	99.92622277	97.87426431	95.87419931	93.92435778
190401A00007	4/1/2019	2.6	4/3/2023	4/1/2019	107.37453	107.3745296	107.3745296	106.2108812	103.0416446	99.98374601	97.03268549	94.18410665	91.43385926
190401A00023	4/1/2019	2.54	4/1/2021	4/1/2019	102.6616	102.6616006	102.6616006	102.0584032	100.9108332	99.76988664	98.65467865	97.56434575	96.4980627
190402A00004	4/2/2019	2.9	4/2/2029	4/2/2019	125.73193	125.7319278	125.7319278	118.6762635	109.3955918	100.9329839	93.21157514	86.16207211	79.72201069
190404A00003	4/4/2019	2.47	4/4/2024	4/4/2019	109.93546	109.9354581	109.9354581	108.3580045	104.1549284	100.1390126	96.3009549	92.63190886	89.12351929
190416A00019	4/16/2019	2.7	4/14/2023	4/16/2019	107.76725	107.7672467	107.7672467	106.5902619	103.3851522	100.2934815	97.31062406	94.43210682	91.65367045
190422A00084	4/22/2019	2.6	4/22/2021	4/22/2019	102.87916	102.8791558	102.8791558	102.2747692	101.0739172	99.87721794	98.70880249	97.56767676	96.45289274
190402A00010	4/2/2019	2.4	4/6/2022	4/2/2019	105.03732	105.0373195	105.0373195	104.2228275	102.0400432	99.91362258	97.84176778	95.82269382	93.85468904
190408A00047	4/8/2019	2.43	4/7/2023	4/8/2019	107.44582	107.4458238	107.4458238	106.2730054	103.0777527	99.99538911	97.0213167	94.15109578	91.38049799
190409A00031	4/9/2019	2.64	4/9/2024	4/9/2019	109.89858	109.8985792	109.8985792	108.3235329	104.1298225	100.1228219	96.29325257	92.63228633	89.13158571
190416A00027	4/16/2019	2.64	4/16/2020	4/16/2019	100.50434	100.5043365	100.5043365	100.3797305	100.1693939	99.95995042	99.75139438	99.5437201	99.33692193

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190426A00011	5/1/2019	2.56	3/15/2022	5/1/2019	104.85069	104.8506932	104.8506932	104.0563894	101.9419305	99.88082153	97.87143392	95.91211892	94.00129332
190430A00003	4/30/2019	2.43	8/2/2023	4/30/2019	108.19414	108.1941393	108.1941393	106.8957611	103.3783893	99.99630502	96.74367174	93.61484364	90.60445261
190430A00021	4/30/2019	2.52	10/29/2021	4/30/2019	103.94245	103.9424451	103.9424451	103.2274114	101.4918366	99.79358041	98.1315548	96.50466456	94.91185898
190506A00011	5/6/2019	2.45	11/6/2020	5/6/2019	101.81245	101.8124546	101.8124546	101.3424484	100.5713217	99.81191012	99.06394812	98.3271781	97.60135014
190508A00008	5/8/2019	2.36	5/9/2022	5/8/2019	105.15385	105.1538452	105.1538452	104.3136303	102.0403628	99.82775387	97.6738342	95.57665342	93.53434148
190509A00029	5/9/2019	2.34	6/9/2022	5/9/2019	105.2987	105.2986978	105.2986978	104.4316724	102.0745307	99.78230414	97.55294487	95.3843903	93.27465739
190513A00015	5/13/2019	2.51	5/13/2020	5/13/2019	100.64656	100.6465626	100.6465626	100.4769686	100.1922186	99.90909284	99.62757718	99.34765789	99.06932132
190514A00014	5/14/2019	2.43	5/14/2021	5/14/2019	102.79972	102.7997162	102.7997162	102.1953387	100.9291101	99.67443367	98.44603802	97.24309938	96.06482853
190514A00056	5/14/2019	2.32	5/15/2023	5/14/2019	107.32291	107.3229104	107.3229104	106.1122479	102.8176129	99.64264357	96.58239237	93.63208039	90.78715661
190516A00006	5/16/2019	2.43	5/13/2021	5/16/2019	102.79374	102.7937415	102.7937415	102.1893996	100.9265105	99.67457633	98.44913301	97.24934064	96.07439501
190520A00006	5/20/2019	2.44	5/20/2020	5/20/2019	100.70887	100.7088684	100.7088684	100.5276729	100.2231707	99.92052431	99.61971669	99.32073102	99.02355068
190521A00024	5/21/2019	2.53	1/20/2023	5/21/2019	106.70301	106.7030133	106.7030133	105.6151235	102.6546079	99.79287756	97.02619718	94.35089602	91.76346616
190521A00047	5/21/2019	2.54	5/19/2023	5/21/2019	107.46638	107.4663818	107.4663818	106.2555913	102.9631006	99.79017545	96.73190205	93.78351772	90.94048523
190523A00005	5/23/2019	2.42	5/26/2020	5/23/2019	100.74114	100.7411377	100.7411377	100.5502303	100.2291889	99.91020142	99.59324825	99.2783099	98.96536717
190523A00007	5/23/2019	2.28	5/23/2022	5/23/2019	105.05379	105.0537901	105.0537901	104.2021474	101.8932696	99.64688621	97.46101652	95.33367892	93.26296954
190523A00022	5/23/2019	2.47	10/12/2022	5/23/2019	105.92356	105.9235613	105.9235613	104.9439808	102.2566256	99.65167915	97.12614714	94.67710637	92.30176272
190528A00002	5/28/2019	2.45	11/30/2020	5/28/2019	101.84152	101.8415194	101.8415194	101.3283411	100.4940545	99.67346826	98.86624713	98.07206675	97.29061319
190528A00003	5/28/2019	2.42	5/31/2022	5/28/2019	105.0023	105.0023031	105.0023031	104.146888	101.8262896	99.56883913	97.37257467	95.23551269	93.15574522
190528A00009	5/28/2019	2.45	5/15/2024	5/28/2019	109.30888	109.3088845	109.3088845	107.6942146	103.4186848	99.33758077	95.44109899	91.71991501	88.16522623
190529A00013	5/29/2019	2.38	5/29/2024	5/29/2019	109.08659	109.0865882	109.0865882	107.4553001	103.1488126	99.03976013	95.11818079	91.37457988	87.79999097
191105A00007	11/5/2019	1.98	11/5/2026	11/5/2019	112.7194	112.7193978	112.7193978	108.7419926	102.0688805	95.85051027	90.053535	84.647206	79.60317349
191106A00022	11/6/2019	2.34	1/2/2030	11/6/2019	120.16514	120.1651418	120.1651418	112.2954951	102.7353869	94.08265806	86.24611825	79.1441052	72.70352218
191115A00015	11/18/2019	2.61	11/18/2024	11/18/2019	111.18671	111.1867111	111.1867111	109.2776323	104.4768866	99.91651715	95.58331012	91.46476926	87.54915075
191115A00030	11/15/2019	2.35	11/9/2029	11/15/2019	119.96662	119.9666152	119.9666152	112.3185303	102.8831016	94.33129337	86.57535509	79.53666083	73.14473915
191120A00031	11/20/2019	1.69	11/21/2022	11/20/2019	104.46641	104.466412	104.466412	103.4528293	100.6686852	97.97326643	95.36330538	92.83562342	90.38717934
191121A00004	11/21/2019	1.77	11/21/2024	11/21/2019	108.03195	108.0319475	108.0319475	106.135885	101.3742476	96.85324727	92.55955435	88.48059486	84.60455423
191122A00020	11/26/2019	3.2	11/23/2037	11/26/2019	150.88292	150.8829247	145.5880607	126.5441976	109.8533491	95.73583095	83.77148587	73.6112191	64.96468869
191206A00019	12/6/2019	1.96	11/15/2023	12/6/2019	106.3603	106.3602962	106.3602962	104.9745984	101.2319847	97.64279538	94.19997318	90.89677373	87.72680144
191212A00026	12/13/2019	1.92	6/16/2022	12/13/2019	103.89611	103.8961094	103.8961094	103.0338965	100.6835869	98.39844208	96.17637649	94.01530883	91.91323855
191226A00019	12/26/2019	2.4	12/22/2028	12/26/2019	118.63557	118.6355692	118.6355692	112.1741048	103.5145677	95.60104234	88.36523696	81.74535996	75.68555053
200113A00003	1/13/2020	1.72	1/13/2022	1/13/2020	103.16805	103.1680461	103.1680461	102.4164059	100.4807489	98.5912094	96.74647723	94.94521992	93.18615363
200115A00022	1/15/2020	1.88	10/14/2022	1/15/2020	104.32474	104.3247405	104.3247405	103.3525226	100.6817013	98.09309862	95.58369427	93.15056517	90.79091771
200115A00024	1/15/2020	1.88	1/17/2023	1/15/2020	104.73982	104.7398196	104.7398196	103.6675162	100.7439098	97.9178728	95.18569675	92.5437625	89.98861103

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
200117A00026	1/17/2020	1.69	1/18/2022	1/17/2020	103.13051	103.1305061	103.1305061	102.3756711	100.4273469	98.52575469	96.6695551	94.85738905	93.08794747
200121A00008	1/24/2020	1.84	1/20/2022	1/24/2020	103.07922	103.0792223	103.0792223	102.3255332	100.3791673	98.47949029	96.62516938	94.81484598	93.0472115
200123A00005	1/23/2020	1.81	1/24/2022	1/23/2020	103.03619	103.0361909	103.0361909	102.2800264	100.3237247	98.41460105	96.55129875	94.73243802	92.9566901
200123A00013	1/27/2020	1.89	1/27/2025	1/27/2020	107.96098	107.960977	107.960977	105.952709	101.0552045	96.4130506	92.01170029	87.83743906	83.87740255
200129A00008	1/29/2020	1.76	1/31/2022	1/29/2020	102.96435	102.9643531	102.9643531	102.2038437	100.2301409	98.30447611	96.42545132	94.59164921	92.80170534
200129A00010	1/29/2020	1.76	1/31/2022	1/29/2020	102.96435	102.9643531	102.9643531	102.2038437	100.2301409	98.30447611	96.42545132	94.59164921	92.80170534
200130A00016	1/30/2020	1.58	1/30/2025	1/30/2020	107.39071	107.3907106	107.3907106	105.3688987	100.4472427	95.78369938	91.36348152	87.17266451	83.19819077
200131A00032	1/31/2020	2.1	1/31/2030	1/31/2020	117.92682	117.926816	117.926816	109.99952	100.482911	91.87909562	84.09550075	77.0493186	70.66650026
200131A00048	1/31/2020	1.69	1/31/2024	1/31/2020	105.62377	105.6237654	105.6237654	104.1587264	100.2343403	96.47922145	92.88525585	89.44469729	86.15021292
190926A00016	9/26/2019	2.28	5/24/2030	9/26/2019	120.32394	120.3239428	120.3239428	111.8595429	101.9861222	93.08293367	85.04915804	77.79488679	71.23994379
190926A00034	9/26/2019	1.88	9/26/2022	9/26/2019	104.24601	104.2460138	104.2460138	103.2915773	100.6688237	98.12564534	95.65917674	93.26663105	90.94534246
190927A00019	9/30/2019	1.91	9/30/2022	9/30/2019	104.34418	104.344181	104.344181	103.3857227	100.7509258	98.19631576	95.71899231	93.31613804	90.9850584
191001A00009	10/1/2019	1.84	10/1/2020	10/1/2019	101.16611	101.1661112	101.1661112	100.7599189	100.088746	99.42648463	98.77295837	98.12799532	97.4914281
191002A00016	10/2/2019	1.79	10/2/2023	10/2/2019	105.52971	105.5297084	105.5297084	104.1957533	100.5820755	97.11266257	93.78098823	90.58082467	87.50626337
191003A00013	10/3/2019	1.66	10/3/2022	10/3/2019	103.68259	103.6825875	103.6825875	102.7249985	100.0913262	97.53807902	95.06232702	92.66123658	90.33209809
191004A00002	10/4/2019	2.08	10/4/2029	10/4/2019	117.15719	117.157194	117.157194	109.7237728	100.4928565	92.12204007	84.52644204	77.62996168	71.36433904
191007A00024	10/7/2019	1.7	7/14/2022	10/7/2019	103.47669	103.4766866	103.4766866	102.5928732	100.1742728	97.82479479	95.54214303	93.32404476	91.16831838
191008A00033	10/8/2019	1.71	10/8/2024	10/8/2019	106.62923	106.6292302	106.6292302	104.8303104	100.2417099	95.87955077	91.73148766	87.78588856	84.03181762
191009A00018	10/9/2019	1.74	10/12/2021	10/9/2019	102.49738	102.4973762	102.4973762	101.7966364	100.1185881	98.4759786	96.86777564	95.2929616	93.75055913
191009A00027	10/9/2019	1.74	10/6/2023	10/9/2019	105.36057	105.3605685	105.3605685	104.0236381	100.4028294	96.92696434	93.58946394	90.38405547	87.30478866
191017A00025	10/17/2019	1.74	10/19/2020	10/17/2019	101.17947	101.1794738	101.1794738	100.7425481	100.0226629	99.31304181	98.61346643	97.9237244	97.24360935
191021A00034	10/22/2019	1.9	10/17/2022	10/22/2019	104.39265	104.3926481	104.3926481	103.4170609	100.7375447	98.14070763	95.62350377	93.18298643	90.81633987
191022A00018	10/22/2019	1.9	10/22/2020	10/22/2019	101.20854	101.2085394	101.2085394	100.7672441	100.0404606	99.32413444	98.61804096	97.92196203	97.23568568
191108A00011	11/8/2019	2.08	10/18/2024	11/8/2019	108.42454	108.4245435	108.4245435	106.5929302	101.9378559	97.51305341	93.30593089	89.30461816	85.49795878
191115A00011	11/15/2019	1.89	11/16/2020	11/15/2019	101.30636	101.3063611	101.3063611	100.82027	100.0259641	99.24413964	98.474504	97.71677373	96.97067411
191115A00014	11/18/2019	2.45	11/18/2024	11/18/2019	110.41329	110.4132853	110.4132853	108.5113518	103.7288074	99.18598736	94.86970065	90.76747894	86.8676049
191115A00016	11/18/2019	2.48	11/18/2024	11/18/2019	110.5583	110.5583026	110.5583026	108.6550294	103.8690722	99.3229617	95.00350243	90.89822087	86.99539475
191119A00027	11/19/2019	1.8	11/19/2024	11/19/2019	108.16857	108.168573	108.168573	106.2745965	101.5149345	96.99551206	92.70302652	88.62493159	84.74943903
191120A00027	11/20/2019	1.73	11/20/2020	11/20/2019	101.31528	101.3152821	101.3152821	100.8208382	100.0141477	99.22032594	98.43906671	97.67007355	96.91305923
191120A00032	11/20/2019	1.73	5/20/2021	11/20/2019	102.12413	102.1241268	102.1241268	101.5209041	100.2362789	98.96681405	97.72240396	96.50231977	95.30586117
191121A00034	11/21/2019	2.28	11/2/2029	11/21/2019	119.2458	119.2458013	119.2458013	111.6444019	102.2571269	93.74826983	86.03066167	79.02621264	72.66492581
191122A00021	11/26/2019	3.4	11/22/2038	11/26/2019	157.35444	157.3544402	150.8222113	130.4272712	112.7021988	97.82152302	85.30068509	74.74067914	65.81257294
191125A00036	11/25/2019	2.29	11/23/2029	11/25/2019	119.4553	119.4553021	119.4553021	111.7664056	102.3235845	93.76890464	86.01390065	78.97929152	72.59403868

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190426A00016	5/1/2019	2.58	4/14/2023	5/1/2019	107.3795	107.3794964	107.3794964	106.2050633	103.0061537	99.92052477	96.94355122	94.07076545	91.29791332
190426A00033	6/27/2019	2.55	6/27/2022	6/27/2019	105.47602	105.4760196	105.4760196	104.5964748	102.1975646	99.865793	97.59901046	95.39504925	93.25182675
190501A00003	5/1/2019	2.61	5/1/2024	5/1/2019	109.9113	109.9112951	109.9112951	108.3101524	104.0577655	99.99706934	96.11840931	92.41261804	88.87104421
190506A00034	5/6/2019	2.56	5/6/2020	5/6/2019	100.61583	100.615828	100.615828	100.4575431	100.1920644	99.92799336	99.66531882	99.40402966	99.14411493
190507A00022	5/7/2019	2.56	5/7/2020	5/7/2019	100.62226	100.6222613	100.6222613	100.4623585	100.1941223	99.92732431	99.66195291	99.39799664	99.13544415
190510A00009	5/10/2019	2.47	11/10/2021	5/10/2019	103.90847	103.9084685	103.9084685	103.1889072	101.4215344	99.69275543	98.00148785	96.3466262	94.72710773
190513A00010	5/13/2019	2.41	5/13/2020	5/13/2019	100.65512	100.6551229	100.6551229	100.485278	100.2001112	99.91657568	99.63465725	99.35434202	99.07561622
190514A00023	5/14/2019	2.43	5/14/2021	5/14/2019	102.79972	102.7997162	102.7997162	102.1953387	100.9291101	99.67443367	98.44603802	97.24309938	96.06482853
190514A00024	5/14/2019	2.34	5/14/2024	5/14/2019	109.6317	109.631699	109.631699	108.0072373	103.7045884	99.59800842	95.67758231	91.93388774	88.35803111
190515A00008	5/15/2019	2.41	11/15/2021	5/15/2019	103.82975	103.8297473	103.8297473	103.1086122	101.3284047	99.58733036	97.88431295	96.21824576	94.58806363
190515A00013	5/15/2019	2.45	11/16/2020	5/15/2019	101.75693	101.7569343	101.7569343	101.2696558	100.4733697	99.68958692	98.91801453	98.15836866	97.41037419
190515A00014	5/15/2019	2.26	5/14/2021	5/15/2019	102.78718	102.7871785	102.7871785	102.1814547	100.9121443	99.65445381	98.4231567	97.21742436	96.03646307
190515A00046	5/15/2019	2.4	5/14/2021	5/15/2019	102.76071	102.7607079	102.7607079	102.1564806	100.8905156	99.63609962	98.40796004	97.20527323	96.02725009
190516A00012	5/16/2019	2.43	11/16/2021	5/16/2019	103.8901	103.8900996	103.8900996	103.1681821	101.3843849	99.63985343	97.93351289	96.26425553	94.63101491
190521A00025	5/21/2019	2.47	5/21/2021	5/21/2019	102.89433	102.8943251	102.8943251	102.2894943	100.9995321	99.72531064	98.47591172	97.2506248	96.04876668
190521A00026	5/21/2019	2.54	5/19/2023	5/21/2019	107.46638	107.4663818	107.4663818	106.2555913	102.9631006	99.79017545	96.73190205	93.78351772	90.94048523
190522A00005	5/22/2019	2.47	5/24/2021	5/22/2019	102.91258	102.9125814	102.9125814	102.3076422	101.0076615	99.72521704	98.46697064	97.23226104	96.02045114
190523A00006	5/23/2019	2.31	5/24/2021	5/23/2019	102.9131	102.913101	102.913101	102.3067641	101.0034942	99.71785256	98.45651719	97.21882276	96.00412835
190523A00024	5/23/2019	2.47	10/31/2022	5/23/2019	106.03765	106.037653	106.037653	105.0384695	102.2999804	99.64675087	97.07562064	94.58351829	92.16751071
190523A00034	5/23/2019	2.31	5/21/2021	5/23/2019	102.89485	102.8948498	102.8948498	102.2886215	100.9954058	99.71801595	98.46555857	97.23731888	96.0326096
190524A00032	5/24/2019	2.45	5/24/2023	5/24/2019	107.1966	107.1966012	107.1966012	105.9823321	102.6813652	99.50074846	96.43554083	93.48094872	90.63240417
190528A00004	5/28/2019	2.38	8/13/2021	5/28/2019	103.24932	103.249323	103.249323	102.5740368	101.0505139	99.55709994	98.09306688	96.65761755	95.24998318
190528A00005	5/28/2019	2.42	6/15/2023	5/28/2019	107.22479	107.2247898	107.2247898	105.9883411	102.6289167	99.39399501	96.27841535	93.27716589	90.38547154
190528A00039	5/28/2019	2.38	11/29/2021	5/28/2019	103.85584	103.8558432	103.8558432	103.1291681	101.3108028	99.53313484	97.79510889	96.09561225	94.43357051
190129A00061	1/30/2019	2.92	2/1/2022	1/30/2019	105.31961	105.3196067	105.3196067	104.5470479	102.5463248	100.5941753	98.68923209	96.83006004	95.01527757
190130A00007	1/30/2019	2.89	5/14/2021	1/30/2019	103.39784	103.3978436	103.3978436	102.7911636	101.5208922	100.2622225	99.02990037	97.8231003	96.64103125
190130A00011	1/30/2019	2.88	1/29/2021	1/30/2019	102.62943	102.6294262	102.6294262	102.0292802	101.029896	100.0500626	99.08921036	98.14679168	97.22227978
190131A00011	1/31/2019	3.13	1/30/2026	1/31/2019	117.02888	117.02888	117.02888	113.9445564	107.8769166	102.1771736	96.82115646	91.7862895	87.05159321
190131A00049	1/31/2019	2.79	1/29/2021	1/31/2019	102.53856	102.5385641	102.5385641	101.9387131	100.9398179	99.96046668	99.00009015	98.05814076	97.13409191
190201A00013	2/1/2019	2.89	2/1/2024	2/1/2019	110.4711	110.4710972	110.4710972	108.967061	104.9440061	101.0933783	97.40698094	93.87694141	90.49580654
190205A00047	2/5/2019	2.85	2/5/2021	2/5/2019	102.64873	102.6487335	102.6487335	102.0463969	101.0284185	100.0302805	99.05184214	98.09252423	97.15177022
190206A00013	2/6/2019	2.68	2/6/2023	2/6/2019	107.82635	107.8263547	107.8263547	106.7097732	103.6735632	100.740191	97.90570472	95.16622418	92.51804431
190208A00010	2/8/2019	2.77	2/8/2021	2/8/2019	102.58694	102.5869357	102.5869357	101.9847486	100.9592493	99.95363604	98.96803054	98.00183986	97.05449431

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190212A00024	2/12/2019	2.79	2/12/2021	2/12/2019	102.63526	102.6352621	102.6352621	102.0328422	100.9965986	99.98031382	98.98445932	98.0084233	97.0516182
190214A00012	2/14/2019	2.6	2/14/2022	2/14/2019	105.12854	105.1285447	105.1285447	104.3485707	102.304627	100.3110274	98.36630777	96.46895589	94.61751749
190219A00045	2/19/2019	2.8	2/28/2022	2/19/2019	105.2611	105.2611005	105.2611005	104.4763409	102.3971164	100.3695965	98.39225846	96.46352932	94.58189714
190222A00031	2/22/2019	2.63	8/21/2020	2/22/2019	101.41558	101.4155804	101.4155804	101.0811381	100.5203884	99.96586157	99.41745436	98.87506567	98.33859667
190301A00009	3/1/2019	2.83	3/1/2022	3/1/2019	105.33115	105.3311541	105.3311541	104.5452673	102.4626526	100.4318701	98.45139156	96.51963827	94.63509309
190305A00010	3/5/2019	2.84	3/7/2022	3/5/2019	105.39441	105.3944141	105.3944141	104.6035549	102.5043842	100.4577461	98.46207312	96.51575516	94.61724542
190308A00003	3/8/2019	2.69	3/8/2021	3/8/2019	102.6899	102.6899048	102.6899048	102.0868878	100.9911556	99.91218517	98.85623602	97.82257691	96.81050728
190313A00017	3/13/2019	2.73	7/15/2022	3/13/2019	106.03438	106.0343788	106.0343788	105.1355594	102.6826416	100.2996472	97.98429468	95.73428385	93.54740672
190318A00015	3/18/2019	2.66	3/18/2021	3/18/2019	102.71115	102.7111541	102.7111541	102.1079889	100.9906596	99.88572829	98.80494	97.74750951	96.71268529
190319A00013	3/19/2019	2.72	3/18/2022	3/19/2019	105.21367	105.2136722	105.2136722	104.4152045	102.2889036	100.2163731	98.19596924	96.22602515	94.3049406
190321A00004	3/21/2019	2.62	3/22/2021	3/21/2019	102.69136	102.6913612	102.6913612	102.0882048	100.9623495	99.84715017	98.75654583	97.6897292	96.64592803
190321A00038	3/21/2019	2.64	9/21/2020	3/21/2019	101.54762	101.5476231	101.5476231	101.1589556	100.5145984	99.87844259	99.2503322	98.63011521	98.0176434
190326A00024	3/26/2019	2.59	3/26/2024	3/26/2019	109.59937	109.5993706	109.5993706	108.0433584	103.8926852	99.9254424	96.13259255	92.50552484	89.0361028
190326A00032	3/26/2019	2.4	3/26/2024	3/26/2019	109.58293	109.5829274	109.5829274	108.0191674	103.847133	99.86004477	96.04875868	92.40457191	88.91926226
190327A00024	3/27/2019	2.48	3/25/2022	3/27/2019	104.73969	104.7396898	104.7396898	103.9382251	101.7986318	99.71353149	97.6812263	95.70001514	93.76826547
190506A00016	5/6/2019	2.56	5/6/2020	5/6/2019	100.61583	100.615828	100.615828	100.4575431	100.1920644	99.92799336	99.66531882	99.40402966	99.14411493
190507A00014	5/7/2019	2.6	5/7/2024	5/7/2019	109.90646	109.9064586	109.9064586	108.2974081	104.0297391	99.95510454	96.06378164	92.34652915	88.79462466
190510A00005	5/10/2019	2.47	5/10/2021	5/10/2019	102.82739	102.8273858	102.8273858	102.2229528	100.9697374	99.72569056	98.50877141	97.31809207	96.15280343
190513A00076	5/13/2019	2.42	11/12/2021	5/13/2019	103.83029	103.830294	103.830294	103.1103185	101.338238	99.60495973	97.90940303	96.25046218	94.62707367
190514A00013	5/14/2019	2.49	11/16/2020	5/14/2019	101.78912	101.7891181	101.7891181	101.3017548	100.5053272	99.72140458	98.94969386	98.18991116	97.44178134
190514A00015	5/14/2019	2.43	5/14/2021	5/14/2019	102.79972	102.7997162	102.7997162	102.1953387	100.9291101	99.67443367	98.44603802	97.24309938	96.06482853
190515A00055	5/15/2019	2.26	5/15/2023	5/15/2019	107.12332	107.1233154	107.1233154	105.9139956	102.6226418	99.45086775	96.39372657	93.44644228	90.60446672
190515A00057	5/15/2019	2.25	5/16/2022	5/15/2019	104.94227	104.9422697	104.9422697	104.0971952	101.8079923	99.58032613	97.41222021	95.30170998	93.24690983
190516A00010	5/16/2019	2.43	5/17/2021	5/16/2019	102.81764	102.8176403	102.8176403	102.2131563	100.9369102	99.67400854	98.43675895	97.224386	96.0361457
190517A00019	5/17/2019	2.41	5/17/2021	5/17/2019	102.79147	102.7914687	102.7914687	102.1870858	100.9110176	99.64829175	98.41121497	97.19901196	96.01093882
190520A00024	5/20/2019	2.32	5/20/2021	5/20/2019	102.90195	102.9019495	102.9019495	102.2957062	101.0057519	99.73102396	98.48143918	97.25626626	96.05480255
190521A00044	5/21/2019	2.47	5/17/2021	5/21/2019	102.86998	102.8699834	102.8699834	102.2652973	100.9886953	99.72544212	98.48784693	97.27513408	96.08655946
190522A00019	5/23/2019	2.55	5/15/2024	5/23/2019	109.74104	109.7410411	109.7410411	108.1227756	103.8381114	99.74817049	95.84314091	92.11368642	88.5509931
190522A00021	5/23/2019	2.47	10/15/2021	5/23/2019	103.7695	103.7694994	103.7694994	103.0616544	101.3645413	99.70333254	98.07700696	96.48452903	94.92490444
190523A00008	5/23/2019	2.29	5/23/2023	5/23/2019	107.27122	107.271223	107.271223	106.0523711	102.7377575	99.54423997	96.46682569	93.50068025	90.6411976
190524A00002	5/24/2019	2.39	5/24/2021	5/24/2019	102.80635	102.8063453	102.8063453	102.2018197	100.902571	99.62084942	98.36331378	97.12930313	95.9181807
190524A00013	5/24/2019	2.39	5/24/2021	5/24/2019	102.80635	102.8063453	102.8063453	102.2018197	100.902571	99.62084942	98.36331378	97.12930313	95.9181807
190524A00015	5/24/2019	2.24	5/24/2022	5/24/2019	104.96614	104.9661407	104.9661407	104.1141119	101.8036403	99.55577647	97.36853803	95.23994159	93.16808134

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190524A00026	5/28/2019	2.45	6/15/2023	5/28/2019	107.32684	107.3268427	107.3268427	106.0896959	102.728557	99.49196659	96.37476349	93.3719343	90.47870237
190529A00005	5/29/2019	2.31	11/29/2021	5/29/2019	103.72633	103.726327	103.726327	103.0002593	101.1831107	99.40663981	97.66978873	95.9714454	94.31053601
190529A00014	5/29/2019	2.47	5/29/2020	5/29/2019	100.73406	100.7340612	100.7340612	100.5386111	100.2098235	99.88318204	99.55866571	99.23625386	98.91592611
190529A00028	5/29/2019	2.38	5/29/2024	5/29/2019	109.08659	109.0865882	109.0865882	107.4553001	103.1488126	99.03976013	95.11818079	91.37457988	87.79999097
190529A00049	5/29/2019	2.32	6/29/2021	5/29/2019	102.90245	102.9024462	102.9024462	102.268416	100.8657781	99.48897781	98.13750382	96.81071833	95.50800448
190529A00080	5/29/2019	2.31	11/29/2021	5/29/2019	103.72633	103.726327	103.726327	103.0002593	101.1831107	99.40663981	97.66978873	95.9714454	94.31053601
190529A00020	5/29/2019	2.38	5/29/2024	5/29/2019	109.08659	109.0865882	109.0865882	107.4553001	103.1488126	99.03976013	95.11818079	91.37457988	87.79999097
190529A00050	5/29/2019	2.31	11/29/2021	5/29/2019	103.72633	103.726327	103.726327	103.0002593	101.1831107	99.40663981	97.66978873	95.9714454	94.31053601
190529A00069	5/29/2019	2.34	11/29/2021	5/29/2019	103.78183	103.7818339	103.7818339	103.0555059	101.2378359	99.46085196	97.72349737	96.02465976	94.36326508
190530A00007	5/30/2019	2.35	11/30/2021	5/30/2019	103.806	103.8060017	103.8060017	103.0791743	101.2585773	99.47878203	97.73873345	96.03731861	94.37346261
190530A00031	5/30/2019	2.21	5/31/2022	5/30/2019	104.93651	104.9365053	104.9365053	104.0786613	101.7501925	99.48526254	97.28188325	95.13805458	93.05185279
190530A00062	5/30/2019	2.5	6/15/2020	5/30/2019	100.85015	100.8501528	100.8501528	100.6275944	100.2520097	99.87923504	99.50923888	99.14199013	98.77745818
190531A00007	6/5/2019	2.14	6/4/2021	6/5/2019	102.74879	102.7487866	102.7487866	102.1389746	100.8026313	99.48867174	98.19789238	96.92973295	95.68365076
190603A00033	6/3/2019	2.05	6/3/2024	6/3/2019	108.48115	108.4811468	108.4811468	106.839759	102.5100112	98.38013133	94.43997147	90.67987353	87.09071877
190603A00046	6/3/2019	2.17	6/3/2022	6/3/2019	104.42894	104.4289385	104.4289385	103.5741981	101.2523246	98.99389007	96.79690554	94.65937205	92.57936699
190604A00007	6/4/2019	2.23	7/8/2021	6/4/2019	102.82247	102.8224728	102.8224728	102.1797999	100.7540879	99.35512986	97.9823282	96.6350135	95.31253876
190611A00004	6/11/2019	2.33	6/11/2020	6/11/2019	100.76288	100.7628826	100.7628826	100.5467694	100.182327	99.82053169	99.46135469	99.10476755	98.75074224
190612A00011	6/12/2019	2.2	6/30/2022	6/12/2019	104.64131	104.6413133	104.6413133	103.7639233	101.3671497	99.03774326	96.77352542	94.57231429	92.43201394
190613A00046	6/13/2019	2.2	6/14/2021	6/13/2019	102.66577	102.6657692	102.6657692	102.0476524	100.6877672	99.35156032	98.03930429	96.75041093	95.48431088
190614A00005	6/14/2019	1.99	6/14/2022	6/14/2019	104.48971	104.4897067	104.4897067	103.6230373	101.2620936	98.96659194	96.73444066	94.56354948	92.45190926
190617A00027	6/17/2019	2.21	6/16/2023	6/17/2019	106.51567	106.515671	106.515671	105.283105	101.9329432	98.70715889	95.60058201	92.60820052	89.7252393
190621A00041	6/21/2019	2.12	6/21/2022	6/21/2019	104.4011	104.4010953	104.4010953	103.5321745	101.1624034	98.85863828	96.61876263	94.44065775	92.32228759
190625A00007	6/25/2019	2.06	6/25/2021	6/25/2019	102.51172	102.5117231	102.5117231	101.8832841	100.494503	99.1309476	97.79230676	96.47795722	95.18729605
190625A00027	6/25/2019	2.04	6/24/2022	6/25/2019	104.22243	104.2224301	104.2224301	103.3520935	100.9764619	98.66722547	96.42224456	94.23938144	92.11658207
190627A00009	6/27/2019	1.93	6/27/2023	6/27/2019	106.241	106.2410044	106.2410044	104.9942999	101.6040156	98.34106072	95.20007098	92.1758624	89.26349887
190627A00038	6/27/2019	2.12	6/27/2023	6/27/2019	106.26431	106.2643063	106.2643063	105.0228276	101.6477966	98.39915175	95.27158986	92.25997741	89.35942565
190628A00024	6/28/2019	2.09	6/28/2022	6/28/2019	104.36325	104.3632505	104.3632505	103.4889682	101.1009294	98.77989947	96.52371132	94.33019882	92.19728105
190701A00006	7/1/2019	2.11	7/1/2021	7/1/2019	102.61278	102.612777	102.612777	101.9779253	100.5720674	99.19225948	97.83792596	96.50842312	95.20312849
190701A00023	7/1/2019	1.95	7/1/2024	7/1/2019	108.18361	108.1836117	108.1836117	106.507971	102.1109912	97.92042792	93.92562044	90.11643871	86.48332797
190711A00022	7/11/2019	2	7/11/2023	7/11/2019	106.55511	106.5551083	106.5551083	105.2916144	101.8596134	98.5578181	95.38068488	92.32285917	89.37924529
190529A00009	5/29/2019	2.35	5/31/2022	5/29/2019	104.83743	104.8374295	104.8374295	103.9828958	101.6642451	99.40870402	97.21430863	95.07907669	93.00110138
190529A00032	5/29/2019	2.38	5/29/2024	5/29/2019	109.08659	109.0865882	109.0865882	107.4553001	103.1488126	99.03976013	95.11818079	91.37457988	87.79999097
190529A00059	5/29/2019	2.32	5/28/2021	5/29/2019	102.73607	102.7360701	102.7360701	102.1317717	100.8198295	99.52780198	98.25911961	97.01318797	95.78943265

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190529A00062	5/29/2019	2.32	5/28/2021	5/29/2019	102.73607	102.7360701	102.7360701	102.1317717	100.8198295	99.52780198	98.25911961	97.01318797	95.78943265
190530A00002	5/30/2019	2.24	5/28/2021	5/30/2019	102.8436	102.8435988	102.8435988	102.2374847	100.9214637	99.62546804	98.35293563	97.103268	95.8758869
190530A00005	5/30/2019	2.36	5/28/2021	5/30/2019	102.78963	102.7896309	102.7896309	102.1851231	100.8728092	99.58041449	98.31137117	97.06508459	95.84098016
190530A00045	5/30/2019	2.44	5/30/2024	5/30/2019	109.35408	109.3540803	109.3540803	107.719228	103.4044937	99.28760758	95.35859148	91.60793049	88.02663878
190531A00003	5/31/2019	2.31	10/29/2021	5/31/2019	103.57185	103.5718471	103.5718471	102.8585079	101.126263	99.43128443	97.77247701	96.14874714	94.5590457
190603A00012	6/3/2019	2.44	6/3/2020	6/3/2019	100.75458	100.7545804	100.7545804	100.5511372	100.208611	99.86841515	99.53052607	99.19492033	98.86157484
190603A00048	6/3/2019	2.24	6/3/2024	6/3/2019	108.50284	108.5028408	108.5028408	106.8699166	102.5629501	98.45417466	94.53356205	90.79155852	87.21914246
190604A00009	6/4/2019	2.23	6/4/2021	6/4/2019	102.6534	102.6534023	102.6534023	102.0453752	100.7131096	99.40310804	98.11616984	96.85173852	95.6092751
190605A00035	6/5/2019	2.18	6/5/2023	6/5/2019	106.35668	106.3566807	106.3566807	105.1358489	101.817506	98.6213627	95.54238187	92.57567764	89.71659314
190606A00028	6/6/2019	2.74	6/6/2029	6/6/2019	122.75099	122.7509929	122.7509929	115.6195082	106.4046868	98.01567914	90.37382143	83.40823818	77.05512322
190611A00015	6/11/2019	2.32	6/11/2024	6/11/2019	108.89703	108.8970286	108.8970286	107.2503963	102.9140369	98.77805164	94.83225926	91.0669604	87.47299852
190620A00010	6/20/2019	2.04	6/20/2022	6/20/2019	104.20324	104.2032373	104.2032373	103.3361842	100.9714805	98.67259034	96.43740272	94.26380714	92.14977535
190620A00024	6/20/2019	2.05	6/21/2021	6/20/2019	102.47808	102.4780848	102.4780848	101.8537896	100.4762373	99.12333518	97.79498204	96.4905679	95.20950253
190624A00008	6/24/2019	2.08	6/24/2022	6/24/2019	104.31929	104.3192909	104.3192909	103.4484281	101.0716212	98.76123318	96.5151254	94.33115935	92.2072803
190624A00052	6/24/2019	1.89	6/24/2022	6/24/2019	104.2988	104.2988011	104.2988011	103.4251633	101.0395993	98.72088095	96.46684248	94.27532701	92.14426231
190625A00017	6/25/2019	2.02	12/15/2022	6/25/2019	105.00153	105.001531	105.001531	103.9637875	101.1209914	98.37035727	95.70849454	93.13207834	90.63792642
190625A00024	6/25/2019	2.26	6/25/2025	6/25/2019	110.61411	110.6141067	110.6141067	108.2472197	102.901954	97.85431788	93.0863119	88.58103095	84.32267438
190626A00015	6/26/2019	2.15	6/26/2024	6/26/2019	108.18031	108.1803077	108.1803077	106.5208017	102.1620423	98.00663786	94.04415337	90.26466167	86.65879613
190701A00008	7/3/2019	2.1	7/3/2023	7/3/2019	106.22538	106.2253834	106.2253834	104.978111	101.5881489	98.32571284	95.18542572	92.16208513	89.25073793
190701A00017	7/1/2019	1.9	7/1/2022	7/1/2019	104.35759	104.357588	104.357588	103.4779079	101.0728903	98.73575505	96.46428582	94.25627681	92.10960946
190703A00004	7/3/2019	2.08	7/5/2022	7/3/2019	104.37341	104.3734145	104.3734145	103.4929048	101.0864614	98.74804819	96.47544619	94.26644008	92.1189024
190530A00026	5/30/2019	2.36	5/26/2021	5/30/2019	102.77807	102.7780688	102.7780688	102.1736297	100.8679853	99.58106208	98.31790485	97.07788579	95.8603992
190530A00047	5/30/2019	2.36	5/28/2021	5/30/2019	102.78963	102.7896309	102.7896309	102.1851231	100.8728092	99.58041449	98.31137117	97.06508459	95.84098016
190603A00003	6/3/2019	2.05	6/3/2024	6/3/2019	108.48115	108.4811468	108.4811468	106.839759	102.5100112	98.38013133	94.43997147	90.67987353	87.09071877
190603A00005	6/3/2019	2.25	6/3/2024	6/3/2019	108.54658	108.5465774	108.5465774	106.9132854	102.6053839	98.49570412	94.57421708	90.83136775	87.25813336
190603A00019	6/3/2019	2.19	6/3/2021	6/3/2019	102.59378	102.5937825	102.5937825	101.9869947	100.6579025	99.35092856	98.06692315	96.80533312	95.56562263
190603A00032	6/3/2019	1.98	6/3/2022	6/3/2019	104.40905	104.4090531	104.4090531	103.5516311	101.2213146	98.9548411	96.75019599	94.60536319	92.51840386
190604A00047	6/4/2019	2.31	12/4/2020	6/4/2019	101.74615	101.7461496	101.7461496	101.2261137	100.3815239	99.55099189	98.73416893	97.9307177	97.14031187
190605A00012	6/5/2019	1.92	6/6/2022	6/5/2019	104.28188	104.2818817	104.2818817	103.4227402	101.0858486	98.813199	96.60275433	94.45247953	92.36041778
190605A00020	6/5/2019	2.19	2/5/2024	6/5/2019	107.66632	107.666324	107.666324	106.1803987	102.2018535	98.39487853	94.75125631	91.26312452	87.92304138
190607A00009	6/7/2019	2.14	6/7/2022	6/7/2019	104.37833	104.3783255	104.3783255	103.5206707	101.1886727	98.92066989	96.71464486	94.56857267	92.48050612
190610A00017	6/10/2019	2.29	6/10/2024	6/10/2019	108.75971	108.7597062	108.7597062	107.1155321	102.7847406	98.65398724	94.71311178	90.95243565	87.36282163
190613A00051	6/13/2019	2.29	12/14/2020	6/13/2019	101.78527	101.7852706	101.7852706	101.2473345	100.3757361	99.51911334	98.67708255	97.84927306	97.03532669

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190614A00013	6/14/2019	2.15	6/15/2020	6/14/2019	100.76692	100.7669246	100.7669246	100.5441503	100.1682083	99.79508605	99.42475194	99.05717461	98.69232324
190614A00018	6/14/2019	2.21	6/14/2021	6/14/2019	102.67963	102.6796298	102.6796298	102.0614577	100.7014731	99.36516808	98.05281558	96.76382736	95.49763401
190620A00057	6/25/2019	2.09	5/15/2023	6/25/2019	105.9492	105.949202	105.949202	104.7528323	101.4955663	98.35649731	95.33073817	92.41357621	89.60052309
190621A00019	6/21/2019	2.12	6/21/2021	6/21/2019	102.57646	102.5764573	102.5764573	101.9517668	100.5735	99.21989255	97.89084607	96.58575023	95.30401445
190621A00021	6/21/2019	2.12	6/21/2022	6/21/2019	104.4011	104.4010953	104.4010953	103.5321745	101.1624034	98.85863828	96.61876263	94.44065775	92.32228759
190621A00040	6/21/2019	2.12	6/21/2021	6/21/2019	102.57646	102.5764573	102.5764573	101.9517668	100.5735	99.21989255	97.89084607	96.58575023	95.30401445
190625A00008	6/25/2019	2.04	6/27/2022	6/25/2019	104.23682	104.2368247	104.2368247	103.3640257	100.9802	98.66320705	96.41088568	94.22107761	92.09170933
190625A00016	6/25/2019	2.13	6/25/2024	6/25/2019	108.08661	108.0866068	108.0866068	106.4291918	102.0750659	97.9239877	93.9655426	90.18982324	86.58748138
190701A00024	7/1/2019	2.24	7/1/2020	7/1/2019	100.84036	100.8403573	100.8403573	100.5924771	100.173199	99.75740558	99.34505369	98.93610076	98.53050497
190702A00002	7/2/2019	2.16	7/2/2024	7/2/2019	108.25513	108.255134	108.255134	106.5869172	102.2110936	98.04011247	94.0634265	90.27100346	86.65337967
190703A00021	7/3/2019	2.11	7/2/2021	7/3/2019	102.61784	102.6178362	102.6178362	101.9819691	100.5734607	99.19110019	97.83430792	96.50243669	95.19486064
190716A00046	7/16/2019	2.19	7/18/2022	7/16/2019	104.7112	104.7112019	104.7112019	103.8169241	101.3726634	98.99843114	96.69191093	94.45079124	92.27285364
190731A00028	7/31/2019	1.93	7/29/2022	7/31/2019	104.57162	104.5716162	104.5716162	103.6649573	101.1844488	98.77603889	96.43729463	94.16580393	91.95925334
190805A00008	8/5/2019	1.88	8/4/2023	8/5/2019	105.60593	105.6059271	105.6059271	104.3294553	100.8684707	97.5408577	94.34083901	91.26284814	88.30159226
190807A00023	8/7/2019	1.77	8/7/2024	8/7/2019	106.71009	106.7100942	106.7100942	105.0024994	100.5689181	96.34759135	92.32733071	88.49753048	84.84819936
190809A00013	8/9/2019	1.91	8/10/2020	8/9/2019	100.95497	100.9549705	100.9549705	100.6404368	100.1110855	99.58730025	99.06899342	98.55607925	98.04847376
190809A00020	8/9/2019	2.44	8/9/2034	8/9/2019	133.90463	133.9046259	132.1677492	116.9102403	103.1754721	91.25807923	80.90520185	71.9003932	64.05827763
190813A00016	8/13/2019	1.88	8/13/2024	8/13/2019	107.23692	107.2369243	107.2369243	105.5158664	101.0553947	96.80890256	92.76508656	88.91323111	85.24324308
190813A00020	8/13/2019	1.89	8/12/2022	8/13/2019	104.07514	104.0751352	104.0751352	103.1615042	100.6603431	98.2325069	95.87549025	93.58681697	91.36411335
190815A00015	8/15/2019	1.82	8/15/2022	8/15/2019	103.90882	103.9088206	103.9088206	102.9933807	100.4865302	98.05334521	95.69129833	93.397896	91.17074819
190816A00025	8/16/2019	1.89	3/16/2021	8/16/2019	101.82257	101.8225741	101.8225741	101.2225935	100.114914	99.02042969	97.94978265	96.90220061	95.87694434
190820A00021	8/20/2019	2.13	8/20/2029	8/20/2019	117.41948	117.4194786	117.4194786	110.1467911	101.0026777	92.70059272	85.15841529	78.30236501	72.06618118
190820A00038	8/20/2019	1.76	8/20/2024	8/20/2019	106.71692	106.7169198	106.7169198	104.9900861	100.5235491	96.27214622	92.22446629	88.36970048	84.69767016
190821A00028	8/21/2019	1.8	8/21/2023	8/21/2019	105.39331	105.3933143	105.3933143	104.1010197	100.6000208	97.23528156	94.00083197	90.89093166	87.90012575
190826A00029	8/26/2019	1.53	8/26/2024	8/26/2019	106.52557	106.5255695	106.5255695	104.7818436	100.2793621	95.99510558	91.91742412	88.03529784	84.33835287
190826A00034	8/26/2019	1.9	8/24/2029	8/26/2019	117.18554	117.1855386	117.1855386	109.8110586	100.5794201	92.20319827	84.59857153	77.69027613	71.41074987
190826A00063	8/26/2019	2.05	8/28/2028	8/26/2019	114.97423	114.9742317	114.9742317	108.9666635	100.7205521	93.16556542	86.24015073	79.88847159	74.05991291
190828A00020	8/28/2019	1.95	5/28/2027	8/28/2019	112.07377	112.0737669	112.0737669	107.5079246	100.4226823	93.85466198	87.76353345	82.11224335	76.86679187
190829A00031	8/29/2019	1.54	8/29/2024	8/29/2019	106.5836	106.5835999	106.5835999	104.8348964	100.3234842	96.03101713	91.94579159	88.05673781	84.35343586
190829A00045	8/29/2019	1.9	8/28/2026	8/29/2019	110.52422	110.524223	110.524223	106.8405612	100.4534277	94.49043526	88.92130561	83.71800908	78.85464849
190829A00050	8/29/2019	1.73	8/29/2024	8/29/2019	106.6148	106.6147964	106.6147964	104.8755941	100.3886755	96.11881296	92.05444264	88.18461716	84.49903022
190904A00001	9/4/2019	1.5	9/4/2024	9/4/2019	106.42123	106.4212324	106.4212324	104.6650527	100.1417513	95.83867715	91.74401552	87.84660049	84.13592376
190905A00003	9/5/2019	1.76	9/5/2024	9/5/2019	106.78121	106.7812077	106.7812077	105.0302276	100.5215352	96.23165905	92.14889775	88.26218117	84.56108983

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190910A00030	9/10/2019	1.86	9/10/2024	9/10/2019	107.2657	107.2656974	107.2656974	105.5030581	100.9704039	96.65813466	92.55443732	88.64813986	84.92872854
190913A00011	9/13/2019	2.02	9/13/2022	9/13/2019	104.55969	104.5596886	104.5596886	103.6146777	101.0226975	98.50850015	96.06933801	93.7025167	91.40545714
190916A00009	9/16/2019	2.04	9/16/2022	9/16/2019	104.62697	104.6269683	104.6269683	103.6789763	101.0780314	98.55532171	96.10807322	93.73356914	91.4292093
191206A00009	12/6/2019	2.87	12/4/2037	12/6/2019	145.15568	145.1556808	139.8664626	121.1995785	104.921339	91.17457667	79.54373999	69.68381619	61.30809363
191210A00010	12/10/2019	1.91	12/10/2020	12/10/2019	101.43177	101.431766	101.431766	100.9019481	100.0427432	99.19812615	98.36772777	97.55119123	96.74817154
191217A00012	12/20/2019	2.03	12/20/2024	12/20/2019	108.48456	108.4845582	108.4845582	106.5442922	101.7280065	97.15777366	92.81986516	88.7013116	84.78993113
191223A00022	12/23/2019	1.93	12/30/2021	12/23/2019	103.16359	103.1635949	103.1635949	102.423485	100.5308142	98.68227667	96.87665976	95.11271418	93.3892352
200115A00017	1/15/2020	1.88	1/17/2023	1/15/2020	104.73982	104.7398196	104.7398196	103.6675162	100.7439098	97.9178728	95.18569675	92.5437625	89.98861103
200122A00035	1/22/2020	1.94	1/22/2025	1/22/2020	108.18976	108.1897617	108.1897617	106.189055	101.298283	96.66176904	92.26507117	88.09456878	84.13748326
200124A00008	1/24/2020	1.92	1/22/2027	1/24/2020	112.69671	112.696712	112.696712	108.4635451	101.6053826	95.22818554	89.29582288	83.77498467	78.63501568
200127A00016	1/27/2020	1.81	1/27/2025	1/27/2020	107.55904	107.5590389	107.5590389	105.5546342	100.6669448	96.03424273	91.64199437	87.47650119	83.52491397
200130A00015	1/30/2020	1.63	7/30/2021	1/30/2020	102.28998	102.2899811	102.2899811	101.6259436	100.1427402	98.68857453	97.26273583	95.86447017	94.49304987
200130A00025	1/30/2020	1.54	1/30/2023	1/30/2020	104.31582	104.3158201	104.3158201	103.2274237	100.2642653	97.40146139	94.63512682	91.96148857	89.37694315
200131A00031	1/31/2020	1.74	1/31/2024	1/31/2020	105.82544	105.8254426	105.8254426	104.3588222	100.4304469	96.67146151	93.07374907	89.62955873	86.33155317
200131A00047	1/31/2020	1.68	1/31/2023	1/31/2020	104.19501	104.1950092	104.1950092	103.1105378	100.159329	97.307894	94.55238111	91.88904432	89.31430565
190717A00007	7/17/2019	2.18	10/14/2022	7/17/2019	105.14381	105.1438067	105.1438067	104.1667958	101.4848288	98.88532871	96.36527947	93.92175016	91.55193955
190726A00005	7/26/2019	1.97	7/26/2022	7/26/2019	104.65717	104.6571697	104.6571697	103.7527985	101.2790088	98.87689009	96.54403344	94.27804841	92.07664198
190729A00009	7/29/2019	2.19	7/29/2024	7/29/2019	108.57501	108.5750085	108.5750085	106.8644499	102.4123192	98.17182093	94.13188109	90.28198013	86.61220461
190729A00017	7/29/2019	1.97	7/29/2021	7/29/2019	102.80002	102.8000177	102.8000177	102.1348351	100.6502739	99.19470481	97.76743325	96.36770721	94.99480087
190801A00007	8/1/2019	2.17	8/2/2021	8/1/2019	102.86596	102.8659607	102.8659607	102.1990114	100.7076337	99.24545848	97.81178946	96.40586575	95.02695304
190802A00029	8/2/2019	2	8/2/2022	8/2/2019	104.30924	104.3092408	104.3092408	103.4034567	100.9254248	98.5195028	96.18325535	93.91426646	91.71021905
190805A00037	8/5/2019	2.17	8/6/2029	8/5/2019	119.68864	119.6886436	119.6886436	112.317471	103.013733	94.56524744	86.8887244	79.90931794	73.55980123
190806A00027	8/6/2019	1.71	8/7/2023	8/6/2019	105.66369	105.6636901	105.6636901	104.3780402	100.8918873	97.54068663	94.31855954	91.21985134	88.23918661
190807A00014	8/7/2019	1.75	8/7/2023	8/7/2019	105.15786	105.1578631	105.1578631	103.8814965	100.4206174	97.09341913	93.89409318	90.81704964	87.85697405
190807A00022	8/7/2019	1.76	1/17/2023	8/7/2019	104.3808	104.3807985	104.3807985	103.3107301	100.392456	97.57162328	94.84452299	92.20754015	89.65721978
190807A00036	8/7/2019	1.75	8/7/2023	8/7/2019	105.15786	105.1578631	105.1578631	103.8814965	100.4206174	97.09341913	93.89409318	90.81704964	87.85697405
190807A00060	8/7/2019	1.95	2/8/2021	8/7/2019	101.73637	101.7363718	101.7363718	101.1370075	100.1162029	99.11521872	98.13417788	97.17248892	96.22958357
190808A00012	8/8/2019	1.89	8/8/2024	8/8/2019	107.26069	107.2606938	107.2606938	105.5468193	101.0984743	96.86302083	92.82924055	88.98649502	85.32476231
190809A00012	8/9/2019	1.69	8/9/2024	8/9/2019	107.19137	107.1913714	107.1913714	105.4671201	100.9930291	96.73386253	92.67825074	88.8154225	85.13523267
190814A00003	8/14/2019	2.01	8/14/2029	8/14/2019	118.19468	118.1946777	118.1946777	110.831786	101.5770087	93.17645842	85.54669189	78.61275474	72.30734179
190814A00005	8/14/2019	1.65	8/14/2024	8/14/2019	107.02951	107.0295073	107.0295073	105.2992163	100.8159768	96.5486569	92.485804	88.616573	84.93075075
190815A00008	8/15/2019	1.82	8/15/2022	8/15/2019	103.90882	103.9088206	103.9088206	102.9933807	100.4865302	98.05334521	95.69129833	93.397896	91.17074819
190816A00014	8/16/2019	1.77	8/16/2024	8/16/2019	106.74658	106.7465786	106.7465786	105.0253848	100.5682736	96.32543276	92.28551897	88.43778522	84.77210978

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190816A00039	8/16/2019	1.91	2/16/2021	8/16/2019	101.73055	101.730547	101.730547	101.1311085	100.0894842	99.06781797	98.06693153	97.08619581	96.12500696
190819A00001	8/19/2019	1.82	8/19/2021	8/19/2019	102.40579	102.4057946	102.4057946	101.7304567	100.1978387	98.69571124	97.22330406	95.77980385	94.3644265
190819A00020	8/19/2019	1.79	8/19/2022	8/19/2019	103.84841	103.8484078	103.8484078	102.9296524	100.4131638	97.97083977	95.60012489	93.29850094	91.06355468
190819A00027	8/19/2019	2.03	8/19/2020	8/19/2019	100.99478	100.9947821	100.9947821	100.6651284	100.1120444	99.56503285	99.02399389	98.48883003	97.95944583
190820A00012	8/20/2019	1.76	8/19/2022	8/20/2019	103.77113	103.7711307	103.7711307	102.8528111	100.3373171	97.89596672	95.52620369	93.22551053	90.99147466
190820A00019	8/20/2019	1.76	8/21/2023	8/20/2019	105.24988	105.2498773	105.2498773	103.9586049	100.4601407	97.09786553	93.86581038	90.75823743	87.76969417
190924A00026	9/24/2019	1.9	7/22/2022	9/24/2019	104.00752	104.0075216	104.0075216	103.1134738	100.6676616	98.2922884	95.98500045	93.74346272	91.56543466
190924A00033	9/24/2019	1.84	9/30/2022	9/24/2019	104.15577	104.1557654	104.1557654	103.1983994	100.566131	98.01399397	95.53908667	93.13859353	90.8098217
190925A00018	9/25/2019	1.7	9/25/2024	9/25/2019	107.44247	107.4424731	107.4424731	105.6459731	101.0443335	96.66880225	92.50711342	88.54769813	84.77967652
191001A00006	10/1/2019	1.83	6/18/2024	10/1/2019	106.72756	106.7275622	106.7275622	105.0907235	100.7841414	96.67796074	92.76192399	89.02628202	85.4618339
191001A00023	10/1/2019	1.85	9/27/2024	10/1/2019	107.24351	107.2435128	107.2435128	105.4566123	100.8816963	96.53110882	92.39270449	88.45502312	84.70728604
191002A00015	10/2/2019	1.78	10/3/2022	10/2/2019	104.00658	104.0065774	104.0065774	103.0471063	100.4090729	97.85156072	95.37164186	92.96647966	90.63336152
191003A00019	10/3/2019	1.71	9/27/2024	10/3/2019	106.58686	106.5868552	106.5868552	104.8058449	100.2459429	95.90984522	91.78542388	87.8612407	84.1265379
191003A00022	10/3/2019	1.72	2/3/2023	10/3/2019	104.32777	104.3277706	104.3277706	103.2400462	100.2782545	97.41678536	94.65175775	91.97939726	89.39609917
191004A00012	10/4/2019	1.78	10/4/2024	10/4/2019	106.94346	106.943464	106.943464	105.1482757	100.562448	96.2023712	92.0557699	88.11107148	84.35739426
191011A00013	10/11/2019	1.88	10/11/2022	10/11/2019	104.3116	104.3116028	104.3116028	103.3424332	100.6795608	98.09846448	95.5961496	93.16971611	90.81639196
191015A00029	10/15/2019	1.91	10/15/2024	10/15/2019	107.60418	107.6041813	107.6041813	105.7849476	101.1563678	96.75667724	92.57336596	88.59464532	84.80943457
191023A00006	10/23/2019	1.95	10/23/2024	10/23/2019	107.8299	107.8298979	107.8298979	105.9954571	101.3416025	96.91872679	92.71415489	88.71594825	84.91288827
191024A00016	10/25/2019	1.91	2/16/2021	10/25/2019	101.73055	101.730547	101.730547	101.1311085	100.0894842	99.06781797	98.06693153	97.08619581	96.12500696
191106A00012	11/6/2019	2.02	10/11/2024	11/6/2019	108.10672	108.1067158	108.1067158	106.2895169	101.6593841	97.25759782	93.07171372	89.08999656	85.30141415
191114A00009	11/18/2019	1.94	8/16/2023	11/18/2019	105.87268	105.8726776	105.8726776	104.5820699	101.0854829	97.72450665	94.49322544	91.38594314	88.39724582
191121A00009	11/21/2019	2.55	11/21/2036	11/21/2019	141.04562	141.0456202	136.837235	119.0296143	103.4094917	90.12363062	78.8052044	69.14697952	60.89139445
191206A00008	12/6/2019	2.44	12/6/2030	12/6/2019	123.09595	123.0959527	123.0959527	113.675418	103.2596802	93.91133008	85.51475972	77.96737031	71.1781236
191209A00009	12/9/2019	1.91	12/9/2021	12/9/2019	103.03094	103.0309415	103.0309415	102.3028621	100.4661112	98.6710602	96.91659666	95.20157043	93.52487116
191223A00043	12/23/2019	1.77	3/23/2021	12/23/2019	101.91117	101.9111661	101.9111661	101.3093203	100.1831964	99.0672886	97.97612529	96.90889066	95.86480444
191223A00056	12/23/2019	2.46	12/14/2029	12/23/2019	121.24404	121.2440434	121.2440434	113.4221903	103.8525096	95.1854332	87.33074999	80.20762292	73.74365034
200108A00021	1/13/2020	1.97	1/13/2025	1/13/2020	108.29897	108.2989722	108.2989722	106.3148003	101.4435765	96.82437578	92.44295446	88.28587201	84.34051463
200109A00012	1/14/2020	1.94	12/15/2022	1/14/2020	104.76945	104.7694521	104.7694521	103.7331226	100.8936732	98.14630759	95.48763434	92.91433117	90.42321829
200114A00006	1/15/2020	1.99	1/15/2025	1/15/2020	108.40794	108.407935	108.407935	106.418815	101.5400094	96.91384197	92.52602073	88.36306001	84.41230456
200115A00015	1/17/2020	1.88	1/17/2023	1/17/2020	104.73982	104.7398196	104.7398196	103.6675162	100.7439098	97.9178728	95.18569675	92.5437625	89.98861103
190820A00020	8/20/2019	1.76	8/20/2024	8/20/2019	106.71692	106.7169198	106.7169198	104.9900861	100.5235491	96.27214622	92.22446629	88.36970048	84.69767016
190820A00030	8/20/2019	1.76	4/16/2024	8/20/2019	106.2105	106.210504	106.210504	104.6574239	100.5216528	96.57171424	92.79827369	89.19249179	85.74602334
190821A00009	8/21/2019	1.79	8/22/2022	8/21/2019	103.86081	103.8608081	103.8608081	102.9392418	100.4147864	97.9648871	95.58696762	93.27849067	91.03702507

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190821A00027	8/21/2019	1.79	8/22/2022	8/21/2019	103.86081	103.8608081	103.8608081	102.9392418	100.4147864	97.9648871	95.58696762	93.27849067	91.03702507
190823A00002	8/23/2019	1.89	8/24/2020	8/23/2019	101.01323	101.013235	101.013235	100.6743716	100.1067651	99.54554998	98.99061881	98.44186634	97.89918973
190826A00030	8/26/2019	1.72	8/26/2026	8/26/2019	110.62947	110.6294711	110.6294711	106.9167617	100.4828098	94.47743688	88.86996989	83.63202555	78.73738432
190826A00057	8/26/2019	1.87	8/26/2025	8/26/2019	108.76149	108.7614934	108.7614934	106.24584	100.7984829	95.66367726	90.82195224	86.25508463	81.9460762
190828A00019	8/28/2019	2	3/28/2028	8/28/2019	113.84276	113.8427582	113.8427582	108.3291722	100.4739072	93.24899217	86.60053088	80.47947837	74.84120159
190905A00035	9/5/2019	1.82	9/7/2021	9/5/2019	102.48647	102.4864742	102.4864742	101.8006358	100.2166939	98.66486309	97.14429365	95.65410624	94.19345429
190906A00004	9/6/2019	1.78	9/6/2022	9/6/2019	103.89639	103.896389	103.896389	102.96122	100.3967831	97.90893646	95.49498932	93.15230388	90.87835433
190910A00009	9/10/2019	1.86	9/10/2020	9/10/2019	101.07824	101.0782441	101.0782441	100.7094039	100.0954322	99.48893521	98.88977704	98.29782493	97.71294932
190912A00028	9/12/2019	1.94	9/12/2024	9/12/2019	107.64628	107.6462777	107.6462777	105.8773067	101.3308167	97.00548794	92.88945775	88.971507	85.24107827
190912A00033	9/12/2019	1.77	9/12/2023	9/12/2019	106.04175	106.0417477	106.0417477	104.7172273	101.1299241	97.68437448	94.374252	91.19349727	88.13635761
190913A00012	9/13/2019	2.04	9/13/2023	9/13/2019	106.36416	106.3641605	106.3641605	105.0423652	101.4637975	98.02624653	94.7234419	91.54936718	88.49830992
190916A00008	9/16/2019	2.05	9/16/2021	9/16/2019	102.90309	102.9030948	102.9030948	102.2117339	100.5997989	99.02086595	97.47404584	95.9584231	94.4731169
190917A00022	9/17/2019	2.02	9/16/2022	9/17/2019	104.57391	104.5739069	104.5739069	103.6262197	101.0259774	98.50395494	96.05737808	93.68353049	91.37981245
190920A00018	9/20/2019	1.98	9/20/2022	9/20/2019	104.4863	104.4863009	104.4863009	103.5356596	100.9258201	98.39475406	95.93965109	93.55776636	91.24647343
190926A00007	9/26/2019	1.88	9/26/2022	9/26/2019	104.24601	104.2460138	104.2460138	103.2915773	100.6688237	98.12564534	95.65917674	93.26663105	90.94534246
190926A00015	9/26/2019	2.32	11/26/2030	9/26/2019	121.74328	121.7432756	121.7432756	112.4120316	102.0840661	92.81406019	84.48754446	77.00292974	70.27005841
190926A00017	9/26/2019	2.23	9/26/2029	9/26/2019	118.56612	118.5661169	118.5661169	111.1258669	101.8488248	93.43269626	85.79278932	78.85313502	72.54557126
190930A00008	9/30/2019	1.9	10/10/2023	9/30/2019	105.97222	105.9722218	105.9722218	104.6265898	100.9843686	97.48818146	94.13139005	90.90766139	87.81098897
191003A00033	10/3/2019	1.54	10/3/2022	10/3/2019	103.84717	103.8471691	103.8471691	102.8851819	100.238675	97.67318812	95.18575802	92.77352405	90.43375111
191004A00001	10/4/2019	2.47	10/4/2034	10/4/2019	131.49849	131.4984916	129.6618441	114.6498183	101.1423386	89.43250466	79.26856055	70.43531748	62.74867105
191009A00028	10/9/2019	1.76	10/9/2024	10/9/2019	106.86925	106.8692525	106.8692525	105.0665247	100.4699039	96.10015446	91.94490498	87.99249772	84.23197294
190327A00041	3/27/2019	2.44	3/26/2021	3/27/2019	102.50764	102.5076419	102.5076419	101.9050874	100.7717152	99.64724573	98.54780969	97.47257802	96.42075795
190328A00025	3/28/2019	2.51	7/23/2021	3/28/2019	103.32161	103.3216125	103.3216125	102.6619397	101.1932185	99.75278978	98.34000788	96.9541467	95.59450507
190401A00005	4/1/2019	2.54	4/1/2021	4/1/2019	102.6616	102.6616006	102.6616006	102.0584032	100.9108332	99.76988664	98.65467865	97.56434575	96.4980627
190401A00008	4/1/2019	2.62	4/1/2024	4/1/2019	109.76322	109.7632232	109.7632232	108.1986815	104.029076	100.0442971	96.23520545	92.5930991	89.10975723
190402A00003	4/2/2019	2.49	4/2/2020	4/2/2019	100.40806	100.4080648	100.4080648	100.3073279	100.1354391	99.96414128	99.79343137	99.62330636	99.45376323
190402A00045	4/2/2019	2.49	4/2/2020	4/2/2019	100.40806	100.4080648	100.4080648	100.3073279	100.1354391	99.96414128	99.79343137	99.62330636	99.45376323
190411A00017	4/15/2019	2.65	4/15/2024	4/15/2019	109.97948	109.9794759	109.9794759	108.3967174	104.1853526	100.1621029	96.3175847	92.64287504	89.12954886
190411A00029	4/11/2019	2.46	4/11/2024	4/11/2019	109.93847	109.9384688	109.9384688	108.3526862	104.1307286	100.0975234	96.24364639	92.56014218	89.03855481
190412A00005	4/12/2019	2.54	4/13/2020	4/12/2019	100.49059	100.4905896	100.4905896	100.3709574	100.1686219	99.96711579	99.76643403	99.56657147	99.36752301
190415A00020	4/15/2019	2.65	5/1/2020	4/15/2019	100.6064	100.6064017	100.6064017	100.4561852	100.2044587	99.95398976	99.70476912	99.45678747	99.21003563
190416A00018	4/16/2019	2.63	4/16/2021	4/16/2019	102.87731	102.8773095	102.8773095	102.2730154	101.0869521	99.90574669	98.75210026	97.62505634	96.52370229
190422A00008	4/22/2019	2.6	4/22/2021	4/22/2019	102.87916	102.8791558	102.8791558	102.2747692	101.0739172	99.87721794	98.70880249	97.56767676	96.45289274

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190424A00007	4/24/2019	2.66	4/24/2024	4/24/2019	110.08012	110.0801186	110.0801186	108.4859599	104.2485463	100.2013517	96.33483403	92.63992767	89.10807566
190426A00032	6/27/2019	2.55	6/27/2022	6/27/2019	105.47602	105.4760196	105.4760196	104.5964748	102.1975646	99.865793	97.59901046	95.39504925	93.25182675
190426A00055	4/26/2019	2.59	4/27/2020	4/26/2019	100.56524	100.5652364	100.5652364	100.4217899	100.1811156	99.94159501	99.70321989	99.46598207	99.22987343
190429A00003	4/29/2019	2.62	10/13/2023	4/29/2019	108.67219	108.6721896	108.6721896	107.3035318	103.604065	100.0526381	96.6425477	93.36737199	90.22102064
190430A00014	4/30/2019	2.59	4/30/2020	4/30/2019	100.58472	100.5847249	100.5847249	100.4361417	100.1871995	99.93948519	99.69298983	99.44770448	99.20362029
190501A00021	5/1/2019	2.57	5/1/2020	5/1/2019	100.58619	100.5861881	100.5861881	100.4359914	100.1842987	99.93386348	99.68467643	99.43672823	99.1900097
190501A00028	5/1/2019	2.42	5/1/2024	5/1/2019	109.89581	109.8958093	109.8958093	108.2865176	104.0118826	99.93054341	96.03273104	92.30917912	88.75114418
190503A00009	5/3/2019	2.57	5/3/2021	5/3/2019	102.91177	102.9117719	102.9117719	102.3071096	101.0764499	99.85079534	98.65376197	97.48435125	96.34161079
190506A00027	5/6/2019	2.38	5/6/2022	5/6/2019	105.18102	105.1810247	105.1810247	104.3432311	102.0775409	99.87212021	97.72500199	95.63424223	93.59797776
190507A00004	5/7/2019	2.88	5/7/2029	5/7/2019	125.81232	125.8123174	125.8123174	118.6278414	109.2604699	100.726549	92.94706671	85.85086553	79.37385992
190510A00017	5/10/2019	2.47	5/10/2021	5/10/2019	102.82739	102.8273858	102.8273858	102.2229528	100.9697374	99.72569056	98.50877141	97.31809207	96.15280343
190510A00018	5/10/2019	2.54	5/10/2023	5/10/2019	107.4107	107.4107019	107.4107019	106.2098268	102.941542	99.79118352	96.75388776	93.82495476	90.99990948
200116A00005	1/16/2020	1.92	7/16/2021	1/16/2020	102.40852	102.4085157	102.4085157	101.7595926	100.316125	98.90015766	97.51105044	96.14810637	94.81065206
200117A00002	1/17/2020	1.72	1/19/2021	1/17/2020	101.57399	101.5739905	101.5739905	100.9860177	100.016913	99.06633497	98.13375615	97.21866902	96.32058495
200122A00034	1/22/2020	1.87	1/22/2024	1/22/2020	106.31078	106.3107819	106.3107819	104.8506378	100.9353627	97.18781559	93.60001535	90.16433213	86.87354054
200130A00028	1/30/2020	1.54	2/7/2023	1/30/2020	104.3471	104.3470985	104.3470985	103.2516994	100.2653251	97.38067131	94.59377214	91.90078106	89.29802555
200131A00005	1/31/2020	1.64	2/1/2021	1/31/2020	101.55029	101.5502938	101.5502938	100.9502415	99.94640968	98.96235205	97.99757642	97.05152076	96.12364466
200131A00038	1/31/2020	1.73	1/30/2025	1/31/2020	107.16884	107.168835	107.168835	105.1623406	100.2768349	95.64674049	91.25747056	87.09528025	83.14727838
191010A00013	10/10/2019	1.59	10/7/2022	10/10/2019	103.99882	103.9988199	103.9988199	103.0319653	100.3729948	97.79567485	95.29700859	92.87410357	90.52419476
191015A00013	10/15/2019	1.72	10/15/2024	10/15/2019	107.62513	107.6251277	107.6251277	105.7946037	101.1376338	96.71173174	92.50422561	88.50318394	84.6973936
191017A00026	10/17/2019	2.3	7/17/2029	10/17/2019	118.85931	118.8593093	118.8593093	111.6759778	102.5412558	94.23876892	86.68812369	79.81700508	73.56040332
191021A00033	10/22/2019	1.9	7/18/2022	10/22/2019	103.98977	103.9897706	103.9897706	103.0994761	100.6641978	98.29876248	96.00084735	93.76814667	91.59844758
191025A00013	10/25/2019	1.98	10/25/2024	10/25/2019	107.98194	107.9819419	107.9819419	106.1428263	101.4804286	97.0496124	92.83765846	88.83258725	85.02314236
191101A00006	11/1/2019	1.69	11/2/2020	11/1/2019	101.20422	101.204223	101.204223	100.7431138	99.9853515	99.23894541	98.50364179	97.77919445	97.06536443
191104A00009	11/4/2019	1.91	11/6/2023	11/4/2019	106.1294	106.1294011	106.1294011	104.7544443	101.0398345	97.47665641	94.05793176	90.77700865	87.62758158
191104A00018	11/5/2019	1.96	11/5/2024	11/5/2019	107.93644	107.936439	107.936439	106.0795645	101.390301	96.93527356	92.7015699	88.67702588	84.85021309
191104A00025	11/4/2019	2.33	8/2/2030	11/4/2019	121.21999	121.2199861	121.2199861	112.4230768	102.3616352	93.30452966	85.14574525	77.79090115	71.15599475
191106A00004	11/6/2019	2.01	11/6/2024	11/6/2019	108.18095	108.1809487	108.1809487	106.3201717	101.6226153	97.15975025	92.91864215	88.88710239	85.05367931
191108A00014	11/8/2019	2.25	11/8/2029	11/8/2019	121.00669	121.0066933	121.0066933	113.2352878	103.6615471	94.98734314	87.12310692	79.98861314	73.51197651
191113A00020	11/13/2019	1.88	11/13/2020	11/13/2019	101.29283	101.2928294	101.2928294	100.8122022	100.0259034	99.25183684	98.48971855	97.73927341	97.00023467
191126A00026	11/26/2019	1.91	11/25/2026	11/26/2019	112.33971	112.3397098	112.3397098	108.3027355	101.5931313	95.34442462	89.52267633	84.09655477	79.03717687
191210A00011	12/10/2019	1.92	12/12/2022	12/10/2019	104.69797	104.6979708	104.6979708	103.6653044	100.8345886	98.09544672	95.4445145	92.87849603	90.39423642
191212A00019	12/13/2019	1.93	12/19/2022	12/13/2019	104.7585	104.7585013	104.7585013	103.7179351	100.8683741	98.11154263	95.4440127	92.86242778	90.36357582

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191218A00014	12/18/2019	2.04	12/18/2024	12/18/2019	108.52424	108.524241	108.524241	106.5872841	101.7750152	97.20832945	92.87353942	88.75771292	84.84870228
191219A00047	12/19/2019	1.76	12/17/2021	12/19/2019	103.12419	103.1241865	103.1241865	102.3891821	100.5245018	98.70270434	96.92262241	95.18305888	93.48285866
191226A00020	12/26/2019	2.44	12/21/2029	12/26/2019	121.08717	121.0871746	121.0871746	113.2411133	103.663807	94.99161003	87.1338936	80.00946389	73.54561475
200106A00019	1/6/2020	1.89	7/16/2024	1/6/2020	107.15987	107.1598745	107.1598745	105.4803275	101.0919571	96.91105482	92.92682656	89.129024	85.50798503
200115A00014	1/17/2020	1.88	9/15/2022	1/17/2020	104.19812	104.1981232	104.1981232	103.2534585	100.6608779	98.14626462	95.70685091	93.33993113	91.04291569
200115A00018	1/15/2020	1.9	1/16/2024	1/15/2020	106.40454	106.4045405	106.4045405	104.9505222	101.0485604	97.31308231	93.73620037	90.31037008	87.02844523
200122A00003	1/22/2020	1.88	1/22/2021	1/22/2020	101.58865	101.5886496	101.5886496	100.9989461	100.0239119	99.06763477	98.1295775	97.20922311	96.30607408
200122A00010	1/22/2020	1.84	1/24/2022	1/22/2020	103.09634	103.0963373	103.0963373	102.3398784	100.382967	98.47324425	96.60935439	94.78991731	93.01360394
200127A00013	1/27/2020	1.56	1/27/2023	1/27/2020	104.36455	104.3645533	104.3645533	103.2792096	100.3230203	97.46668394	94.70634535	92.03825998	89.45885104
190513A00003	5/13/2019	2.41	5/13/2020	5/13/2019	100.65512	100.6551229	100.6551229	100.485278	100.2001112	99.91657568	99.63465725	99.35434202	99.07561622
190514A00022	5/14/2019	2.49	11/16/2020	5/14/2019	101.78912	101.7891181	101.7891181	101.3017548	100.5053272	99.72140458	98.94969386	98.18991116	97.44178134
190514A00025	5/14/2019	2.43	5/14/2021	5/14/2019	102.79972	102.7997162	102.7997162	102.1953387	100.9291101	99.67443367	98.44603802	97.24309938	96.06482853
190514A00045	5/14/2019	2.49	5/13/2022	5/14/2019	105.05796	105.0579614	105.0579614	104.2175289	101.9432401	99.72972868	97.5750464	95.47725109	93.43447926
190515A00002	5/15/2019	2.44	5/16/2022	5/15/2019	104.96047	104.9604655	104.9604655	104.1180013	101.8370097	99.61716803	97.45652494	95.35313224	93.30511988
190515A00003	5/15/2019	2.45	11/16/2020	5/15/2019	101.75693	101.7569343	101.7569343	101.2696558	100.4733697	99.68958692	98.91801453	98.15836866	97.41037419
190515A00015	5/15/2019	2.25	5/16/2022	5/15/2019	104.94227	104.9422697	104.9422697	104.0971952	101.8079923	99.58032613	97.41222021	95.30170998	93.24690983
190515A00044	5/15/2019	2.38	5/17/2021	5/15/2019	102.75221	102.7522113	102.7522113	102.1479801	100.8721788	99.60971656	98.37289899	97.1609509	95.97312849
190517A00017	5/17/2019	2.33	2/22/2021	5/17/2019	102.38148	102.3814834	102.3814834	101.7783658	100.7149199	99.67167971	98.64999253	97.64919565	96.6686533
190520A00034	5/20/2019	2.44	5/20/2021	5/20/2019	102.84873	102.8487332	102.8487332	102.2440917	100.9577395	99.68652647	98.44034007	97.21845354	96.02016851
190520A00054	5/20/2019	2.46	5/20/2021	5/20/2019	102.87507	102.8750709	102.8750709	102.2703273	100.9837949	99.71240402	98.46604272	97.2439842	96.04552998
190521A00005	5/21/2019	2.56	5/21/2024	5/21/2019	109.82159	109.8215946	109.8215946	108.1947218	103.8930078	99.78742875	95.86810148	92.12561212	88.55107215
190521A00027	5/21/2019	2.56	5/21/2024	5/21/2019	109.82159	109.8215946	109.8215946	108.1947218	103.8930078	99.78742875	95.86810148	92.12561212	88.55107215
190521A00028	5/21/2019	2.47	11/22/2021	5/21/2019	103.99882	103.9988182	103.9988182	103.2740689	101.4729967	99.71187335	97.98963484	96.3051705	94.65740966
190521A00043	5/21/2019	2.54	5/22/2023	5/21/2019	107.48494	107.4849419	107.4849419	106.2708468	102.9702906	99.78984869	96.72459024	93.76973142	90.920714
190523A00023	5/23/2019	2.48	3/22/2023	5/23/2019	106.9182	106.9181958	106.9181958	105.7701242	102.6396048	99.61822329	96.70161221	93.88553519	91.1659542
190524A00031	5/24/2019	2.43	5/24/2022	5/24/2019	104.98454	104.984541	104.984541	104.1351606	101.8330158	99.59308418	97.41340846	95.29202201	93.22703484
190528A00006	5/28/2019	2.43	9/15/2023	5/28/2019	107.79902	107.7990211	107.7990211	106.4649453	102.8552355	99.38765923	96.05590734	92.85391329	89.77591729
190529A00031	5/29/2019	2.36	5/30/2023	5/29/2019	106.93004	106.9300389	106.9300389	105.7112234	102.3991984	99.20849015	96.13412592	93.17127382	90.3153278
190529A00034	5/29/2019	2.32	5/28/2021	5/29/2019	102.73607	102.7360701	102.7360701	102.1317717	100.8198295	99.52780198	98.25911961	97.01318797	95.78943265
190529A00060	5/29/2019	2.31	11/29/2021	5/29/2019	103.72633	103.726327	103.726327	103.0002593	101.1831107	99.40663981	97.66978873	95.9714454	94.31053601
190529A00067	5/29/2019	2.32	6/1/2021	5/29/2019	102.75873	102.7587259	102.7587259	102.1532989	100.8285623	99.52567796	98.24560587	96.98779863	95.75172589
190529A00079	5/29/2019	2.32	5/28/2021	5/29/2019	102.73607	102.7360701	102.7360701	102.1317717	100.8198295	99.52780198	98.25911961	97.01318797	95.78943265
190530A00003	5/30/2019	2.21	5/27/2022	5/30/2019	104.91331	104.913307	104.913307	104.059001	101.7412857	99.48656756	97.29286119	95.15817635	93.08059989

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190712A00001	7/12/2019	2.05	7/12/2024	7/12/2019	108.68922	108.6892211	108.6892211	106.9931495	102.5571261	98.33053943	94.30250764	90.46269253	86.80134694
190712A00009	7/12/2019	2.19	7/12/2023	7/12/2019	106.58299	106.5829891	106.5829891	105.3237507	101.90465	98.61498152	95.4492522	92.40214782	89.46861066
190715A00022	7/15/2019	2.27	7/15/2020	7/15/2019	100.93178	100.9317815	100.9317815	100.6610235	100.2033161	99.74977421	99.30034108	98.8549609	98.41357891
190715A00027	7/15/2019	1.99	7/15/2021	7/15/2019	102.75753	102.7575335	102.7575335	102.106503	100.6589405	99.23896034	97.84592339	96.47913033	95.13790554
190715A00028	7/17/2019	2.17	1/18/2022	7/17/2019	103.72681	103.7268078	103.7268078	102.9713065	101.0236141	99.12247554	97.26657963	95.45457506	93.68516008
190719A00012	7/19/2019	2.07	7/20/2020	7/19/2019	100.92638	100.9263826	100.9263826	100.6470879	100.1750508	99.7074444	99.24420654	98.78527603	98.33059284
190724A00024	7/24/2019	2.49	7/24/2029	7/24/2019	122.67503	122.675033	122.675033	115.2765879	105.8686984	97.31919051	89.54493371	82.47117327	76.03072953
190729A00007	7/29/2019	2.17	7/28/2023	7/29/2019	106.59613	106.5961345	106.5961345	105.3199427	101.8597013	98.53201865	95.33119532	92.25172555	89.28837277
190729A00019	7/29/2019	2.16	7/29/2021	7/29/2019	102.82996	102.8299575	102.8299575	102.1663671	100.6857768	99.23402869	97.81044109	96.41426709	95.04478568
190731A00004	7/31/2019	2.18	7/31/2024	7/31/2019	108.5401	108.5400962	108.5400962	106.8269405	102.3705572	98.12626142	94.08294141	90.23004328	86.55762198
190802A00004	8/2/2019	2	8/2/2022	8/2/2019	104.30924	104.3092408	104.3092408	103.4034567	100.9254248	98.5195028	96.18325535	93.91426646	91.71021905
190806A00007	8/6/2019	1.88	8/5/2022	8/6/2019	104.0189	104.0188992	104.0188992	103.1119884	100.6298004	98.22002711	95.88021045	93.60791829	91.40081841
190807A00012	8/7/2019	1.76	2/7/2023	8/7/2019	104.46515	104.4651514	104.4651514	103.3733354	100.3980202	97.52374734	94.74659671	92.06275618	89.46858568
190807A00045	8/7/2019	1.77	8/7/2024	8/7/2019	106.71009	106.7100942	106.7100942	105.0024994	100.5689181	96.34759135	92.32733071	88.49753048	84.84819936
190808A00024	8/8/2019	1.69	2/8/2024	8/8/2019	106.39668	106.3966775	106.3966775	104.9104859	100.9285257	97.11940282	93.47477569	89.98668705	86.64760728
190809A00001	8/9/2019	1.88	8/9/2022	8/9/2019	104.03642	104.0364248	104.0364248	103.1257558	100.6329117	98.21299771	95.86352865	93.58204738	91.36619815
190809A00022	8/9/2019	1.88	8/9/2024	8/9/2019	107.2195	107.2195035	107.2195035	105.5045101	101.0545493	96.81766978	92.78263712	88.93879861	85.27611918
190813A00008	8/13/2019	1.88	8/13/2024	8/13/2019	107.23692	107.2369243	107.2369243	105.5158664	101.0553947	96.80890256	92.76508656	88.91323111	85.24324308
190814A00006	8/14/2019	1.84	8/14/2023	8/14/2019	105.50694	105.5069424	105.5069424	104.2209719	100.7359697	97.38604684	94.16531302	91.06809939	88.08901768
190814A00009	8/14/2019	1.84	8/14/2024	8/14/2019	107.05844	107.05844	107.05844	105.3374667	100.8784461	96.63349063	92.591284	88.74110061	85.07283825
190814A00015	8/14/2019	1.84	8/14/2024	8/14/2019	107.05844	107.05844	107.05844	105.3374667	100.8784461	96.63349063	92.591284	88.74110061	85.07283825
190815A00025	8/15/2019	1.97	8/15/2029	8/15/2019	117.815	117.8149979	117.8149979	110.4581745	101.2181699	92.83169935	85.21534299	78.29417263	72.00090958
190816A00007	8/16/2019	1.77	8/16/2023	8/16/2019	105.26541	105.2654062	105.2654062	103.9791134	100.4932181	97.14263675	93.92145761	90.8239951	87.84484547
190816A00016	8/16/2019	2.2	8/16/2029	8/16/2019	118.06737	118.0673652	118.0673652	110.7927811	101.6284629	93.30642845	85.74465067	78.86941954	72.61452867
200130A00048	1/30/2020	1.74	1/31/2022	1/30/2020	102.92387	102.923869	102.923869	102.1635587	100.1902699	98.26501181	96.38638589	94.55297499	92.76341491
200131A00006	1/31/2020	1.52	1/31/2022	1/31/2020	102.84243	102.842435	102.842435	102.0802431	100.1009883	98.17004225	96.28598589	94.44739095	92.65288271
190819A00004	8/20/2019	1.81	5/24/2024	8/20/2019	106.58058	106.5805814	106.5805814	104.9768422	100.7363372	96.69039357	92.8291562	89.14326359	85.6238766
190820A00005	8/21/2019	1.76	2/27/2023	8/21/2019	104.54433	104.5443294	104.5443294	103.4358857	100.4021578	97.47288722	94.64395396	91.91136183	89.27129822
190829A00015	8/30/2019	2.06	8/30/2022	8/30/2019	104.59756	104.5975576	104.5975576	103.6644981	101.1096511	98.63060487	96.22473383	93.88944331	91.62224791
190830A00002	8/30/2019	1.93	8/28/2026	8/30/2019	110.72225	110.7222543	110.7222543	107.0358477	100.6424448	94.67347713	89.09865088	83.88992076	79.02137493
190904A00007	9/4/2019	1.69	9/1/2023	9/4/2019	105.04115	105.0411455	105.0411455	103.7402455	100.2171904	96.83218434	93.57913102	90.45217881	87.44576925
190904A00019	9/4/2019	1.69	9/4/2024	9/4/2019	106.45321	106.4532124	106.4532124	104.7066084	100.2079182	95.92755154	91.85383473	87.97572554	84.28283042
190904A00020	9/4/2019	1.69	9/1/2023	9/4/2019	105.04115	105.0411455	105.0411455	103.7402455	100.2171904	96.83218434	93.57913102	90.45217881	87.44576925

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190905A00002	9/5/2019	1.78	9/6/2022	9/5/2019	103.89639	103.896389	103.896389	102.96122	100.3967831	97.90893646	95.49498932	93.15230388	90.87835433
190909A00025	9/9/2019	1.88	9/9/2024	9/9/2019	107.35427	107.354269	107.354269	105.5923159	101.0602598	96.74841961	92.64499999	88.73884326	85.01944883
190910A00004	9/11/2019	1.86	9/11/2024	9/11/2019	107.26997	107.2699702	107.2699702	105.5058201	100.9704662	96.65573907	92.54980574	88.64147671	84.9202222
190917A00044	9/17/2019	1.86	9/17/2021	9/17/2019	102.87517	102.8751718	102.8751718	102.1816872	100.5624989	98.97658327	97.42303137	95.9009175	94.40935116
190918A00007	9/20/2019	1.95	12/15/2022	9/20/2019	104.79846	104.798462	104.798462	103.7619557	100.922088	98.1743138	95.51524186	92.94154957	90.4500568
190923A00017	9/23/2019	1.74	9/23/2024	9/23/2019	107.62177	107.6217657	107.6217657	105.8266305	101.2261403	96.85141556	92.69022642	88.73103349	84.96298381
190924A00035	9/24/2019	1.88	9/13/2024	9/24/2019	107.37158	107.3715792	107.3715792	105.6035791	101.0607148	96.73903469	92.62666319	88.71237287	84.98559894
190925A00004	9/25/2019	1.7	9/24/2024	9/25/2019	107.43811	107.4381094	107.4381094	105.6431359	101.0442225	96.67117094	92.51173557	88.55436551	84.78819736
190925A00019	9/27/2019	1.93	9/27/2023	9/27/2019	106.02545	106.0254491	106.0254491	104.6928286	101.0831914	97.61711073	94.28812418	91.09005478	88.01704086
190926A00019	9/26/2019	1.94	9/26/2024	9/26/2019	107.66119	107.6611873	107.6611873	105.8720126	101.2901484	96.93270528	92.78754727	88.84321768	85.08894068
190930A00014	9/30/2019	1.89	9/30/2022	9/30/2019	104.29035	104.290348	104.290348	103.3322017	100.6981273	98.14422382	95.6675907	93.26541104	90.93499077
191002A00005	10/2/2019	1.83	10/2/2020	10/2/2019	101.16409	101.1640924	101.1640924	100.7561979	100.0823267	99.41744085	98.76136174	98.11391528	97.47493198
191002A00014	10/2/2019	1.78	10/3/2022	10/2/2019	104.00658	104.0065774	104.0065774	103.0471063	100.4090729	97.85156072	95.37164186	92.96647966	90.63336152
191007A00029	10/7/2019	1.88	10/9/2029	10/7/2019	117.21504	117.2150377	117.2150377	109.6643851	100.3290612	91.86892741	84.19719401	77.23609939	70.9159273
191008A00018	10/8/2019	1.74	10/11/2022	10/8/2019	103.93053	103.930529	103.930529	102.963585	100.305883	97.72984224	95.232466	92.81085787	90.46224932
191008A00022	10/8/2019	1.55	10/8/2021	10/8/2019	102.44666	102.4466594	102.4466594	101.7460868	100.0739678	98.43708429	96.83440826	95.26493163	93.72768606
191009A00006	10/9/2019	1.53	10/7/2022	10/9/2019	103.83576	103.8357583	103.8357583	102.8698558	100.2130945	97.63793486	95.14137892	92.72053584	90.37264206
190530A00004	5/30/2019	2.24	5/30/2023	5/30/2019	107.14492	107.1449159	107.1449159	105.9194529	102.5887365	99.38033641	96.28922134	93.31050884	90.43954516
190531A00047	5/31/2019	2.32	5/28/2021	5/31/2019	102.73607	102.7360701	102.7360701	102.1317717	100.8198295	99.52780198	98.25911961	97.01318797	95.78943265
190603A00009	6/3/2019	2.17	7/6/2022	6/3/2019	104.59926	104.5992633	104.5992633	103.7166006	101.304794	98.96122055	96.68365574	94.46987535	92.3177435
190603A00050	6/3/2019	2.19	6/3/2021	6/3/2019	102.59378	102.5937825	102.5937825	101.9869947	100.6579025	99.35092856	98.06692315	96.80533312	95.56562263
190604A00008	6/4/2019	2.23	6/4/2021	6/4/2019	102.6534	102.6534023	102.6534023	102.0453752	100.7131096	99.40310804	98.11616984	96.85173852	95.6092751
190604A00028	6/4/2019	2.2	6/3/2022	6/4/2019	104.49985	104.4998468	104.4998468	103.6447265	101.3220125	99.06275395	96.86496286	94.72663969	92.64586134
190605A00034	6/5/2019	2.11	6/6/2022	6/5/2019	104.3021	104.3020952	104.3020952	103.4456459	101.1172354	98.85265979	96.64990796	94.5069621	92.42188179
190606A00026	6/6/2019	2.23	6/6/2023	6/6/2019	106.5307	106.5307002	106.5307002	105.3077165	101.9838195	98.78239008	95.69837825	92.72688438	89.86323857
190606A00029	6/6/2019	2.96	6/6/2034	6/6/2019	137.78351	137.7835101	136.2673167	121.2275192	107.5267647	95.59792942	85.19890313	76.12186842	68.18836587
190607A00012	6/7/2019	2.13	6/7/2022	6/7/2019	104.35458	104.3545791	104.3545791	103.4970518	101.1653367	98.89761102	96.69185729	94.54605072	92.45824426
190607A00023	6/7/2019	1.92	6/7/2022	6/7/2019	104.28687	104.2868665	104.2868665	103.4268976	101.0872516	98.811992	96.59907482	94.44645826	92.35217916
190610A00016	6/10/2019	2.21	6/10/2022	6/10/2019	104.56035	104.5603511	104.5603511	103.6993278	101.3571145	99.07936728	96.86404946	94.70911491	92.61259631
190611A00007	6/11/2019	2.25	6/10/2022	6/11/2019	104.65567	104.6556676	104.6556676	103.7941313	101.450779	99.1719155	96.95550509	94.79950094	92.70193503
190613A00011	6/13/2019	2.26	6/13/2024	6/13/2019	108.64404	108.6440381	108.6440381	106.9969477	102.660792	98.52530837	94.58028403	90.81599319	87.22325499
190619A00024	6/19/2019	2.21	7/19/2022	6/19/2019	104.76625	104.7662482	104.7662482	103.8707498	101.4232151	99.04587115	96.73639412	94.49246481	92.31185747
190620A00025	6/20/2019	2.04	6/20/2022	6/20/2019	104.20324	104.2032373	104.2032373	103.3361842	100.9714805	98.67259034	96.43740272	94.26380714	92.14977535

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190620A00026	6/20/2019	2.09	6/20/2023	6/20/2019	106.12681	106.1268147	106.1268147	104.893045	101.5388436	98.30961464	95.20014099	92.20537133	89.3204939
190624A00036	6/24/2019	1.95	12/28/2020	6/24/2019	101.68809	101.6880897	101.6880897	101.1243698	100.2138668	99.31970008	98.44143327	97.57864525	96.73092967
190625A00003	6/25/2019	2.03	6/27/2022	6/25/2019	104.21253	104.2125268	104.2125268	103.3398601	100.9563301	98.63962693	96.38758911	94.19805856	92.06896192
190625A00023	6/25/2019	2.47	6/25/2027	6/25/2019	116.05645	116.05645	116.05645	111.3391749	104.0474504	97.2901645	91.02540262	85.21465373	79.82260305
190627A00010	6/27/2019	1.97	6/27/2024	6/27/2019	108.25252	108.2525248	108.2525248	106.5816797	102.1936196	98.01105865	94.02340917	90.22060856	86.59316427
190627A00037	6/27/2019	1.93	6/27/2023	6/27/2019	106.241	106.2410044	106.2410044	104.9942999	101.6040156	98.34106072	95.20007098	92.1758624	89.26349887
190628A00004	6/28/2019	2.12	6/28/2023	6/28/2019	106.26931	106.2693101	106.2693101	105.0268306	101.6490716	98.39789451	95.26798402	92.25419498	89.35162783
190701A00009	7/3/2019	2.14	7/2/2024	7/3/2019	108.16609	108.1660909	108.1660909	106.4986349	102.1247479	97.95563859	93.98076175	90.19008772	86.57415531
191010A00011	10/10/2019	1.6	10/10/2023	10/10/2019	105.53449	105.5344908	105.5344908	104.185853	100.5338984	97.02889367	93.6641276	90.43321106	87.33008519
191017A00003	10/17/2019	1.9	12/10/2021	10/17/2019	103.01661	103.0166085	103.0166085	102.2880539	100.4488361	98.65142966	96.89471692	95.17754322	93.49879391
191018A00005	10/18/2019	1.89	5/2/2022	10/18/2019	103.62602	103.626015	103.626015	102.802435	100.5732712	98.40313323	96.29006252	94.23215027	92.22756787
191024A00017	10/25/2019	1.9	7/15/2021	10/25/2019	102.37455	102.3745478	102.3745478	101.7267579	100.2861538	98.87294754	97.4865022	96.12612452	94.79114473
191025A00009	10/25/2019	2.26	5/25/2029	10/25/2019	118.20162	118.2016227	118.2016227	111.2265663	102.2370394	94.05565298	86.6053654	79.81679183	73.6274651
191104A00023	11/4/2019	2.24	8/4/2028	11/4/2019	116.4793	116.4793006	116.4793006	110.5147596	102.2622016	94.69534628	87.75357726	81.38185499	75.53025259
191105A00018	11/5/2019	1.78	11/6/2023	11/5/2019	106.33111	106.3311081	106.3311081	104.9481772	101.2114403	97.62744702	94.18913641	90.88978388	87.723016
191114A00008	11/18/2019	1.93	4/17/2023	11/18/2019	105.29263	105.292633	105.292633	104.1290283	100.9555057	97.89493943	94.94267314	92.0942378	89.3453787
191114A00020	11/18/2019	1.91	2/15/2022	11/18/2019	103.33376	103.3337562	103.3337562	102.5645878	100.5435067	98.57224608	96.6493297	94.77326271	92.94260733
191120A00006	11/20/2019	2.67	11/20/2035	11/20/2019	136.98981	136.9898141	134.0057429	117.6597845	103.107481	90.60912313	79.85929975	70.59961745	62.61128231
191120A00010	11/20/2019	1.88	1/20/2022	11/20/2019	103.15898	103.1589756	103.1589756	102.4048974	100.4577271	98.55725976	96.70216362	94.89107973	93.1226991
191122A00006	11/22/2019	1.74	11/22/2023	11/22/2019	106.25034	106.2503422	106.2503422	104.8518586	101.0742013	97.45260195	93.97986102	90.64909653	87.4537815
191126A00015	11/27/2019	1.88	10/14/2022	11/27/2019	104.32474	104.3247405	104.3247405	103.3525226	100.6817013	98.09309862	95.58369427	93.15056517	90.79091771
191202A00005	12/2/2019	2.03	12/2/2024	12/2/2019	108.4494	108.4494028	108.4494028	106.54199	101.7697424	97.23911798	92.93675683	88.85002915	84.9670651
191206A00013	12/6/2019	3.05	12/6/2044	12/6/2019	166.58237	166.5823657	152.6173904	126.5915789	105.3963251	88.47176922	74.9025612	63.97624772	55.13726426
191206A00021	12/6/2019	2.02	12/6/2024	12/6/2019	108.41962	108.4196163	108.4196163	106.5051072	101.7236125	97.18471754	92.87498006	88.78169481	84.89292265
191206A00044	12/10/2019	2.01	10/31/2024	12/10/2019	108.15304	108.1530389	108.1530389	106.3024821	101.6210645	97.17280511	92.94486027	88.925137	85.10227457
191220A00001	12/20/2019	2.62	12/19/2031	12/20/2019	127.3894	127.3894035	127.3894035	116.006908	104.6050539	94.46470195	85.43842663	77.39668756	70.22565739
191223A00008	12/23/2019	1.93	12/23/2021	12/23/2019	103.1319	103.1318955	103.1318955	102.395736	100.5215776	98.69073781	96.90203715	95.15425977	93.44623278
191223A00055	12/23/2019	2.46	12/7/2029	12/23/2019	121.20332	121.2033177	121.2033177	113.4111071	103.8581551	95.20469721	87.3609856	80.24658295	73.78943132
191230A00012	12/30/2019	1.77	12/1/2023	12/30/2019	106.40705	106.4070539	106.4070539	104.9981773	101.193794	97.54745624	94.05187748	90.70007784	87.48543559
200108A00017	1/8/2020	2.55	1/8/2035	1/8/2020	136.51997	136.5199659	134.3528466	118.5569442	104.3858347	92.13121649	81.52038805	72.32079935	64.33402942
200110A00005	1/10/2020	1.7	1/10/2022	1/10/2020	103.11532	103.1153181	103.1153181	102.3659612	100.4386606	98.55709729	96.71997742	94.92598472	93.17385076
200122A00028	1/22/2020	1.84	1/21/2022	1/22/2020	103.0835	103.083501	103.083501	102.3291195	100.380117	98.47792811	96.62121436	94.80861177	93.03880667
190703A00019	7/3/2019	2.08	7/5/2022	7/3/2019	104.37341	104.3734145	104.3734145	103.4929048	101.0864614	98.74804819	96.47544619	94.26644008	92.1189024

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190709A00018	7/9/2019	2.24	7/9/2024	7/9/2019	108.6485	108.6485039	108.6485039	106.9667826	102.5647465	98.36950506	94.37037078	90.55717869	86.92034232
190710A00012	7/10/2019	2.18	7/10/2023	7/10/2019	106.53784	106.5378412	106.5378412	105.2810254	101.8678175	98.58363281	95.42300421	92.38064183	89.45151074
190711A00020	7/11/2019	1.98	7/11/2022	7/11/2019	104.60491	104.6049061	104.6049061	103.71465	101.2805478	98.91586547	96.61831194	94.38560741	92.21556343
190715A00010	7/15/2019	2.23	7/15/2024	7/15/2019	108.63551	108.6355101	108.6355101	106.9452102	102.5283368	98.31968148	94.30844314	90.48435282	86.8377281
190715A00024	7/15/2019	2.17	7/15/2021	7/15/2019	102.77191	102.7719082	102.7719082	102.1224783	100.678861	99.26268229	97.87331531	96.51006546	95.17226163
190715A00029	7/17/2019	2.16	4/18/2022	7/17/2019	104.16846	104.1684603	104.1684603	103.3523493	101.1545835	99.01416718	96.92923211	94.89794242	92.91853866
190724A00023	7/24/2019	2.13	7/24/2025	7/24/2019	111.14298	111.1429759	111.1429759	108.6746932	103.2080826	98.05094297	93.18424082	88.59013048	84.25195171
190726A00017	7/26/2019	2.44	7/24/2026	7/26/2019	113.88493	113.8849282	113.8849282	110.271586	103.8618041	97.87038412	92.26791352	87.02710516	82.12272016
190729A00008	7/29/2019	2.18	1/29/2024	7/29/2019	107.58983	107.589828	107.589828	106.1116714	102.1534693	98.36529192	94.73902993	91.26692101	87.94161615
190802A00003	8/2/2019	2.01	8/2/2024	8/2/2019	107.77897	107.7789717	107.7789717	106.0694632	101.6248365	97.39216762	93.36032822	89.51875692	85.85750245
190802A00015	8/2/2019	2	2/15/2023	8/2/2019	105.23402	105.2340217	105.2340217	104.1308777	101.1209596	98.21371732	95.40515214	92.69136972	90.06865274
190805A00004	8/5/2019	1.7	8/5/2022	8/5/2019	104.02183	104.0218267	104.0218267	103.1117882	100.6199132	98.20093265	95.8523586	93.57173746	91.35671676
190805A00007	8/5/2019	1.88	8/5/2022	8/5/2019	104.0189	104.0188992	104.0188992	103.1119884	100.6298004	98.22002711	95.88021045	93.60791829	91.40081841
190805A00011	8/5/2019	1.91	8/5/2024	8/5/2019	107.33847	107.3384727	107.3384727	105.6283566	101.1858834	96.9556982	92.92663192	89.08809033	85.4300922
190806A00026	8/6/2019	1.71	8/7/2023	8/6/2019	105.66369	105.6636901	105.6636901	104.3780402	100.8918873	97.54068663	94.31855954	91.21985134	88.23918661
190807A00027	8/7/2019	1.77	8/7/2024	8/7/2019	106.71009	106.7100942	106.7100942	105.0024994	100.5689181	96.34759135	92.32733071	88.49753048	84.84819936
190808A00025	8/8/2019	1.7	8/8/2024	8/8/2019	107.23276	107.2327585	107.2327585	105.5096375	101.0371785	96.77945206	92.72510474	88.86337978	85.18414536
190808A00041	8/8/2019	1.74	8/6/2021	8/8/2019	102.48817	102.4881674	102.4881674	101.8186373	100.3153675	98.8417279	97.39698569	95.98036342	94.59111106
190809A00024	8/9/2019	2.07	8/10/2020	8/9/2019	100.96618	100.9661765	100.9661765	100.6521567	100.12366	99.60070859	99.0832154	98.5710952	98.06426453
190812A00003	8/12/2019	1.67	8/12/2024	8/12/2019	107.11272	107.1127235	107.1127235	105.3846852	100.9046889	96.64022816	92.57988301	88.71283738	85.0289048
190812A00008	8/12/2019	1.67	8/12/2022	8/12/2019	103.97565	103.9756455	103.9756455	103.0594229	100.5497745	98.11391052	95.74929431	93.45342872	91.22392021
190813A00007	8/13/2019	1.89	8/15/2022	8/13/2019	104.08836	104.0883623	104.0883623	103.1719123	100.6627602	98.22732236	95.86307272	93.56751621	91.33826134
190814A00008	8/14/2019	1.84	8/14/2024	8/14/2019	107.05844	107.05844	107.05844	105.3374667	100.8784461	96.63349063	92.591284	88.74110061	85.07283825
200123A00049	1/23/2020	1.63	1/23/2023	1/23/2020	104.55974	104.5597364	104.5597364	103.4776488	100.5288152	97.67921281	94.92502798	92.26255239	89.68824316
200130A00005	1/30/2020	1.73	1/30/2024	1/30/2020	105.78116	105.7811551	105.7811551	104.316024	100.3910385	96.63519811	93.04040312	89.59891845	86.3034214
200130A00006	1/30/2020	1.77	1/30/2025	1/30/2020	107.37013	107.3701323	107.3701323	105.3616998	100.471271	95.83643605	91.44260125	87.27601377	83.3237748
200130A00010	1/30/2020	1.56	1/31/2022	1/30/2020	102.92356	102.9235553	102.9235553	102.1609636	100.1808773	98.24911439	96.36425702	94.52487645	92.72959756
200131A00016	1/31/2020	1.73	1/31/2025	1/31/2020	107.17275	107.1727471	107.1727471	105.1642651	100.2762164	95.64384252	91.25253307	87.08852244	83.13890042
190816A00006	8/16/2019	1.77	8/16/2024	8/16/2019	106.74658	106.7465786	106.7465786	105.0253848	100.5682736	96.32543276	92.28551897	88.43778522	84.77210978
190816A00009	8/16/2019	2.01	8/17/2020	8/16/2019	100.97382	100.9738167	100.9738167	100.6476556	100.1000658	99.55843031	99.02265212	98.49263652	97.96829077
190816A00015	8/16/2019	2.2	8/16/2029	8/16/2019	118.06737	118.0673652	118.0673652	110.7927811	101.6284629	93.30642845	85.74465067	78.86941954	72.61452867
190819A00005	8/19/2019	1.62	8/21/2023	8/19/2019	105.40161	105.4016084	105.4016084	104.1034372	100.5855958	97.20506901	93.95581793	90.83204429	87.82823888
190820A00008	8/20/2019	1.76	8/20/2024	8/20/2019	106.71692	106.7169198	106.7169198	104.9900861	100.5235491	96.27214622	92.22446629	88.36970048	84.69767016

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190820A00013	8/20/2019	1.76	8/21/2023	8/20/2019	105.24988	105.2498773	105.2498773	103.9586049	100.4601407	97.09786553	93.86581038	90.75823743	87.76969417
190826A00014	8/26/2019	1.86	8/26/2020	8/26/2019	101.00576	101.0057553	101.0057553	100.6634479	100.0904315	99.52392645	98.96382211	98.41001042	97.86238575
190826A00038	8/26/2019	1.74	8/26/2022	8/26/2019	103.74758	103.747582	103.747582	102.8230032	100.2896099	97.83126043	95.44534986	93.12931649	90.88070612
190826A00058	8/26/2019	1.91	8/26/2026	8/26/2019	110.58147	110.58147	110.58147	106.9036111	100.5193753	94.5587608	88.99154828	83.78976004	78.92754551
190826A00060	8/26/2019	2.02	8/26/2027	8/26/2019	113.00709	113.0070886	113.0070886	108.1520089	100.8254318	94.04919763	87.77915757	81.97485472	76.59926176
190828A00015	8/28/2019	2.04	8/28/2029	8/28/2019	116.59767	116.5976677	116.5976677	109.3166671	100.1919848	91.91018116	84.38884515	77.55395979	71.33906831
190829A00005	8/30/2019	2.06	8/30/2023	8/30/2019	106.36942	106.3694233	106.3694233	105.0609702	101.5194992	98.11637011	94.84550339	91.70104587	88.67743699
190829A00021	8/30/2019	2.18	8/30/2021	8/30/2019	103.02822	103.0282206	103.0282206	102.3435151	100.7768299	99.241594	97.73701165	96.26223125	94.81643237
190904A00008	9/4/2019	1.69	9/3/2024	9/4/2019	106.44941	106.4494053	106.4494053	104.7043044	100.2082946	95.93036834	91.85887186	87.98278017	84.2917156
190905A00015	9/5/2019	1.78	9/6/2022	9/5/2019	103.89639	103.896389	103.896389	102.96122	100.3967831	97.90893646	95.49498932	93.15230388	90.87835433
190917A00021	9/17/2019	2.13	9/17/2020	9/17/2019	101.1957	101.1956978	101.1956978	100.8148702	100.1826109	99.55827065	98.94170137	98.33275848	97.73130103
190917A00028	9/17/2019	2.02	3/1/2023	9/17/2019	105.36099	105.3609879	105.3609879	104.2454481	101.193711	98.24707374	95.4013962	92.65265362	89.99700632
190919A00025	9/19/2019	1.8	9/19/2024	9/19/2019	107.88524	107.8852359	107.8852359	106.0936941	101.4977058	97.12672115	92.96858478	89.01181938	85.24562879
190923A00032	9/23/2019	1.72	9/22/2023	9/23/2019	105.90306	105.9030643	105.9030643	104.5699931	100.9584399	97.49052104	94.15977126	90.9600136	87.88538614
190926A00004	9/26/2019	1.93	9/21/2021	9/26/2019	102.72825	102.7282531	102.7282531	102.0356089	100.4115362	98.82091494	97.26282522	95.73633274	94.24053893
190930A00012	9/30/2019	1.93	9/30/2024	9/30/2019	107.63206	107.6320552	107.6320552	105.8372493	101.2456589	96.8794283	92.72634201	88.77487406	85.01418493
190930A00035	9/30/2019	1.93	9/30/2024	9/30/2019	107.63206	107.6320552	107.6320552	105.8372493	101.2456589	96.8794283	92.72634201	88.77487406	85.01418493
190930A00040	9/30/2019	1.92	2/25/2022	9/30/2019	103.39854	103.3985373	103.3985373	102.6244885	100.5736919	98.5738925	96.62355802	94.72114176	92.865157
190930A00070	9/30/2019	1.93	9/27/2024	9/30/2019	107.61875	107.6187458	107.6187458	105.8284793	101.244984	96.88611659	92.73972198	88.79432737	85.03914211
190930A00071	9/30/2019	2.05	9/29/2025	9/30/2019	109.93124	109.9312365	109.9312365	107.3080966	101.7436926	96.50262764	91.56446268	86.91011898	82.52181855
191004A00009	10/4/2019	1.71	10/4/2021	10/4/2019	102.41424	102.4142426	102.4142426	101.7174961	100.0611534	98.43946251	96.85142871	95.29606743	93.77243258
191004A00032	10/4/2019	2.01	1/3/2028	10/4/2019	113.53234	113.5323421	113.5323421	108.2776129	100.6311488	93.58281435	87.08278131	81.08553974	75.54957267
191009A00021	10/9/2019	1.71	10/7/2022	10/9/2019	103.83323	103.8332267	103.8332267	102.8708064	100.2247633	97.65977009	95.17286368	92.76117893	90.42197658
191018A00007	10/18/2019	1.89	7/1/2022	10/18/2019	103.88992	103.8899221	103.8899221	103.0157161	100.6255346	98.30267932	96.04495706	93.85018462	91.71626495
191031A00033	10/31/2019	2.2	5/31/2028	10/31/2019	115.80518	115.8051821	115.8051821	110.0572104	101.9790363	94.55973108	87.74214053	81.47426675	75.70885078
191104A00022	11/4/2019	2.17	8/4/2027	11/4/2019	114.03358	114.0335792	114.0335792	109.2272942	101.9148857	95.14729096	88.88112337	83.0765871	77.69723755
191105A00014	11/5/2019	1.96	11/6/2023	11/5/2019	106.31927	106.3192736	106.3192736	104.9429003	101.2247457	97.65812635	94.23606206	90.95189709	87.79932232
191108A00013	11/8/2019	2.25	11/8/2029	11/8/2019	121.00669	121.0066933	121.0066933	113.2352878	103.6615471	94.98734314	87.12310692	79.98861314	73.51197651
191113A00019	11/15/2019	1.93	3/15/2021	11/15/2019	101.8748	101.8748005	101.8748005	101.2745591	100.1685544	99.07618912	98.00755934	96.96189783	95.9384701
191114A00021	11/18/2019	1.91	6/15/2022	11/18/2019	103.86768	103.8676752	103.8676752	103.0064099	100.6591135	98.37683192	96.15748631	93.99900229	91.89938589
191120A00011	11/20/2019	1.88	1/20/2023	11/20/2019	104.75295	104.7529477	104.7529477	103.6772211	100.7457441	97.91235437	95.17331301	92.52497236	89.96384659
191120A00024	11/20/2019	2.23	11/16/2029	11/20/2019	118.83083	118.8308332	118.8308332	111.1860684	101.7870396	93.27122454	85.5507209	78.54676625	72.18878008
191122A00005	11/22/2019	2.03	11/22/2027	11/22/2019	115.07141	115.0714078	115.0714078	109.8599366	102.1873311	95.10822447	88.57366845	82.53893756	76.96319349

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191126A00022	11/26/2019	1.72	5/26/2023	11/26/2019	105.37577	105.3757655	105.3757655	104.1665505	100.8755622	97.7053881	94.65102421	91.70764354	88.87064644
191206A00020	12/9/2019	1.91	12/15/2021	12/9/2019	103.05778	103.0577801	103.0577801	102.326316	100.4736894	98.66345066	96.89445851	95.16553496	93.47554315
191212A00032	12/12/2019	1.99	12/12/2023	12/12/2019	106.60056	106.600563	106.600563	105.1845903	101.3674938	97.70957658	94.20347576	90.84213192	87.61884955
191220A00002	12/20/2019	3.02	12/20/2038	12/20/2019	150.51042	150.5104192	143.9523514	124.0074423	106.7769696	92.34429398	80.22892898	70.03573953	61.43943964
191223A00006	12/23/2019	1.92	12/23/2020	12/23/2019	101.50022	101.5002234	101.5002234	100.9471293	100.0528109	99.17428641	98.31114011	97.46297093	96.62939159
191223A00007	12/23/2019	1.95	6/23/2021	12/23/2019	102.34674	102.3467366	102.3467366	101.7209663	100.3388795	98.98171623	97.64926645	96.34091401	95.05606279
191230A00013	12/30/2019	1.84	12/2/2024	12/30/2019	108.42465	108.4246549	108.4246549	106.506118	101.7067361	97.15115007	92.82583554	88.71801744	84.81569134
200103A00009	1/3/2020	1.9	1/3/2024	1/3/2020	106.34711	106.3471103	106.3471103	104.9084014	101.0404311	97.33610696	93.78774546	90.38799113	87.12987327
200106A00015	1/6/2020	1.87	2/15/2024	1/6/2020	106.41399	106.413992	106.413992	104.9282379	100.9472191	97.13912917	93.49561764	90.0087138	86.67087603
200110A00004	1/10/2020	1.7	1/10/2022	1/10/2020	103.11532	103.1153181	103.1153181	102.3659612	100.4386606	98.55709729	96.71997742	94.92598472	93.17385076
200123A00048	1/23/2020	1.7	1/23/2025	1/23/2020	107.96691	107.9669107	107.9669107	105.9533422	101.0349521	96.37335918	91.95391564	87.76282015	83.78712728
200127A00023	1/27/2020	1.8	1/27/2025	1/27/2020	107.5088	107.5087966	107.5087966	105.5048748	100.6184124	95.98689175	91.59578113	87.43138396	83.4808529
200130A00011	1/30/2020	1.54	1/30/2023	1/30/2020	104.31582	104.3158201	104.3158201	103.2274237	100.2642653	97.40146139	94.63512682	91.96148857	89.37694315
150601A00737	6/1/2015	2.68	12/31/2024	6/1/2015	112.54415	112.5441478	112.5441478	110.5325283	105.5608866	100.8440753	96.36781938	92.11861623	88.08378865
150601A00789	6/1/2015	1.9	5/21/2020	6/1/2015	100.49933	100.4993306	100.4993306	100.3170283	100.0106292	99.70610868	99.40344951	99.10263456	98.80364697
150601A00830	6/1/2015	6.743	7/31/2025	6/1/2015	136.27715	136.277152	136.277152	133.5190866	127.3601144	121.539829	116.037844	110.8348636	105.9128651
150601A00839	6/1/2015	6.93	10/30/2020	6/1/2015	104.96932	104.9693153	104.9693153	104.5050773	103.7411258	102.9884114	102.246687	101.5157129	100.7952559
150609A00006	6/9/2015	1.95	6/15/2020	6/9/2015	100.69139	100.6913902	100.6913902	100.4687192	100.0929522	99.72000408	99.3498431	98.98243796	98.61775782
150707A00053	7/7/2015	1.92	7/7/2020	7/7/2015	100.73326	100.7332621	100.7332621	100.4758011	100.0404301	99.60882968	99.18095099	98.75674599	98.33616743
150803A00053	8/3/2015	2.49	8/3/2022	8/3/2015	105.55454	105.5545373	105.5545373	104.640888	102.1444785	99.7206364	97.36692976	95.08092611	92.86029264
150817A00016	8/17/2015	2.24	8/17/2021	8/17/2015	103.05373	103.0537265	103.0537265	102.3768332	100.8442892	99.34215008	97.86966846	96.42603497	95.01046933
150824A00071	8/24/2015	2.86	8/25/2025	8/24/2015	114.29924	114.2992399	114.2992399	111.7260258	106.1311491	100.8546543	95.87683005	91.17918653	86.74447333
150827A00005	8/27/2015	2.07	8/27/2021	8/27/2015	103.10834	103.1083426	103.1083426	102.4233217	100.8593786	99.32681994	97.82484859	96.35261662	94.90930712
150827A00029	8/27/2015	2.74	8/27/2024	8/27/2015	112.12683	112.1268348	112.1268348	110.3320887	105.7008132	101.2923394	97.09485996	93.0971581	89.28867319
150923A00045	9/23/2015	1.97	9/23/2021	9/23/2015	103.08756	103.0875576	103.0875576	102.3906529	100.7532406	99.14969899	97.57909091	96.04046614	94.53291104
151002A00041	10/2/2015	1.76	10/4/2021	10/2/2015	102.78739	102.7873853	102.7873853	102.0871032	100.4225669	98.79292173	97.1971665	95.63430808	94.10339231
151002A00047	10/2/2015	1.64	9/2/2020	10/2/2015	100.82554	100.8255406	100.8255406	100.4720187	99.88162278	99.29814047	98.72145095	98.15143622	97.58798099
151002A00081	10/2/2015	2.29	10/2/2023	10/2/2015	108.06421	108.0642112	108.0642112	106.7055351	103.0279742	99.4971361	96.106397	92.84941724	89.72018257
151014A00030	10/14/2015	1.68	10/14/2020	10/14/2015	101.01509	101.0150887	101.0150887	100.5878577	99.88339934	99.18878294	98.50380324	97.82826062	97.16196098
151015A00006	10/15/2015	1.68	10/15/2020	10/15/2015	101.01905	101.0190484	101.0190484	100.5901082	99.88294047	99.18569032	98.4981501	97.82011792	97.15139746
151102A00012	11/2/2015	2.4	11/2/2022	11/2/2015	105.85483	105.8548262	105.8548262	104.854814	102.1134852	99.45767658	96.88422133	94.39004111	91.97219561
151116A00027	11/16/2015	2.02	11/16/2020	11/16/2015	101.41096	101.4109585	101.4109585	100.9245917	100.1298261	99.34754704	98.5774618	97.81928684	97.07274734
151211A00012	12/11/2015	1.89	12/11/2020	12/11/2015	101.54913	101.5491256	101.5491256	101.0160892	100.1518885	99.30243049	98.46734016	97.64625522	96.83882547

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
151221A00014	12/21/2015	2.94	12/22/2025	12/21/2015	115.60262	115.6026173	115.6026173	112.6606739	106.7297291	101.1531287	95.90795293	90.97277162	86.32764504
160113A00030	1/13/2016	2.52	1/13/2025	1/13/2016	112.03122	112.0312238	112.0312238	109.9985063	105.0061543	100.2716222	95.78035523	91.51860008	87.47345032
160119A00028	1/19/2016	3.34	1/21/2031	1/19/2016	133.21039	133.2103937	133.2103937	123.2434276	112.2258578	102.3339343	93.44537876	85.45172372	78.25679348
160128A00058	1/28/2016	1.83	1/28/2021	1/28/2016	101.56505	101.5650503	101.5650503	100.9693686	99.97838922	99.00677935	98.05397561	97.11943628	96.20264023
160129A00016	1/29/2016	1.76	1/29/2021	1/29/2016	101.4987	101.4986981	101.4986981	100.9022233	99.90892359	98.93509131	97.98015881	97.04358028	96.12483075
160210A00029	2/10/2016	1.56	8/10/2020	2/10/2016	100.69439	100.6943947	100.6943947	100.3808682	99.85320575	99.33108228	98.8144108	98.30310616	97.79708497
160212A00029	2/12/2016	1.8	2/11/2022	2/12/2016	103.09021	103.0902139	103.0902139	102.3240768	100.3171433	98.35952417	96.44976224	94.5863843	92.76797312
160212A00044	2/12/2016	1.93	2/13/2023	2/12/2016	105.01015	105.0101517	105.0101517	103.9100445	100.9092719	98.01075331	95.21050978	92.50466804	89.88953056
160223A00014	2/23/2016	1.75	2/23/2021	2/23/2016	101.58915	101.5891452	101.5891452	100.9901116	99.93106301	98.89208901	97.87462193	96.87799951	95.90158647
160329A00044	3/29/2016	1.79	3/29/2022	3/29/2016	103.65335	103.6533495	103.6533495	102.8518754	100.7060187	98.61524501	96.57779341	94.59193393	92.6560069
160401A00016	4/1/2016	2.42	4/1/2025	4/1/2016	110.99228	110.9922762	110.9922762	108.8267044	103.6864202	98.82103741	94.21444554	89.85151013	85.71806286
160404A00039	4/4/2016	1.45	4/6/2020	4/4/2016	100.2199	100.2199017	100.2199017	100.112611	99.93019029	99.74844063	99.56735828	99.38693956	99.20718079
160407A00004	4/7/2016	1.41	4/7/2021	4/7/2016	101.54822	101.5482232	101.5482232	100.9475557	99.78922	98.63674516	97.51072827	96.41026691	95.33449928
160419A00004	4/19/2016	1.52	4/20/2020	4/19/2016	100.28208	100.2820834	100.2820834	100.1508478	99.92985725	99.70985118	99.49082299	99.27276615	99.05567416
160422A00015	4/22/2016	1.61	4/22/2020	4/22/2016	100.30963	100.3096257	100.3096257	100.1749527	99.94842557	99.72293017	99.49845949	99.27500651	99.05256431
160429A00041	4/29/2016	1.71	4/29/2021	4/29/2016	101.80381	101.8038074	101.8038074	101.2033892	99.99236037	98.7845816	97.6058214	96.45504433	95.33126367
160503A00016	5/3/2016	1.48	5/5/2020	5/3/2016	100.32452	100.3245203	100.3245203	100.1681449	99.90592065	99.64507171	99.38558729	99.1274567	98.87066932
160504A00004	5/4/2016	2.3	5/4/2026	5/4/2016	113.79328	113.793281	113.793281	110.4216008	104.1648935	98.30522429	92.81531963	87.66989051	82.8455085
160510A00010	5/10/2016	1.6	5/3/2021	5/10/2016	101.68003	101.6800315	101.6800315	101.0800492	99.85752867	98.63991547	97.45078902	96.28915456	95.15406329
160526A00011	5/26/2016	1.58	5/26/2021	5/26/2016	101.95073	101.9507305	101.9507305	101.3481308	100.0449112	98.76043778	97.49974192	96.26219459	95.04718895
160603A00021	6/3/2016	1.66	6/3/2021	6/3/2016	101.8753	101.8753019	101.8753019	101.2713428	99.9472949	98.64530182	97.36619346	96.10941901	94.87444483
160613A00047	6/15/2016	2.18	6/16/2025	6/15/2016	110.13362	110.1336218	110.1336218	107.7943933	102.4845056	97.46921093	92.73076053	88.25248244	84.01878951
160615A00023	6/15/2016	1.38	6/15/2021	6/15/2016	101.75366	101.7536579	101.7536579	101.1367369	99.77715143	98.44141999	97.1297299	95.84148896	94.57612399
160616A00028	6/16/2016	1.81	6/16/2023	6/16/2016	105.15387	105.1538667	105.1538667	103.930622	100.6033554	97.39985575	94.3149583	91.34367231	88.4812431
160617A00002	6/17/2016	1.2	6/17/2020	6/17/2016	100.41413	100.414132	100.414132	100.1886777	99.80808542	99.43039035	99.05555938	98.68355991	98.31435981
160624A00006	6/24/2016	1.52	6/24/2021	6/24/2016	101.74347	101.7434717	101.7434717	101.1191322	99.738707	98.3832909	97.05260493	95.74603169	94.46297385
160624A00063	6/24/2016	1.52	6/24/2022	6/24/2016	103.40084	103.4008369	103.4008369	102.532089	100.1574476	97.84943044	95.6058633	93.4245961	91.30356322
160628A00030	6/28/2016	1.48	6/28/2021	6/28/2016	101.70009	101.7000941	101.7000941	101.0719357	99.68088791	98.3154181	96.97503524	95.65910885	94.36702913
160628A00039	6/28/2016	2.01	6/29/2026	6/28/2016	112.2516	112.2515963	112.2515963	108.7126951	102.3661196	96.43224843	90.88222094	85.68926115	80.82858946
160701A00019	7/1/2016	1.73	7/3/2023	7/1/2016	104.94842	104.9484208	104.9484208	103.7099803	100.3417672	97.10049344	93.98078789	90.97746875	88.08560261
160712A00023	7/12/2016	1.79	7/12/2023	7/12/2016	105.19259	105.1925936	105.1925936	103.9430255	100.5477712	97.28130201	94.13813186	91.11296936	88.20077865
160713A00007	7/13/2016	1.32	7/13/2021	7/13/2016	101.76352	101.7635242	101.7635242	101.1185926	99.68379951	98.27628821	96.89540229	95.54045323	94.21077574
160725A00010	7/25/2016	1.61	7/26/2021	7/25/2016	101.98819	101.988194	101.988194	101.3311007	99.86483707	98.42702493	97.01697349	95.63395015	94.27724755

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160726A00024	7/26/2016	1.61	7/26/2021	7/26/2016	101.98819	101.988194	101.988194	101.3311007	99.86483707	98.42702493	97.01697349	95.63395015	94.27724755
160728A00022	7/28/2016	1.37	7/28/2021	7/28/2016	101.88907	101.8890702	101.8890702	101.2287054	99.75383745	98.30776296	96.88976833	95.49910866	94.13506492
160811A00011	8/11/2016	2.25	8/11/2026	8/11/2016	112.74437	112.7443692	112.7443692	109.0863719	102.6694888	96.67487551	91.07261974	85.83499748	80.93638021
160825A00054	8/29/2016	2.49	8/30/2021	8/29/2016	103.52388	103.5238822	103.5238822	102.8370308	101.2662871	99.7270513	98.21853922	96.73989732	95.29030333
160829A00037	8/31/2016	2.35	8/31/2021	8/31/2016	103.30576	103.3057572	103.3057572	102.61924	101.0476379	99.50759992	97.99833215	96.51897857	95.06871464
160906A00017	9/6/2016	1.65	9/7/2021	9/6/2016	102.2109	102.2109001	102.2109001	101.5262642	99.944609	98.39503148	96.87667565	95.3886633	93.93014888
160928A00014	9/28/2016	1.37	9/28/2021	9/28/2016	102.10426	102.1042574	102.1042574	101.4096695	99.76702309	98.15859963	96.58341352	95.04049881	93.52892698
161013A00038	10/13/2016	1.52	10/13/2021	10/13/2016	102.41484	102.414835	102.414835	101.7121346	100.0271282	98.37784273	96.76322463	95.18224529	93.63391696
161014A00006	10/14/2016	1.74	10/14/2021	10/14/2016	102.50544	102.5054422	102.5054422	101.8037611	100.1203979	98.4726698	96.85953501	95.27996755	93.73298225
161031A00042	10/31/2016	1.51	7/17/2020	10/31/2016	100.58861	100.5886122	100.5886122	100.3151637	99.85294753	99.39498989	98.94123205	98.4916163	98.04608603
161102A00026	11/2/2016	1.54	10/30/2020	11/2/2016	100.97239	100.9723933	100.9723933	100.518084	99.7707417	99.03446286	98.30900339	97.59412637	96.88960173
161109A00018	11/9/2016	2.63	11/9/2026	11/9/2016	115.80465	115.8046484	115.8046484	111.807095	105.0746416	98.79782744	92.94341674	87.48071898	82.38142884
161208A00007	12/8/2016	2.6	12/8/2023	12/8/2016	108.95194	108.9519435	108.9519435	107.5225751	103.6707655	99.97864008	96.43886696	93.04439042	89.78851725
161208A00016	12/8/2016	2.24	12/8/2021	12/8/2016	103.64525	103.6452478	103.6452478	102.9148102	101.0748173	99.27650694	97.51878242	95.80049518	94.12053639
161213A00017	12/13/2016	2.24	12/13/2022	12/13/2016	106.1589	106.1588968	106.1588968	105.1123237	102.2460939	99.47273388	96.78883505	94.19104634	91.67616046
170110A00022	1/10/2017	2.27	1/10/2023	1/10/2017	106.41291	106.4129066	106.4129066	105.3338791	102.3910841	99.5459377	96.79476312	94.13395428	91.5600639
170111A00012	1/11/2017	3.31	1/11/2030	1/11/2017	129.8528	129.8527971	129.8527971	121.6773204	111.6505509	102.5652075	94.32714772	86.85201356	80.06427664
170117A00046	1/17/2017	2.55	1/17/2024	1/17/2017	109.00579	109.0057858	109.0057858	107.5303888	103.574911	99.78768727	96.16077974	92.68657025	89.35784268
170215A00017	2/15/2017	3.26	2/16/2027	2/15/2017	120.88308	120.8830805	120.8830805	116.4888964	109.3452156	102.6992826	96.51376018	90.75418924	85.38886312
170216A00028	2/16/2017	1.97	2/16/2021	2/16/2017	101.96311	101.9631054	101.9631054	101.361496	100.3161405	99.29084555	98.28643358	97.30227151	96.33775166
170217A00014	2/17/2017	2.27	2/14/2022	2/17/2017	104.072	104.0719984	104.0719984	103.2996171	101.273751	99.29772643	97.37008381	95.48932917	93.65402556
170303A00008	3/3/2017	1.97	3/3/2020	3/3/2017	100.15222	100.1522158	100.1522158	100.1026919	100.0140618	99.92559291	99.8372849	99.74913728	99.66114961
170310A00026	3/10/2017	2.15	9/8/2020	3/10/2017	101.1613	101.1612987	101.1612987	100.7964772	100.1886962	99.58823258	98.99495465	98.40873395	97.82944502
170313A00033	3/13/2017	3.31	3/15/2027	3/13/2017	121.45629	121.4562864	121.4562864	116.9693268	109.7372089	103.0132961	96.75911813	90.93922405	85.52101917
170329A00015	3/29/2017	2.11	3/29/2021	3/29/2017	102.13852	102.138525	102.138525	101.5372658	100.3996954	99.2696944	98.16503462	97.08487114	96.02839623
170404A00007	4/4/2017	2.22	4/4/2022	4/4/2017	104.2285	104.2285033	104.2285033	103.4221475	101.2615704	99.15658598	97.10542256	95.10632671	93.15761663
170410A00007	4/10/2017	2.1	4/11/2022	4/10/2017	104.40231	104.4023117	104.4023117	103.5874779	101.3981387	99.26566612	97.18821976	95.16398897	93.19123798
170417A00057	4/17/2017	2.32	4/17/2023	4/17/2017	106.55604	106.5560398	106.5560398	105.3841053	102.1903312	99.11003184	96.13854892	93.27139571	90.50430052
170417A00069	4/17/2018	2.07	4/16/2021	4/17/2018	102.19255	102.1925528	102.1925528	101.590804	100.4091188	99.2322364	98.08284281	96.95998344	95.86274749
170419A00024	4/19/2017	2.45	4/21/2025	4/19/2017	112.31072	112.310716	112.310716	110.0714392	104.812451	99.83784105	95.13074245	90.67533527	86.45682175
170501A00003	5/1/2017	1.85	5/1/2020	5/1/2017	100.40427	100.4042652	100.4042652	100.254247	100.0028588	99.75272703	99.50384217	99.25619501	99.00977636
170501A00008	5/1/2017	2.23	5/2/2022	5/1/2017	104.39963	104.3996318	104.3996318	103.5719966	101.3339893	99.15517769	97.03361231	94.9673791	92.95464442
170512A00035	5/15/2017	1.85	5/15/2020	5/15/2017	100.46674	100.4667438	100.4667438	100.2941295	100.0042332	99.71602262	99.42948298	99.14459968	98.8613583

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170515A00038	5/15/2017	2.43	5/15/2023	5/15/2017	107.07682	107.0768181	107.0768181	105.8728821	102.597129	99.44005542	96.39677114	93.46254685	90.63287826
170515A00039	5/15/2017	2.58	5/15/2024	5/15/2017	109.87069	109.8706881	109.8706881	108.2513438	103.9639394	99.8713474	95.96375349	92.23181784	88.66672316
170516A00015	5/16/2017	1.88	5/17/2021	5/16/2017	102.3072	102.3072047	102.3072047	101.7033014	100.4273304	99.16473668	97.92784964	96.7158908	95.52811339
170517A00026	5/17/2017	1.63	5/18/2020	5/17/2017	100.45302	100.4530214	100.4530214	100.2753428	99.97683019	99.68010633	99.38515508	99.0919605	98.8005068
170522A00044	5/22/2017	1.99	5/24/2021	5/22/2017	102.27516	102.2751648	102.2751648	101.6727073	100.3771185	99.09901136	97.84502948	96.61451359	95.40682851
170525A00028	5/25/2017	1.97	5/25/2022	5/25/2017	104.33919	104.3391872	104.3391872	103.489651	101.1839335	98.94081219	96.75829721	94.63440724	92.56723823
170530A00005	5/30/2017	1.99	5/28/2021	5/30/2017	102.29419	102.2941932	102.2941932	101.6916227	100.3827476	99.09374878	97.82804422	96.58504089	95.36416571
170530A00026	5/30/2017	1.81	6/1/2021	5/30/2017	102.28595	102.2859482	102.2859482	101.6809833	100.3561817	99.05329967	97.77327927	96.51557106	95.2796428
170530A00064	5/30/2017	2.32	3/27/2023	5/30/2017	106.43924	106.439242	106.439242	105.2889181	102.1529218	99.12670106	96.20583388	93.3860439	90.66325589
170601A00008	6/1/2017	1.81	6/1/2020	6/1/2017	100.52904	100.5290403	100.5290403	100.3290428	99.99246876	99.65814507	99.32604929	98.99615924	98.66845307
170606A00014	6/6/2017	1.9	6/6/2022	6/6/2017	104.23434	104.2343402	104.2343402	103.3754545	101.0391298	98.76703581	96.55713497	94.40739257	92.31585213
170609A00006	6/9/2017	1.89	12/9/2021	6/9/2017	103.33229	103.3322924	103.3322924	102.6006691	100.7549357	98.95119886	97.18833441	95.46518156	93.78061979
170609A00007	6/9/2017	1.96	6/9/2022	6/9/2017	104.39225	104.3922516	104.3922516	103.5301133	101.1838172	98.90221975	96.68326371	94.5248932	92.42513165
170609A00025	6/9/2017	2.13	6/9/2022	6/9/2017	104.36467	104.3646717	104.3646717	103.5054978	101.1683024	98.89538374	96.6847103	94.53424401	92.44202521
170623A00028	6/23/2017	2.79	6/23/2027	6/23/2017	118.41711	118.417107	118.417107	113.6661715	106.2959129	99.46370062	93.12744856	87.24847061	81.79128592
170629A00015	6/29/2017	1.92	10/26/2020	6/29/2017	101.24175	101.2417465	101.2417465	100.7935685	100.055876	99.32894931	98.61255404	97.90646263	97.210454
170630A00009	6/30/2017	2.53	6/30/2025	6/30/2017	113.19904	113.1990376	113.1990376	110.7750481	105.3133902	100.1565551	95.28605426	90.68451864	86.33571837
170630A00036	6/30/2017	2.01	6/30/2022	6/30/2017	104.62144	104.6214387	104.6214387	103.7412378	101.3355944	98.99775223	96.72550527	94.51665274	92.36908087
170713A00033	7/13/2017	1.72	7/13/2020	7/13/2017	100.72903	100.7290251	100.7290251	100.4614274	100.0090343	99.56071933	99.11642724	98.67610394	98.23969629
170714A00006	7/14/2017	1.67	7/14/2020	7/14/2017	100.71057	100.7105679	100.7105679	100.4413748	99.98630315	99.53535867	99.08848522	98.64562768	98.20673195
170725A00001	7/25/2017	1.88	7/27/2020	7/25/2017	100.8066	100.8066015	100.8066015	100.5165842	100.0265495	99.54128242	99.06071359	98.58477504	98.11340012
170728A00030	7/28/2017	2.18	7/27/2022	7/28/2017	104.73321	104.7332124	104.7332124	103.8305666	101.3627491	98.96630294	96.63884093	94.37798547	92.18145569
170728A00032	7/28/2017	2.36	7/27/2023	7/28/2017	107.25924	107.2592397	107.2592397	105.9794472	102.5102591	99.1737491	95.96422703	92.876188	89.904396
170731A00027	7/31/2017	2	7/30/2021	7/31/2017	102.59304	102.5930449	102.5930449	101.9294539	100.4480997	98.99566229	97.57145072	96.17471519	94.8047319
170803A00005	8/3/2017	1.67	8/3/2020	8/3/2017	100.79683	100.7968292	100.7968292	100.4946908	99.98486567	99.4802016	98.98062046	98.48604574	97.99640246
170803A00019	8/3/2017	2.14	8/3/2022	8/3/2017	104.66841	104.6684057	104.6684057	103.759701	101.274509	98.86164941	96.51868302	94.24318469	92.03282868
170808A00037	8/8/2017	2.19	12/15/2022	8/8/2017	105.4947	105.4946987	105.4946987	104.4539503	101.6040424	98.84646284	96.17782249	93.59479108	91.09418118
170809A00005	8/9/2017	2.61	8/11/2025	8/9/2017	112.81145	112.8114483	112.8114483	110.2935361	104.7738198	99.5671099	94.65410512	90.01669881	85.63799232
170809A00023	8/9/2017	2.86	8/9/2027	8/9/2017	119.26241	119.2624115	119.2624115	114.3503176	106.8387073	99.88350314	93.44052247	87.46921277	81.93243318
170811A00015	8/11/2017	1.81	8/11/2020	8/11/2017	100.83194	100.831943	100.831943	100.5164409	99.98564244	99.46044388	98.9407568	98.42649467	97.91757278
170815A00027	8/15/2017	1.85	8/17/2020	8/15/2017	100.88544	100.8854427	100.8854427	100.5594471	100.0121372	99.47077938	98.93527671	98.4055345	97.88146003
170830A00030	8/30/2017	2	3/30/2022	8/30/2017	103.72144	103.7214443	103.7214443	102.9213363	100.7797869	98.69310789	96.65955565	94.67740862	92.74501509
170830A00047	8/30/2017	1.61	8/31/2020	8/30/2017	100.8821	100.8820989	100.8820989	100.5313919	99.94520929	99.36583694	98.79315683	98.22705364	97.66741468

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170831A00008	8/31/2017	1.78	8/31/2020	8/31/2017	100.90065	100.9006491	100.9006491	100.5505162	99.9652796	99.38682855	98.81504571	98.24981644	97.69102871
170831A00022	8/31/2017	2.27	2/29/2024	8/31/2017	108.11916	108.1191553	108.1191553	106.6062696	102.5526896	98.67610799	94.96793474	91.41996233	88.02442836
170831A00047	8/31/2017	1.6	8/31/2020	8/31/2017	100.87618	100.8761847	100.8761847	100.5254894	99.93932653	99.3599738	98.78731315	98.22122927	97.66160944
170831A00049	8/31/2017	1.68	3/1/2021	8/31/2017	101.71157	101.7115704	101.7115704	101.1106671	100.0332306	98.97562121	97.94026112	96.92645442	95.93353396
170831A00054	8/31/2017	1.85	6/30/2022	8/31/2017	104.23047	104.2304708	104.2304708	103.3524073	100.9515492	98.61839489	96.35073463	94.14637071	92.00319224
170911A00023	9/11/2017	1.77	9/11/2020	9/11/2017	100.94079	100.9407922	100.9407922	100.5711172	99.95598738	99.34836715	98.74811952	98.15511083	97.56921062
170913A00025	9/13/2017	1.94	8/16/2021	9/13/2017	102.58025	102.5802498	102.5802498	101.9059878	100.3798799	98.88404325	97.4177231	95.98011509	94.57044369
170913A00027	9/13/2017	2.08	9/13/2022	9/13/2017	104.71838	104.7183769	104.7183769	103.7724561	101.178381	98.66213439	96.22096944	93.85219038	91.55321678
171003A00005	10/3/2017	1.92	10/5/2020	10/3/2017	101.14462	101.1446199	101.1446199	100.7323984	100.0517019	99.38017936	98.71764633	98.06392318	97.41883506
171004A00017	10/4/2017	1.89	10/5/2020	10/4/2017	101.12397	101.1239738	101.1239738	100.7117994	100.0311818	99.35973741	98.6972818	98.04363533	97.39862318
171013A00021	10/13/2017	2	10/17/2022	10/13/2017	105.16522	105.1652248	105.1652248	104.181558	101.4806038	98.86312939	96.326057	93.86640596	91.48132826
171025A00026	10/25/2017	2.64	10/25/2024	10/25/2017	111.1282	111.1281984	111.1281984	109.2604128	104.5249522	100.023659	95.74372599	91.67306376	87.80031178
171025A00027	10/25/2017	2.36	10/25/2022	10/25/2017	105.69796	105.6979647	105.6979647	104.7067625	101.988587	99.35467269	96.8019102	94.32727832	91.92789107
171026A00004	10/26/2017	2	10/26/2020	10/26/2017	101.30146	101.3014602	101.3014602	100.8531357	100.115198	99.38802856	98.67139309	97.96506392	97.26881995
171026A00006	10/26/2017	2.32	10/26/2022	10/26/2017	105.59314	105.5931352	105.5931352	104.6015564	101.8822194	99.24725994	96.69355907	94.21808889	91.81795711
171026A00008	10/26/2017	2.6	10/25/2024	10/26/2017	110.93752	110.9375162	110.9375162	109.0714682	104.3404356	99.84341378	95.56760069	91.50091367	87.63199848
171030A00029	10/30/2017	1.9	4/30/2020	10/30/2017	100.4123	100.4122972	100.4122972	100.2638813	100.0152245	99.76779464	99.52158258	99.27657945	99.03277641
171031A00007	10/31/2017	2.15	12/27/2021	10/31/2017	103.57407	103.5740731	103.5740731	102.8336242	100.9447438	99.09971737	97.29735269	95.53641276	93.8157045
171031A00027	10/31/2017	1.98	10/30/2020	10/31/2017	101.3057	101.3056978	101.3056978	100.8505605	100.1018332	99.36418378	98.63736798	97.92114862	97.21529538
171031A00029	10/31/2017	2.43	10/31/2023	10/31/2017	108.06898	108.068984	108.068984	106.6856177	102.950742	99.36710924	95.92777278	92.62609966	89.45580378
171101A00022	11/1/2017	2.65	11/1/2024	11/1/2017	111.22087	111.2208687	111.2208687	109.3405854	104.5850745	100.0655127	95.76895452	91.68318303	87.79672003
171115A00028	11/15/2017	2.25	8/18/2021	11/15/2017	103.0748	103.0748013	103.0748013	102.397208	100.8618505	99.35698016	97.88184635	96.43563639	95.01756685
171120A00017	11/20/2017	2.41	11/21/2022	11/20/2017	105.99306	105.9930644	105.9930644	104.9740886	102.1798822	99.47428539	96.85407486	94.31608483	91.85728601
171122A00012	11/22/2017	2.22	11/23/2020	11/22/2017	101.60971	101.6097068	101.6097068	101.1099857	100.2955416	99.49418636	98.70560633	97.9294978	97.1655666
171130A00003	11/30/2017	2.22	11/30/2020	11/30/2017	101.64754	101.6475381	101.6475381	101.1348928	100.3014929	99.48178315	98.67542846	97.88210466	97.101498
171206A00010	12/6/2017	2.45	12/6/2022	12/6/2017	106.19544	106.1954359	106.1954359	105.1601563	102.3234381	99.57782298	96.92000604	94.34672622	91.85486111
171208A00007	12/8/2017	2.47	12/9/2024	12/8/2017	111.55326	111.5532628	111.5532628	109.5923535	104.7006872	100.0573015	95.64842748	91.46103678	87.48288899
171214A00005	12/14/2017	2.29	12/14/2022	12/14/2017	106.31007	106.3100723	106.3100723	105.2614875	102.3904701	99.61253763	96.92427292	94.32231449	91.80344529
171228A00089	12/28/2017	2.13	12/28/2020	12/28/2017	101.85399	101.8539903	101.8539903	101.2897735	100.3784475	99.48346815	98.60439887	97.7408183	96.8923199
180102A00004	1/2/2018	2.28	1/8/2021	1/2/2018	101.91627	101.9162739	101.9162739	101.3396194	100.4003233	99.47839601	98.57335897	97.68475112	96.81212803
180104A00018	1/4/2018	2.97	1/4/2027	1/4/2018	118.5225	118.5225044	118.5225044	114.3007097	107.3438483	100.8657575	94.83101033	89.2068697	83.96317636
180125A00022	1/25/2018	2.69	1/25/2023	1/25/2018	107.21606	107.2160588	107.2160588	106.1193522	103.1382509	100.2569835	97.47176409	94.77886803	92.17473663
180205A00019	2/5/2018	2.88	2/5/2025	2/5/2018	114.01009	114.0100865	114.0100865	111.9132203	106.8122103	101.9770004	97.39243819	93.04420708	88.91888198

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180215A00044	2/15/2018	2.64	2/1/2021	2/15/2018	102.40673	102.4067317	102.4067317	101.8052617	100.7990822	99.81265962	98.84550353	97.89705364	96.96677123
180220A00027	2/20/2018	2.69	2/19/2021	2/20/2018	102.57676	102.5767554	102.5767554	101.974411	100.920175	99.8860192	98.87302666	97.88055241	96.90797752
180226A00043	2/26/2018	2.73	9/27/2021	2/26/2018	104.0965	104.0965022	104.0965022	103.3953131	101.7432014	100.1252881	98.54064924	96.98832145	95.46737844
180307A00010	3/7/2018	2.68	2/16/2021	3/7/2018	102.54631	102.5463061	102.5463061	101.9441154	100.8978998	99.87170722	98.86635866	97.88122358	96.91569665
180308A00016	3/8/2018	2.88	6/1/2022	3/8/2018	106.09287	106.0928726	106.0928726	105.2308243	102.8946362	100.6219928	98.41093663	96.25946987	94.16567075
180313A00022	3/13/2018	2.54	3/12/2021	3/13/2018	102.72847	102.7284715	102.7284715	102.1238611	101.0166258	99.92448011	98.85590438	97.81014152	96.78646655
180315A00016	3/15/2018	2.61	3/16/2020	3/15/2018	100.29583	100.2958301	100.2958301	100.2241572	100.0994844	99.97513715	99.85111412	99.72741401	99.60403552
180328A00006	3/28/2018	2.73	3/26/2021	3/28/2018	102.84537	102.8453688	102.8453688	102.2415966	101.1061577	99.97964964	98.87820656	97.80099863	96.7472323
180328A00008	3/28/2018	2.85	3/25/2022	3/28/2018	105.54277	105.5427728	105.5427728	104.7372069	102.5888355	100.4951196	98.45437195	96.46488645	94.52502576
180329A00003	3/29/2018	3.08	3/29/2028	3/29/2018	124.39328	124.3932838	124.3932838	118.6038886	110.2679651	102.5943994	95.52682331	89.01389626	83.00888855
180329A00010	3/29/2018	2.76	3/29/2021	3/29/2018	102.9009	102.9008974	102.9008974	102.296877	101.1546136	100.0199828	98.91076538	97.82611463	96.76522099
180403A00005	4/3/2018	2.72	4/3/2023	4/3/2018	108.35127	108.3512686	108.3512686	107.1764594	103.97767	100.8914248	97.91317078	95.03849644	92.26319954
180418A00021	4/18/2018	2.85	4/19/2021	4/18/2018	103.16766	103.1676619	103.1676619	102.5622411	101.3669207	100.1761282	99.01328651	97.87741972	96.76759674
180425A00023	4/25/2018	2.97	4/23/2021	4/25/2018	103.34518	103.3451752	103.3451752	102.7390261	101.5326915	100.3304296	99.15662196	98.0102667	96.89040858
180427A00011	4/27/2018	3.03	4/27/2022	4/27/2018	106.18219	106.1821923	106.1821923	105.3490977	103.1041387	100.9181188	98.78913085	96.71527128	94.6947166
180427A00017	4/27/2018	2.94	4/27/2021	4/27/2018	103.33736	103.3373617	103.3373617	102.7311775	101.515026	100.3024797	99.11887354	97.96318025	96.83442073
180510A00024	5/10/2018	2.77	5/10/2021	5/10/2018	103.42161	103.4216096	103.4216096	102.8135004	101.5531725	100.3021215	99.07838056	97.88105484	96.70928863
180514A00004	5/14/2018	2.64	5/14/2020	5/14/2018	100.72792	100.7279209	100.7279209	100.5563823	100.2683303	99.98194157	99.69720177	99.41409653	99.13261167
180514A00030	5/14/2018	2.9	5/16/2022	5/14/2018	106.44956	106.4495595	106.4495595	105.5964892	103.2897297	101.0448498	98.85988959	96.73287405	94.66190737
180514A00035	5/14/2018	3.07	5/14/2024	5/14/2018	112.79684	112.7968434	112.7968434	111.1459873	106.7762793	102.6048279	98.62165713	94.81725722	91.18265134
180515A00035	5/16/2018	2.98	5/17/2021	5/16/2018	103.53736	103.5373589	103.5373589	102.9300947	101.6489552	100.3812204	99.13921855	97.92217211	96.72933492
180517A00036	5/17/2018	2.74	9/17/2020	5/17/2018	101.67402	101.6740247	101.6740247	101.2914996	100.6564145	100.029293	99.40998589	98.79834743	98.19423568
180521A00025	5/21/2018	3.24	5/21/2025	5/21/2018	116.74075	116.740748	116.740748	114.3823582	108.9318928	103.7784722	98.90443077	94.29314224	89.92905474
180521A00072	5/21/2018	2.96	5/23/2022	5/21/2018	106.64383	106.6438322	106.6438322	105.7837152	103.4561706	101.1914875	98.98770219	96.84282186	94.75493172
180529A00060	5/29/2018	2.83	6/1/2021	5/29/2018	103.44727	103.447272	103.447272	102.8391405	101.5095893	100.2019507	98.91720416	97.65480024	96.41420644
180530A00006	5/30/2018	2.87	5/31/2022	5/30/2018	106.0622	106.0622047	106.0622047	105.2011234	102.8680037	100.5982792	98.3899992	96.24117263	94.14988415
180530A00084	5/30/2018	2.61	6/1/2021	5/30/2018	103.36725	103.3672468	103.3672468	102.758027	101.42565	100.1152879	98.82791335	97.56297346	96.31993272
180604A00026	6/4/2018	2.74	6/4/2020	6/4/2018	100.86477	100.8647671	100.8647671	100.6596013	100.3140995	99.97096846	99.63018377	99.29172144	98.95555778
180604A00045	6/4/2018	2.87	6/4/2021	6/4/2018	103.52277	103.5227722	103.5227722	102.9113182	101.5729367	100.2568964	98.96402108	97.69375141	96.44554576
180604A00047	6/4/2018	2.97	6/3/2022	6/4/2018	106.31983	106.3198264	106.3198264	105.4549564	103.1106668	100.8302602	98.61176742	96.45317579	94.35254954
180604A00050	6/4/2018	3.15	6/4/2024	6/4/2018	112.49068	112.490684	112.490684	110.8229101	106.4280168	102.2343593	98.23181126	94.41068921	90.76184874
180614A00006	6/14/2018	2.94	6/14/2021	6/14/2018	103.69145	103.6914521	103.6914521	103.0692448	101.7020035	100.3585349	99.0391398	97.74322657	96.47022266
180615A00069	6/15/2018	2.86	6/15/2022	6/15/2018	106.58463	106.584628	106.584628	105.705817	103.3169438	100.9941639	98.73539939	96.53853752	94.40154768

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180619A00031	6/19/2018	2.74	6/21/2021	6/19/2018	103.68825	103.6882527	103.6882527	103.0575229	101.6673658	100.3021037	98.96165877	97.64541278	96.35276766
180625A00009	6/25/2018	3	6/27/2022	6/25/2018	106.56943	106.5694268	106.5694268	105.6839298	103.2717099	100.9268983	98.64735585	96.43090658	94.27545977
180626A00045	6/26/2018	2.91	6/25/2021	6/26/2018	103.71565	103.715652	103.715652	103.0823539	101.6847653	100.3125179	98.96533247	97.64258173	96.34365891
180627A00017	6/27/2018	2.9	6/25/2021	6/27/2018	103.70149	103.7014882	103.7014882	103.0682472	101.6707622	100.2986171	98.95153216	97.62888026	96.33005464
180628A00018	6/28/2018	2.76	6/29/2020	6/28/2018	101.04582	101.0458222	101.0458222	100.8008427	100.3865085	99.97557188	99.56799125	99.16372567	98.76273488
180628A00081	6/28/2018	2.72	6/21/2021	6/28/2018	103.66011	103.660111	103.660111	103.0294946	101.6395422	100.2744823	98.93423612	97.61818553	96.32573256
180629A00039	6/29/2018	2.91	6/29/2021	6/29/2018	103.74464	103.7446432	103.7446432	103.1071994	101.6983577	100.3154353	98.95794327	97.62524095	96.31670875
180703A00015	7/3/2018	3.06	7/3/2023	7/3/2018	109.53858	109.5385838	109.5385838	108.2683959	104.8220042	101.5046605	98.31097252	95.23568438	92.27379171
180719A00064	7/19/2018	3.3	7/21/2025	7/19/2018	116.47569	116.4756876	116.4756876	113.97673	108.4114593	103.1573512	98.19546664	93.50799472	89.07830005
180720A00030	7/20/2018	2.79	7/20/2021	7/20/2018	103.97351	103.9735073	103.9735073	103.3124287	101.8424437	100.4006677	98.98647182	97.59913395	96.23795663
180723A00027	1/23/2019	3.13	1/24/2022	1/23/2019	105.68263	105.6826313	105.6826313	104.9135142	102.9303861	100.9949022	99.10574719	97.26152698	95.46089912
180723A00029	6/21/2019	3.17	6/21/2022	6/21/2019	106.93501	106.9350056	106.9350056	106.0523446	103.6519259	101.3181307	99.0488673	96.84199784	94.69546785
180724A00075	7/24/2018	2.98	7/24/2023	7/24/2018	110.07267	110.0726663	110.0726663	108.7706576	105.2441105	101.8519981	98.58858825	95.44831006	92.42586467
180725A00027	7/25/2018	2.95	12/17/2020	7/25/2018	102.38987	102.3898654	102.3898654	101.8448417	100.9622936	100.0950339	99.24266751	98.40481286	97.58110136
180725A00029	7/25/2018	2.98	4/16/2021	7/25/2018	103.30528	103.3052824	103.3052824	102.6993975	101.5105979	100.3266906	99.17038616	98.0407269	96.93679904
180726A00024	7/26/2018	3.09	7/26/2022	7/26/2018	107.01188	107.0118753	107.0118753	106.0974984	103.6036585	101.1816361	98.82907135	96.54357535	94.32285636
180727A00037	7/27/2018	3.13	7/27/2023	7/27/2018	109.9675	109.9674989	109.9674989	108.6686986	105.1525356	101.7703382	98.51640103	95.38517342	92.37137565
180727A00039	7/27/2018	3.48	7/27/2028	7/27/2018	126.9744	126.9743953	126.9743953	120.8122353	112.1571237	104.2093243	96.90695851	90.19375643	84.01863897
180730A00023	7/30/2018	3.13	7/30/2024	7/30/2018	113.69783	113.6978348	113.6978348	111.931836	107.3389642	102.9636698	98.79460711	94.8209623	91.03254531
180730A00033	7/30/2018	3.11	7/29/2022	7/30/2018	107.08539	107.0853923	107.0853923	106.1678337	103.6652265	101.2349063	98.87449051	96.58156753	94.35382395
180730A00041	7/30/2018	3.14	7/31/2023	7/30/2018	110.03401	110.0340062	110.0340062	108.7304617	105.2027606	101.8098486	98.545968	95.40551841	92.38317356
180730A00081	7/30/2018	3.5	7/28/2028	7/30/2018	127.15301	127.1530057	127.1530057	120.9837662	112.3191479	104.362664	97.05235352	90.33187266	84.1500763
180801A00009	8/1/2018	2.98	3/15/2021	8/1/2018	103.0657	103.0657016	103.0657016	102.4612407	101.3481138	100.2487251	99.17317827	98.12070321	97.09056292
180801A00011	8/1/2018	3	5/14/2021	8/1/2018	103.54087	103.5408741	103.5408741	102.9336434	101.6624053	100.4027806	99.16951963	97.96179617	96.77881886
180814A00010	8/14/2018	3.1	8/14/2025	8/14/2018	116.68945	116.6894476	116.6894476	114.1022587	108.4333912	103.0858242	98.03973445	93.27651192	88.77879104
180815A00008	8/15/2018	2.85	8/14/2020	8/15/2018	101.41067	101.4106687	101.4106687	101.0889193	100.5481724	100.0132134	99.48394944	98.96028981	98.44214568
180815A00021	8/15/2018	3.01	8/15/2023	8/15/2018	109.68744	109.6874413	109.6874413	108.3707664	104.8096429	101.3858154	98.09335528	94.92651028	91.87981256
180817A00022	8/17/2018	2.87	8/17/2023	8/17/2018	109.86823	109.868235	109.868235	108.5423334	104.9559371	101.5083394	98.19351816	95.00563887	91.93915664
180820A00017	8/20/2018	3	8/18/2023	8/20/2018	109.67409	109.6740854	109.6740854	108.3543942	104.7856261	101.3546854	98.05560852	94.88261164	91.8301974
180820A00055	8/20/2018	3.37	8/21/2028	8/20/2018	126.24726	126.247257	126.247257	120.0189121	111.3335117	103.3634827	96.04578763	89.3231541	83.14362887
180823A00053	8/23/2018	3.2	8/23/2028	8/23/2018	126.62757	126.6275705	126.6275705	120.3133155	111.5311855	103.4757681	96.08278558	89.29386725	83.056081
180827A00020	8/27/2018	3.21	8/27/2025	8/27/2018	116.27443	116.2744331	116.2744331	113.6740751	108.0206507	102.6883245	97.6572415	92.90876464	88.42550609
180830A00033	8/30/2018	2.87	8/31/2020	8/30/2018	101.545	101.5450031	101.5450031	101.1935946	100.6062052	100.0256193	99.45171923	98.88439016	98.32351979

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180904A00004	9/4/2018	2.89	9/5/2023	9/4/2018	110.08567	110.0856684	110.0856684	108.7386877	105.0976915	101.5991317	98.23674932	95.0044943	91.89662094
180904A00012	9/4/2018	3.35	9/4/2030	9/4/2018	134.50752	134.5075158	134.5075158	125.0267954	114.1385916	104.3318418	95.4922575	87.51812911	80.31897378
180906A00004	9/6/2018	2.92	9/7/2021	9/6/2018	104.2696	104.2696007	104.2696007	103.5759814	101.9772429	100.4108323	98.8759395	97.37167821	95.89719514
180913A00030	9/13/2018	3.33	9/12/2025	9/13/2018	117.07885	117.0788516	117.0788516	114.4243485	108.7075917	103.317363	98.23333853	93.43646284	88.90896592
180914A00008	9/14/2018	3.15	9/14/2023	9/14/2018	110.42251	110.4225149	110.4225149	109.0704267	105.4162174	101.9052813	98.53130292	95.28817943	92.1701159
180914A00046	9/14/2018	2.93	9/14/2021	9/14/2018	104.61845	104.6184517	104.6184517	103.9185325	102.2928922	100.7004584	99.14037687	97.61172652	96.11362121
180918A00011	9/18/2018	3.17	9/18/2023	9/18/2018	110.52709	110.5270909	110.5270909	109.170376	105.5034312	101.9805978	98.59550365	95.34199567	92.2142325
180918A00013	9/18/2018	3.11	9/16/2022	9/18/2018	107.46576	107.465755	107.465755	106.5014531	103.8629219	101.3034437	98.82026302	96.41063708	94.07194089
180920A00035	9/20/2018	3.16	9/20/2022	9/20/2018	107.62993	107.6299319	107.6299319	106.6611823	104.0095556	101.4376146	98.942569	96.52164494	94.17218825
180921A00039	9/21/2018	3.15	9/21/2022	9/21/2018	107.61114	107.6111443	107.6111443	106.6416271	103.9875208	101.4132416	98.91598982	96.49298448	94.14156457
180924A00044	9/24/2018	3.1	9/24/2021	9/24/2018	104.69343	104.6934342	104.6934342	103.9908456	102.3418586	100.726859	99.14495232	97.59518441	96.07663792
180927A00030	9/27/2018	3.01	10/27/2020	9/27/2018	102.06299	102.0629921	102.0629921	101.6110927	100.8673247	100.1344347	99.41218519	98.70034569	97.99869223
180928A00071	9/28/2018	2.93	3/30/2020	9/28/2018	100.44069	100.4406851	100.4406851	100.3451675	100.1817183	100.0188001	99.85641025	99.69454634	99.53320579
181001A00024	10/1/2018	2.95	4/15/2020	10/1/2018	100.56226	100.562261	100.562261	100.4393129	100.2316407	100.0248391	99.81890275	99.61382607	99.40960366
181010A00018	10/10/2018	3.17	6/1/2021	10/10/2018	103.9063	103.9063026	103.9063026	103.2963683	101.9636073	100.6527991	99.36493635	98.09946798	96.85586014
181026A00019	10/29/2018	3.09	10/16/2020	10/29/2018	102.03637	102.0363711	102.0363711	101.6033169	100.8894098	100.1855363	99.49148551	98.80705274	98.13203879
181109A00028	11/9/2018	3.72	11/9/2026	11/9/2018	123.21626	123.2162579	123.2162579	119.1108535	112.137119	105.6306413	99.55755376	93.88653397	88.58868592
181113A00066	11/13/2018	3.25	11/15/2021	11/13/2018	105.35145	105.351454	105.351454	104.6232622	102.8290346	101.0741646	99.3576044	97.67824026	96.03500029
181114A00026	11/14/2018	3.32	12/14/2022	11/14/2018	108.76447	108.7644709	108.7644709	107.7048919	104.8104527	102.00928	99.2980043	96.67326803	94.13185742
181115A00034	11/15/2018	3.05	5/15/2020	11/15/2018	100.81658	100.8165764	100.8165764	100.6435724	100.3530132	100.0641427	99.77694595	99.49140847	99.20751579
181120A00024	11/20/2018	3.25	11/20/2023	11/20/2018	111.33139	111.3313907	111.3313907	109.9032931	106.0538124	102.3615579	98.81937606	95.42037054	92.1579996
181121A00016	11/21/2018	3.29	11/21/2023	11/21/2018	111.49304	111.4930368	111.4930368	110.0626997	106.2074759	102.5097804	98.96244906	95.55857207	92.29159464
181123A00015	11/23/2018	3.14	11/23/2021	11/23/2018	105.21495	105.2149457	105.2149457	104.4842488	102.6694613	100.8949045	99.1595388	97.46224796	95.80195563
181126A00048	11/26/2018	3.24	11/25/2022	11/26/2018	108.37842	108.3784151	108.3784151	107.3412781	104.5025862	101.7539291	99.09207976	96.51382851	94.01610281
181128A00010	11/28/2018	2.95	11/30/2020	11/28/2018	102.38961	102.389607	102.389607	101.8738621	101.035377	100.210674	99.39941549	98.60127472	97.81593547
181203A00053	12/4/2018	3.23	12/1/2023	12/4/2018	111.3432	111.3432039	111.3432039	109.9036462	106.0244321	102.3047871	98.73745394	95.31542077	92.03203405
181212A00033	12/12/2018	2.99	12/12/2023	12/12/2018	111.22773	111.2277263	111.2277263	109.7696125	105.8445579	102.0826186	98.47629099	95.01834224	91.70191256
181214A00012	12/14/2018	3.07	12/14/2021	12/14/2018	105.24763	105.2476325	105.2476325	104.5063203	102.6352809	100.8068633	99.01996918	97.27341446	95.56605639
181217A00052	12/17/2018	3.04	12/17/2021	12/17/2018	105.21366	105.2136647	105.2136647	104.4708615	102.5922553	100.7566114	98.96281578	97.20967056	95.49601979
181226A00034	12/26/2018	2.9	12/27/2021	12/26/2018	105.01975	105.019746	105.019746	104.2723694	102.3693703	100.5104628	98.69447891	96.92017445	95.18634928
181227A00026	12/27/2018	3.03	12/27/2023	12/27/2018	110.76553	110.7655303	110.7655303	109.3007712	105.3651064	101.5941771	97.98035021	94.51627094	91.19496694
181227A00028	12/27/2018	3.46	12/27/2028	12/27/2018	128.1099	128.1099041	128.1099041	121.4136286	112.3464173	104.0514725	96.4585121	89.50388825	83.13004415
181228A00006	12/28/2018	2.86	11/13/2020	12/28/2018	102.07322	102.0732184	102.0732184	101.5905544	100.8008574	100.0234298	99.25798706	98.50425346	97.76196155

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190102A00026	1/2/2019	2.62	1/4/2022	1/2/2019	104.88592	104.8859212	104.8859212	104.1320635	102.202907	100.3190471	98.47925323	96.6822316	94.92673495
190102A00041	1/2/2019	2.91	1/2/2024	1/2/2019	110.33618	110.3361823	110.3361823	108.8678546	104.9250024	101.14792	97.52888948	94.06048112	90.73565319
190107A00028	1/7/2019	2.62	1/7/2022	1/7/2019	104.90673	104.9067349	104.9067349	104.1507289	102.2134606	100.3218634	98.47469014	96.67063092	94.9084234
190107A00035	1/7/2019	2.82	10/15/2021	1/7/2019	104.37362	104.3736206	104.3736206	103.663046	101.9606145	100.2941692	98.66270128	97.06517254	95.50058621
190108A00023	1/8/2019	2.77	1/9/2023	1/8/2019	107.8959	107.8959003	107.8959003	106.8087955	103.8466746	100.9825536	98.21276949	95.53370823	92.94191494
190109A00010	1/9/2019	2.98	1/9/2023	1/9/2019	107.97161	107.9716134	107.9716134	106.8882088	103.937423	101.0839793	98.32425728	95.65467543	93.0718095
190110A00012	1/10/2019	2.97	1/18/2024	1/10/2019	110.69109	110.6910904	110.6910904	109.2014211	105.2103263	101.3887122	97.72860246	94.22232588	90.86261613
190110A00014	1/10/2019	2.97	1/17/2024	1/10/2019	110.68374	110.6837359	110.6837359	109.1952858	105.2069172	101.3878049	97.72998892	94.22581289	90.86802433
190110A00080	1/10/2019	2.68	6/7/2021	1/10/2019	103.50445	103.5044506	103.5044506	102.8886184	101.5386212	100.2115003	98.90791477	97.62729235	96.36907896
190111A00010	1/11/2019	2.87	1/7/2022	1/11/2019	105.04028	105.040277	105.040277	104.285846	102.3537792	100.4671324	98.62467845	96.82511749	95.06719642
190111A00037	1/11/2019	2.68	1/11/2022	1/11/2019	105.05284	105.0528416	105.0528416	104.2933965	102.3441319	100.4410601	98.58291318	96.76835925	94.99611508
190114A00040	1/14/2019	2.89	1/14/2025	1/14/2019	113.89251	113.8925098	113.8925098	111.8399796	106.7997876	102.0193521	97.48403388	93.17998535	89.09421157
190114A00043	1/14/2019	2.88	1/14/2022	1/14/2019	105.10991	105.1099083	105.1099083	104.3503839	102.3992645	100.4944417	98.6346497	96.81855113	95.04485747
190117A00043	1/17/2019	2.88	7/17/2020	1/17/2019	101.2275	101.2275038	101.2275038	100.9530199	100.4890491	100.0293487	99.5738597	99.12252429	98.67528571
190122A00007	1/22/2019	3.03	1/22/2024	1/22/2019	110.96104	110.961039	110.961039	109.4646165	105.4578891	101.6216849	97.94795982	94.42897752	91.05741093
190122A00045	1/22/2019	3.17	1/22/2027	1/22/2019	121.50647	121.5064732	121.5064732	117.1381231	109.9840431	103.325591	97.12581219	91.35058005	85.96847718
190130A00012	1/30/2019	2.92	1/31/2022	1/30/2019	105.31243	105.312434	105.312434	104.5403742	102.5426607	100.5934054	98.6912465	96.83475382	95.02255061
190130A00018	1/30/2019	2.95	10/17/2022	1/30/2019	107.26806	107.2680575	107.2680575	106.2756114	103.5568539	100.9216516	98.36697346	95.88984499	93.48742349
190131A00018	1/31/2019	2.83	3/25/2022	1/31/2019	105.49936	105.4993629	105.4993629	104.6940187	102.5461218	100.4528716	98.41258029	96.42354205	94.4841198
190213A00023	2/13/2019	2.93	2/13/2024	2/13/2019	110.7188	110.7188015	110.7188015	109.2009729	105.1395343	101.2532567	97.53375724	93.97299064	90.56334349
190226A00020	2/26/2019	2.64	2/26/2024	2/26/2019	110.38881	110.3888075	110.3888075	108.8531912	104.741097	100.8082412	97.04594395	93.44589734	90.00024411
190227A00005	2/27/2019	2.87	2/27/2024	2/27/2019	110.57297	110.5729735	110.5729735	109.0424992	104.9450044	101.0256184	97.27574392	93.68714202	90.25201961
190228A00039	2/28/2019	2.88	2/28/2024	2/28/2019	110.6211	110.6211005	110.6211005	109.089258	104.9880133	101.0651256	97.31198155	93.72032665	90.28235355
190308A00014	3/8/2019	2.69	3/8/2021	3/8/2019	102.6899	102.6899048	102.6899048	102.0868878	100.9911556	99.91218517	98.85623602	97.82257691	96.81050728
190311A00009	3/11/2019	2.54	3/11/2022	3/11/2019	105.17194	105.1719354	105.1719354	104.376675	102.2618594	100.2003231	98.19044723	96.23058882	94.3191699
190321A00018	3/21/2019	2.45	3/21/2022	3/21/2019	105.04434	105.0443443	105.0443443	104.2419513	102.1019816	100.0164359	97.9836254	96.00185475	94.06949652
190325A00014	3/25/2019	2.43	9/25/2020	3/25/2019	101.52734	101.527342	101.527342	101.1309219	100.4746524	99.82688763	99.18746313	98.55621852	97.93299749
190326A00001	3/26/2019	2.55	3/28/2022	3/26/2019	104.91033	104.9103326	104.9103326	104.1056788	101.9563199	99.86184082	97.82052541	95.83065545	93.8905822
190326A00007	3/26/2019	2.5	3/26/2021	3/26/2019	102.57752	102.5775164	102.5775164	101.97471	100.8409102	99.71601895	98.61616766	97.54052711	96.48830437
190327A00022	3/27/2019	2.59	3/27/2020	3/27/2019	100.36534	100.3653405	100.3653405	100.2749632	100.1198743	99.96526981	99.81114732	99.65750463	99.50433952
190327A00062	3/27/2019	2.44	3/26/2021	3/27/2019	102.50764	102.5076419	102.5076419	101.9050874	100.7717152	99.64724573	98.54780969	97.47257802	96.42075795
190328A00018	3/28/2019	2.5	3/29/2021	3/28/2019	102.59595	102.5959484	102.5959484	101.9930325	100.8526463	99.71986743	98.61247308	97.52961723	96.47049109
190328A00027	3/28/2019	2.51	9/21/2021	3/28/2019	103.69089	103.6908936	103.6908936	102.9939928	101.3617518	99.76308445	98.19709124	96.66283406	95.15941061

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190328A00046	3/28/2019	2.7	3/4/2025	3/28/2019	112.26439	112.2643853	112.2643853	110.1479366	105.0464062	100.2138149	95.63464995	91.29428359	87.17900887
190328A00065	3/28/2019	2.56	3/28/2024	3/28/2019	109.48629	109.4862896	109.4862896	107.928786	103.7752687	99.80553472	96.01051528	92.38157386	88.91055025
190329A00033	3/29/2019	2.52	3/29/2021	3/29/2019	102.61941	102.619406	102.619406	102.0164052	100.8758746	99.74295323	98.63541864	97.55242472	96.49316262
190401A00035	4/1/2019	2.53	10/1/2021	4/1/2019	103.78604	103.786035	103.786035	103.0845256	101.4242381	99.7984922	98.20633673	96.64679357	95.11892264
190409A00014	4/9/2019	2.59	10/12/2021	4/9/2019	103.95748	103.9574803	103.9574803	103.2501606	101.5593168	99.90410793	98.28353177	96.69656439	95.14222246
190409A00019	4/9/2019	2.91	4/9/2029	4/9/2019	125.87808	125.8780848	125.8780848	118.7936792	109.4898748	101.0075759	93.26945369	86.2058161	79.75385167
190411A00020	5/1/2019	2.63	5/2/2022	5/1/2019	105.30977	105.3097691	105.3097691	104.4773632	102.2289517	100.0399359	97.90837676	95.83235418	93.8100286
190411A00037	4/11/2019	2.59	4/9/2021	4/11/2019	102.77158	102.7715831	102.7715831	102.1678682	100.9998994	99.83760674	98.70201556	97.59221337	96.50732881
190416A00021	4/16/2019	2.73	4/16/2024	4/16/2019	110.32528	110.3252839	110.3252839	108.7385194	104.5173121	100.4846759	96.63120349	92.94794756	89.42646001
190416A00038	4/16/2019	2.63	10/15/2021	4/16/2019	104.04567	104.0456691	104.0456691	103.3365763	101.6370319	99.97342931	98.34475293	96.74996606	95.18807325
190423A00002	4/23/2019	2.52	4/23/2024	4/23/2019	110.27273	110.2727302	110.2727302	108.669966	104.4087937	100.3393398	96.45196317	92.73751085	89.18734423
190423A00004	4/23/2019	2.62	4/23/2020	4/23/2019	100.54848	100.548479	100.548479	100.4118631	100.1821846	99.95356341	99.72599223	99.49946381	99.27397098
190424A00015	4/24/2019	2.55	4/26/2021	4/24/2019	102.84232	102.8423194	102.8423194	102.2380157	101.027558	99.82078254	98.64277253	97.49250854	96.36901885
190424A00021	4/24/2019	2.6	4/22/2022	4/24/2019	105.178	105.1779983	105.1779983	104.3537575	102.1337774	99.97187436	97.86616467	95.81478171	93.81593702
190424A00027	4/24/2019	2.55	4/23/2021	4/24/2019	102.82347	102.8234696	102.8234696	102.2192779	101.016325	99.81740332	98.64688077	97.50375711	96.38707853
190429A00076	4/29/2019	2.52	4/29/2021	4/29/2019	102.82341	102.8234066	102.8234066	102.2191336	101.0014209	99.78703886	98.60178555	97.44462241	96.31455982
190501A00017	5/1/2019	2.61	5/1/2024	5/1/2019	109.9113	109.9112951	109.9112951	108.3101524	104.0577655	99.99706934	96.11840931	92.41261804	88.87104421
190513A00013	5/13/2019	2.52	5/13/2024	5/13/2019	109.59917	109.5991675	109.5991675	107.9847268	103.7081742	99.62579636	95.72780718	92.00489931	88.44828656
190514A00020	5/14/2019	2.66	5/14/2025	5/14/2019	112.5166	112.5165996	112.5165996	110.2352672	104.9462596	99.94520981	95.21499001	90.73951014	86.50371983
190515A00023	5/15/2019	2.25	5/16/2022	5/15/2019	104.94227	104.9422697	104.9422697	104.0971952	101.8079923	99.58032613	97.41222021	95.30170998	93.24690983
190515A00038	5/15/2019	2.38	5/14/2021	5/15/2019	102.7347	102.7347023	102.7347023	102.1305752	100.864786	99.61054359	98.38257472	97.1800558	96.0021978
190515A00041	5/15/2019	2.41	11/15/2021	5/15/2019	103.82975	103.8297473	103.8297473	103.1086122	101.3284047	99.58733036	97.88431295	96.21824576	94.58806363
190515A00060	5/15/2019	2.38	5/14/2021	5/15/2019	102.7347	102.7347023	102.7347023	102.1305752	100.864786	99.61054359	98.38257472	97.1800558	96.0021978
190520A00007	5/20/2019	2.52	5/20/2024	5/20/2019	109.64196	109.6419606	109.6419606	108.0179092	103.7225605	99.62299623	95.70934817	91.97222009	88.40274031
190521A00023	5/21/2019	2.47	11/22/2021	5/21/2019	103.99882	103.9988182	103.9988182	103.2740689	101.4729967	99.71187335	97.98963484	96.3051705	94.65740966
190522A00004	5/22/2019	2.52	5/23/2022	5/22/2019	105.18863	105.1886333	105.1886333	104.339016	102.0370891	99.7972895	97.61766307	95.49624402	93.43114349
190523A00018	5/23/2019	2.51	3/15/2024	5/23/2019	109.19764	109.1976367	109.1976367	107.6581006	103.5440304	99.6107962	95.84954799	92.2518415	88.80969453
190524A00040	5/24/2019	2.47	5/24/2024	5/24/2019	109.4491	109.4491017	109.4491017	107.8213765	103.5199098	99.41499875	95.49673238	91.75566925	88.18289425
190528A00014	5/28/2019	2.41	5/28/2020	5/28/2019	100.75065	100.7506537	100.7506537	100.556511	100.2299607	99.90553155	99.58320304	99.26295476	98.9447666
190528A00028	5/28/2019	2.42	5/30/2023	5/28/2019	107.13151	107.1315051	107.1315051	105.9113252	102.5959583	99.40199626	96.32446568	93.35853165	90.49958518
190529A00023	5/29/2019	2.38	5/29/2024	5/29/2019	109.08659	109.0865882	109.0865882	107.4553001	103.1488126	99.03976013	95.11818079	91.37457988	87.79999097
190529A00065	5/29/2019	2.47	5/29/2020	5/29/2019	100.73406	100.7340612	100.7340612	100.5386111	100.2098235	99.88318204	99.55866571	99.23625386	98.91592611
190530A00006	5/30/2019	2.25	5/30/2024	5/30/2019	109.33581	109.3358124	109.3358124	107.6924955	103.3549464	99.2169177	95.26831221	91.4995112	87.90143217

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190530A00008	5/30/2019	2.38	5/30/2025	5/30/2019	112.18466	112.184664	112.184664	109.8506188	104.4958085	99.43587214	94.65316425	90.13109609	85.85415213
190530A00016	5/30/2019	2.51	6/1/2020	5/30/2019	100.76614	100.7661369	100.7661369	100.5658458	100.2287735	99.89395415	99.56136514	99.23098433	98.90278984
190530A00029	5/30/2019	2.25	5/30/2024	5/30/2019	109.33581	109.3358124	109.3358124	107.6924955	103.3549464	99.2169177	95.26831221	91.4995112	87.90143217
190531A00008	5/31/2019	2.14	6/1/2021	5/31/2019	102.73198	102.7319839	102.7319839	102.1252639	100.7973374	99.49136982	98.20831583	96.94762455	95.70876239
190603A00047	6/3/2019	2.22	6/2/2023	6/3/2019	106.47582	106.4758158	106.4758158	105.2570805	101.9447121	98.75402387	95.68001392	92.71782802	89.86283891
190607A00019	6/7/2019	2.04	12/7/2020	6/7/2019	101.65895	101.6589502	101.6589502	101.1327314	100.2787626	99.4391751	98.61360796	97.80171208	97.00314995
190611A00046	6/11/2019	2.25	6/13/2022	6/11/2019	104.6718	104.6717993	104.6717993	103.8077848	101.4561906	99.16951805	96.94571053	94.78270107	92.67850263
190617A00026	6/17/2019	2.17	6/17/2022	6/17/2019	104.50113	104.501131	104.501131	103.6348519	101.274585	98.97977256	96.74832775	94.57815811	92.4672524
190620A00045	6/20/2019	2.14	6/20/2024	6/20/2019	108.10587	108.1058666	108.1058666	106.4547546	102.1132316	97.97357337	94.02545701	90.25905964	86.6651111
190625A00021	6/25/2019	1.88	6/26/2023	6/25/2019	106.06386	106.0638591	106.0638591	104.8193515	101.4347401	98.17718198	95.04132582	92.02200213	89.1142884
190626A00020	6/26/2019	2.08	6/25/2021	6/26/2019	102.54005	102.5400508	102.5400508	101.9114976	100.5225091	99.15874925	97.81990736	96.50536015	95.21450458
190628A00017	6/28/2019	2.25	6/30/2020	6/28/2019	100.83901	100.8390063	100.8390063	100.5927528	100.176208	99.76310047	99.3533879	98.94702867	98.54398182
190701A00007	7/2/2019	2.09	7/1/2022	7/2/2019	104.37809	104.3780872	104.3780872	103.5012166	101.1050681	98.77636715	96.51292511	94.31255503	92.17315627
190703A00017	7/3/2019	2.33	5/4/2026	7/3/2019	112.72236	112.7223649	112.7223649	109.3935818	103.2142425	97.42611349	92.0023836	86.91818603	82.15047944
190711A00019	7/11/2019	2.19	7/11/2023	7/11/2019	106.57777	106.5777676	106.5777676	105.3196199	101.9031684	98.61595258	95.45249228	92.4074852	89.47588475
190711A00025	7/11/2019	2.18	7/12/2021	7/11/2019	102.77087	102.7708668	102.7708668	102.1244253	100.68865	99.28001681	97.89791092	96.54164863	95.21056929
190715A00014	7/15/2019	2.16	3/30/2022	7/15/2019	104.07093	104.0709313	104.0709313	103.2690325	101.1236408	99.03319094	96.99594389	95.01017592	93.0742332
190719A00006	7/19/2019	2.17	7/19/2024	7/19/2019	108.43295	108.4329537	108.4329537	106.7380983	102.3142536	98.09953466	94.0830617	90.25449553	86.60408916
190722A00035	7/22/2019	2.18	4/13/2021	7/22/2019	102.29914	102.2991419	102.2991419	101.6971185	100.5222995	99.35264374	98.21012066	97.09379437	96.00277159
190724A00025	7/24/2019	1.96	7/24/2023	7/24/2019	106.48203	106.4820343	106.4820343	105.205246	101.7410116	98.40950332	95.20500894	92.1220184	89.15529089
190730A00016	7/30/2019	2	7/30/2024	7/30/2019	108.55795	108.5579542	108.5579542	106.8366989	102.3578221	98.09264989	94.02995603	90.15908616	86.47000173
190731A00029	7/31/2019	1.93	7/29/2022	7/31/2019	104.57162	104.5716162	104.5716162	103.6649573	101.1844488	98.77603889	96.43729463	94.16580393	91.95925334
190801A00010	8/1/2019	1.97	8/1/2023	8/1/2019	106.55826	106.5582562	106.5582562	105.2724644	101.7862821	98.43442203	95.21106888	92.11061544	89.12773023
190802A00017	8/2/2019	2.01	11/15/2023	8/2/2019	106.5514	106.5514045	106.5514045	105.1642733	101.4180693	97.82539495	94.37919124	91.07270981	87.89955132
190805A00009	8/5/2019	1.91	8/5/2024	8/5/2019	107.33847	107.3384727	107.3384727	105.6283566	101.1858834	96.9556982	92.92663192	89.08809033	85.4300922
190806A00010	8/6/2019	1.7	8/5/2022	8/6/2019	104.02183	104.0218267	104.0218267	103.1117882	100.6199132	98.20093265	95.8523586	93.57173746	91.35671676
190806A00012	8/6/2019	1.93	8/6/2021	8/6/2019	102.51904	102.5190448	102.5190448	101.8511223	100.3518933	98.88214075	97.44114501	96.0281339	94.64236238
190807A00053	8/7/2019	1.66	8/6/2021	8/7/2019	102.3654	102.3653968	102.3653968	101.6963865	100.1940853	98.72140061	97.27759683	95.86189689	94.47355118
190807A00055	8/7/2019	1.76	8/8/2022	8/7/2019	103.72657	103.726573	103.726573	102.8185539	100.3322611	97.91868755	95.57535243	93.29980743	91.08970514
190808A00019	8/8/2019	1.87	8/8/2022	8/8/2019	104.00659	104.0065875	104.0065875	103.0970006	100.6071442	98.19008209	95.84333561	93.56445413	91.35108798
190808A00039	8/8/2019	1.84	8/8/2023	8/8/2019	105.48139	105.4813922	105.4813922	104.2017197	100.7326081	97.39750877	94.19059998	91.10627582	88.13920682
190808A00045	8/8/2019	1.86	8/8/2023	8/8/2019	105.5524	105.5523962	105.5523962	104.2722216	100.8018673	97.4655597	94.25747644	91.17201048	88.20383116
190808A00047	8/8/2019	1.89	8/8/2024	8/8/2019	107.26069	107.2606938	107.2606938	105.5468193	101.0984743	96.86302083	92.82924055	88.98649502	85.32476231

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190809A00011	8/9/2019	1.69	8/9/2024	8/9/2019	107.19137	107.1913714	107.1913714	105.4671201	100.9930291	96.73386253	92.67825074	88.8154225	85.13523267
190809A00021	8/9/2019	2.12	8/9/2029	8/9/2019	119.22529	119.2252853	119.2252853	111.8546717	102.564931	94.13034349	86.46754018	79.50161447	73.16529182
190812A00006	8/12/2019	1.86	8/12/2024	8/12/2019	107.14126	107.1412589	107.1412589	105.4225155	100.9667056	96.72458112	92.68485805	88.83683942	85.17044936
190813A00021	8/13/2019	1.89	8/14/2023	8/13/2019	105.68528	105.6852768	105.6852768	104.3980408	100.9099034	97.55693232	94.33323606	91.23314266	88.25126089
190813A00030	8/13/2019	1.71	8/15/2022	8/13/2019	104.09139	104.09139	104.09139	103.1717544	100.6527534	98.20795721	95.83480902	93.53079177	91.2934931
190816A00011	8/16/2019	1.77	8/16/2024	8/16/2019	106.74658	106.7465786	106.7465786	105.0253848	100.5682736	96.32543276	92.28551897	88.43778522	84.77210978
190820A00029	8/20/2019	1.76	8/20/2024	8/20/2019	106.71692	106.7169198	106.7169198	104.9900861	100.5235491	96.27214622	92.22446629	88.36970048	84.69767016
190821A00002	8/21/2019	1.61	8/21/2024	8/21/2019	106.87479	106.8747907	106.8747907	105.135427	100.6378114	96.3575668	92.28312234	88.40352664	84.70846873
190821A00030	8/21/2019	1.8	8/21/2024	8/21/2019	106.90455	106.9045529	106.9045529	105.1745955	100.7013351	96.44357487	92.38988168	88.52942508	84.85200628
190821A00035	8/21/2019	2.03	8/21/2020	8/21/2019	101.0047	101.0047007	101.0047007	100.6715754	100.113033	99.56068147	99.01441813	98.47414263	97.93975685
190826A00018	8/26/2019	1.9	8/27/2029	8/26/2019	117.20023	117.200232	117.200232	109.8140387	100.5751499	92.19296176	84.58346885	77.67124922	71.38860371
190826A00065	8/26/2019	2.09	8/28/2029	8/26/2019	117.07616	117.0761595	117.0761595	109.7827264	100.6366656	92.33487685	84.7948442	77.94245269	71.7111559
190827A00002	8/27/2019	1.74	8/27/2024	8/27/2019	106.65297	106.6529732	106.6529732	104.9163821	100.433639	96.16753672	92.10654449	88.23974536	84.55686098
190829A00012	8/29/2019	1.54	8/29/2024	8/29/2019	106.5836	106.5835999	106.5835999	104.8348964	100.3234842	96.03101713	91.94579159	88.05673781	84.35343586
190830A00010	9/3/2019	1.75	9/1/2023	9/3/2019	105.25811	105.2581148	105.2581148	103.9556582	100.4287386	97.03997636	93.78327369	90.65277507	87.6429183
190830A00012	8/30/2019	1.76	8/30/2024	8/30/2019	106.75719	106.7571862	106.7571862	105.0152515	100.5226126	96.24736233	92.17791658	88.30330759	84.61321007
190906A00018	9/6/2019	1.76	9/6/2024	9/6/2019	106.78521	106.7852065	106.7852065	105.0327201	100.5213392	96.22901516	92.14402669	88.25528633	84.55235868
190909A00028	9/9/2019	1.84	9/9/2022	9/9/2019	104.06665	104.0666501	104.0666501	103.1279192	100.5531903	98.05552911	95.63221959	93.28060087	90.99812536
190913A00001	9/13/2019	1.96	9/14/2020	9/13/2019	101.16059	101.160588	101.160588	100.78448	100.159372	99.54200892	98.9322473	98.32994724	97.73497224
190917A00035	9/19/2019	2.02	10/16/2023	9/19/2019	106.44752	106.447521	106.447521	105.0920571	101.4257408	97.90686998	94.52871997	91.28487544	88.16925311
190917A00045	9/17/2019	1.86	9/17/2021	9/17/2019	102.87517	102.8751718	102.8751718	102.1816872	100.5624989	98.97658327	97.42303137	95.9009175	94.40935116
190918A00003	9/18/2019	1.95	9/19/2022	9/18/2019	104.40183	104.4018315	104.4018315	103.4525407	100.8465118	98.31908694	95.86746413	93.48890666	91.18079572
190923A00078	9/23/2019	1.96	6/28/2024	9/23/2019	107.34656	107.3465636	107.3465636	105.6915787	101.3457028	97.20305886	93.2531928	89.48616768	85.89260854
190926A00012	9/26/2019	1.93	9/27/2021	9/26/2019	102.75545	102.7554534	102.7554534	102.0602264	100.4195976	98.81299418	97.23946394	95.6980489	94.18782812
190927A00012	10/1/2019	1.96	10/1/2024	10/1/2019	107.77756	107.7775574	107.7775574	105.9797973	101.3823617	97.01063867	92.85238908	88.89606465	85.13080516
190930A00075	9/30/2019	2.19	9/29/2027	9/30/2019	114.47047	114.4704659	114.4704659	109.488664	102.0282903	95.13322545	88.75765393	82.85967331	77.40096806
191001A00005	10/1/2019	1.8	4/18/2023	10/1/2019	104.87562	104.8756233	104.8756233	103.7138016	100.5443088	97.48777725	94.53953984	91.69512325	88.95026886
191003A00002	10/3/2019	1.58	10/4/2021	10/3/2019	102.48171	102.4817094	102.4817094	101.7827977	100.1209125	98.49387809	96.90068689	95.34034706	93.81190566
191004A00004	10/4/2019	1.54	10/4/2024	10/4/2019	106.72485	106.7248475	106.7248475	104.9207436	100.3123769	95.93171048	91.76631661	87.80449095	84.03522996
191004A00011	10/4/2019	1.77	10/5/2020	10/4/2019	101.13705	101.1370457	101.1370457	100.7240937	100.0422101	99.36953363	98.7058787	98.05106471	97.40491584
191004A00013	10/4/2019	1.53	10/22/2021	10/4/2019	102.46733	102.4673336	102.4673336	101.7603085	100.0511507	98.37861068	96.741591	95.13902504	93.56988921
191007A00020	10/7/2019	1.69	10/7/2022	10/7/2019	103.77901	103.779008	103.779008	102.8169035	100.1715931	97.60731645	95.12111005	92.71010928	90.3715754
191008A00031	10/8/2019	1.52	10/8/2024	10/8/2019	106.64574	106.6457371	106.6457371	104.8357171	100.2190839	95.83104187	91.65908586	87.69144324	83.91704782

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191015A00001	10/15/2019	1.87	10/15/2021	10/15/2019	102.73386	102.7338631	102.7338631	102.0306974	100.3427016	98.69046967	97.07295955	95.48914014	93.93802142
191018A00015	10/18/2019	1.89	10/18/2021	10/18/2019	102.78173	102.781727	102.781727	102.0769849	100.3806929	98.72046597	97.0952481	95.50399549	93.94570612
191031A00041	10/31/2019	1.72	10/31/2023	10/31/2019	106.07593	106.0759313	106.0759313	104.7009671	100.9849238	97.42023401	93.99989038	90.71723204	87.56594757
191105A00008	11/5/2019	1.83	11/5/2024	11/5/2019	108.24821	108.2482053	108.2482053	106.3769847	101.6519325	97.16360361	92.8989092	88.84552659	84.99188025
191107A00011	11/8/2019	2.02	2/24/2023	11/8/2019	105.33753	105.3375252	105.3375252	104.2264397	101.1891118	98.25602988	95.42310454	92.68635736	90.04199214
191113A00016	11/15/2019	2.02	8/15/2024	11/15/2019	107.88596	107.8859565	107.8859565	106.156258	101.6762412	97.41114207	93.34960733	89.48086961	85.79478752
191113A00017	11/15/2019	1.93	12/6/2021	11/15/2019	103.05491	103.0549137	103.0549137	102.3283504	100.4991845	98.71138208	96.9638457	95.25543881	93.58506402
191115A00028	11/15/2019	2.34	9/28/2029	11/15/2019	119.63834	119.6383427	119.6383427	112.1623706	102.8325994	94.36776816	86.68281467	79.70143749	73.35517608
191120A00005	11/20/2019	2.63	11/20/2034	11/20/2019	134.11704	134.1170421	132.1490488	116.8772137	103.1213662	91.20397433	80.86619121	71.88693363	64.07723849
191122A00007	11/22/2019	1.87	11/21/2025	11/22/2019	110.28266	110.2826589	110.2826589	107.4763587	101.7328125	96.3317046	91.25093716	86.46989737	81.96940015
191129A00010	11/29/2019	1.94	8/27/2021	11/29/2019	102.63072	102.6307179	102.6307179	101.9495555	100.3940304	98.8696652	97.37566508	95.91118978	94.47542968
191129A00012	11/29/2019	1.99	11/29/2024	11/29/2019	108.24058	108.2405797	108.2405797	106.340459	101.5807031	97.06163727	92.7699652	88.69311916	84.81928709
191203A00004	12/4/2019	1.87	12/4/2024	12/4/2019	107.67849	107.6784912	107.6784912	105.7745775	101.0156502	96.49818644	92.20880827	88.13487605	84.26451177
191204A00013	12/4/2019	1.72	12/4/2024	12/4/2019	107.84625	107.846252	107.846252	105.9293987	101.1387623	96.59193024	92.27535368	88.1762403	84.28257043
191212A00027	12/13/2019	1.93	10/17/2022	12/13/2019	104.4748	104.4748026	104.4748026	103.4987338	100.8180964	98.22016317	95.70188862	93.26032525	90.89265655
191212A00029	12/13/2019	1.94	5/16/2023	12/13/2019	105.45626	105.4562609	105.4562609	104.262147	101.0104008	97.87681903	94.85651037	91.9447626	89.13708753
191216A00042	12/16/2019	1.95	12/16/2022	12/16/2019	104.80303	104.8030318	104.8030318	103.7654216	100.9229196	98.1726748	95.51128695	92.93542476	90.44189999
191219A00036	12/20/2019	2.1	12/20/2024	12/20/2019	108.82898	108.8289783	108.8289783	106.8854728	102.0609428	97.4827653	93.1372012	89.01126805	85.09277169
191223A00019	12/23/2019	1.92	12/30/2020	12/23/2019	101.53239	101.532395	101.532395	100.9667847	100.0535961	99.15685983	98.27613468	97.41099499	96.56103006
191230A00031	12/30/2019	1.85	12/30/2024	12/30/2019	108.60764	108.6076383	108.6076383	106.6352527	101.761198	97.13823448	92.75223622	88.58987224	84.6386273
191231A00006	12/31/2019	1.88	12/31/2021	12/31/2019	103.07119	103.0711932	103.0711932	102.3309845	100.4366205	98.58649125	96.77937652	95.01402277	93.28922121
200110A00014	1/10/2020	1.73	1/10/2023	1/10/2020	104.80334	104.8033412	104.8033412	103.7343121	100.8153364	97.99343965	95.26494172	92.62625526	90.073951
200110A00022	1/13/2020	2	1/6/2025	1/13/2020	108.41601	108.4160051	108.4160051	106.4444031	101.5876442	96.98120351	92.61098918	88.46369869	84.52684451
200121A00009	1/24/2020	1.94	1/24/2025	1/24/2020	108.19873	108.1987324	108.1987324	106.1940351	101.2981156	96.65698175	92.25614614	88.0819467	84.12156677
200127A00018	1/27/2020	1.8	1/27/2025	1/27/2020	107.5088	107.5087966	107.5087966	105.5048748	100.6184124	95.98689175	91.59578113	87.43138396	83.4808529
200128A00015	1/28/2020	1.81	1/28/2025	1/28/2020	107.56317	107.5631687	107.5631687	105.556776	100.6665307	96.03153615	91.63723595	87.46991082	83.51669249
200128A00028	1/28/2020	1.81	1/28/2025	1/28/2020	107.56317	107.5631687	107.5631687	105.556776	100.6665307	96.03153615	91.63723595	87.46991082	83.51669249
090429A00044	4/29/2009	4.1	4/29/2024	4/29/2014	100.62719	100.6271866	100.6271866	100.5308456	100.3660486	100.1667127	99.47775038	98.14882155	96.51630521
100517A00013	5/17/2010	3.71	5/19/2025	5/18/2015	100.59383	100.5938267	100.5938267	100.4971275	100.331739	100.0563787	98.98971216	97.20638376	95.14715613
100707A00014	7/7/2010	3.19	7/7/2025	7/7/2015	100.50788	100.5078791	100.5078791	100.4112269	100.2445382	99.73762698	98.19564892	96.12456514	93.89544016
110923A00005	9/23/2011	2.96	9/23/2026	9/23/2016	100.43889	100.438893	100.438893	100.3423461	100.1505699	99.05294089	96.80591415	94.18808991	91.50535799
110923A00013	9/23/2011	2.96	9/23/2026	9/23/2016	100.43889	100.438893	100.438893	100.3423461	100.1505698	99.05294019	96.80591251	94.18808729	91.50535439
111005A00009	10/5/2011	2.72	10/5/2026	10/5/2016	100.43071	100.4307066	100.4307066	100.3339716	100.1323458	98.93788702	96.61214193	93.93817685	91.21180716

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
111031A00021	10/31/2011	2.85	11/2/2026	10/31/2016	100.45226	100.4522557	100.4522557	100.3555027	100.1693537	99.13001987	96.90008337	94.26820129	91.55798136
111215A00019	12/15/2011	2.53	12/15/2026	12/15/2021	104.10533	104.1053268	104.1053268	103.4072846	101.3976544	98.91286568	96.14346505	93.29262693	90.47176479
120202A00021	2/2/2012	2.88	2/2/2027	2/2/2017	100.4258	100.425799	100.425799	100.3292245	100.1153299	98.80343967	96.35283288	93.56675115	90.7378738
120328A00005	3/28/2012	3.18	3/30/2027	3/28/2017	100.47557	100.4755674	100.4755674	100.3789442	100.2045649	99.22987208	96.98629999	94.27488167	91.46029979
120330A00019	3/30/2012	2.71	3/30/2027	3/30/2017	100.42921	100.4292091	100.4292091	100.3324376	100.1177103	98.79168133	96.3105946	93.48885344	90.62385415
120411A00017	4/11/2012	3.03	4/12/2027	4/11/2017	100.45073	100.4507291	100.4507291	100.3541196	100.1598221	98.99422905	96.59780802	93.8024028	90.93863297
120523A00020	5/23/2012	2.84	5/24/2027	5/23/2017	100.4519	100.4519029	100.4519029	100.3548573	100.0555743	98.02613616	94.58833188	90.77262664	86.93871312
120606A00015	6/6/2012	2.36	6/7/2027	6/6/2017	100.37125	100.3712519	100.3712519	100.2745084	99.92424394	98.03462187	95.23377923	92.23423741	89.25685887
120702A00016	7/2/2012	2.42	7/6/2027	7/3/2013	100.38123	100.3812266	100.3812266	100.2844681	99.95839	98.1258422	95.33078747	92.31641156	89.31650667
120920A00024	9/20/2012	2.8	9/20/2027	9/20/2019	100.44595	100.4459529	100.4459529	100.3487529	99.87508829	97.04607573	92.79079034	88.19502407	83.6370685
120924A00030	9/24/2012	2.2	9/24/2027	9/25/2017	100.34479	100.3447854	100.3447854	100.2480448	99.75667348	97.55919035	94.57841197	91.46259958	88.39757982
120928A00026	9/28/2012	1.98	9/28/2022	9/28/2017	100.27545	100.2754541	100.2754541	100.1800189	99.88814904	98.9299965	97.70619687	96.4464069	95.20021638
120928A00027	9/28/2012	2.34	9/28/2027	9/30/2019	100.33287	100.3328697	100.3328697	100.2373963	100.0377225	99.29333211	98.13938641	96.89788787	95.65434256
121113A00015	11/13/2012	2.32	11/15/2027	11/13/2017	100.33317	100.3331721	100.3331721	100.2366159	99.6653302	97.33378149	94.27293853	91.10218331	87.99429399
121115A00031	11/15/2012	2.06	11/15/2027	11/15/2017	100.32161	100.3216057	100.3216057	100.2248723	99.57071083	97.12803759	94.01946781	90.82471145	87.70362334
121115A00033	11/15/2012	2.06	11/15/2027	11/15/2017	100.32161	100.3216057	100.3216057	100.2248723	99.57071083	97.12803759	94.01946781	90.82471145	87.70362334
121121A00026	11/21/2012	1.63	11/21/2022	11/21/2017	100.21826	100.2182564	100.2182564	100.1220662	99.61711525	98.43761953	97.10356739	95.76589413	94.45226056
121128A00031	11/28/2012	2.35	11/29/2027	11/28/2017	100.33815	100.338147	100.338147	100.2415867	99.69937219	97.40726419	94.36099749	91.19503045	88.08795263
121130A00005	11/30/2012	2.36	12/2/2024	12/2/2019	100.3422	100.3422012	100.3422012	100.2454107	99.82198921	97.71742797	94.7157685	91.51522662	88.33580108
121231A00018	12/31/2012	2.21	12/31/2027	12/31/2017	100.34651	100.3465058	100.3465058	100.2497457	99.73412794	97.45985867	94.39397981	91.19556787	88.05307693
130104A00013	1/4/2013	1.79	1/4/2023	1/4/2018	100.24474	100.2447362	100.2447362	100.1491443	99.73255077	98.5693787	97.18346908	95.7784835	94.39541275
130116A00024	1/16/2013	2.22	1/18/2028	1/16/2018	100.34818	100.3481844	100.3481844	100.2514171	99.73392266	97.44339755	94.3531777	91.12891027	87.9613676
130118A00019	1/18/2013	1.94	1/18/2023	1/18/2018	100.30174	100.3017374	100.3017374	100.2050091	99.85117707	98.37657834	96.34627914	94.20748209	92.08386938
130122A00019	1/22/2013	2.57	1/24/2028	1/22/2018	100.37468	100.3746754	100.3746754	100.278073	99.89423031	97.84760621	94.8651557	91.68607227	88.53890975
130222A00006	2/22/2013	2.17	2/22/2023	2/22/2018	100.3406	100.3406032	100.3406032	100.24363	99.96959875	98.58680379	96.4382254	94.10158843	91.75634289
130322A00001	3/22/2013	2.06	3/22/2023	3/22/2018	100.32168	100.3216781	100.3216781	100.2249219	99.91674762	98.48946327	96.4111394	94.19083037	91.9759461
130403A00005	4/3/2013	2.64	4/3/2028	4/3/2018	100.38635	100.3863498	100.3863498	100.289721	99.92613878	97.89756197	94.87124831	91.6263416	88.40827515
130409A00013	4/9/2013	1.76	4/11/2023	4/9/2018	100.24008	100.2400767	100.2400767	100.1443766	99.68089377	98.4161283	96.92246104	95.411241	93.92548205
130416A00010	4/17/2013	2.39	12/29/2028	1/31/2019	100.3766	100.3765959	100.3765959	100.2797487	99.79806941	97.4226306	94.10716584	90.61760376	87.184644
130416A00025	4/16/2013	2.27	4/18/2028	4/16/2018	100.35654	100.3565375	100.3565375	100.2597467	99.75512483	97.44341122	94.29129728	90.99338119	87.75183927
130422A00021	4/22/2013	2.06	4/24/2023	4/23/2018	100.32233	100.3223314	100.3223314	100.2253692	99.88843435	98.30030569	96.00069649	93.54308276	91.09236941
130510A00025	5/10/2013	2.66	5/10/2028	5/10/2018	100.38969	100.3896882	100.3896882	100.2930514	99.93390331	97.90685082	94.86419273	91.59680628	88.35502376
130521A00009	5/21/2013	2.55	5/22/2028	5/21/2018	100.40302	100.4030191	100.4030191	100.306184	99.98261377	98.05829642	95.05142262	91.79018212	88.54194619

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
130529A00039	5/29/2013	3.02	5/30/2028	5/29/2018	100.44942	100.4494196	100.4494196	100.352733	100.1283806	98.64400466	95.86437661	92.70510083	89.50187956
130530A00014	5/30/2013	3.01	5/30/2028	5/30/2018	100.44776	100.4477602	100.4477602	100.351075	100.1244304	98.62553502	95.83778922	92.67511034	89.47049875
130614A00011	6/14/2013	2.95	6/14/2028	6/14/2018	100.46943	100.4694274	100.4694274	100.3725317	100.1667788	98.81206697	96.0865068	92.92784239	89.70395934
130823A00025	8/23/2013	3.43	8/23/2023	8/24/2020	101.92974	101.9297399	101.9297399	101.5821377	100.9863954	100.0896064	98.45445433	96.26379955	93.83378938
131025A00003	10/25/2013	3.4	10/25/2028	10/25/2018	100.54423	100.5442314	100.5442314	100.4472535	100.2751012	99.39423888	96.99677379	93.93296913	90.69705466
131031A00009	10/31/2013	3.37	10/31/2028	10/31/2018	100.53925	100.5392502	100.5392502	100.4422765	100.2694662	99.35600398	96.92687351	93.84770914	90.60455936
131101A00003	11/1/2013	3.63	11/1/2028	11/1/2018	100.55081	100.5508108	100.5508108	100.4540103	100.2829688	99.44258464	97.08115434	94.02934498	90.79375373
131120A00016	11/20/2013	3.6	11/20/2028	11/20/2018	100.54583	100.5458303	100.5458303	100.4490339	100.2773738	99.40529752	97.01166595	93.94387178	90.70061182
140107A00015	1/7/2014	3.73	1/8/2029	1/7/2019	100.56746	100.5674639	100.5674639	100.4706405	100.3009418	99.53081573	97.22354122	94.17344339	90.91482815
140114A00038	1/14/2014	3.61	1/16/2029	1/14/2019	100.54754	100.5475398	100.5475398	100.4507329	100.2786979	99.38471437	96.94786413	93.83287895	90.54317114
140129A00014	1/29/2014	3.33	1/29/2029	1/29/2019	100.53268	100.5326814	100.5326814	100.4356993	100.2609861	99.24877037	96.69479634	93.51598728	90.18959533
140226A00011	2/26/2014	3.49	2/26/2029	2/26/2019	100.52764	100.5276397	100.5276397	100.4308449	100.2556729	99.20512894	96.61302505	93.41065235	90.06844691
140328A00011	3/28/2014	3.32	3/30/2026	3/29/2021	103.66182	103.6618156	103.6618156	103.0678083	101.7483235	99.60924975	96.6045203	93.15777213	89.57656835
140328A00018	3/28/2014	3.25	3/28/2029	3/28/2019	100.51944	100.5194421	100.5194421	100.4224622	100.2449927	99.09348959	96.40040464	93.12961514	89.73726348
140416A00025	4/14/2014	3.56	4/16/2029	4/14/2021	104.20722	104.2072156	104.2072156	103.6044952	102.0039834	99.25267398	95.52055811	91.34071452	87.07327403
140421A00003	4/21/2014	3.41	4/23/2029	4/22/2019	100.5144	100.5144015	100.5144015	100.4176091	100.2315657	99.04559716	96.31537997	93.02206859	89.61491406
140421A00010	4/21/2014	3.41	4/23/2029	4/22/2019	100.5144	100.5144015	100.5144015	100.4176091	100.2315655	99.04559174	96.31536653	93.02204675	89.61488394
140421A00014	4/21/2014	3.41	4/23/2029	4/22/2019	100.5144	100.5144015	100.5144015	100.4176091	100.2315655	99.04559174	96.31536653	93.02204675	89.61488394
140421A00017	4/21/2014	3.22	4/23/2029	4/22/2019	100.51448	100.5144817	100.5144817	100.4175017	100.230098	99.0258996	96.27421377	92.96294917	89.54037209
140508A00011	5/8/2014	2.32	5/8/2024	5/8/2019	100.3631	100.3631026	100.3631026	100.2667864	100.0554171	99.04186305	97.33333535	95.44488714	93.54055067
140528A00068	5/28/2014	2.95	5/29/2029	5/28/2019	100.46966	100.4696635	100.4696635	100.3727167	100.1397523	98.52019324	95.48287407	92.03154692	88.53703898
140529A00026	5/29/2014	2.36	5/29/2024	5/29/2019	100.33994	100.3399359	100.3399359	100.2438153	100.0014492	98.8644683	97.10373397	95.20070263	93.29498584
140530A00036	5/30/2014	2.21	5/30/2024	5/30/2019	100.34494	100.3449376	100.3449376	100.2486366	100.0121224	98.89428265	97.13818882	95.23303093	93.32299581
140617A00012	6/17/2014	3.14	6/18/2029	6/17/2019	100.50124	100.5012374	100.5012374	100.40426	100.2050535	98.84859949	95.96028816	92.56017208	89.07437055
140708A00040	7/8/2014	3.08	7/9/2029	7/8/2019	100.49129	100.4912923	100.4912923	100.3943192	100.1839345	98.71679574	95.74253105	92.29077728	88.7704016
140714A00012	7/14/2014	3.04	7/16/2029	7/15/2019	100.48465	100.4846489	100.4846489	100.3876813	100.1697303	98.64137565	95.6294746	92.16136644	88.63398645
140723A00038	7/23/2014	2.3	7/23/2024	7/23/2019	100.35993	100.3599338	100.3599338	100.2635828	100.0434863	98.96904898	97.19164381	95.23632282	93.26772723
140822A00012	8/22/2014	3.7	8/22/2034	8/23/2021	105.22022	105.2202159	105.2202159	104.5003827	102.1493187	98.51987176	94.05218432	89.30971199	84.61025989
141001A00044	10/1/2014	3.07	10/1/2029	10/1/2019	100.48969	100.4896883	100.4896883	100.3927048	100.1737148	98.62044786	95.55328355	92.02018706	88.42731321
141007A00027	10/7/2014	3.22	10/9/2029	10/7/2019	100.48297	100.4829703	100.4829703	100.3861798	100.1613572	98.56743826	95.48490573	91.95403203	88.37031432
141010A00012	10/10/2014	2.44	10/10/2024	10/10/2019	100.3518	100.3518016	100.3518016	100.2555922	100.0174799	98.83955529	96.95895379	94.90913668	92.85172476
141015A00017	10/15/2014	2.92	10/15/2029	10/15/2019	100.43315	100.433153	100.433153	100.3364039	100.0082199	97.92145875	94.58174768	90.94071908	87.31454714
141110A00008	11/10/2014	2.31	11/12/2024	11/12/2019	100.36183	100.361827	100.361827	100.2654072	100.0374696	98.88792178	96.99621131	94.91742613	92.82574383

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
141117A00087	11/17/2014	3.86	11/19/2029	11/18/2019	102.99142	102.9914229	102.9914229	102.4632516	101.2706925	98.45663269	93.9881448	88.83322144	83.58258505
141119A00005	11/19/2014	2.53	11/19/2024	11/19/2019	100.36839	100.3683873	100.3683873	100.2721384	100.0552987	98.95631882	97.09227117	95.02722814	92.94391985
141224A00038	12/24/2014	2.93	12/24/2024	12/24/2019	100.43485	100.4348457	100.4348457	100.3380878	100.1400482	98.93186118	96.48043532	93.6156359	90.67012632
150106A00006	1/6/2015	2.88	1/7/2030	1/6/2020	100.42656	100.4265581	100.4265581	100.3298035	99.96279634	97.7225183	94.26872692	90.53857911	86.83965271
150108A00017	1/7/2015	2.94	1/7/2030	1/7/2020	105.09192	105.0919202	105.0919202	104.2622161	101.5389171	97.94859694	93.90742436	89.7715228	85.72508594
150108A00029	1/8/2015	3.16	1/9/2035	1/10/2022	106.0014	106.0013973	106.0013973	105.0571972	101.6410476	96.93943294	91.63530023	86.25939616	81.07396554
150114A00003	1/14/2015	2.61	1/14/2030	1/14/2020	100.41333	100.4133326	100.4133326	100.3164016	99.89079475	97.48731973	93.95121299	90.1788621	86.45653086
150115A00030	1/15/2015	1.98	1/15/2025	1/15/2020	100.30737	100.3073701	100.3073701	100.2109657	99.84366819	98.30537295	96.21735956	94.02929095	91.86412628
150116A00005	1/16/2015	1.92	1/16/2025	1/16/2020	100.29745	100.2974499	100.2974499	100.2010539	99.7941499	98.19911463	96.09039765	93.89631084	91.73004314
150122A00012	1/22/2015	3.41	1/22/2030	1/22/2020	100.54623	100.546227	100.546227	100.4491853	100.2723179	99.13548869	96.33912115	92.88968523	89.29559676
150128A00018	1/28/2015	2.59	1/28/2025	1/28/2020	102.2971	102.2971036	102.2971036	101.7186094	100.7117963	99.19351936	97.04103375	94.61670713	92.14741427
150202A00006	2/2/2015	1.92	2/3/2025	2/3/2020	100.29749	100.2974922	100.2974922	100.2010818	99.78644382	98.16510032	96.02531014	93.80002317	91.60364886
150204A00008	2/6/2015	2.21	2/6/2025	2/6/2020	100.31399	100.3139854	100.3139854	100.2177473	99.87226642	98.35918687	96.26371544	94.05649062	91.8688284
150218A00011	2/18/2015	2.28	2/18/2025	2/18/2020	100.35703	100.3570256	100.3570256	100.2605652	100.0159025	98.76803579	96.7718774	94.59456954	92.40960591
150218A00012	2/18/2015	2.28	2/18/2025	2/18/2020	100.35703	100.3570256	100.3570256	100.2605652	100.0159025	98.76803603	96.7718779	94.59457031	92.40960694
150223A00011	2/23/2015	3.54	2/22/2030	2/23/2022	106.22142	106.2214233	106.2214233	105.4473323	103.0565717	100.0002663	96.48618881	92.80118576	89.11925891
150227A00029	2/27/2015	2.81	2/27/2025	2/27/2020	104.38233	104.3823336	104.3823336	103.7267612	101.9701044	99.99190119	97.84174519	95.62741105	93.42192638
150305A00009	3/5/2015	2.27	3/5/2025	3/5/2020	100.35542	100.3554208	100.3554208	100.2589478	100.0081643	98.72697368	96.69636887	94.48682475	92.27147543
150316A00019	3/16/2015	2.22	3/17/2025	3/16/2020	100.34715	100.3471506	100.3471506	100.2506846	99.98390748	98.64807587	96.59353686	94.37531268	92.15713818
150319A00006	3/19/2015	2.28	3/19/2025	3/19/2020	100.3256	100.3256039	100.3256039	100.2293421	99.91408474	98.44831421	96.34816954	94.11825795	91.90198791
150319A00020	3/19/2015	2.98	3/19/2030	3/19/2020	100.4432	100.4431962	100.4431962	100.3464206	100.0195902	97.89690502	94.46630056	90.71840356	86.98497794
150320A00016	3/20/2015	2.11	3/20/2025	3/20/2020	100.32896	100.3289569	100.3289569	100.2325062	99.92257652	98.46659296	96.36502869	94.12995491	91.90729486
150320A00030	3/20/2015	3.38	3/20/2030	3/20/2020	100.54128	100.541281	100.541281	100.4442362	100.2657845	99.0484298	96.1640891	92.6479864	89.00068736
150323A00010	3/23/2015	3.35	3/25/2030	3/23/2020	100.53741	100.5374081	100.5374081	100.4401564	100.100476	97.50866476	93.02392993	88.0291701	83.03451079
150324A00021	3/24/2015	3.01	3/25/2030	3/24/2020	100.44843	100.4484311	100.4484311	100.3486778	100.0934979	97.96120627	94.34118358	90.47479312	86.65203648
150325A00018	3/25/2015	2.02	3/25/2025	3/25/2020	100.31407	100.3140717	100.3140717	100.2176335	99.86095601	98.30969965	96.17357511	93.92670537	91.70133285
150327A00011	3/27/2015	2.88	3/27/2030	3/27/2020	100.45938	100.4593798	100.4593798	100.3595342	100.1223954	98.09467502	94.50315658	90.63921608	86.8086739
150406A00008	4/6/2015	2.95	4/8/2030	4/6/2020	100.6577	100.6577042	100.6577042	100.5054251	100.1251543	97.93138844	94.22135889	90.2390216	86.32370508
150406A00016	4/6/2015	2.78	4/7/2025	4/6/2020	100.61534	100.6153381	100.6153381	100.4633145	100.1657565	98.62292024	95.5674911	92.11389614	88.63402828
150409A00013	4/9/2015	2.2	4/9/2025	4/9/2020	100.46507	100.4650691	100.4650691	100.3190202	99.86247686	98.27624105	96.11511858	93.84415351	91.5958221
150409A00018	4/9/2015	1.86	4/9/2020	4/9/2018	100.30962	100.3096203	100.3096203	100.1952919	100.001378	99.80821197	99.61578979	99.42410718	99.23315983
150409A00033	4/9/2015	2.03	4/9/2025	4/9/2020	100.47007	100.4700734	100.4700734	100.3237301	99.87327062	98.29531784	96.13242352	93.85588983	91.60097527
150417A00033	4/17/2015	1.78	4/18/2022	4/17/2020	100.4085	100.4084966	100.4084966	100.2621374	99.83396074	98.62428679	97.06804989	95.45817067	93.86519525

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150420A00051	4/20/2015	2.66	9/20/2030	4/20/2020	100.63047	100.6304698	100.6304698	100.4826839	99.89532519	97.31688959	93.59499993	89.63636607	85.73937172
150421A00009	4/21/2015	2.17	4/21/2025	4/21/2020	100.45768	100.4576814	100.4576814	100.3116414	99.83730648	98.22150418	96.04878025	93.77403802	91.52467177
150423A00020	4/23/2015	2.97	4/23/2030	4/23/2020	100.65995	100.6599524	100.6599524	100.5124722	100.0512246	97.83914408	94.37295308	90.59645386	86.83931817
150430A00047	4/30/2015	2.89	5/6/2030	4/30/2020	101.14535	101.1453496	101.1453496	100.9017006	100.244623	98.0712106	94.66935592	90.91228089	87.15222375
150501A00019	5/1/2015	3.69	5/1/2035	5/1/2020	104.38923	104.3892258	104.3892258	103.7568399	101.6252247	97.90671877	93.12977324	88.02555009	82.99526036
150526A00018	5/28/2015	2.27	5/28/2025	5/28/2020	100.87501	100.8750061	100.8750061	100.6355629	100.0914902	98.6732508	96.58018848	94.30814304	92.03200196
150526A00019	5/28/2015	2.27	5/28/2025	5/28/2020	100.87501	100.8750061	100.8750061	100.6355629	100.0914902	98.67325117	96.58018921	94.30814412	92.03200336
150526A00044	5/26/2015	3.19	5/28/2030	5/26/2020	101.19127	101.1912659	101.1912659	100.9480108	100.3405618	98.31774904	95.00724036	91.28700665	87.53768246
150709A00018	7/9/2015	2.36	7/9/2025	7/6/2020	101.09191	101.0919077	101.0919077	100.8049949	100.1898331	98.76627172	96.65549496	94.33922513	92.00942364
150709A00019	7/9/2015	2.36	7/9/2025	7/9/2020	101.09191	101.0919075	101.0919075	100.8049948	100.1898331	98.76627197	96.65549558	94.33922612	92.00942498
150715A00020	7/15/2015	3.45	7/15/2030	7/15/2020	101.56116	101.5611641	101.5611641	101.2684573	100.6275237	98.80939262	95.67908287	92.02111543	88.27478097
150721A00044	7/23/2015	2.68	7/23/2025	7/23/2020	101.15605	101.156045	101.156045	100.8696315	100.2898763	98.97977161	96.94729069	94.66658852	92.3539223
150817A00038	8/17/2015	4.01	8/31/2040	8/17/2020	102.28559	102.2855876	102.2855876	101.9317824	100.7226729	97.02671347	91.46971912	85.36435472	79.39907245
150901A00019	9/1/2015	3.26	9/3/2030	9/1/2020	101.94537	101.9453693	101.9453693	101.549029	100.6209622	98.39086676	95.00292983	91.20951827	87.38254939
150921A00008	9/21/2015	1.91	9/21/2020	9/21/2018	101.07152	101.0715163	101.0715163	100.6790798	100.0285685	99.38635675	98.75228703	98.12620583	97.5079631
151005A00020	10/5/2015	2.27	10/6/2025	10/5/2020	101.55404	101.5540419	101.5540419	101.073356	100.0416202	98.21414454	95.88556279	93.43798484	91.01421443
151027A00015	10/27/2015	2.89	10/28/2030	10/27/2020	102.26859	102.2685946	102.2685946	101.7666964	100.5294993	97.92105213	94.31305792	90.40244042	86.50794492
151124A00024	11/24/2015	2.6	11/24/2025	11/24/2020	101.93073	101.930728	101.930728	101.4100862	100.4028546	98.57842162	96.03774394	93.28056093	90.52601987
151209A00031	12/9/2015	3.18	12/9/2030	12/9/2020	102.5843	102.5842998	102.5842998	102.0307541	100.7408336	98.16259544	94.58449172	90.6793898	86.77277516
151223A00007	12/23/2015	3.76	12/23/2030	12/23/2022	110.03104	110.0310421	110.0310421	108.6521044	104.2373682	98.94592918	93.27670883	87.58579315	82.08426428
151224A00017	12/24/2015	3.06	12/24/2030	12/24/2020	102.64647	102.6464691	102.6464691	102.091699	100.8267508	98.30135239	94.7542153	90.85417677	86.94008516
160105A00024	1/5/2016	3.78	1/4/2036	1/5/2021	103.82412	103.8241196	103.8241196	103.2188172	101.4617562	98.02171659	93.4002832	88.41123146	83.45361776
160128A00029	1/29/2016	3.45	1/29/2036	1/29/2021	103.69587	103.6958738	103.6958738	103.0835114	101.175462	97.50234127	92.725926	87.63340282	82.61635301
160209A00028	2/9/2016	2.04	2/9/2026	2/9/2021	101.87057	101.8705738	101.8705738	101.3068485	99.82341221	97.60447697	95.05269425	92.45514105	89.91092315
160311A00019	3/11/2016	3.02	3/11/2031	3/11/2021	103.06549	103.0654896	103.0654896	102.4684142	100.7279576	97.69644073	93.8762542	89.83298621	85.83933289
160506A00054	5/10/2016	3.31	5/12/2036	5/10/2021	103.90293	103.9029322	103.9029322	103.2260274	100.567596	96.09603508	90.74231468	85.26768068	80.00906548
160506A00056	5/10/2016	3.77	5/10/2041	5/10/2021	104.55241	104.5524093	104.5524093	103.8442949	100.9137143	95.80380161	89.60412222	83.26403833	77.2216225
160627A00034	6/27/2016	1.7	6/26/2026	6/28/2021	102.03998	102.0399757	102.0399757	101.4268459	99.56340271	97.05505943	94.3164853	91.57483701	88.90869766
160711A00011	7/11/2016	1.66	7/13/2026	7/11/2021	102.19937	102.1993708	102.1993708	101.5374583	99.51195205	96.91471339	94.12829034	91.35339107	88.65983551
160825A00032	8/25/2016	3.14	8/25/2036	8/25/2021	104.37948	104.3794809	104.3794809	103.5355239	100.303683	95.54512679	90.16505431	84.77257704	79.61573552
161006A00023	10/6/2016	2.49	10/6/2031	10/6/2021	104.11505	104.1150527	104.1150527	103.2903559	100.3615513	96.43317246	92.10266954	87.76101374	83.57188643
161011A00037	10/11/2016	2.17	10/13/2026	10/11/2019	100.51212	100.5121214	100.5121214	100.3623006	99.93400411	97.95093229	95.14991414	92.2446731	89.39168557
161012A00009	10/12/2016	2.56	10/14/2031	10/12/2021	104.23767	104.2376664	104.2376664	103.4246141	100.5527444	96.67956958	92.38053151	88.05052067	83.86386884

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
161012A00020	10/11/2016	2.96	10/14/2031	10/11/2023	110.27744	110.2774374	110.2774374	108.0470134	102.1322079	95.71382101	89.27836013	83.09793426	77.2903099
161118A00013	11/18/2016	2.96	11/18/2026	11/18/2021	105.15937	105.159368	105.159368	104.3953313	101.8868265	98.37099563	94.21844765	89.84425208	85.48869098
170113A00025	1/13/2017	3.59	1/13/2032	1/13/2022	106.57869	106.5786875	106.5786875	105.7924254	103.3004089	99.95582025	96.026533	91.87691083	87.72699591
170411A00031	4/11/2017	3.39	4/12/2032	4/11/2022	106.71097	106.7109738	106.7109738	105.7888859	102.731178	98.88128982	94.61751379	90.26156975	85.99885549
170515A00052	5/15/2017	3.78	5/15/2042	5/15/2024	116.07407	116.07407	116.073902	112.9122837	105.855885	98.52424815	91.35512561	84.59563364	78.34513852
170519A00006	5/19/2017	3	5/19/2032	5/19/2022	106.27662	106.2766154	106.2766154	105.3231503	102.1230111	98.10705005	93.71057252	89.26979098	84.95052273
170705A00037	7/5/2017	2.85	7/6/2032	7/6/2027	114.9714	114.9713996	114.9713996	111.3557309	105.3622087	99.71385827	94.43140381	89.51166677	84.93898125
170721A00021	7/21/2017	2.95	7/21/2032	7/21/2022	106.77643	106.7764314	106.7764314	105.7017793	102.1911907	97.96040114	93.43556979	88.91217316	84.5382041
170802A00074	8/2/2017	2.92	8/2/2027	8/2/2022	106.17056	106.1705626	106.1705626	105.1919291	102.0486103	98.30685181	94.2909025	90.2441825	86.29738626
170809A00042	8/9/2017	2.35	8/9/2027	8/9/2022	104.93857	104.9385665	104.9385665	104.0536179	101.3798176	98.36148268	95.20712036	92.06440708	89.00425695
171004A00022	10/4/2017	2.74	10/4/2027	10/4/2022	106.64419	106.6441903	106.6441903	105.5810506	102.2196148	98.31279892	94.17643941	90.03635408	86.01174683
171005A00047	10/5/2017	3.29	10/5/2032	10/5/2022	108.32607	108.3260684	108.3260684	107.0105199	102.7427735	97.59486247	92.11453017	86.66184864	81.43204719
171012A00039	10/12/2017	3.73	10/12/2032	10/13/2020	103.04592	103.0459211	103.0459211	102.5118761	100.9428156	97.06913549	91.47643157	85.39048791	79.40136116
171016A00037	10/16/2017	3.39	10/18/2032	10/16/2022	108.74249	108.7424909	108.7424909	107.327286	102.7262566	97.13004664	91.16574748	85.2360174	79.56841251
171214A00010	12/14/2017	2.57	12/14/2022	12/14/2020	102.10971	102.1097072	102.1097072	101.5333184	100.5416654	99.11235553	97.14794002	94.97266956	92.77102166
180105A00005	1/5/2018	3.07	1/5/2028	1/5/2023	107.48014	107.4801442	107.4801442	106.4792069	103.5921031	100.4478203	97.18215556	93.9122891	90.7128368
180105A00006	1/5/2018	3.07	1/5/2028	1/5/2023	107.48014	107.4801435	107.4801435	106.4792064	103.5921035	100.4478221	97.18215907	93.91229443	90.71284394
180130A00087	1/30/2018	2.92	1/31/2028	1/30/2023	107.09329	107.0932855	107.0932855	106.088694	103.1787439	100.0068214	96.71880527	93.43968715	90.23738443
180212A00090	2/12/2018	2.92	2/13/2023	2/12/2021	104.71285	104.7128494	104.7128494	104.0080622	102.1397273	100.1520334	98.05683632	95.92413983	93.80539316
180302A00003	3/2/2018	3.89	3/2/2033	3/2/2023	111.56022	111.5602184	111.5602184	109.996506	105.199025	99.55189602	93.55858612	87.58710998	81.84767934
180315A00030	3/15/2018	3.76	3/15/2033	3/17/2025	117.47524	117.4752447	117.4752444	114.3210446	107.411074	100.3708864	93.50860304	86.99689348	80.91448616
180504A00024	5/4/2018	3.62	5/4/2028	5/4/2023	111.21116	111.2111626	111.2111626	109.8436353	105.6945614	100.9897115	96.00372122	90.97677658	86.06037996
180627A00005	6/27/2018	3.63	6/30/2033	6/30/2023	111.14753	111.1475325	111.1475325	109.6987184	105.4643571	100.7747109	95.9243604	91.12644603	86.49695913
180703A00033	7/3/2018	3.4	7/3/2028	7/3/2023	108.94905	108.949053	108.949053	107.7877289	104.504353	101.0438248	97.53074549	94.05692067	90.68243743
180712A00016	7/12/2018	3.66	7/12/2033	7/12/2028	124.9776	124.9776007	124.9772233	119.150596	110.9112228	103.2249125	96.12930695	89.61467727	83.65719759
181212A00026	12/12/2018	3.22	12/12/2028	12/12/2023	110.06938	110.069379	110.069379	108.7214924	105.0261512	101.2333376	97.45721197	93.77084658	90.21948591
190111A00040	1/11/2019	3.74	1/11/2034	1/11/2024	113.81918	113.8191785	113.8191784	111.6845372	105.9459936	99.69726468	93.35994559	87.20472489	81.37455906
190116A00015	1/16/2019	3.61	1/17/2034	1/16/2024	111.82317	111.8231706	111.8231706	110.0419742	105.2096192	100.066059	94.89614142	89.87086111	85.08605331
190204A00054	2/4/2019	3.98	2/6/2034	2/2/2024	114.32005	114.3200476	114.3200467	111.9926054	105.9560272	99.42813185	92.84982891	86.50345653	80.51799897
190222A00023	2/22/2019	3.66	2/22/2034	2/22/2026	122.55488	122.5548759	122.5543683	117.3460808	108.6188337	100.1323791	92.14905408	84.77751175	78.04174074
190301A00015	3/1/2019	3.86	3/1/2034	3/2/2026	120.66834	120.6683405	120.6680479	115.9803855	107.8285493	99.82480735	92.22338365	85.15206373	78.64460934
190329A00023	3/29/2019	3	3/29/2034	3/29/2024	110.85756	110.8575637	110.8575637	108.7958326	103.5635797	98.12655929	92.76592416	87.62819862	82.78358359
190329A00025	3/29/2019	3	3/29/2034	3/29/2024	110.85755	110.8575478	110.8575478	108.7958237	103.5635867	98.12658361	92.76596557	87.62825609	82.78365556

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190329A00026	3/29/2019	3	3/29/2034	3/29/2024	110.85756	110.8575637	110.8575637	108.7958341	103.5635839	98.12656656	92.76593435	87.62821149	82.78359875
190409A00016	4/9/2019	2.91	4/9/2029	4/9/2024	110.52086	110.5208551	110.5208551	108.708131	103.8863107	98.88799113	93.93541472	89.15453246	84.60627148
190409A00017	4/9/2019	3.01	4/9/2029	4/9/2024	111.38919	111.3891898	111.3891898	109.4347616	104.2243728	98.77421083	93.35294793	88.11413807	83.1347576
190430A00020	4/30/2019	3.41	4/28/2034	4/28/2026	122.01416	122.0141551	122.01179	115.9745116	106.9360976	98.31632021	90.29697745	82.94374904	76.25500929
190520A00018	5/20/2019	3.7	5/20/2044	5/20/2024	113.98826	113.9882634	113.9879232	110.7500575	103.4271863	95.70644034	88.16445921	81.10248385	74.63769127
190530A00037	5/30/2019	2.85	5/30/2034	5/30/2024	110.474	110.4740045	110.4740045	108.2862054	102.8993378	97.34783058	91.90884827	86.72214544	81.85086682
190530A00044	5/30/2019	2.85	5/30/2034	5/30/2024	110.47401	110.4740126	110.4740126	108.2862099	102.8993342	97.34781808	91.90882682	86.7221155	81.85082911
190807A00041	8/7/2019	2.27	8/7/2034	7/7/2024	108.4979	108.4978989	108.4978984	105.8866352	100.1065701	94.30793108	88.7389897	83.50851626	78.64678525
190807A00044	8/7/2019	2.27	8/7/2034	8/7/2024	108.76014	108.7601446	108.760144	106.046359	100.1889819	94.35128487	88.76248018	83.52164816	78.65432323
190827A00044	8/27/2019	1.9	8/27/2029	8/27/2024	106.5204	106.5204016	106.5204016	104.7254193	100.4034767	96.14805708	92.05530826	88.16274097	84.48136498
190930A00079	9/30/2019	2.04	10/1/2029	9/30/2024	107.15089	107.1508876	107.1508876	105.3373046	100.9765597	96.68197161	92.54784075	88.61535751	84.89470659
190930A00083	9/30/2019	2.04	10/1/2029	9/30/2024	107.15089	107.1508876	107.1508876	105.3373044	100.9765592	96.68197081	92.54783966	88.61535617	84.89470504
191007A00012	10/7/2019	2	10/5/2029	10/7/2024	106.29421	106.29421	106.29421	104.4296085	100.0370327	95.72882916	91.59609531	87.67366897	83.96951204
191007A00013	10/7/2019	2	10/5/2029	10/7/2024	106.29421	106.2942086	106.2942086	104.4296088	100.0370359	95.72883524	91.59610416	87.67368035	83.96952567
191028A00015	10/28/2019	2.49	10/27/2034	10/28/2024	109.84374	109.8437356	109.843735	107.1578078	101.2874469	95.4157084	89.7775248	84.47300443	79.53805718
191031A00036	10/31/2019	2.9	10/31/2039	10/31/2024	111.62373	111.6237271	111.6231932	107.8659866	100.6607472	93.49826201	86.71159312	80.42747344	74.68978374
191031A00037	10/31/2019	2.59	10/30/2034	10/31/2024	109.72329	109.7232869	109.7232858	106.9063068	100.9647742	95.07272967	89.44201821	84.15967962	79.25448007
191220A00029	12/20/2019	2.57	12/19/2031	12/20/2024	109.18573	109.1857268	109.1857268	106.9678226	101.8892139	96.85518161	92.01048886	87.42242422	83.11053062
200102A00020	1/2/2020	2.78	1/3/2040	1/2/2025	112.16893	112.1689258	112.1682113	108.2992344	100.963058	93.67983529	86.78359898	80.40568688	74.58649033
200108A00009	1/8/2020	2.4	1/8/2035	1/8/2025	110.21088	110.2108814	110.2108779	107.1097073	100.6851437	94.309265	88.2289143	82.54880613	77.29528164
200108A00040	1/8/2020	2.52	1/8/2030	1/8/2025	110.05208	110.0520848	110.0520848	107.272889	101.1741271	95.10141944	89.26688674	83.76778168	78.63248906
200110A00012	1/10/2020	2.57	1/10/2035	1/10/2025	109.80504	109.8050446	109.8050424	106.8631839	100.8038508	94.81708879	89.11045156	83.76933375	78.81822709
200115A00023	1/15/2020	2.16	1/15/2030	1/15/2025	107.20807	107.2080671	107.2080671	105.2345992	100.7026008	96.27379238	92.03236388	88.01120725	84.21710062
200115A00025	1/15/2020	2.1	1/15/2025	1/15/2023	104.93277	104.9327739	104.9327739	103.8592954	100.7030845	97.31699527	93.88325189	90.51013114	87.24641979
110505A00036	5/5/2011	3.23	5/5/2021	5/5/2011	103.63415	103.6341465	103.6341465	103.0644818	101.9215908	100.7853432	99.67439023	98.58787653	97.52498533
121016A00013	10/16/2012	1.64	10/14/2022	10/16/2012	101.93491	101.9349063	101.9349063	101.3329694	99.92652458	98.55176017	97.20918347	95.89777719	94.61656459
140908A00080	9/8/2014	2.51	3/8/2024	9/8/2014	107.65953	107.6595342	107.6595342	106.447544	103.2633094	100.2061823	97.27072463	94.45125623	91.74239798
140925A00039	9/25/2014	2.02	9/27/2021	9/25/2014	101.54001	101.5400146	101.5400146	101.0879196	100.2162008	99.35764117	98.51438906	97.68602578	96.8721483
141107A00027	11/7/2014	1.98	11/8/2021	11/7/2014	101.63512	101.6351235	101.6351235	101.1590814	100.2069196	99.27019989	98.35076765	97.44814104	96.56185645
141203A00039	12/3/2014	3.6	12/4/2034	12/3/2014	126.97692	126.976915	126.769964	119.6786344	111.3492934	103.8243403	97.01428119	90.84022124	85.23281942
150414A00037	4/14/2015	2.34	4/14/2025	4/14/2015	105.57641	105.5764093	105.5764093	104.5061303	101.8048969	99.20797036	96.71118084	94.30978952	91.99931703
150617A00036	6/17/2015	2.44	6/15/2022	6/17/2015	104.81756	104.8175575	104.8175575	103.9904614	101.7755521	99.62065374	97.52410584	95.48399713	93.49849036
150624A00077	6/24/2015	2.54	6/24/2022	6/24/2015	105.09325	105.0932543	105.0932543	104.2581156	102.0177576	99.83864794	97.71906953	95.65705479	93.65071302

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150701A00056	7/1/2015	2.34	7/1/2025	7/1/2015	106.40168	106.4016817	106.4016817	105.2585598	102.4039999	99.66444093	97.03496683	94.51017475	92.08496727
150729A00041	7/29/2015	2.44	7/29/2025	7/29/2015	106.13604	106.1360368	106.1360368	104.9985194	102.1599806	99.43555555	96.82037985	94.30910018	91.89666538
151006A00050	10/6/2015	2.21	10/6/2022	10/6/2015	102.76122	102.7612236	102.7612236	102.1546677	100.7375175	99.35226639	97.99942777	96.67797816	95.38693472
151023A00018	10/23/2015	1.74	10/23/2020	10/23/2015	101.07525	101.0752523	101.0752523	100.6406648	99.92476558	99.21913568	98.52355457	97.837808	97.1616878
151102A00024	11/2/2015	2.37	11/2/2022	11/2/2015	105.55019	105.5501896	105.5501896	104.5818458	101.9467906	99.39296902	96.91750722	94.51749081	92.19013574
151118A00037	11/18/2015	2.75	11/18/2025	11/18/2015	110.85328	110.8532768	110.8532768	108.8233562	104.4040851	100.22005	96.25735606	92.50263567	88.94341092
160126A00004	1/26/2016	2.52	1/26/2026	1/26/2016	113.34905	113.3490483	113.3490483	110.58353	105.0491204	99.84277264	94.94327122	90.33069777	85.98653261
160211A00038	2/11/2016	1.83	2/11/2026	2/11/2016	104.81934	104.8193392	104.8193392	103.5319081	100.4493757	97.5019668	94.6831648	91.98617029	89.40459468
160212A00006	2/12/2016	1.57	2/13/2023	2/12/2016	102.05142	102.0514182	102.0514182	101.3990464	99.82816205	98.29613608	96.80301105	95.34748623	93.92831446
160301A00012	3/1/2016	2.02	3/1/2023	3/1/2016	105.12319	105.123191	105.123191	104.0499338	101.1337146	98.31651395	95.59457761	92.96413093	90.42157237
160309A00013	3/16/2016	1.59	3/16/2020	3/16/2016	100.1672	100.1672039	100.1672039	100.0961547	99.97250759	99.84918177	99.72617594	99.60348882	99.48111915
160608A00022	6/8/2016	1.91	6/8/2023	6/8/2016	105.11461	105.1146129	105.1146129	103.9647935	100.8623227	97.87216292	94.989861	92.21094621	89.53115704
160608A00023	6/8/2016	2.36	6/8/2026	6/8/2016	111.56072	111.5607181	111.5607181	108.6147632	103.0784224	97.88224204	93.00340408	88.42053018	84.11379614
160705A00010	7/5/2016	1.68	7/5/2023	7/5/2016	104.53949	104.5394865	104.5394865	103.356161	100.1573704	97.07735962	94.11125389	91.25422533	88.50167705
160713A00015	7/13/2016	1.57	7/13/2026	7/13/2016	104.91091	104.9109134	104.9109134	103.4793369	100.1838325	97.04177023	94.04515611	91.18587524	88.45632774
160810A00024	8/10/2016	1.52	8/10/2021	8/10/2016	101.83085	101.8308455	101.8308455	101.1827522	99.73571354	98.31688143	96.92576703	95.56162154	94.22372274
160810A00025	8/10/2016	2.17	8/10/2026	8/10/2016	110.72019	110.7201932	110.7201932	107.6312266	102.0121162	96.74656084	91.81025339	87.18048468	82.8362365
120517A00021	5/17/2012	1.85	5/17/2024	5/17/2012	103.9172	103.9172016	103.9172016	103.0434308	100.8216443	98.67294382	96.59524874	94.58562005	92.64126228
130508A00004	5/8/2013	1.47	5/8/2020	5/8/2013	100.36615	100.3661546	100.3661546	100.2052745	99.93534222	99.66687564	99.39986273	99.13429161	98.87015053
130522A00027	5/22/2013	2.08	5/22/2023	5/22/2013	103.42691	103.426906	103.426906	102.7247407	101.0042499	99.3292467	97.6993886	96.11309309	94.5688454
130614A00018	6/14/2013	2.83	6/14/2023	6/14/2013	104.54389	104.5438883	104.5438883	103.822684	102.0474707	100.320013	98.63985182	97.00531141	95.41478817
140317A00056	3/17/2014	1.82	3/17/2021	3/17/2014	100.9672	100.9672029	100.9672029	100.6006328	99.9790477	99.36621701	98.76293561	98.16895636	97.58404105
140717A00027	7/17/2014	3.14	7/17/2026	7/17/2014	114.97651	114.9765082	114.9765082	112.1742775	106.8586906	101.8623182	97.16399284	92.74376605	88.58314192
150318A00003	3/18/2015	2.04	3/18/2022	3/18/2015	102.27185	102.2718508	102.2718508	101.7458004	100.5782688	99.43197483	98.3102066	97.21221403	96.13727713
150409A00009	4/9/2015	1.89	4/9/2025	4/9/2015	104.85408	104.8540814	104.8540814	103.7876904	101.0958122	98.5081603	96.02055061	93.62823764	91.32673631
150420A00012	4/20/2015	2.07	4/20/2022	4/20/2015	103.84687	103.8468689	103.8468689	103.0499429	100.9210193	98.84720897	96.82684249	94.85815392	92.93945085
150427A00014	4/27/2015	2.98	4/27/2035	4/27/2015	121.99033	121.9903258	121.7475975	114.7826299	106.6922008	99.39483353	92.80094282	86.83177513	81.41824832
150529A00056	5/29/2015	1.41	5/29/2020	5/29/2015	100.24006	100.2400618	100.2400618	100.1188005	99.91300724	99.70822531	99.50444647	99.3016626	99.09986566
150615A00024	6/15/2015	2.26	6/16/2025	6/15/2015	106.07445	106.0744538	106.0744538	104.9552345	102.1497438	99.45584531	96.8688612	94.38360124	91.99516578
150630A00081	6/30/2015	2.02	6/30/2020	6/30/2015	100.73765	100.7376476	100.7376476	100.4931759	100.0796365	99.66950108	99.26272778	98.85927541	98.45910349
150630A00086	6/30/2015	2.02	6/30/2020	6/30/2015	100.73765	100.7376476	100.7376476	100.4931759	100.0796365	99.66950108	99.26272778	98.85927541	98.45910349
150630A00088	6/30/2015	2.02	6/30/2020	6/30/2015	100.73765	100.7376476	100.7376476	100.4931759	100.0796365	99.66950108	99.26272778	98.85927541	98.45910349
150713A00011	7/13/2015	1.89	7/13/2020	7/13/2015	100.79803	100.7980257	100.7980257	100.5331217	100.0852664	99.64143067	99.20156021	98.76560182	98.33350323

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150803A00033	8/3/2015	3.41	8/2/2030	8/3/2015	126.15141	126.1514065	126.1514065	119.3700578	110.8419047	103.085571	96.02416565	89.58875292	83.71770282
150803A00038	8/3/2015	3.41	8/2/2030	8/3/2015	126.15141	126.1514065	126.1514065	119.3700578	110.8419047	103.085571	96.02416565	89.58875292	83.71770282
150803A00042	8/3/2015	3.01	8/2/2030	8/3/2015	115.2192	115.2191962	115.2191962	111.6741292	106.0529351	100.8316041	95.97722154	91.45950524	87.25094585
150902A00008	9/2/2015	1.37	9/2/2020	9/2/2015	100.46124	100.4612373	100.4612373	100.2439618	99.87801384	99.51536053	99.15595298	98.79974332	98.44668463
150902A00009	9/2/2015	1.68	9/2/2020	9/2/2015	100.89196	100.8919626	100.8919626	100.553044	99.98669553	99.4268783	98.87347894	98.32638669	97.78549333
150922A00014	9/22/2015	1.84	9/22/2020	9/22/2015	101.02082	101.0208188	101.0208188	100.6359876	99.99810074	99.36833776	98.7465438	98.13256797	97.52626315
151001A00023	10/1/2015	2.02	10/1/2025	10/1/2015	105.71337	105.7133716	105.7133716	104.5102877	101.5521073	98.71775832	96.00163625	93.39773975	90.90041722
151006A00019	10/6/2015	1.67	10/6/2022	10/6/2015	101.97742	101.9774189	101.9774189	101.3754771	99.96908977	98.59435987	97.25179701	95.94038538	94.65914958
151120A00019	11/20/2015	2.72	11/20/2030	11/20/2015	115.03218	115.0321755	115.0321755	111.3213836	105.5638185	100.2258545	95.27211813	90.67018136	86.39064959
151125A00037	11/25/2015	2.41	11/25/2025	11/25/2015	106.41569	106.415688	106.415688	105.1840267	102.1754424	99.29407162	96.53407252	93.88922866	91.35368869
090508A00007	5/8/2009	4.26	5/8/2020	5/8/2009	101.12119	101.1211859	101.1211859	100.959774	100.6889193	100.4195326	100.1516017	99.88511486	99.62006025
110304A00006	3/4/2011	3.6	3/4/2021	3/4/2011	103.56093	103.560929	103.560929	102.9934007	101.9778225	100.9793183	100.0013055	99.04314901	98.10423975
140313A00025	3/13/2014	2.43	3/15/2021	3/13/2014	102.56732	102.5673199	102.5673199	101.9744373	100.8849941	99.80908922	98.75639063	97.72615058	96.71765316
140313A00028	3/13/2014	2.86	3/13/2024	3/13/2014	109.13143	109.1314268	109.1314268	107.8649214	104.5309872	101.3323001	98.2629297	95.31677845	92.48807456
140618A00019	6/18/2014	3.08	6/18/2024	6/18/2014	106.43358	106.4335793	106.4335793	105.5260522	103.2161705	100.9832945	98.82515215	96.73861856	94.72072236
140929A00028	9/29/2014	2.62	3/29/2023	9/29/2014	107.34304	107.3430392	107.3430392	106.2586342	103.3396809	100.5203807	97.79698831	95.16564688	92.62268041
150115A00031	1/15/2015	1.42	1/18/2022	1/15/2015	101.37606	101.3760597	101.3760597	100.8774953	99.84235337	98.8253138	97.82795396	96.84972059	95.89008107
150319A00007	3/19/2015	1.39	3/19/2020	3/19/2015	100.1225	100.1224994	100.1224994	100.0619581	99.95541083	99.84911045	99.74305605	99.6372467	99.53168151
150407A00022	4/7/2015	1.67	4/7/2020	4/7/2015	100.26355	100.2635516	100.2635516	100.1547969	99.97001652	99.78592623	99.60252209	99.41980023	99.23775681
150617A00026	6/17/2015	2	6/15/2020	6/17/2015	100.65589	100.6558884	100.6558884	100.4354618	100.0634565	99.69422553	99.32773777	98.96396258	98.6028698
150619A00011	6/19/2015	1.93	6/19/2020	6/19/2015	100.41101	100.411007	100.411007	100.2674586	100.0242235	99.7824073	99.54199652	99.30297765	99.06533743
150729A00028	7/29/2015	2.25	7/29/2025	7/29/2015	106.14008	106.1400825	106.1400825	104.9985235	102.1498472	99.41601865	96.79212173	94.27275598	91.85282652
150803A00037	8/3/2015	3.41	8/2/2030	8/3/2015	126.15139	126.1513901	126.1513901	119.3700485	110.8419008	103.0855716	96.02417004	89.58876048	83.71771302
150803A00041	8/3/2015	3.01	8/2/2030	8/3/2015	115.21919	115.2191857	115.2191857	111.6741228	106.0529326	100.831605	95.97722537	91.45951166	87.25095453
150804A00022	8/4/2015	2.37	8/4/2022	8/4/2015	105.07153	105.0715334	105.0715334	104.1836231	101.776249	99.43815505	97.1671418	94.96088956	92.81717367
150812A00052	8/14/2015	2.13	8/14/2025	8/14/2015	105.87498	105.874981	105.874981	104.7151116	101.8333258	99.06919566	96.4175885	93.87291605	91.42990935
150825A00008	8/25/2015	2.82	8/25/2025	8/25/2015	112.00082	112.0008244	112.0008244	109.862226	105.1006505	100.5955366	96.33167992	92.29457615	88.47067579
150929A00087	9/29/2015	2.09	9/29/2025	9/29/2015	105.84368	105.843676	105.843676	104.6609753	101.7386968	98.93729905	96.25140441	93.67520958	91.20324639
151002A00003	10/2/2015	1.94	10/2/2025	10/2/2015	105.46903	105.4690329	105.4690329	104.2686709	101.317258	98.48939674	95.77949489	93.18156451	90.68996662
151005A00084	10/5/2015	2.25	10/5/2022	10/5/2015	105.08566	105.0856647	105.0856647	104.1462249	101.5868494	99.10465734	96.69699203	94.36113932	92.09450365
151013A00033	10/13/2015	2.23	10/14/2025	10/13/2015	105.77219	105.7721912	105.7721912	104.5722201	101.6225404	98.79601737	96.08709626	93.48982047	90.99857985
151023A00019	10/23/2015	1.74	10/23/2020	10/23/2015	101.07525	101.0752523	101.0752523	100.6406648	99.92476558	99.21913568	98.52355457	97.837808	97.1616878
151030A00004	10/30/2015	2.48	10/30/2025	10/30/2015	110.41345	110.4134516	110.4134516	108.4161744	104.029279	99.87479154	95.93900707	92.20875445	88.67174042

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
151118A00025	11/18/2015	2.4	11/18/2022	11/18/2015	105.51857	105.5185725	105.5185725	104.5628	101.9784303	99.47390188	97.04655036	94.69353722	92.41214651
151124A00007	11/24/2015	1.98	11/23/2022	11/24/2015	102.50165	102.5016485	102.5016485	101.8839319	100.4279723	99.00563541	97.61731336	96.26191533	94.93839434
151228A00013	12/28/2015	2.27	12/29/2025	12/28/2015	106.67118	106.671181	106.671181	105.4070509	102.3394082	99.40346174	96.59303688	93.90161802	91.32307699
110504A00014	5/4/2011	3.46	5/4/2021	5/4/2011	104.07334	104.0733357	104.0733357	103.4827089	102.2895595	101.1023753	99.94225577	98.80827097	97.6995334
110719A00017	7/19/2011	3.68	7/20/2026	7/19/2011	111.61975	111.6197479	111.6197479	110.1029044	106.6105362	103.2802961	100.1037672	97.07239489	94.17816654
121114A00020	11/14/2012	1.74	11/14/2022	11/14/2012	104.13925	104.1392498	104.1392498	103.2103114	100.7078537	98.28213458	95.93064266	93.65064491	91.43952747
130321A00009	3/21/2013	2.17	3/23/2026	3/21/2013	108.2223	108.2223014	108.2223014	106.3893177	102.4346123	98.68468917	95.12763132	91.75181752	88.54640862
130422A00020	4/22/2013	1.98	4/22/2025	4/22/2013	104.57623	104.5762296	104.5762296	103.5157574	100.8396844	98.26697113	95.79348387	93.41452549	91.12565616
140219A00005	2/19/2014	3.13	2/20/2029	2/19/2014	114.59629	114.5962888	114.5962888	111.8589273	106.9589539	102.3647411	98.0542534	94.00678692	90.2033248
140428A00015	4/28/2014	2.35	4/29/2024	4/28/2014	104.97048	104.9704755	104.9704755	104.1024753	101.8988712	99.76661694	97.70377118	95.70749691	93.77509418
140730A00035	7/30/2014	2.67	1/30/2023	7/30/2014	104.03168	104.0316766	104.0316766	103.3775617	101.8124432	100.2853156	98.79633196	97.34423126	95.9278042
141017A00022	10/17/2014	2.78	10/17/2024	10/17/2014	110.18608	110.1860816	110.1860816	108.5742363	104.4744786	100.5670173	96.84188532	93.28941221	89.900499
150203A00012	2/3/2015	1.61	2/3/2022	2/3/2015	101.44232	101.4423234	101.4423234	100.9337535	99.8610394	98.8076396	97.77500615	96.76255064	95.76970664
150213A00019	2/13/2015	1.47	2/13/2020	2/13/2015	100.04261	100.0426089	100.0426089	100.0227021	99.98669325	99.95072533	99.91479829	99.87891204	99.84306653
150224A00010	2/24/2015	2.34	2/24/2025	2/24/2015	105.41476	105.4147572	105.4147572	104.3542722	101.6962404	99.14628583	96.69950404	94.35083226	92.09549318
150617A00030	6/17/2015	2.91	6/16/2025	6/17/2015	112.06639	112.0663857	112.0663857	110.0633582	105.4290897	101.0372676	96.87396582	92.92583819	89.18039135
150624A00076	6/24/2015	2.04	6/24/2020	6/24/2015	100.71476	100.7147554	100.7147554	100.4802761	100.0839784	99.69082145	99.300768	98.91378131	98.5298252
150630A00077	6/30/2015	2.02	6/30/2020	6/30/2015	100.73765	100.7376476	100.7376476	100.4931759	100.0796365	99.66950108	99.26272778	98.85927541	98.45910349
150805A00015	8/5/2015	2.29	8/5/2022	8/5/2015	105.32562	105.3256224	105.3256224	104.4326918	102.0113305	99.65985682	97.37604177	95.15753861	93.0020971
151022A00020	10/22/2015	1.71	10/22/2020	10/22/2015	101.06688	101.0668813	101.0668813	100.6213568	99.88770345	99.16463041	98.45191027	97.74932206	97.05665106
151029A00008	10/29/2015	2.28	10/29/2025	10/29/2015	105.92616	105.9261565	105.9261565	104.7237565	101.7692347	98.93811283	96.22482177	93.62339073	91.1281964
151030A00026	10/30/2015	3.29	10/30/2030	10/30/2015	125.56192	125.5619161	125.5619161	118.5545503	109.9356624	102.1110946	95.000204	88.53091843	82.63894191
151113A00035	11/13/2015	1.8	11/14/2022	11/13/2015	102.49918	102.499182	102.499182	101.8802631	100.4213084	98.99610319	97.6050345	96.24700511	94.92096205
151124A00006	11/24/2015	1.66	11/24/2020	11/24/2015	100.64332	100.643317	100.643317	100.3687634	99.91169858	99.45988834	99.01323204	98.57163174	98.13499212
151215A00039	12/15/2015	2.46	12/15/2025	12/15/2015	106.66456	106.6645576	106.6645576	105.4058924	102.3501215	99.42511804	96.62477766	93.94264857	91.37266138
160209A00008	2/9/2016	2.45	2/10/2031	2/9/2016	112.53569	112.5356874	112.5356874	108.7816185	103.0639439	97.7699082	92.86319267	88.31058145	84.08201381
160303A00035	3/3/2016	2.14	3/3/2026	3/3/2016	105.96938	105.9693753	105.9693753	104.6155298	101.4159158	98.35949621	95.43927964	92.64792878	89.97855713
160328A00030	3/28/2016	1.79	3/29/2021	3/28/2016	101.72603	101.7260326	101.7260326	101.1368251	100.0250254	98.92080277	97.84116812	96.78530465	95.75243139
160608A00020	6/8/2016	2.36	6/8/2026	6/8/2016	111.56071	111.5607137	111.5607137	108.6147605	103.0784218	97.8822433	93.00340701	88.42053462	84.11380194
001127A00007	11/27/2000	6.74	11/27/2020	11/27/2000	103.08498	103.0849807	103.0849807	102.8027225	102.3329546	101.8686151	101.4095996	100.9558062	100.5071358
120330A00013	3/30/2012	2.98	4/2/2024	3/30/2012	109.64549	109.6454909	109.6454909	108.2852353	104.6956662	101.2567485	97.96154202	94.80312085	91.7749356
120806A00014	8/6/2012	1.77	8/8/2022	8/6/2012	101.99644	101.9964356	101.9964356	101.4179162	100.0928054	98.79607157	97.52845748	96.28907099	95.07705456
120820A00009	8/20/2012	2.4	8/22/2022	8/20/2012	104.96954	104.969541	104.969541	104.1019715	101.7762568	99.51712681	97.32261808	95.19047886	93.11855102

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
140508A00008	5/8/2014	1.66	5/10/2021	5/8/2014	101.102	101.1019953	101.1019953	100.7049747	100.003064	99.30922931	98.62743425	97.95733427	97.29859864
140730A00037	7/30/2014	2.83	1/30/2024	7/30/2014	105.70357	105.7035661	105.7035661	104.8734962	102.7795549	100.7500563	98.78352356	96.87748621	95.02958889
140821A00040	8/21/2014	3.41	8/21/2031	8/21/2014	131.78857	131.7885736	131.7885736	123.0137727	113.1674504	104.3042468	96.31685525	89.11021022	82.60020841
140917A00030	9/17/2014	3.23	9/17/2029	9/17/2014	123.49693	123.4969266	123.4969266	117.9413157	110.2700662	103.2371939	96.78390446	90.85698483	85.40846954
150114A00029	1/14/2015	1.99	1/14/2022	1/14/2015	101.79115	101.7911532	101.7911532	101.2917737	100.2552688	99.23683067	98.23804317	97.25835536	96.29723671
150213A00014	2/13/2015	2.41	2/13/2025	2/13/2015	106.10638	106.1063842	106.1063842	105.0647539	102.4230189	99.88080207	97.43429425	95.0790614	92.8109077
150227A00011	2/27/2015	2.33	2/27/2025	2/27/2015	108.75971	108.759711	108.759711	107.1573672	103.2279047	99.48712691	95.925049	92.53186239	89.29835701
150529A00055	5/29/2015	1.78	5/31/2022	5/29/2015	101.82335	101.8233549	101.8233549	101.2792965	100.0768321	98.89812877	97.74427027	96.61452306	95.50818169
150617A00018	6/17/2015	2.45	6/17/2025	6/17/2015	106.07069	106.0706921	106.0706921	104.9553396	102.1597085	99.47496535	96.89648143	94.41911118	92.0379964
150722A00033	7/22/2015	2.47	7/22/2025	7/22/2015	106.22328	106.2232769	106.2232769	105.0851338	102.2445409	99.51812329	96.90101572	94.38786315	91.97361275
150803A00039	8/3/2015	3.01	8/2/2030	8/3/2015	115.21919	115.2191921	115.2191921	111.674127	106.0529344	100.8316047	95.97722324	91.45950788	87.25094928
150824A00033	8/24/2015	2.22	8/25/2025	8/24/2015	105.57585	105.5758488	105.5758488	104.4228616	101.5589474	98.81165524	96.17591597	93.64620194	91.21730059
150828A00018	8/28/2015	1.7	8/29/2022	8/28/2015	102.08066	102.0806628	102.0806628	101.5112718	100.2207629	98.95729108	97.72170707	96.51316484	95.33085106
150928A00016	9/28/2015	1.73	9/28/2020	9/28/2015	100.93689	100.9368936	100.9368936	100.5570016	99.9280859	99.30725059	98.69433932	98.0891998	97.49168363
150929A00076	9/29/2015	2.28	9/29/2025	9/29/2015	105.84014	105.8401406	105.8401406	104.6617307	101.7499867	98.95834299	96.28147813	93.71363994	91.24940755
150929A00083	9/29/2015	2.09	9/29/2025	9/29/2015	105.84368	105.843676	105.843676	104.6609753	101.7386968	98.93729905	96.25140441	93.67520958	91.20324639
151007A00010	10/7/2015	1.7	10/7/2020	10/7/2015	100.98898	100.9889767	100.9889767	100.5788662	99.90170983	99.23371408	98.5746936	97.92446799	97.28286164
151204A00011	12/4/2015	2.28	12/4/2025	12/4/2015	106.70058	106.7005846	106.7005846	105.4373023	102.3697364	99.43379107	96.62330095	93.93175854	91.35304295
160115A00011	1/15/2016	2.18	1/15/2026	1/15/2016	105.86474	105.8647405	105.8647405	104.5902494	101.5171069	98.57707948	95.76384962	93.07078424	90.49164724
160209A00006	2/9/2016	1.91	2/9/2026	2/9/2016	105.07613	105.0761317	105.0761317	103.7856441	100.6956646	97.74112851	94.9155044	92.21197708	89.62414314
160210A00051	2/10/2016	2.28	2/10/2031	2/10/2016	112.69034	112.6903363	112.6903363	108.9062604	103.1516785	97.82499641	92.88941481	88.31129473	84.06020103
160329A00017	3/29/2016	2.48	3/30/2026	3/29/2016	111.29907	111.2990688	111.2990688	108.7051501	103.5710569	98.73795599	94.18639197	89.89803665	85.85586238
000929A00001	9/29/2000	6.82	9/29/2020	9/29/2000	104.4176	104.4176009	104.4176009	104.0153991	103.3500259	102.6933076	102.0450753	101.4051644	100.7734146
110701A00011	7/1/2011	3.87	7/1/2026	7/1/2011	112.29517	112.2951685	112.2951685	110.7701307	107.2573783	103.90764	100.7124577	97.66323399	94.75191579
110909A00006	9/9/2011	2.26	9/9/2026	9/9/2011	106.8024	106.8023989	106.8023989	105.2909506	101.8692165	98.60984817	95.50418728	92.54350987	89.71965442
111115A00005	11/15/2011	2.26	11/15/2021	11/15/2011	101.91029	101.9102936	101.9102936	101.4328509	100.4772719	99.53721126	98.61452017	97.70871531	96.81933169
120806A00015	8/6/2012	2.38	8/6/2027	8/6/2012	108.2328	108.232801	108.232801	106.3341807	102.4269155	98.72708276	95.22209067	91.89969272	88.74850986
120808A00006	8/8/2012	2.06	8/9/2027	8/8/2012	107.71434	107.7143413	107.7143413	105.815622	101.9108661	98.21406158	94.71254302	91.39400226	88.24700528
130312A00007	3/12/2013	1.76	3/12/2021	3/12/2013	101.78459	101.7845893	101.7845893	101.2016981	100.1378714	99.08858281	98.06167668	97.05643836	96.07218338
140703A00026	7/3/2014	3.11	7/3/2024	7/3/2014	110.94525	110.9452463	110.9452463	109.4454654	105.532801	101.7944269	98.22185137	94.80672014	91.54114603
141015A00029	10/15/2014	2.32	10/15/2024	10/15/2014	108.18459	108.1845868	108.1845868	106.7369362	103.0518277	99.53316138	96.17266278	92.96211158	89.89376712
150203A00027	2/3/2015	2.26	2/4/2030	2/3/2015	111.40565	111.4056499	111.4056499	108.2314224	102.9985609	98.12366916	93.57842443	89.33661475	85.37434463
150223A00017	2/23/2015	1.77	2/23/2022	2/23/2015	101.81568	101.8156789	101.8156789	101.3336147	100.2430629	99.17689392	98.13520403	97.11722854	96.12223298

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150722A00035	7/22/2015	2.92	7/22/2025	7/22/2015	112.30817	112.3081716	112.3081716	110.2327444	105.5231086	101.0637479	96.84003717	92.83799284	89.04453959
150803A00040	8/3/2015	3.01	8/2/2030	8/3/2015	115.21921	115.2192081	115.2192081	111.6741376	106.0529391	100.8316041	95.97721796	91.45949846	87.2509362
150824A00050	8/24/2015	2.03	8/25/2025	8/24/2015	105.5788	105.5788009	105.5788009	104.4216783	101.547497	98.79069058	96.14613614	93.60825719	91.17179595
150911A00007	9/10/2015	2.51	9/9/2022	9/10/2015	105.62248	105.6224754	105.6224754	104.7006193	102.1959018	99.76513597	97.40587376	95.11556964	92.89178624
150915A00072	9/15/2015	1.91	9/15/2020	9/15/2015	101.03036	101.030358	101.030358	100.6591695	100.0422899	99.43302869	98.83124472	98.23680052	97.64956192
151201A00004	12/1/2015	2.44	12/1/2022	12/1/2015	105.89809	105.8980943	105.8980943	104.9016551	102.188848	99.56173921	97.01736541	94.5526804	92.1647668
151210A00011	12/10/2015	2.16	12/12/2022	12/10/2015	103.12678	103.1267788	103.1267788	102.4917143	100.9827527	99.50952376	98.0723033	96.66992029	95.30125101
160113A00002	1/13/2016	2.12	1/13/2026	1/13/2016	106.28379	106.2837868	106.2837868	104.9995068	101.9029674	98.94093923	96.10701482	93.39447586	90.79700715
160210A00054	2/10/2016	1.78	2/10/2026	2/10/2016	105.27157	105.2715711	105.2715711	103.973673	100.8664631	97.89585126	95.05522542	92.33769569	89.73678953
160212A00047	2/12/2016	1.94	2/12/2026	2/12/2016	105.17276	105.172763	105.172763	103.8809668	100.7880418	97.83069748	95.00239512	92.29631217	89.70603829
160413A00016	4/13/2016	2.55	4/14/2031	4/13/2016	113.34598	113.3459782	113.3459782	109.4643159	103.6301551	98.23398104	93.23774995	88.60673469	84.3095463
160413A00021	4/13/2016	2.48	4/13/2026	4/13/2016	111.98631	111.9863136	111.9863136	109.1747876	103.728752	98.61032281	93.79787716	89.27116128	85.01137704
160523A00086	5/23/2016	2.2	5/26/2026	5/23/2016	111.08085	111.080848	111.080848	108.3462676	103.0950348	98.15915141	93.51780541	89.15141976	85.04182901
160524A00028	5/24/2016	2.06	5/24/2023	5/24/2016	105.61532	105.6153234	105.6153234	104.4599388	101.3354224	98.32331792	95.41914336	92.61844141	89.91696393
160526A00018	5/26/2016	1.68	5/26/2021	5/26/2016	101.6968	101.6968003	101.6968003	101.1372625	99.95819259	98.79574319	97.65455742	96.53407062	95.43373819
020129A00031	12/31/2001	6.03	6/30/2021	12/31/2001	104.54274	104.5427438	104.5427438	104.1179273	103.3452327	102.5827605	101.8332814	101.0964423	100.3719034
110504A00017	5/4/2011	3.46	5/4/2021	5/4/2011	104.07334	104.0733357	104.0733357	103.4827089	102.2895595	101.1023753	99.94225577	98.80827097	97.6995334
110810A00009	8/10/2011	2.36	8/10/2021	8/10/2011	101.74962	101.7496248	101.7496248	101.3100443	100.4802172	99.66237451	98.85884098	98.06922938	97.29316686
111220A00025	12/20/2011	2.17	12/20/2021	12/20/2011	101.90353	101.9035297	101.9035297	101.4147038	100.4174782	99.43705405	98.47514853	97.5312465	96.60485199
120807A00025	8/7/2012	1.82	8/8/2022	8/7/2012	102.06459	102.0645945	102.0645945	101.4856892	100.1596962	98.86209897	97.59364085	96.35342907	95.14060554
120807A00026	8/7/2012	2.42	8/9/2027	8/7/2012	108.3958	108.3958037	108.3958037	106.494232	102.5810248	98.87557233	95.36526266	92.03782974	88.8818764
130521A00012	5/21/2013	1.61	5/21/2020	5/21/2013	100.30013	100.300132	100.300132	100.1818637	99.98117179	99.78142976	99.58263024	99.38476589	99.18782949
131018A00006	10/18/2013	3.28	10/20/2025	10/18/2013	115.12349	115.123486	115.123486	112.8883202	108.0285807	103.4332848	99.0864967	94.97303759	91.07874816
140318A00003	3/17/2014	3.08	3/18/2024	3/17/2014	111.64514	111.6451401	111.6451401	110.1567511	106.1983993	102.4107906	98.78576909	95.31541056	91.99222339
140924A00057	9/24/2014	3.25	9/25/2028	9/24/2014	123.72924	123.7292405	123.7292405	118.3897858	110.6779654	103.5785947	97.03860335	91.0096591	85.44789204
150205A00031	2/5/2015	1.96	10/6/2025	2/5/2015	105.53042	105.5304236	105.5304236	104.3291809	101.3759038	98.54626711	95.83467378	93.23513091	90.74199494
150219A00016	2/19/2015	2.68	2/19/2025	2/19/2015	110.1908	110.1907964	110.1907964	108.4166369	104.0905232	99.98102471	96.07611868	92.36434306	88.83494288
150320A00019	3/20/2015	2.25	3/20/2025	3/20/2015	108.52416	108.5241568	108.5241568	106.8962421	102.9364515	99.16854962	95.582264	92.16753822	88.91493533
150603A00032	6/3/2015	2.21	6/3/2025	6/3/2015	105.92882	105.9288222	105.9288222	104.8116751	102.0105673	99.32083884	96.7378238	94.25634398	91.87151097
150617A00017	6/17/2015	2.27	6/17/2025	6/17/2015	106.10345	106.1034453	106.1034453	104.9838797	102.1775838	99.48291501	96.89519391	94.40922844	92.02011726
150714A00003	7/14/2015	3.76	7/12/2030	7/14/2015	120.77914	120.7791445	120.7791445	117.0779518	111.1839113	105.7082097	100.6165116	95.87721767	91.46161344
150717A00032	7/17/2015	1.88	7/17/2020	7/17/2015	100.81264	100.8126415	100.8126415	100.5413659	100.0828117	99.62847126	99.17828638	98.73219999	98.29015602
150803A00036	8/3/2015	3.41	8/2/2030	8/3/2015	126.15141	126.1514065	126.1514065	119.3700578	110.8419047	103.085571	96.02416565	89.58875292	83.71770282

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150925A00034	9/25/2015	2.36	9/25/2025	9/25/2015	106.08088	106.0808786	106.0808786	104.8999702	101.981777	99.18393854	96.50112294	93.92756652	91.4578375
151223A00036	12/23/2015	2.64	12/23/2025	12/23/2015	109.05907	109.059075	109.059075	107.3232275	103.4237153	99.71581228	96.18846113	92.83131945	89.63470861
160307A00024	3/7/2016	2.17	3/6/2026	3/7/2016	105.99456	105.994561	105.994561	104.6667451	101.5098829	98.49301715	95.60929211	92.85159581	90.21325007
160401A00005	4/1/2016	2.02	4/3/2023	4/1/2016	105.26667	105.266665	105.266665	104.1605759	101.1638446	98.27114289	95.47838973	92.78153147	90.17670565
160428A00020	4/28/2016	1.69	4/28/2021	4/28/2016	101.69109	101.6910925	101.6910925	101.1130398	99.96029156	98.81137722	97.68952744	96.59378707	95.52324561
160428A00025	4/28/2016	1.25	4/28/2021	4/28/2016	100.76391	100.7639133	100.7639133	100.3818064	99.71904469	99.06428009	98.42048971	97.78736757	97.16461966
160524A00101	5/24/2016	2.98	5/23/2031	5/24/2016	125.42403	125.4240268	125.4240268	117.1417619	107.7400497	99.26879997	91.62776533	84.72797892	78.49058031
160601A00023	6/1/2016	2.37	6/1/2029	6/1/2016	110.20456	110.2045565	110.2045565	107.4243771	102.5784062	98.04349538	93.79656444	89.81603382	86.08212666
120820A00011	8/20/2012	2.4	8/22/2022	8/20/2012	104.96954	104.9695376	104.9695376	104.1019685	101.7762554	99.51712692	97.32261965	95.19048184	93.11855536
130206A00009	2/6/2013	2.83	2/7/2028	2/6/2013	114.81396	114.8139598	114.8139598	111.2320251	105.3965365	99.96421865	94.90392637	90.18681233	85.786461
140821A00030	8/21/2014	2.27	8/21/2024	8/21/2014	105.16334	105.1633367	105.1633367	104.2326173	101.8602764	99.56978556	97.35852078	95.22307316	93.1602056
141015A00027	10/15/2014	2.01	10/15/2021	10/15/2014	103.11301	103.1130099	103.1130099	102.430588	100.8140186	99.23123302	97.68150146	96.16384431	94.67732097
150213A00028	2/13/2015	1.47	2/13/2020	2/13/2015	100.04261	100.0426089	100.0426089	100.0227021	99.98669326	99.95072534	99.9147983	99.87891206	99.84306655
150311A00003	3/11/2015	2.72	3/31/2025	3/11/2015	110.76928	110.7692758	110.7692758	108.9206958	104.4801805	100.2644283	96.26088368	92.45749292	88.84295785
150320A00020	3/20/2015	1.57	3/20/2020	3/20/2015	100.19658	100.196577	100.196577	100.1183605	99.98304803	99.84811659	99.71356456	99.57939031	99.44559219
150410A00021	4/10/2015	2.27	4/10/2025	4/10/2015	105.38097	105.3809671	105.3809671	104.3128173	101.6167479	99.0247748	96.53273755	94.13590749	91.82981482
150603A00012	6/3/2015	2.77	6/3/2030	6/3/2015	114.72299	114.7229924	114.7229924	111.2670429	105.7207509	100.564876	95.76762843	91.29971561	87.1345006
150604A00039	6/4/2015	2.82	6/4/2030	6/4/2015	115.01293	115.0129273	115.0129273	111.5482416	105.9879574	100.8190764	96.00972848	91.53054679	87.35482698
150814A00029	8/14/2015	2.39	8/14/2025	8/14/2015	106.07927	106.0792742	106.0792742	104.9212961	102.044208	99.2842484	96.6363285	94.09489822	91.6547238
151002A00042	10/2/2015	1.26	10/2/2020	10/2/2015	100.41289	100.4128911	100.4128911	100.1694895	99.76185265	99.35833587	98.95887044	98.56338923	98.17182663
151209A00024	12/9/2015	2.22	12/9/2025	12/9/2015	106.51131	106.5113106	106.5113106	105.2500225	102.1876948	99.25677783	96.45111482	93.76420781	91.1899449
151229A00026	12/29/2015	2.28	12/29/2025	12/29/2015	106.70283	106.7028276	106.7028276	105.4383233	102.3697724	99.4329566	96.62169951	93.92948361	91.35017892
160104A00020	1/4/2016	2.47	1/4/2023	1/4/2016	106.1702	106.1701982	106.1701982	105.137885	102.3394383	99.63193946	97.01213461	94.47670162	92.02246315
160106A00042	1/6/2016	2.43	1/6/2026	1/6/2016	106.66221	106.6622096	106.6622096	105.3785855	102.2827023	99.32089089	96.48679052	93.77372211	91.17540619
160210A00049	2/10/2016	1.78	2/10/2026	2/10/2016	105.27156	105.2715638	105.2715638	103.9736677	100.8664621	97.8958543	95.05523229	92.33770617	89.73680342
160328A00038	3/28/2016	2.54	3/30/2026	3/28/2016	111.61953	111.6195281	111.6195281	109.0196256	103.8730072	99.02805694	94.46527855	90.16630453	86.11407059
160413A00018	4/13/2016	1.78	4/13/2026	4/13/2016	105.41643	105.4164252	105.4164252	104.0631754	100.871467	97.82339411	94.91178627	92.12925734	89.46887733
160608A00025	6/8/2016	2.36	6/8/2026	6/8/2016	111.56071	111.5607137	111.5607137	108.6147605	103.0784218	97.8822433	93.00340701	88.42053462	84.11380194
160608A00027	6/8/2016	2.36	6/8/2026	6/8/2016	111.56071	111.5607137	111.5607137	108.6147605	103.0784218	97.8822433	93.00340701	88.42053462	84.11380194
160608A00028	6/8/2016	2.36	6/8/2026	6/8/2016	111.56071	111.5607137	111.5607137	108.6147605	103.0784218	97.8822433	93.00340701	88.42053462	84.11380194
160608A00029	6/8/2016	2.36	6/8/2026	6/8/2016	111.56071	111.5607137	111.5607137	108.6147605	103.0784218	97.8822433	93.00340701	88.42053462	84.11380194
160608A00033	6/8/2016	2.44	6/9/2031	6/8/2016	112.85936	112.8593647	112.8593647	108.8927198	103.0089834	97.5726977	92.54449712	87.88851292	83.57236463
160624A00051	6/24/2016	2.11	6/26/2029	6/24/2016	108.88593	108.8859311	108.8859311	106.1379955	101.3492787	96.8680223	92.6714054	88.73809204	85.04852935

Classification | Public

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160719A00026	7/19/2016	1.87	7/20/2026	7/19/2016	105.28699	105.2869925	105.2869925	103.8558702	100.5609766	97.4190618	94.42218268	91.5622671	88.83175399
160819A00012	8/19/2016	2.14	8/20/2029	8/19/2016	109.19974	109.1997414	109.1997414	106.3617349	101.4831463	96.92264244	92.65624134	88.66157849	84.91818396
160908A00017	9/8/2016	1.87	9/8/2023	9/8/2016	105.33681	105.3368057	105.3368057	104.1041717	100.7895104	97.60230616	94.53712267	91.58858301	88.75157935
160908A00022	9/8/2016	2.21	9/8/2026	9/8/2016	111.07582	111.0758205	111.0758205	107.9061289	102.2178272	96.89082598	91.9000369	87.22205808	82.83524657
160908A00037	9/8/2016	1.4	9/8/2023	9/8/2016	102.72296	102.7229613	102.7229613	101.9049415	99.83116695	97.82145541	95.87428444	93.98721006	92.15790161
160930A00047	9/30/2016	2.08	10/1/2029	9/30/2016	108.96959	108.9695921	108.9695921	106.0955713	101.189085	96.60497596	92.31874659	88.30758039	84.55060728
161005A00031	10/5/2016	1.43	10/5/2021	10/5/2016	101.21624	101.2162392	101.2162392	100.7529334	99.84403643	98.9493718	98.07093003	97.2082632	96.36094031
161014A00019	10/14/2016	2.39	10/15/2031	10/14/2016	112.92272	112.9227171	112.9227171	108.7452186	102.7099693	97.14547922	92.00927688	87.26280222	82.87133268
161014A00026	10/14/2016	2.16	10/14/2031	10/14/2016	112.70062	112.7006231	112.7006231	108.5023422	102.4473396	96.86637454	91.71654429	86.95891596	82.55844166
161128A00006	11/28/2016	1.93	11/29/2021	11/28/2016	103.13385	103.1338528	103.1338528	102.4422896	100.7435753	99.08218296	97.45744321	95.86832576	94.31383615
161214A00034	12/14/2016	2.65	12/14/2026	12/14/2016	108.50491	108.5049122	108.5049122	106.8735443	103.2760776	99.85487363	96.60016634	93.50222854	90.55197698
161216A00008	12/16/2016	3.16	12/17/2029	12/16/2016	115.05798	115.0579829	115.0579829	111.8908438	106.5918681	101.6488889	97.03423801	92.72223768	88.68944423
161229A00019	12/29/2016	2.46	12/29/2026	12/29/2016	108.5169	108.5168975	108.5168975	106.8775539	103.2650379	99.83009881	96.56286034	93.45349596	90.49283154
170310A00008	3/10/2017	3.17	3/11/2030	3/10/2017	115.50585	115.5058548	115.5058548	112.1889824	106.750376	101.6852243	96.96385554	92.55882557	88.44512507
170317A00039	3/17/2017	2.73	3/18/2024	3/17/2017	109.4334	109.4334016	109.4334016	107.9838047	104.1297495	100.4413254	96.91065587	93.5300744	90.29233191
170406A00023	4/6/2017	2.24	4/6/2022	4/6/2017	104.12486	104.1248552	104.1248552	103.3386551	101.2522686	99.21905024	97.23745543	95.30580518	93.42248914
170406A00027	4/6/2017	2.61	4/8/2024	4/6/2017	109.07722	109.0772243	109.0772243	107.6097122	103.7178421	99.99516529	96.43351762	93.02498358	89.76208417
170427A00010	4/27/2017	1.46	4/27/2020	4/27/2017	100.21827	100.2182749	100.2182749	100.1232158	99.96076792	99.79893206	99.63770447	99.47708139	99.31705911
170504A00012	5/4/2017	2.28	5/4/2026	5/4/2017	107.17628	107.1762808	107.1762808	105.772773	102.4876818	99.35210196	96.35846081	93.49899835	90.7664383
170526A00017	5/26/2017	2.16	5/28/2024	5/26/2017	104.13564	104.1356385	104.1356385	103.2769215	101.097248	98.98797138	96.94718834	94.97210556	93.06006439
170901A00030	9/1/2017	1.82	9/1/2022	9/1/2017	104.05668	104.0566754	104.0566754	103.1852856	100.8460187	98.57441205	96.36842403	94.22574471	92.14416136
171207A00021	12/7/2017	2.25	12/7/2020	12/7/2017	101.68124	101.6812376	101.6812376	101.1654678	100.3279837	99.5044847	98.6946214	97.89805614	97.11446227
171219A00009	12/19/2017	2.3	12/19/2024	12/19/2017	105.61749	105.6174945	105.6174945	104.6162832	102.0686885	99.6143763	97.24995803	94.97136867	92.77475702
180305A00030	3/5/2018	3.12	3/5/2025	3/5/2018	113.57796	113.5779645	113.5779645	111.5713142	106.7184445	102.1158549	97.74937673	93.60553095	89.67168189
180309A00011	3/9/2018	3.19	3/10/2025	3/9/2018	113.96157	113.9615668	113.9615668	111.939876	107.0627329	102.4376057	98.05019365	93.886899	89.93497669
180713A00031	7/13/2018	3.06	7/14/2025	7/13/2018	107.95992	107.9599156	107.9599156	106.8035896	103.9170484	101.1465015	98.48700808	95.93312926	93.47973307
180718A00008	7/18/2018	3.37	7/18/2028	7/18/2018	123.46233	123.4623319	123.4623319	118.0209449	110.1370181	102.8757284	96.18354124	90.01182234	84.31636406
151216A00005	12/16/2015	2.15	12/16/2020	12/16/2015	101.6468	101.6468027	101.6468027	101.1140956	100.2509836	99.40271136	98.56889735	97.74917315	96.94318276
151216A00006	12/16/2015	2.3	12/16/2021	12/16/2015	103.67326	103.6732581	103.6732581	102.9556834	101.1563952	99.39784289	97.67910167	95.99903432	94.35654345
151223A00078	12/23/2015	2.28	12/23/2025	12/23/2015	106.70229	106.7022941	106.7022941	105.4380825	102.3697659	99.43315691	96.62208179	93.93002546	91.35086012
160119A00072	1/19/2016	2.77	1/21/2031	1/19/2016	115.46437	115.4643686	115.4643686	111.2111636	104.9302309	99.12934382	93.7658284	88.80119711	84.20070651
160201A00016	2/1/2016	2.1	2/2/2026	2/1/2016	105.68738	105.6873801	105.6873801	104.3897143	101.2821007	98.31068195	95.46889206	92.74987924	90.14720561
160203A00017	2/3/2016	2.07	2/3/2023	2/3/2016	105.15842	105.15842	105.15842	104.1042554	101.2549332	98.50065046	95.83788922	93.2630904	90.77285449

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160405A00011	4/5/2016	1.31	4/5/2021	4/5/2016	100.68621	100.686212	100.686212	100.3051692	99.64800846	98.99898468	98.36069875	97.73285624	97.11517404
160617A00012	6/17/2016	2.13	6/18/2029	6/17/2016	108.98673	108.9867251	108.9867251	106.2365352	101.4435769	96.95832911	92.75795474	88.82110236	85.1282047
160711A00004	7/11/2016	1.51	7/13/2026	7/11/2016	104.70493	104.7049324	104.7049324	103.2761566	99.98710322	96.8511921	93.86044489	91.00676254	88.28256
160805A00014	8/5/2016	2.11	8/6/2029	8/5/2016	109.04448	109.0444786	109.0444786	106.2109936	101.3396175	96.78582095	92.52566389	88.53682023	84.79885491
160824A00019	8/24/2016	1.98	8/25/2031	8/24/2016	111.37472	111.3747227	111.3747227	107.3297578	101.4190702	95.96537121	90.92780949	86.26924799	81.95621372
160908A00019	9/8/2016	1.87	9/8/2023	9/8/2016	105.33681	105.3368057	105.3368057	104.1041717	100.7895104	97.60230616	94.53712267	91.58858301	88.75157935
160908A00023	9/8/2016	2.21	9/8/2026	9/8/2016	111.07582	111.0758181	111.0758181	107.9061278	102.2178274	96.8908272	91.90003906	87.22206108	82.8352503
160908A00030	9/8/2016	2.21	9/8/2026	9/8/2016	111.07582	111.0758181	111.0758181	107.9061278	102.2178274	96.8908272	91.90003906	87.22206108	82.8352503
160923A00009	9/23/2016	2.24	9/23/2031	9/23/2016	111.87329	111.8732854	111.8732854	107.7862622	101.843326	96.3610866	91.29823435	86.61723094	82.28425296
160923A00020	9/23/2016	2.15	9/24/2029	9/23/2016	109.33319	109.3331883	109.3331883	106.4498366	101.5271625	96.9279114	92.62750803	88.60306339	84.83364083
161028A00011	10/28/2016	2.32	10/29/2029	10/28/2016	110.30998	110.3099838	110.3099838	107.3583978	102.3534843	97.67989345	93.31225443	89.22696701	85.40245774
161103A00013	11/3/2016	1.69	11/3/2021	11/3/2016	102.41699	102.4169859	102.4169859	101.7231352	100.0427196	98.39837288	96.7891825	95.21409414	93.67209573
161116A00006	11/16/2016	2.39	11/16/2026	11/16/2016	107.4486	107.4486044	107.4486044	105.8650172	102.3423062	98.99039431	95.79993298	92.76157804	89.86659875
161202A00001	12/2/2016	2.65	12/1/2023	12/2/2016	108.65155	108.6515502	108.6515502	107.2937988	103.6473496	100.1489838	96.79209407	93.57020591	90.47717438
170103A00025	1/3/2017	3.09	1/3/2030	1/3/2017	114.79898	114.7989757	114.7989757	111.5941871	106.2678237	101.3019053	96.66821333	92.3405885	88.29516212
170105A00010	1/5/2017	2.61	1/5/2027	1/5/2017	108.45729	108.4572859	108.4572859	106.7941167	103.1582808	99.70243267	96.4164799	93.29040405	90.31485557
170120A00027	1/20/2017	2.35	1/20/2022	1/20/2017	103.95956	103.9595605	103.9595605	103.219205	101.3277133	99.4810457	97.67809233	95.91754688	94.19815107
170127A00008	1/27/2017	3.05	1/28/2030	1/27/2017	114.57909	114.579095	114.579095	111.3793893	106.0626709	101.1058173	96.48064702	92.16103666	88.12315079
170201A00016	2/1/2017	2.49	2/1/2024	2/1/2017	109.10353	109.1035337	109.1035337	107.6729357	103.8583833	100.2052415	96.70597103	93.35323284	90.1400783
170224A00007	2/24/2017	2.02	2/24/2021	2/24/2017	101.85152	101.8515167	101.8515167	101.2613441	100.2169023	99.19211892	98.18845135	97.20525015	96.24189233
160330A00003	3/30/2016	1.68	3/30/2021	3/30/2016	101.60303	101.6030268	101.6030268	101.0143809	99.90155586	98.79588242	97.7148863	96.65774589	95.62367575
160404A00019	4/4/2016	2.48	4/4/2031	4/4/2016	112.9133	112.9133024	112.9133024	109.0467886	103.2350097	97.85951374	92.88240802	88.26910291	83.98833341
160412A00029	4/12/2016	2.48	4/14/2031	4/12/2016	112.9138	112.9137978	112.9137978	109.0468685	103.2348884	97.85923294	92.88200264	88.26860197	83.98776096
160427A00004	4/27/2016	2.09	4/27/2026	4/27/2016	105.81191	105.8119148	105.8119148	104.458319	101.2661658	98.217286	95.30455016	92.52060596	89.85855422
160428A00028	4/28/2016	2	4/28/2026	4/28/2016	106.14833	106.1483258	106.1483258	104.7850289	101.5707112	98.501087	95.56892956	92.76679573	90.08770221
160504A00022	5/4/2016	2	5/4/2023	5/4/2016	105.33725	105.3372537	105.3372537	104.2031215	101.1306394	98.16717511	95.30834924	92.54983418	89.88751033
160511A00016	5/11/2016	2.48	5/12/2031	5/11/2016	113.01173	113.0117256	113.0117256	109.0908183	103.2364331	97.82441173	92.81608215	88.17617642	83.87283673
160608A00016	6/8/2016	1.63	6/8/2021	6/8/2016	101.80695	101.8069454	101.8069454	101.2092859	99.9050217	98.62277926	97.36324699	96.12587141	94.91011661
160608A00019	6/8/2016	2.36	6/8/2026	6/8/2016	111.56071	111.5607137	111.5607137	108.6147605	103.0784218	97.8822433	93.00340701	88.42053462	84.11380194
160810A00028	8/10/2016	2.19	8/10/2026	8/10/2016	111.19236	111.1923621	111.1923621	107.9698422	102.1630288	96.72592297	91.63290116	86.86007667	82.38534862
160826A00005	8/26/2016	2.12	8/27/2029	8/26/2016	109.09699	109.0969936	109.0969936	106.261397	101.3872395	96.83089597	92.56840302	88.57741364	84.83747413
160908A00015	9/8/2016	1.87	9/8/2023	9/8/2016	105.33681	105.3368057	105.3368057	104.1041717	100.7895104	97.60230616	94.53712267	91.58858301	88.75157935
160908A00021	9/8/2016	2.21	9/8/2026	9/8/2016	111.07582	111.0758181	111.0758181	107.9061278	102.2178274	96.8908272	91.90003906	87.22206108	82.8352503

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160908A00035	9/8/2016	2.3	9/8/2031	9/8/2016	112.25436	112.2543649	112.2543649	108.1540836	102.1912199	96.69055503	91.61065014	86.9138484	82.56621909
161104A00002	11/4/2016	2.26	11/5/2029	11/4/2016	110.07937	110.0793737	110.0793737	107.0920995	102.0599627	97.36339194	92.976502	88.87524277	85.03764268
161227A00073	12/27/2016	2.83	12/28/2026	12/27/2016	114.06018	114.0601763	114.0601763	111.2086488	106.0070575	101.1248655	96.54021317	92.2325215	88.1827655
170112A00015	1/12/2017	2.32	1/12/2027	1/12/2017	108.09155	108.0915472	108.0915472	106.4263227	102.7881203	99.33058933	96.04356262	92.91695768	89.94136702
170113A00028	1/13/2017	2.92	1/14/2030	1/13/2017	113.85945	113.8594506	113.8594506	110.6803179	105.3971721	100.4715832	95.87555467	91.58313402	87.57064138
170217A00012	2/17/2017	2.97	2/19/2030	2/17/2017	114.18554	114.1855352	114.1855352	110.9715875	105.6574536	100.7048117	96.08519295	91.77222613	87.74186269
170301A00031	3/1/2017	2.11	3/1/2024	3/1/2017	104.25606	104.2560551	104.2560551	103.4230093	101.3164561	99.27586785	97.29963446	95.38519594	93.53011307
170309A00014	3/9/2017	2.58	3/9/2027	3/9/2017	109.29259	109.2925875	109.2925875	107.5414213	103.7816834	100.2125145	96.82293411	93.6021229	90.53999841
170313A00045	3/13/2017	3.22	3/15/2032	3/13/2017	119.02093	119.0209308	119.0209308	114.3354721	107.7826451	101.7568054	96.20895041	91.09477929	86.37452442
170317A00044	3/17/2017	3.11	3/17/2027	3/17/2017	116.70114	116.7011389	116.7011389	113.188181	107.2025856	101.6119721	96.38763252	91.50286909	86.93308889
170406A00024	4/6/2017	2.61	4/8/2024	4/6/2017	109.07722	109.0772243	109.0772243	107.6097122	103.7178421	99.99516529	96.43351762	93.02498358	89.76208417
170406A00029	4/6/2017	3.01	4/6/2027	4/6/2017	117.13648	117.136485	117.136485	113.309776	106.9607296	101.0428565	95.52411952	90.37486668	85.56781822
170406A00032	4/6/2017	3.01	4/6/2027	4/6/2017	117.13648	117.136485	117.136485	113.309776	106.9607296	101.0428565	95.52411952	90.37486668	85.56781822
160225A00011	2/25/2016	1.5	2/27/2023	2/25/2016	102.48186	102.481858	102.481858	101.7708947	100.0136159	98.30356095	96.6402491	95.02203364	93.44733829
160413A00014	4/13/2016	2.55	4/14/2031	4/13/2016	113.34598	113.3459781	113.3459781	109.4643158	103.6301551	98.2339811	93.23775003	88.60673479	84.30954641
160413A00020	4/13/2016	2.48	4/13/2026	4/13/2016	111.98631	111.9863136	111.9863136	109.1747876	103.728752	98.61032281	93.79787716	89.27116128	85.01137704
160413A00033	4/13/2016	2.32	4/13/2026	4/13/2016	109.42099	109.4209855	109.4209855	107.1544594	102.5536269	98.21157272	94.1120756	90.2396926	86.58006286
160414A00042	4/13/2016	2.48	4/13/2026	4/13/2016	111.98631	111.9863136	111.9863136	109.1747876	103.728752	98.61032281	93.79787716	89.27116128	85.01137704
160421A00016	4/21/2016	2.26	4/21/2026	4/21/2016	111.25895	111.2589521	111.2589521	108.6013372	103.4039221	98.51467446	93.91343407	89.58124914	85.50052765
160511A00015	5/11/2016	2.42	5/11/2026	5/11/2016	111.77718	111.7771796	111.7771796	108.8987715	103.4068307	98.24877764	93.40237292	88.84679622	84.56273442
160603A00029	6/3/2016	2.18	6/3/2031	6/3/2016	112.45507	112.4550686	112.4550686	108.475979	102.5830822	97.13994742	92.10688234	87.44773809	83.12989044
160616A00029	6/16/2016	1.58	6/16/2026	6/16/2016	104.88194	104.8819441	104.8819441	103.4794769	100.2243592	97.11912083	94.15606079	91.32732543	88.62555511
160629A00066	6/29/2016	2.61	6/30/2036	6/29/2016	131.4031	131.4031031	129.3154021	116.8059627	104.8698574	94.49744504	85.46341819	77.5766807	70.67507447
160722A00011	7/22/2016	2.17	7/23/2029	7/22/2016	109.272	109.2719957	109.2719957	106.473432	101.6296835	97.09933716	92.8589476	88.88662306	85.16231377
160802A00026	8/2/2016	1.84	8/2/2023	8/2/2016	105.17803	105.1780313	105.1780313	103.9626907	100.6851085	97.53163588	94.49706414	91.57625034	88.76430307
160810A00027	8/10/2016	2.13	8/10/2026	8/10/2016	109.93036	109.9303553	109.9303553	107.0577613	101.7430797	96.75578935	92.07371372	87.67605035	83.54353414
160810A00030	8/10/2016	2.24	8/11/2031	8/10/2016	111.78605	111.7860511	111.7860511	107.7544746	101.8529714	96.40604707	91.37319822	86.71758597	82.40599578
160908A00027	9/8/2016	2.21	9/8/2026	9/8/2016	111.07582	111.0758205	111.0758205	107.9061289	102.2178272	96.89082598	91.9000369	87.22205808	82.83524657
160908A00031	9/8/2016	2.21	9/8/2026	9/8/2016	111.07582	111.0758181	111.0758181	107.9061278	102.2178274	96.8908272	91.90003906	87.22206108	82.8352503
160909A00018	9/9/2016	2.22	9/10/2029	9/9/2016	109.69711	109.6971102	109.6971102	106.8047156	101.8660172	97.25175435	92.9372794	88.89963492	85.11782133
161007A00012	10/7/2016	2.27	10/9/2029	10/7/2016	110.04527	110.0452719	110.0452719	107.1014852	102.1089668	97.44689949	93.0899849	89.01468941	85.19949985
161012A00011	10/12/2016	1.53	10/12/2023	10/12/2016	102.87343	102.8734261	102.8734261	102.0823801	100.0858236	98.14780065	96.26932023	94.44803171	92.68169669
170207A00055	2/7/2017	2.36	2/8/2027	2/7/2017	108.34154	108.3415391	108.3415391	106.639122	102.9522764	99.45041347	96.12299846	92.95961857	89.95056414

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170224A00006	2/24/2017	1.77	2/24/2020	2/24/2017	100.10004	100.1000377	100.1000377	100.0632758	99.99679388	99.93040791	99.86411767	99.79792296	99.73182359
170303A00011	3/3/2017	3.09	3/4/2030	3/3/2017	115.05321	115.053211	115.053211	111.7495791	106.3323837	101.2871558	96.58434389	92.19661468	88.09905967
170309A00016	3/9/2017	2.39	3/8/2024	3/9/2017	104.95921	104.9592074	104.9592074	104.1065707	101.9457416	99.85366592	97.82857283	95.86776431	93.96867105
170317A00029	3/17/2017	1.97	3/17/2020	3/17/2017	100.22049	100.2204946	100.2204946	100.1472617	100.0200589	99.8931945	99.7666671	99.64047533	99.51461782
170317A00034	3/17/2017	1.97	3/17/2020	3/17/2017	100.22044	100.2204389	100.2204389	100.1472256	100.0200547	99.89322205	99.76672626	99.64056595	99.51473977
170317A00037	3/17/2017	1.95	3/17/2020	3/17/2017	100.21764	100.2176377	100.2176377	100.1445144	100.0174904	99.89080389	99.76445362	99.63843819	99.51275623
160608A00034	6/8/2016	2.44	6/9/2031	6/8/2016	112.85937	112.8593667	112.8593667	108.8927222	103.0089848	97.5726981	92.54449646	87.88851118	83.57236178
160705A00008	7/5/2016	1.7	7/6/2026	7/5/2016	107.78834	107.788336	107.788336	105.3154227	100.5092341	95.98430311	91.72201008	87.70508251	83.91748995
160908A00016	9/8/2016	1.87	9/8/2023	9/8/2016	105.33681	105.3368057	105.3368057	104.1041717	100.7895104	97.60230616	94.53712267	91.58858301	88.75157935
160908A00024	9/8/2016	2.21	9/8/2026	9/8/2016	111.07582	111.0758181	111.0758181	107.9061278	102.2178274	96.8908272	91.90003906	87.22206108	82.8352503
160908A00036	9/8/2016	2.3	9/8/2031	9/8/2016	112.25437	112.2543708	112.2543708	108.1540867	102.1912201	96.69055277	91.61064568	86.91384201	82.56621102
161004A00070	10/4/2016	1.92	10/4/2023	10/4/2016	105.70344	105.7034417	105.7034417	104.4276422	100.9904761	97.68828226	94.51512301	91.46520562	88.53303322
161110A00010	11/10/2016	2.53	11/9/2029	11/10/2016	111.52026	111.520262	111.520262	108.4939239	103.3960533	98.63813468	94.19394399	90.03911618	86.15139208
161212A00010	12/12/2016	3	12/12/2029	12/12/2016	114.17855	114.1785521	114.1785521	111.0357037	105.7771977	100.8719604	96.29253696	92.01344752	88.01142875
170105A00012	1/5/2017	2.68	1/5/2024	1/5/2017	108.97174	108.9717438	108.9717438	107.5753979	103.8405089	100.2606062	96.82860923	93.53760072	90.38102369
170106A00021	1/6/2017	2.99	1/7/2030	1/6/2017	114.24557	114.2455707	114.2455707	111.0559946	105.7551414	100.8130214	96.20154866	91.89468694	87.86867997
170106A00030	1/6/2017	2.39	1/6/2027	1/6/2017	108.35488	108.3548839	108.3548839	106.6858763	103.0390272	99.57326058	96.27838776	93.14430453	90.16158305
170120A00028	1/20/2017	2.34	1/20/2022	1/20/2017	103.8887	103.8887026	103.8887026	103.155382	101.2887919	99.46624787	97.68671836	95.94891893	94.25161244
170126A00004	1/26/2017	2.13	1/26/2022	1/26/2017	103.86029	103.8602866	103.8602866	103.1216893	101.2363969	99.3960449	97.59955734	95.84561145	94.13293371
170221A00026	2/21/2017	1.86	2/21/2020	2/21/2017	100.09218	100.0921781	100.0921781	100.0600109	100.0018344	99.943737	99.88571851	99.82777878	99.76991765
170406A00021	4/6/2017	2.24	4/6/2022	4/6/2017	104.12486	104.1248552	104.1248552	103.3386551	101.2522686	99.21905024	97.23745543	95.30580518	93.42248914
170406A00026	4/6/2017	2.61	4/8/2024	4/6/2017	109.07722	109.077218	109.077218	107.6097068	103.7178394	99.99516517	96.43351991	93.02498815	89.76209089
170406A00034	4/6/2017	3.01	4/6/2027	4/6/2017	117.13648	117.1364825	117.1364825	113.3097747	106.9607292	101.0428568	95.52412058	90.37486834	85.5678204
170407A00001	4/6/2017	2.97	4/6/2027	4/6/2017	115.95041	115.950412	115.950412	112.4098035	106.4201046	100.8283677	95.60545543	90.72431027	86.160022
170512A00024	5/12/2017	2.88	5/13/2030	5/12/2017	114.10613	114.1061304	114.1061304	110.7366187	105.2856343	100.2143628	95.49219579	91.09088598	86.98472463
170602A00030	6/2/2017	1.88	6/2/2022	6/2/2017	103.93591	103.9359091	103.9359091	103.1162651	100.9206372	98.78405817	96.70487639	94.68123079	92.71133154
170615A00006	6/15/2017	2.15	6/17/2024	6/15/2017	104.17035	104.1703517	104.1703517	103.2967147	101.0758884	98.92795688	96.85085677	94.84166247	92.89759079
170619A00095	6/16/2017	2.79	6/16/2027	6/16/2017	116.07282	116.0728229	116.0728229	112.1049345	105.6721179	99.68649219	94.11415669	88.92375724	84.08649109
170727A00003	7/27/2017	1.97	7/29/2024	7/27/2017	104.35392	104.3539212	104.3539212	103.4457678	101.1321312	98.89710995	96.7382733	94.65238409	92.63636659
170921A00054	9/21/2017	2.22	9/21/2022	9/21/2017	104.90385	104.9038506	104.9038506	103.9822645	101.4772847	99.04685408	96.68847893	94.39956876	92.17764455
170921A00057	9/21/2017	2.79	9/21/2027	9/21/2017	115.65308	115.6530805	115.6530805	111.7645369	105.5036253	99.68061391	94.26178644	89.21599848	84.51469348
171013A00024	10/13/2017	2.47	10/15/2024	10/13/2017	109.15311	109.1531129	109.1531129	107.5092916	103.3259929	99.34112579	95.54428471	91.92544186	88.47516374
160608A00015	6/8/2016	1.63	6/8/2021	6/8/2016	101.81732	101.8173158	101.8173158	101.2171498	99.90543315	98.61590213	97.34921797	96.10482427	94.88218231

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160608A00030	6/8/2016	2.36	6/8/2026	6/8/2016	111.56071	111.5607137	111.5607137	108.6147605	103.0784218	97.8822433	93.00340701	88.42053462	84.11380194
160719A00012	7/19/2016	1.32	7/19/2021	7/19/2016	100.82709	100.8270942	100.8270942	100.4049246	99.62215818	98.85020662	98.09154902	97.34582633	96.61269287
160810A00022	8/10/2016	1.53	8/10/2021	8/10/2016	101.86515	101.8651491	101.8651491	101.2118363	99.7494973	98.31576389	96.91007941	95.5316861	94.17985311
160810A00029	8/10/2016	2.17	8/10/2026	8/10/2016	110.72019	110.7201932	110.7201932	107.6312266	102.0121162	96.74656084	91.81025339	87.18048468	82.8362365
160812A00006	8/12/2016	2.16	8/12/2026	8/12/2016	111.18933	111.1893324	111.1893324	108.2699991	102.8752948	97.81388588	93.06312831	88.60179018	84.41021318
160812A00016	8/12/2016	2.06	8/13/2029	8/12/2016	108.78747	108.7874697	108.7874697	105.960382	101.1003049	96.55708986	92.30684903	88.32730519	84.59806821
160906A00027	9/6/2016	2.03	9/8/2031	9/6/2016	111.77662	111.7766205	111.7766205	107.6654707	101.6968613	96.19259705	91.11091448	86.41388012	82.06732411
160907A00041	9/7/2016	1.83	9/7/2023	9/7/2016	105.28128	105.2812793	105.2812793	104.0326875	100.6695157	97.43629989	94.32744718	91.33746664	88.46114236
160908A00034	9/8/2016	2.17	9/8/2026	9/8/2016	110.2617	110.2617021	110.2617021	107.3163427	101.937774	96.8936369	92.16105147	87.71859077	83.54642619
161005A00016	10/5/2016	2.32	10/6/2031	10/5/2016	112.47225	112.4722458	112.4722458	108.3116883	102.3005833	96.75833555	91.64264772	86.91511765	82.54116459
161102A00014	11/2/2016	1.99	11/2/2023	11/2/2016	106.07444	106.0744351	106.0744351	104.7678756	101.2551103	97.88267922	94.64428868	91.53382013	88.54547313
161202A00003	12/2/2016	2.94	12/3/2029	12/2/2016	113.84933	113.8493253	113.8493253	110.7158579	105.4726601	100.5816798	96.01554637	91.74885787	87.7584219
161207A00014	12/7/2016	2.75	12/8/2031	12/7/2016	116.79377	116.7937704	116.7937704	112.3327565	105.9820332	100.1346576	94.74451754	89.76983898	85.17306307
161222A00013	12/22/2016	2.93	12/22/2026	12/22/2016	116.31902	116.3190207	116.3190207	112.9840831	107.1411345	101.6743533	96.55711864	91.76457894	87.27379221
161229A00018	12/29/2016	2.46	12/29/2026	12/29/2016	108.5169	108.5168999	108.5168999	106.8775557	103.2650387	99.83009866	96.56285932	93.45349415	90.492829
170210A00007	2/10/2017	2.96	2/11/2030	2/10/2017	114.20092	114.2009191	114.2009191	110.9669261	105.6287479	100.6544955	96.01546341	91.68507165	87.63908326
170317A00032	3/17/2017	1.97	3/17/2020	3/17/2017	100.22044	100.2204389	100.2204389	100.1472256	100.0200547	99.89322205	99.76672626	99.64056595	99.51473977
170330A00060	3/30/2017	2.06	3/30/2022	3/30/2017	104.03065	104.0306509	104.0306509	103.2555701	101.2113604	99.21877791	97.27639577	95.38259276	93.53581343
170518A00027	5/18/2017	2.11	5/18/2022	5/18/2017	104.04108	104.0410802	104.0410802	103.2256029	101.038042	98.90858187	96.83551719	94.81700225	92.85126475
170602A00019	6/2/2017	2.42	6/3/2024	6/2/2017	108.7642	108.764205	108.764205	107.2139853	103.1355765	99.24118397	95.5216997	91.96832662	88.57275515
170706A00029	7/6/2017	2.42	7/6/2027	7/6/2017	109.56741	109.5674076	109.5674076	107.4743086	103.3037203	99.36379325	95.63938236	92.11645678	88.78201024
170707A00007	7/7/2017	2.65	7/8/2024	7/7/2017	109.89	109.8900025	109.8900025	108.2863533	104.096091	100.0984824	96.28379816	92.64265902	89.16621601
170921A00048	9/21/2017	1.95	9/21/2020	9/21/2017	101.08863	101.0886252	101.0886252	100.7048588	100.0685256	99.4402669	98.81992933	98.20736346	97.6024236
170921A00053	9/21/2017	2.22	9/21/2022	9/21/2017	104.90385	104.9038506	104.9038506	103.9822645	101.4772847	99.04685408	96.68847893	94.39956876	92.17764455
170921A00055	9/21/2017	2.82	9/21/2027	9/21/2017	116.79709	116.7970914	116.7970914	112.5832738	105.9387018	99.7697118	94.03912964	88.71271823	83.75911002
160801A00002	8/1/2016	1.58	8/3/2026	8/1/2016	105.00832	105.0083227	105.0083227	103.546294	100.208502	97.02782995	93.99598171	91.1045722	88.34575325
160810A00035	8/10/2016	2.1	8/10/2026	8/10/2016	109.76313	109.7631296	109.7631296	106.894038	101.5862589	96.60547867	91.92954573	87.53768148	83.41064297
160908A00025	9/8/2016	2.21	9/8/2026	9/8/2016	111.07582	111.0758181	111.0758181	107.9061278	102.2178274	96.8908272	91.90003906	87.22206108	82.8352503
160908A00032	9/8/2016	2.17	9/8/2026	9/8/2016	110.2617	110.2617021	110.2617021	107.3163427	101.937774	96.8936369	92.16105147	87.71859077	83.54642619
160930A00025	9/30/2016	1.66	9/30/2027	9/30/2016	106.16376	106.1637624	106.1637624	104.2565344	100.368143	96.68888428	93.20587994	89.90664728	86.77959781
161014A00029	10/14/2016	2.51	10/15/2031	10/14/2016	114.97457	114.9745676	114.9745676	110.6919667	104.515178	98.82194478	93.56850368	88.71514076	84.22610498
161118A00012	11/18/2016	2.72	11/19/2029	11/18/2016	112.54166	112.5416573	112.5416573	109.487358	104.3427404	99.5412137	95.05630976	90.86343645	86.94012738
161125A00010	11/25/2016	2.86	11/26/2029	11/25/2016	113.29798	113.2979783	113.2979783	110.2229832	105.0437571	100.2099455	95.69489929	91.47385844	87.5242032

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170126A00003	1/26/2017	2.86	1/26/2027	1/26/2017	116.08979	116.0897888	116.0897888	112.6799302	106.7867405	101.2774738	96.12461761	91.30252671	86.78755078
170221A00025	2/21/2017	1.86	2/21/2020	2/21/2017	100.09218	100.0921781	100.0921781	100.0600109	100.0018344	99.943737	99.88571851	99.82777878	99.76991765
170221A00033	2/21/2017	2.31	2/18/2022	2/21/2017	104.03146	104.0314577	104.0314577	103.2761417	101.3083995	99.38869971	97.51577956	95.68819226	93.90454642
170224A00012	2/24/2017	2.92	2/25/2030	2/24/2017	113.97906	113.9790566	113.9790566	110.7507889	105.4226246	100.4577454	95.8274916	91.50532666	87.46705338
170303A00004	3/3/2017	2.8	3/4/2024	3/3/2017	109.79878	109.7987824	109.7987824	108.3374487	104.4401444	100.7100624	97.13926724	93.72005306	90.44513058
170317A00028	3/17/2017	1.97	3/17/2020	3/17/2017	100.22049	100.2204946	100.2204946	100.1472617	100.0200589	99.8931945	99.7666671	99.64047533	99.51461782
170317A00030	3/17/2017	1.97	3/17/2020	3/17/2017	100.22044	100.2204389	100.2204389	100.1472256	100.0200547	99.89322205	99.76672626	99.64056595	99.51473977
170317A00033	3/17/2017	1.97	3/17/2020	3/17/2017	100.22044	100.2204389	100.2204389	100.1472256	100.0200547	99.89322205	99.76672626	99.64056595	99.51473977
170524A00037	5/24/2017	2.46	5/24/2024	5/24/2017	108.45316	108.4531631	108.4531631	106.9840027	103.1202395	99.42694665	95.89587171	92.51894879	89.28855722
170619A00101	6/16/2017	2.74	6/16/2027	6/16/2017	114.86339	114.863388	114.863388	111.199385	105.1381469	99.48889704	94.22086189	89.30549205	84.71654224
170804A00005	8/4/2017	1.94	8/5/2024	8/4/2017	104.3592	104.3591975	104.3591975	103.4360283	101.0825418	98.81021462	96.61644802	94.49786379	92.45125387
171207A00026	12/7/2017	2.93	12/7/2027	12/7/2017	118.64531	118.6453126	118.6453126	114.0032137	106.9123827	100.3474155	94.26601719	88.6293421	83.40187436
171219A00067	12/19/2017	2.72	12/20/2027	12/19/2017	116.95285	116.9528534	116.9528534	112.812081	106.3038201	100.264105	94.65587269	89.44496634	84.6001362
180202A00027	2/2/2018	3.02	2/3/2025	2/2/2018	112.88863	112.8886262	112.8886262	110.939742	106.1815735	101.6656062	97.37832104	93.30682993	89.43904008
180223A00012	2/23/2018	3.33	2/24/2031	2/23/2018	117.95069	117.9506908	117.9506908	114.0162834	108.0240722	102.4758443	97.33353404	92.56232849	88.13072172
180322A00044	3/22/2018	3.18	3/22/2033	3/22/2018	121.86992	121.8699231	121.8619118	116.295602	109.0840737	102.4965882	96.47081029	90.95095356	85.88733151
180517A00024	5/17/2018	3.46	5/17/2033	5/17/2018	124.32599	124.3259881	124.3104535	118.5088605	111.0747555	104.2910723	98.09213396	92.41925463	87.22023039
180605A00031	6/5/2018	3.37	6/5/2030	6/5/2018	117.0642	117.0642028	117.0642028	113.5599634	107.9284107	102.6918906	97.81833823	93.27819229	89.04456435
160603A00014	6/3/2016	1.74	6/3/2026	6/3/2016	105.42461	105.4246122	105.4246122	104.0155054	100.7440412	97.62317008	94.64515735	91.80211449	89.08664891
160606A00018	6/6/2016	1.74	6/5/2026	6/6/2016	105.42473	105.4247334	105.4247334	104.0155351	100.7440007	97.62306827	94.64500228	91.80191333	89.08640809
160608A00021	6/8/2016	1.91	6/8/2023	6/8/2016	105.11461	105.1146129	105.1146129	103.9647935	100.8623227	97.87216292	94.989861	92.21094621	89.53115704
160608A00024	6/8/2016	2.36	6/8/2026	6/8/2016	111.56071	111.5607137	111.5607137	108.6147605	103.0784218	97.8822433	93.00340701	88.42053462	84.11380194
160729A00015	7/29/2016	2.06	7/30/2029	7/29/2016	108.71077	108.7107706	108.7107706	105.9262633	101.1071683	96.59990218	92.38113506	88.4290833	84.72379636
160902A00004	9/2/2016	2.15	9/4/2029	9/2/2016	109.25181	109.2518076	109.2518076	106.4120675	101.5309419	96.96809393	92.69952423	88.70285237	84.95759415
160907A00049	9/7/2016	1.41	9/9/2024	9/7/2016	103.13461	103.1346112	103.1346112	102.2063672	99.83978016	97.55607012	95.35248924	93.22554712	91.17193116
160908A00026	9/8/2016	2.21	9/8/2026	9/8/2016	111.07582	111.0758181	111.0758181	107.9061278	102.2178274	96.8908272	91.90003906	87.22206108	82.8352503
160908A00028	9/8/2016	2.21	9/8/2026	9/8/2016	111.07582	111.0758205	111.0758205	107.9061289	102.2178272	96.89082598	91.9000369	87.22205808	82.83524657
160908A00033	9/8/2016	2.17	9/8/2026	9/8/2016	110.2617	110.2617021	110.2617021	107.3163427	101.937774	96.8936369	92.16105147	87.71859077	83.54642619
160916A00015	9/16/2016	2.2	9/17/2029	9/16/2016	109.59322	109.593215	109.593215	106.7032931	101.7691015	97.1590689	92.8485664	88.81465455	85.03635041
161014A00008	10/14/2016	2.28	10/15/2029	10/14/2016	110.09828	110.0982754	110.0982754	107.1528561	102.1578175	97.49341195	93.13432555	89.05701034	85.23994021
161021A00004	10/21/2016	2.23	10/22/2029	10/21/2016	109.83529	109.8352886	109.8352886	106.8966132	101.9133261	97.25991398	92.91111895	88.84344535	85.03541514
161116A00005	11/16/2016	2.01	11/16/2021	11/16/2016	102.75776	102.7577639	102.7577639	102.1010769	100.534207	99.00045644	97.49948498	96.03034694	94.59213198
170124A00017	1/24/2017	2.82	1/23/2032	1/24/2017	117.38958	117.3895765	117.3895765	112.8487054	106.4270971	100.5176281	95.07309035	90.05075399	85.41222567

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170203A00022	2/3/2017	2.99	2/4/2030	2/3/2017	114.36769	114.36769	114.36769	111.1292712	105.7834917	100.8021341	96.15645615	91.81984363	87.76802788
170221A00028	2/21/2017	2.31	2/18/2022	2/21/2017	104.03146	104.0314577	104.0314577	103.2761417	101.3083995	99.38869971	97.51577956	95.68819226	93.90454642
170224A00008	2/24/2017	2.18	2/24/2022	2/24/2017	103.79777	103.7977659	103.7977659	103.0413316	101.060809	99.12890351	97.24432047	95.40558658	93.61128548
170317A00040	3/17/2017	2.74	3/18/2024	3/17/2017	109.64368	109.6436797	109.6436797	108.1690493	104.2440559	100.4887394	96.89496903	93.45487092	90.16100073
170317A00041	3/17/2017	2.73	3/18/2024	3/17/2017	109.4334	109.4334016	109.4334016	107.9838047	104.1297495	100.4413254	96.91065587	93.5300744	90.29233191
170322A00033	3/22/2017	3.61	3/24/2042	3/22/2017	144.43036	144.430356	141.2294112	127.3556	113.9990682	102.4736529	92.49316435	83.8197468	76.25540061
170511A00011	5/11/2017	2.41	5/11/2027	5/11/2017	108.83785	108.8378517	108.8378517	107.0250516	103.2001251	99.57300739	96.13203633	92.86578976	89.76363703
170619A00096	6/16/2017	2.79	6/16/2027	6/16/2017	116.07282	116.0728229	116.0728229	112.1049345	105.6721179	99.68649219	94.11415669	88.92375724	84.08649109
170707A00013	7/7/2017	2.88	7/8/2030	7/7/2017	114.33988	114.3398837	114.3398837	110.8693307	105.3295144	100.1810585	95.39197003	90.93278518	86.77672107
170731A00041	7/31/2017	2.74	7/31/2030	7/31/2017	113.53032	113.5303167	113.5303167	110.083294	104.5821606	99.46972264	94.7141975	90.28631575	86.15947215
170921A00052	9/21/2017	2.21	9/21/2022	9/21/2017	104.79636	104.7963638	104.7963638	103.8871233	101.424598	99.03496182	96.7158375	94.46469554	92.27911517
180913A00033	9/13/2018	3.31	9/13/2033	9/13/2018	123.77592	123.7759181	123.7386187	117.7193675	110.164817	103.2857224	97.01241312	91.28282181	86.04187465
180914A00049	9/14/2018	3.37	9/14/2033	9/14/2018	124.25316	124.2531623	124.2157003	118.1733079	110.5896823	103.684111	97.38665545	91.6350093	86.37388688
180925A00013	9/25/2018	3.41	9/25/2028	9/25/2018	114.30717	114.3071693	114.3071693	111.7969123	107.1340176	102.7494251	98.62397721	94.73952542	91.07934369
181128A00004	11/28/2018	3.08	11/28/2023	11/28/2018	110.83019	110.8301912	110.8301912	109.4602834	105.7848401	102.2580425	98.87328953	95.62408539	92.50426593
181226A00030	12/26/2018	2.91	12/26/2028	12/26/2018	113.23309	113.2330859	113.2330859	110.610758	105.8494683	101.3804966	97.1831261	93.2378353	89.52667085
190104A00034	1/4/2019	3.18	1/4/2029	1/4/2019	118.61477	118.6147718	118.6147718	114.3155346	107.8039997	101.7821388	96.2087332	91.04602023	86.25968279
190111A00038	1/11/2019	2.63	1/11/2022	1/11/2019	104.49095	104.4909452	104.4909452	103.7834181	102.0173683	100.2918537	98.60618529	96.95918803	95.3497299
190131A00013	1/31/2019	3.48	1/31/2034	1/31/2019	137.33748	137.3374843	136.5202713	124.3280993	112.394367	101.8653429	92.56070547	84.32456847	77.02203018
190131A00023	1/31/2019	3.02	1/30/2034	1/31/2019	122.03863	122.0386278	121.9712582	115.7995948	108.201173	101.2967248	95.01316054	89.28556194	84.05647042
190205A00025	2/5/2019	2.88	2/7/2022	2/5/2019	105.13064	105.130643	105.130643	104.3715368	102.4111157	100.4981154	98.63131213	96.80929427	95.03070363
190313A00039	3/13/2019	2.7	6/13/2022	3/13/2019	105.55108	105.551082	105.551082	104.7038707	102.4206066	100.1996115	98.03906192	95.93697727	93.89145349
190313A00044	3/13/2019	2.7	6/13/2022	3/13/2019	105.55108	105.551082	105.551082	104.7038707	102.4206066	100.1996115	98.03906192	95.93697727	93.89145349
190329A00067	3/29/2019	2.61	3/29/2024	3/29/2019	108.50708	108.507081	108.507081	107.1287032	103.4826586	99.99105667	96.64669198	93.44244164	90.37157059
190403A00010	4/3/2019	3.08	4/3/2029	4/3/2019	122.77772	122.7777157	122.7777157	116.7542924	108.5321116	101.0044054	94.10757063	87.78406432	81.98192399
190403A00014	4/3/2019	3.05	4/3/2029	4/3/2019	121.68486	121.6848622	121.6848622	115.9691655	108.0652135	100.8193396	94.17179861	88.06847065	82.46045598
190411A00022	4/11/2019	2.68	4/11/2022	4/11/2019	103.46414	103.4641351	103.4641351	102.854557	101.4206941	100.018084	98.64716505	97.3069615	95.9965361
190422A00037	4/22/2019	3.07	4/21/2034	4/22/2019	121.21458	121.2145837	121.1216803	114.868763	107.2560211	100.3465745	94.06546603	88.34623352	83.13014014
190529A00061	5/29/2019	2.46	5/29/2026	5/29/2019	107.13769	107.1376935	107.1376935	105.7390957	102.4666793	99.34283058	96.36004794	93.51063542	90.78737562
190702A00071	7/2/2019	2.69	7/1/2039	7/2/2019	138.34766	138.3476564	134.0791465	118.9187165	105.0707986	93.29052486	83.23752093	74.63054828	67.23694016
190708A00025	7/8/2019	2.21	7/1/2024	7/8/2019	108.01706	108.0170632	108.0170632	106.435255	102.2928216	98.34074009	94.56940314	90.96956498	87.53250087
190926A00002	9/30/2019	2.01	9/29/2034	9/30/2019	114.74835	114.7483468	114.6065083	108.3676096	100.9458819	94.23029091	88.14342716	82.61693543	77.59061725
191004A00022	10/4/2019	2.02	10/4/2029	10/4/2019	114.50396	114.5039648	114.5039648	108.2776384	100.2018085	92.8437955	86.13464097	80.01230066	74.42101887

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191011A00027	10/11/2019	1.84	10/11/2029	10/11/2019	108.80096	108.8009575	108.8009575	105.8729162	100.9132733	96.28303187	91.9568941	87.91133965	84.12487292
191031A00025	10/31/2019	1.91	10/31/2024	10/31/2019	103.96731	103.9673098	103.9673098	103.0178095	100.5985017	98.26501687	96.01442569	93.84307713	91.74750797
191203A00011	12/3/2019	2.21	12/3/2029	12/3/2019	116.41431	116.4143141	116.4143141	109.9308333	101.6427203	94.10091854	87.23286587	80.97331521	75.26370723
191206A00005	12/6/2019	2.18	12/7/2026	12/6/2019	111.80362	111.8036233	111.8036233	108.1901376	102.0457953	96.31102162	90.95622686	85.95395167	81.27886232
170224A00009	2/24/2017	2.39	2/24/2023	2/24/2017	106.14257	106.1425655	106.1425655	105.0744909	102.1805522	99.38411038	96.6815314	94.06911651	91.54333558
170307A00013	3/7/2017	2.33	3/7/2024	3/7/2017	104.42727	104.4272678	104.4272678	103.5813247	101.4378126	99.36232575	97.35312411	95.40754412	93.52304887
170309A00042	3/9/2017	2.18	3/11/2024	3/9/2017	104.49475	104.4947478	104.4947478	103.6457976	101.4943335	99.41133371	97.39503404	95.44274749	93.5519152
170317A00027	3/17/2017	1.97	3/17/2020	3/17/2017	100.22049	100.2204946	100.2204946	100.1472617	100.0200589	99.8931945	99.7666671	99.64047533	99.51461782
170406A00020	4/6/2017	1.84	4/6/2020	4/6/2017	100.2908	100.2908043	100.2908043	100.1836924	100.0015559	99.82008856	99.63928671	99.45914665	99.27966473
170406A00033	4/6/2017	3.01	4/6/2027	4/6/2017	117.13648	117.1364825	117.1364825	113.3097747	106.9607292	101.0428568	95.52412058	90.37486834	85.5678204
170406A00037	4/6/2017	3.07	4/6/2032	4/6/2017	118.11902	118.1190203	118.1190203	113.411884	106.8707888	100.8588865	95.32667935	90.22945617	85.52710601
170421A00011	4/21/2017	2.83	4/22/2030	4/21/2017	113.70713	113.7071288	113.7071288	110.3952827	105.0019481	99.98167128	95.30459189	90.94312339	86.87214282
170504A00049	5/4/2017	2.63	5/6/2024	5/4/2017	109.48547	109.4854703	109.4854703	107.9600993	103.9247503	100.0685988	96.38280715	92.85886427	89.48873437
170524A00027	5/24/2017	2.32	5/24/2027	5/24/2017	108.48276	108.4827581	108.4827581	106.6753375	102.8624706	99.24682657	95.81677516	92.5609259	89.46867765
170619A00097	6/16/2017	2.74	6/16/2027	6/16/2017	114.86339	114.863388	114.863388	111.199385	105.1381469	99.48889704	94.22086189	89.30549205	84.71654224
171201A00016	12/1/2017	2.91	12/2/2030	12/1/2017	115.10762	115.1076194	115.1076194	111.3693757	105.5985244	100.2495402	95.28673771	90.67741765	86.39194888
180126A00011	1/26/2018	2.72	1/26/2028	1/26/2018	111.00604	111.0060426	111.0060426	108.8636048	104.6361766	100.6447165	96.87409677	93.30978352	89.93831773
180712A00044	7/12/2018	3.44	7/12/2033	7/12/2018	122.90489	122.9048851	122.8802702	117.0688962	109.6851512	102.9519503	96.80311468	91.17957061	86.0288165
180809A00032	8/9/2018	3.08	8/9/2023	8/9/2018	109.38267	109.3826679	109.3826679	108.1318762	104.7666026	101.5284644	98.41216272	95.41242214	92.5242258
180905A00017	9/5/2018	3.43	9/6/2033	9/5/2018	137.95474	137.9547425	137.4241789	125.675464	114.0778988	103.814388	94.71767057	86.64248465	79.46269706
180913A00062	9/13/2018	3.05	9/13/2023	9/13/2018	109.31742	109.317417	109.317417	108.0586036	104.6810763	101.4328071	98.30833618	95.30221159	92.40925474
181116A00006	11/16/2018	3.18	11/17/2025	11/16/2018	108.82526	108.8252557	108.8252557	107.566184	104.4900394	101.543935	98.72190087	96.01758351	93.42500272
181119A00008	11/19/2018	3.23	11/17/2023	11/19/2018	109.98604	109.9860371	109.9860371	108.7077818	105.2969988	102.0200234	98.87112649	95.84453117	92.93475514
181214A00009	12/14/2018	3.22	12/14/2028	12/14/2018	113.79315	113.793154	113.793154	111.1728096	106.4097617	101.9381481	97.73738289	93.78805606	90.07231215
181214A00030	12/14/2018	3.47	12/14/2033	12/14/2018	139.55321	139.5532141	138.8127071	126.447006	114.3340822	103.6406129	94.18534886	85.81146253	78.38311757
181218A00040	12/18/2018	3.23	6/18/2030	12/18/2018	116.24895	116.2489476	116.2489476	112.768454	107.1757229	101.9753442	97.13546592	92.62672364	88.42240851
190205A00022	2/5/2019	3.32	2/5/2029	2/5/2019	123.5572	123.5571951	123.5571951	117.9202392	110.0191788	102.7657632	96.10211241	89.97565809	84.33882977
190205A00023	2/5/2019	3.32	2/5/2029	2/5/2019	123.55722	123.5572167	123.5572167	117.9202555	110.0191879	102.7657657	96.10210886	89.97564904	84.3388157
190305A00015	3/5/2019	3.32	3/5/2029	3/5/2019	123.73754	123.7375391	123.7375391	118.0243942	110.0595002	102.7522086	96.04331888	89.87911935	84.21104059
190315A00019	3/15/2019	2.88	3/15/2034	3/15/2019	121.17325	121.1732514	121.0888002	114.845108	107.227135	100.3121524	94.02536862	88.30045079	83.07876088
200110A00039	1/10/2020	2.32	1/10/2030	1/10/2020	117.56092	117.5609161	117.5609161	110.9117555	102.4947478	94.84184422	87.87810946	81.53623178	75.75585975
200110A00043	1/10/2020	2.32	1/10/2030	1/10/2020	117.56092	117.5609161	117.5609161	110.9117555	102.4947478	94.84184422	87.87810946	81.53623178	75.75585975
170619A00089	6/16/2017	2.79	6/16/2027	6/16/2017	116.07282	116.0728229	116.0728229	112.1049345	105.6721179	99.68649219	94.11415669	88.92375724	84.08649109

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170710A00079	7/10/2017	2.76	7/12/2032	7/10/2017	117.72138	117.7213771	117.7213771	112.8203706	106.1523613	100.0355785	94.41738277	89.25036477	84.49208612
170801A00022	8/1/2017	1.87	8/3/2020	8/1/2017	100.82688	100.826878	100.826878	100.5274748	100.0222367	99.52208729	99.02695004	98.53674975	98.05141278
170829A00066	8/29/2017	2.11	8/29/2024	8/29/2017	108.65129	108.6512938	108.6512938	106.9878466	102.7007398	98.6167006	94.72513673	91.01589049	87.47939628
171109A00016	11/9/2017	2.94	11/9/2032	11/9/2017	130.52801	130.528008	130.5171008	119.6718256	108.8387056	99.19685473	90.60366109	82.93459152	76.0807517
171204A00024	12/4/2017	2.71	12/4/2024	12/4/2017	111.07475	111.0747525	111.0747525	109.2510222	104.6852233	100.3452605	96.21890965	92.29448203	88.56098812
171207A00022	12/7/2017	2.45	12/7/2022	12/7/2017	105.91565	105.9156459	105.9156459	104.9188001	102.210487	99.58796217	97.04826604	94.58833617	92.20524023
180104A00023	1/4/2018	2.91	1/4/2028	1/4/2018	115.5916	115.5915961	115.5915961	111.91161	105.9416567	100.3859136	95.2123954	90.3914892	85.89606873
180322A00040	3/22/2018	3.16	3/21/2031	3/22/2018	121.12629	121.1262912	121.1262912	115.9511946	108.9308434	102.4952745	96.58881231	91.16127659	86.16769325
180403A00014	4/3/2018	3.11	4/3/2025	4/3/2018	113.73015	113.7301542	113.7301542	111.6646111	106.7409556	102.0744542	97.65033116	93.45457745	89.47407226
180410A00002	4/10/2018	3.14	4/11/2033	4/10/2018	121.70986	121.7098565	121.698692	116.0792098	108.8391906	102.2291375	96.1857835	90.65255177	85.57908305
180420A00011	4/20/2018	2.74	4/20/2023	4/20/2018	104.48227	104.4822686	104.4822686	103.7863562	102.0900907	100.4377474	98.82910764	97.2626613	95.73696212
180601A00038	6/1/2018	2.86	6/1/2021	6/1/2018	103.39594	103.3959426	103.3959426	102.7994454	101.5045674	100.230871	98.97944556	97.74975428	96.54127702
180702A00022	7/2/2018	2.84	6/30/2023	7/2/2018	108.4091	108.409097	108.409097	107.2575065	104.1712867	101.1966088	98.32914247	95.56440252	92.89811686
180702A00040	7/2/2018	2.9	7/2/2021	7/2/2018	103.67652	103.6765209	103.6765209	103.0457887	101.6574356	100.2946396	98.95699058	97.6438507	96.35460333
180809A00034	8/9/2018	3.08	8/9/2023	8/9/2018	109.38267	109.3826679	109.3826679	108.1318762	104.7666026	101.5284644	98.41216272	95.41242214	92.5242258
180906A00032	9/6/2018	3.24	9/5/2025	9/6/2018	115.49253	115.4925328	115.4925328	113.0509465	107.7224209	102.6913614	97.93959457	93.44996903	89.2064796
180913A00012	9/13/2018	3.31	9/13/2033	9/13/2018	123.77592	123.7759159	123.7386165	117.7193667	110.1648168	103.2857227	97.01241386	91.28282287	86.04187597
180924A00033	9/24/2018	3.08	9/22/2023	9/24/2018	109.72879	109.7287875	109.7287875	108.4955189	105.1988549	102.0275981	98.97652623	96.04034133	93.21401209
181010A00025	10/10/2018	3.48	10/10/2030	10/10/2018	119.51406	119.5140612	119.5140612	115.7115892	109.7711548	104.2606504	99.14408191	94.38841926	89.96370251
181129A00005	11/29/2018	3.21	11/29/2023	11/29/2018	110.63701	110.6370125	110.6370125	109.272865	105.6132598	102.1013907	98.73071691	95.49479568	92.3875119
181207A00026	12/7/2018	2.94	12/6/2023	12/7/2018	109.73605	109.736053	109.736053	108.4396729	104.9821435	101.6622375	98.47401461	95.41148874	92.46897857
190118A00006	1/18/2019	3.14	1/18/2034	1/18/2019	123.00819	123.0081903	122.94055	116.7203323	109.0618871	102.1028538	95.76957563	89.99662994	84.72611094
190205A00019	2/5/2019	2.94	2/5/2024	2/5/2019	110.07757	110.077571	110.077571	108.6505833	104.8486413	101.2068619	97.71780951	94.37421557	91.16919773
190205A00020	2/5/2019	3.32	2/5/2029	2/5/2019	123.5572	123.5571951	123.5571951	117.9202392	110.0191788	102.7657632	96.10211241	89.97565809	84.33882977
190205A00021	2/5/2019	3.32	2/5/2029	2/5/2019	123.5572	123.5571951	123.5571951	117.9202392	110.0191788	102.7657632	96.10211241	89.97565809	84.33882977
170406A00036	4/6/2017	3.07	4/6/2032	4/6/2017	118.11902	118.1190238	118.1190238	113.4118856	106.8707891	100.8588859	95.3266779	90.22945404	85.52710333
170619A00092	6/16/2017	2.79	6/16/2027	6/16/2017	116.07281	116.0728107	116.0728107	112.1049256	105.6721138	99.68649266	94.11416127	88.92376558	84.08650285
170711A00010	7/11/2017	2.38	7/12/2027	7/11/2017	108.92028	108.920276	108.920276	107.0358858	103.1275908	99.42543207	95.91698831	92.5901582	89.43369275
170713A00021	7/13/2017	3.25	7/13/2037	7/13/2017	142.58045	142.5804454	139.6432715	125.4632988	112.1257554	100.6160996	90.65829647	82.02028909	74.50684277
170802A00013	8/2/2017	2.5	8/2/2024	8/2/2017	109.42511	109.4251081	109.4251081	107.7941678	103.5604845	99.52425546	95.67535121	92.00402848	88.5011032
171207A00023	12/7/2017	2.45	12/7/2022	12/7/2017	105.91565	105.9156459	105.9156459	104.9188001	102.210487	99.58796217	97.04826604	94.58833617	92.20524023
180206A00045	2/6/2018	2.71	2/6/2023	2/6/2018	106.8805	106.8804993	106.8804993	105.832633	103.0118936	100.2844884	97.64705577	95.09610406	92.62829832
180228A00055	2/28/2018	3.33	2/28/2028	2/28/2018	119.99738	119.9973806	119.9973806	115.6001863	108.8052844	102.5081614	96.66968119	91.25284335	86.22385757

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180601A00037	6/1/2018	2.86	6/1/2021	6/1/2018	103.42107	103.4210687	103.4210687	102.8213454	101.516905	100.233847	98.97323128	97.73451737	96.51718175
180813A00045	8/13/2018	2.89	8/13/2025	8/13/2018	108.14977	108.1497724	108.1497724	106.9651189	104.0216846	101.1984149	98.49006793	95.89093665	93.39563999
180925A00116	9/25/2018	3.28	9/25/2028	9/25/2018	114.62842	114.6284232	114.6284232	112.0975778	107.4009015	102.9854515	98.83180745	94.92158391	91.23784019
181003A00032	10/3/2018	3.23	10/3/2025	10/3/2018	108.85129	108.851288	108.851288	107.6170345	104.5822262	101.6740904	98.88691657	96.21458021	93.65131271
190103A00020	1/3/2019	3.12	1/5/2026	1/3/2019	115.67161	115.6716055	115.6716055	112.9078036	107.3062736	102.0334789	97.068389	92.39123814	87.98363323
190305A00017	3/5/2019	3.12	3/5/2026	3/5/2019	115.12898	115.1289828	115.1289828	112.4117756	107.0023818	101.9110108	97.11713913	92.60144093	88.34595467
190308A00026	3/8/2019	3.18	3/8/2034	3/8/2019	133.5466	133.5466035	132.8179511	121.7618546	110.7035277	100.9223858	92.25682153	84.56609554	77.7283411
190405A00004	4/5/2019	3.02	4/5/2034	4/5/2019	120.80756	120.8075599	120.7152691	114.4835508	106.8965037	100.0103404	93.75036683	88.05035327	82.85176735
190412A00011	4/12/2019	3.07	4/12/2034	4/12/2019	121.21872	121.2187191	121.1259316	114.8712973	107.2570711	100.3463219	94.06407188	88.34384091	83.12687599
190502A00016	5/2/2019	2.87	5/1/2026	5/2/2019	114.95276	114.952762	114.952762	111.8847529	106.0577587	100.5887131	95.45357972	90.62993678	86.09699291
190506A00025	5/6/2019	3.03	5/4/2029	5/6/2019	122.53745	122.5374454	122.5374454	116.4360962	108.1694268	100.6066315	93.68272904	87.3389912	81.52242825
190605A00027	6/5/2019	2.64	6/5/2029	6/5/2019	119.35153	119.3515313	119.3515313	113.2786172	105.1327704	97.68757178	90.87784814	84.64469161	78.93498562
190628A00026	6/28/2019	2.54	6/28/2034	6/28/2019	117.15611	117.1561056	117.0463978	110.8922137	103.4638222	96.72877103	90.61241778	85.04867578	79.97921305
190712A00016	7/12/2019	2.39	7/12/2029	7/12/2019	110.39986	110.3998622	110.3998622	107.5729621	102.6796287	98.10286905	93.81900417	89.80592363	86.04337707
190802A00011	8/2/2019	2.01	8/2/2029	8/2/2019	109.52626	109.526258	109.526258	106.6637921	101.7481446	97.1540291	92.85713301	88.83479507	85.06627843
190823A00018	8/23/2019	2.12	8/23/2034	8/23/2019	113.9651	113.9650999	113.8374871	107.7444232	100.4503924	93.84406052	87.85065826	82.40408191	77.44605694
190829A00039	8/29/2019	1.85	8/29/2034	8/29/2019	113.37227	113.3722722	113.2433172	107.13183	99.83255893	93.2243291	87.23175474	81.78821973	76.83502049
190905A00019	9/5/2019	2.08	9/5/2029	9/5/2019	114.9177	114.9177	114.9177	108.7571056	100.7066422	93.36655061	86.66910476	80.55328129	74.96419898
171030A00039	10/30/2017	2.86	10/30/2030	10/30/2017	114.57392	114.5739244	114.5739244	110.950423	105.2826932	100.0237987	95.13961047	90.59879508	86.37292475
180104A00041	1/4/2018	3.08	1/4/2033	1/4/2018	132.60736	132.6073641	132.5055521	121.354769	110.2575229	100.3922688	91.61018448	83.78142721	76.79260873
180206A00040	2/6/2018	2.47	2/8/2021	2/6/2018	102.24093	102.2409269	102.2409269	101.6486455	100.6404941	99.651802	98.68268074	97.73255183	96.80085942
180206A00048	2/6/2018	2.72	2/6/2023	2/6/2018	107.03942	107.0394223	107.0394223	105.974605	103.1000424	100.3211756	97.63449383	95.03641044	92.52349982
180220A00107	2/20/2018	3.13	2/20/2025	2/20/2018	112.82727	112.8272664	112.8272664	110.9539501	106.3886673	102.053126	97.93461896	94.02094669	90.3006637
180402A00013	4/2/2018	2.99	4/3/2028	4/2/2018	117.29555	117.2955537	117.2955537	113.5209275	107.4513487	101.8085721	96.55900998	91.67165352	87.11815264
180517A00018	5/17/2018	3.46	5/17/2033	5/17/2018	124.32599	124.325992	124.3104574	118.5088624	111.0747563	104.2910721	98.092133	92.41925304	87.2202283
180716A00062	7/16/2018	2.91	7/16/2025	7/16/2018	108.08654	108.0865433	108.0865433	106.9247089	104.0245054	101.2411832	98.56974238	96.00468928	93.54084094
180717A00026	7/17/2018	3.24	7/16/2025	7/17/2018	114.28558	114.2855799	114.2855799	112.1197402	107.2085764	102.5606617	98.16051256	93.99337537	90.04545588
181003A00019	10/3/2018	3.44	10/3/2025	10/3/2018	116.79404	116.7940393	116.7940393	114.2625893	108.8244952	103.6931927	98.84970351	94.27616325	89.95591537
190104A00038	1/4/2019	3.25	1/4/2029	1/4/2019	122.78438	122.7843782	122.7843782	117.2569934	109.4539651	102.2855186	95.69541363	89.63251935	84.05052515
190129A00073	1/29/2019	3.11	1/29/2029	1/29/2019	113.38066	113.3806553	113.3806553	110.7282146	105.9418861	101.4508676	97.23411776	93.27182691	89.54578387
190205A00017	2/5/2019	3.36	2/5/2029	2/5/2019	123.88523	123.8852264	123.8852264	118.236688	110.3179532	103.0481813	96.36938157	90.22888449	84.57902741
190402A00005	4/2/2019	2.77	4/2/2032	4/2/2019	120.04147	120.0414746	120.0414746	113.8667781	106.2881673	99.39869303	93.12847462	87.41363256	82.19746601
190708A00029	7/8/2019	2.57	7/2/2029	7/8/2019	118.88386	118.8838636	118.8838636	112.7523704	104.5844204	97.12413217	90.30520419	84.06775802	78.35784393

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190708A00032	7/8/2019	2.58	7/2/2029	7/8/2019	118.97052	118.9705171	118.9705171	112.8356757	104.6628232	97.19801511	90.37491642	84.13361812	78.42014286
190726A00012	7/26/2019	2.58	7/26/2034	7/26/2019	117.58339	117.5833918	117.4627535	111.2316051	103.741403	96.95383186	90.79287531	85.19127865	80.08971569
190802A00020	8/2/2019	2.42	8/2/2034	8/2/2019	116.38402	116.3840163	116.2541114	110.032718	102.5846051	95.83864026	89.71849287	84.15667737	79.09369998
190813A00051	8/13/2019	2.19	8/13/2029	8/13/2019	115.77859	115.7785907	115.7785907	109.6497715	101.5893913	94.23599778	87.52257496	81.38868808	75.77995296
190813A00057	8/13/2019	1.9	8/13/2024	8/13/2019	106.90592	106.9059235	106.9059235	105.281302	101.0755333	97.0676787	93.24748788	89.60513305	86.13135409
190829A00032	8/29/2019	1.69	8/28/2026	8/29/2019	105.39305	105.3930484	105.3930484	103.924566	100.5737848	97.38079833	94.33726971	91.43477375	88.66542517
190830A00013	8/30/2019	2.06	8/30/2034	8/30/2019	113.48504	113.4850392	113.3578345	107.2902337	100.0267899	93.44818198	87.47994915	82.05626084	77.11908364
190905A00018	9/5/2019	1.85	9/5/2029	9/5/2019	113.19727	113.1972702	113.1972702	107.8073611	100.4955643	93.80427542	87.67568935	82.05756029	76.90282867
190913A00006	9/13/2019	2.33	9/13/2034	9/13/2019	115.74768	115.7476779	115.6069995	109.3658211	101.9240789	95.18742146	89.07881883	83.53021682	78.48165819
191004A00026	10/4/2019	1.74	10/4/2024	10/4/2019	106.34653	106.3465322	106.3465322	104.6609041	100.3556128	96.25809713	92.35727667	88.64259417	85.1041189
191122A00003	11/22/2019	2.32	11/22/2039	11/22/2019	129.30023	129.3002306	125.9899854	112.9647302	100.7300857	90.23964708	81.21404899	73.42179213	66.67063977
171204A00009	12/4/2017	2.23	12/4/2024	12/4/2017	105.34324	105.3432391	105.3432391	104.3614111	101.8609484	99.45075372	97.12763661	94.88770519	92.7272703
171207A00020	12/7/2017	2.25	12/7/2020	12/7/2017	101.68921	101.6892094	101.6892094	101.1709336	100.3294967	99.50213544	98.68849809	97.88824441	97.10104537
171207A00025	12/7/2017	2.91	12/7/2027	12/7/2017	117.8581	117.8581035	117.8581035	113.4338123	106.5949901	100.2567442	94.37914157	88.9254516	83.86207736
180104A00024	1/4/2018	2.98	1/4/2028	1/4/2018	118.50569	118.5056888	118.5056888	114.0001588	107.0836917	100.6773413	94.74008493	89.23422109	84.12529129
180117A00004	1/17/2018	2.44	1/17/2025	1/17/2018	105.98599	105.9859895	105.9859895	104.9808923	102.4238957	99.96056074	97.58748255	95.30057771	93.09597773
180125A00027	1/25/2018	2.69	1/24/2025	1/25/2018	106.6253	106.6252999	106.6252999	105.535478	102.7802495	100.1319995	97.58641841	95.1386377	92.78405529
180206A00046	2/6/2018	2.72	2/6/2023	2/6/2018	107.03942	107.0394218	107.0394218	105.9746046	103.1000423	100.3211756	97.63449396	95.03641071	92.52350022
180228A00047	2/28/2018	2.39	2/28/2020	2/28/2018	100.16573	100.1657271	100.1657271	100.1228133	100.0452128	99.96773293	99.89037344	99.81313404	99.73601448
180615A00021	6/15/2018	3.02	6/15/2023	6/15/2018	108.31357	108.3135709	108.3135709	107.1778132	104.1350692	101.2008745	98.37108529	95.64138962	93.00767759
180628A00078	6/28/2018	2.73	6/28/2023	6/28/2018	104.69303	104.6930335	104.6930335	103.9686052	102.1850142	100.4495698	98.76179554	97.11999704	95.52255286
180717A00021	7/17/2018	3.34	7/17/2028	7/17/2018	121.06257	121.0625743	121.0625743	116.3843744	109.3586095	102.8658572	96.86161802	91.30513112	86.15928837
180907A00013	9/7/2018	3.27	9/8/2025	9/7/2018	115.33683	115.3368318	115.3368318	112.9468144	107.7219186	102.7868385	98.1239486	93.71658163	89.54918288
181128A00011	11/28/2018	3.27	11/28/2023	11/28/2018	110.8533	110.853296	110.853296	109.4879619	105.8252845	102.3103497	98.93661786	95.69764712	92.58732352
190227A00033	2/27/2019	2.65	2/27/2026	2/27/2019	108.10214	108.1021439	108.1021439	106.7687328	103.5775933	100.5267846	97.6095103	94.81868941	92.14767016
190315A00023	3/15/2019	2.88	3/15/2034	3/15/2019	121.17327	121.1732718	121.0888205	114.8451223	107.2271419	100.3121527	94.02536293	88.30043972	83.07874498
190322A00008	3/22/2019	2.64	3/20/2026	3/22/2019	107.54198	107.5419849	107.5419849	106.1941969	102.9909248	99.92974115	97.00368454	94.2055346	91.52851148
190326A00010	3/26/2019	2.58	3/26/2024	3/26/2019	104.98224	104.9822435	104.9822435	104.1313372	101.9754457	99.88802337	97.86731459	95.91063603	94.01543215
190401A00017	4/1/2019	2.55	4/1/2022	4/1/2019	104.72451	104.7245057	104.7245057	103.9419652	101.8741832	99.85868567	97.89400634	95.97850308	94.11060042
190510A00049	5/10/2019	2.58	5/8/2026	5/10/2019	107.44465	107.4446496	107.4446496	106.0701084	102.8287635	99.73290404	96.77529008	93.94845537	91.24539383
190517A00012	5/17/2019	2.88	5/17/2034	5/17/2019	119.79504	119.7950419	119.6934429	113.4573811	105.8978862	99.04034257	92.80956144	87.13892393	81.9695911
190605A00024	6/5/2019	2.64	6/5/2029	6/5/2019	119.35153	119.3515313	119.3515313	113.2786172	105.1327704	97.68757178	90.87784814	84.64469161	78.93498562
190708A00028	7/8/2019	2.57	7/2/2029	7/8/2019	118.88383	118.8838343	118.8838343	112.7523519	104.5844145	97.12413764	90.30521978	84.06778264	78.35787662

Classification | Public

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190708A00030	7/8/2019	2.57	7/2/2029	7/8/2019	118.88386	118.8838636	118.8838636	112.7523704	104.5844204	97.12413217	90.30520419	84.06775802	78.35784393
190719A00017	7/19/2019	2.55	7/19/2034	7/19/2019	117.33957	117.3395679	117.2193135	111.0011442	103.5265118	96.75303537	90.60486069	85.01487602	79.92388098
190816A00023	8/16/2019	2.14	8/16/2034	8/16/2019	114.12517	114.125166	113.9975018	107.8960533	100.5919108	93.97640247	87.97466006	82.5204918	77.55554523
190826A00032	8/26/2019	1.72	8/24/2029	8/26/2019	108.03087	108.0308658	108.0308658	105.2065018	100.3572818	95.82531354	91.58660161	87.61878143	83.90138818
191004A00017	10/4/2019	2.02	10/4/2029	10/4/2019	114.50397	114.5039667	114.5039667	108.2776389	100.201808	92.84379421	86.13463902	80.01229818	74.42101596
191009A00009	10/9/2019	1.8	10/9/2026	10/9/2019	105.24048	105.2404804	105.2404804	103.720605	100.3094552	97.06192858	93.96918408	91.02235051	88.21313383
180628A00068	6/28/2018	3.12	6/28/2028	6/28/2018	118.52489	118.5248868	118.5248868	114.5698926	108.3231904	102.5252597	97.1400391	92.13429481	87.4776974
180809A00031	8/9/2018	2.98	8/9/2021	8/9/2018	104.06173	104.0617295	104.0617295	103.3962121	101.9087261	100.4502854	99.02034249	97.61812856	96.24290211
181105A00015	11/5/2018	3.57	11/5/2025	11/5/2018	117.77475	117.7747461	117.7747461	115.1409494	109.5951395	104.3661638	99.43417419	94.78051376	90.38780156
181115A00044	11/15/2018	3.26	11/15/2023	11/15/2018	110.51005	110.5100511	110.5100511	109.1730361	105.5901508	102.1497441	98.845345	95.67078713	92.6202197
190104A00006	1/4/2019	2.83	1/5/2026	1/4/2019	107.94693	107.9469345	107.9469345	106.6479604	103.5149657	100.5176437	97.64955793	94.9039499	92.27446542
190207A00003	2/7/2019	2.68	2/7/2024	2/7/2019	109.17632	109.1763191	109.1763191	107.8295085	104.2568185	100.8318695	97.54798329	94.3984973	91.37710204
190212A00029	2/12/2019	2.6	2/12/2024	2/12/2019	105.31785	105.3178466	105.3178466	104.4767018	102.3497925	100.2894361	98.29401234	96.36094033	94.48776105
190315A00017	3/15/2019	2.88	3/15/2034	3/15/2019	121.1733	121.1732966	121.0888453	114.8451371	107.2271477	100.3121506	94.02535397	88.30042474	83.07872477
190315A00021	3/15/2019	3.11	3/15/2034	3/15/2019	121.40802	121.4080185	121.3246352	115.1189804	107.5304992	100.6394646	94.37191945	88.66223951	83.45239177
190403A00013	4/3/2019	3.05	4/3/2029	4/3/2019	121.68486	121.6848575	121.6848575	115.9691626	108.0652124	100.81934	94.17180035	88.0684736	82.46045999
190403A00015	4/3/2019	3.05	4/3/2029	4/3/2019	121.68487	121.6848669	121.6848669	115.9691681	108.0652145	100.8193391	94.17179681	88.0684678	82.46045225
190501A00015	5/1/2019	2.78	5/1/2029	5/1/2019	112.19435	112.1943459	112.1943459	109.4061097	104.512273	99.93011105	95.63668058	91.61050288	87.83188146
190605A00007	6/5/2019	2.47	6/5/2026	6/5/2019	112.7414	112.7413991	112.7413991	109.6174592	103.8070955	98.35899054	93.24860628	88.45302275	83.95099284
190614A00022	6/14/2019	2.62	6/14/2034	6/14/2019	117.8013	117.8012956	117.6912506	111.5035827	104.0345704	97.26264665	91.11277157	85.51850572	80.42120496
190619A00010	6/19/2019	2.04	6/17/2022	6/19/2019	102.44667	102.4466746	102.4466746	101.8871164	100.6343927	99.40715453	98.20637635	97.03126748	95.88106756
190718A00012	7/18/2019	2.55	7/18/2029	7/18/2019	116.97204	116.9720401	116.9720401	111.5968593	104.1901977	97.40145058	91.17395994	85.45640444	80.20248368
190813A00067	8/13/2019	1.9	8/13/2024	8/13/2019	106.90592	106.9059235	106.9059235	105.281302	101.0755333	97.0676787	93.24748788	89.60513305	86.13135409
190905A00023	9/5/2019	2.08	9/5/2029	9/5/2019	114.9177	114.9177	114.9177	108.7571056	100.7066423	93.36655062	86.66910478	80.55328132	74.96419901
190905A00025	9/5/2019	2.08	9/5/2029	9/5/2019	114.9177	114.9177	114.9177	108.7571056	100.7066422	93.36655061	86.66910476	80.55328129	74.96419898
190925A00009	9/25/2019	2	9/25/2026	9/25/2019	109.70553	109.7055291	109.7055291	106.5970532	101.0308583	95.81803302	90.93398386	86.35577701	82.06220879
191004A00019	10/4/2019	2.02	10/4/2029	10/4/2019	114.50396	114.5039624	114.5039624	108.2776378	100.2018091	92.84379715	86.13464348	80.01230389	74.42102267
191112A00022	11/12/2019	2.36	11/13/2029	11/12/2019	117.6642	117.6641978	117.6641978	111.1899352	102.8634177	95.28238554	88.37467439	82.07539878	76.32629943
191203A00013	12/3/2019	1.93	12/3/2024	12/3/2019	107.48438	107.4843829	107.4843829	105.6969335	101.221466	96.96834098	92.92547472	89.08133931	85.42509709
191224A00002	12/24/2019	2.17	12/24/2029	12/24/2019	109.68534	109.6853426	109.6853426	106.6651324	101.6126561	96.89966576	92.4997726	88.38848688	84.54344978
200110A00053	1/10/2020	1.99	1/10/2025	1/10/2020	107.87227	107.8722698	107.8722698	106.0181754	101.449102	97.11124624	92.99179652	89.0785533	85.36006171
190326A00029	3/26/2019	2.38	3/26/2026	3/26/2019	107.31835	107.3183497	107.3183497	105.9678155	102.7590431	99.69303673	96.76277452	93.96098313	91.28083432
190404A00015	4/4/2019	2.88	4/3/2026	4/4/2019	114.84069	114.8406883	114.8406883	111.8524212	106.0901365	100.6780843	95.59300939	90.81318276	86.31843848

Classification | Public

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190506A00026	5/6/2019	3.03	5/4/2029	5/6/2019	122.53745	122.5374454	122.5374454	116.4360962	108.1694268	100.6066315	93.68272904	87.3389912	81.52242825
190524A00041	5/24/2019	2.83	5/24/2034	5/24/2019	119.38964	119.389639	119.2882425	113.0730944	105.5390452	98.7046049	92.49483287	86.84333053	81.69145375
190531A00036	5/31/2019	2.71	5/31/2034	5/31/2019	118.41978	118.4197785	118.3190583	112.1540286	104.6809096	97.90176989	91.74226866	86.13653909	81.02640705
190620A00033	6/20/2019	2.1	6/20/2029	6/20/2019	109.81695	109.8169537	109.8169537	107.0298414	102.178051	97.63879105	93.38879383	89.40631744	85.6714416
190705A00007	7/5/2019	2.56	7/5/2034	7/5/2019	117.42014	117.4201392	117.3000765	111.0778944	103.5983006	96.82029236	90.66797443	85.07419801	79.97972927
190731A00013	7/31/2019	2.23	7/22/2022	7/31/2019	102.54405	102.5440482	102.5440482	101.9736778	100.6813357	99.41597159	98.17844562	96.96791602	95.78357346
190813A00064	8/13/2019	1.9	8/13/2024	8/13/2019	106.90592	106.9059235	106.9059235	105.281302	101.0755333	97.0676787	93.24748788	89.60513305	86.13135409
190911A00016	9/11/2019	1.9	9/11/2029	9/11/2019	109.03693	109.0369345	109.0369345	106.144849	101.2126375	96.60553784	92.29877303	88.26927803	84.49596004
191008A00007	10/8/2019	1.67	10/9/2029	10/8/2019	107.91077	107.9107678	107.9107678	105.0066247	100.0874444	95.49497897	91.20413705	87.19159039	83.43601889
191008A00014	10/8/2019	1.85	10/8/2026	10/8/2019	109.46945	109.4694527	109.4694527	106.0707462	100.145648	94.60797275	89.43016174	84.58665185	80.05383426
191015A00025	10/15/2019	2.01	10/15/2029	10/15/2019	108.68099	108.6809872	108.6809872	105.7732935	100.84233	96.23776673	91.9346134	87.90962316	84.14154522
200110A00038	1/10/2020	2.32	1/10/2030	1/10/2020	117.56092	117.5609161	117.5609161	110.9117555	102.4947478	94.84184422	87.87810946	81.53623178	75.75585975
200116A00012	1/16/2020	2.16	1/19/2027	1/16/2020	111.85791	111.8579115	111.8579115	108.1279555	101.8989296	96.09135559	90.67431464	85.61915817	80.89948945
190910A00044	9/10/2019	2.02	9/10/2026	9/10/2019	110.4239	110.423897	110.423897	107.0794239	101.1698325	95.64260002	90.47083386	85.62953284	81.0955877
190920A00014	9/20/2019	2.28	9/20/2034	9/20/2019	115.34148	115.3414848	115.201174	108.981708	101.5659513	94.85283796	88.76560178	83.2364221	78.20554778
190930A00028	9/30/2019	1.95	9/30/2024	9/30/2019	106.96577	106.9657655	106.9657655	105.3458355	101.2034592	97.257515	93.49771535	89.91416851	86.4975656
191004A00025	10/4/2019	1.74	10/4/2024	10/4/2019	106.34653	106.3465322	106.3465322	104.6609041	100.3556128	96.25809713	92.35727667	88.64259417	85.1041189
191101A00005	11/1/2019	1.83	11/2/2026	11/1/2019	110.65762	110.6576221	110.6576221	107.1421784	101.0862999	95.43073037	90.14667852	85.20747601	80.58851475
191112A00024	11/12/2019	2.09	11/12/2024	11/12/2019	108.09049	108.0904888	108.0904888	106.3270508	101.8809484	97.65325883	93.63216288	89.80640323	86.16539806
191203A00009	12/3/2019	2.21	12/3/2029	12/3/2019	116.41431	116.4143141	116.4143141	109.9308333	101.6427203	94.10091854	87.23286587	80.97331521	75.26370723
191203A00010	12/3/2019	2.21	12/3/2029	12/3/2019	116.41431	116.4143141	116.4143141	109.9308333	101.6427203	94.10091854	87.23286587	80.97331521	75.26370723
200103A00002	1/3/2020	2.07	1/3/2030	1/3/2020	115.38063	115.3806259	115.3806259	109.601367	101.9853482	95.03305916	88.68100976	82.87198762	77.55460366
200115A00013	1/15/2020	2.18	1/15/2030	1/15/2020	113.08821	113.0882051	113.0882051	108.2388814	101.5059385	95.32647047	89.64952353	84.42894924	79.62317946
190308A00008	3/8/2019	3.19	3/8/2034	3/8/2019	122.05605	122.05605	121.9723694	115.733897	108.1051392	101.1775042	94.87664834	89.13660381	83.89903346
190322A00011	3/22/2019	2.99	3/22/2034	3/22/2019	120.43948	120.4394841	120.3566188	114.20013	106.6719357	99.83567423	93.61796989	87.95371465	82.78533251
190329A00021	3/29/2019	2.96	3/29/2034	3/29/2019	120.19836	120.1983608	120.1155195	113.9711624	106.4579045	99.63522761	93.42989628	87.77692759	82.61885651
190430A00026	4/30/2019	3.03	4/28/2034	4/30/2019	120.88989	120.8898944	120.7971033	114.5607292	106.9682329	100.0771834	93.81281732	88.10884508	82.90668256
190510A00022	5/10/2019	2.95	5/10/2034	5/10/2019	120.36397	120.3639686	120.2620337	113.9966392	106.4014475	99.51149703	93.25124947	87.55377612	82.35996399
190515A00035	5/15/2019	2.82	2/15/2029	5/15/2019	120.32064	120.3206423	120.3206423	114.5049152	106.4963748	99.15770043	92.42822367	86.2529466	80.58214771
190708A00026	7/8/2019	2.21	7/1/2024	7/8/2019	108.01706	108.0170632	108.0170632	106.435255	102.2928216	98.34074009	94.56940314	90.96956498	87.53250087
190712A00003	7/12/2019	2.61	7/12/2034	7/12/2019	117.82663	117.8266261	117.7060157	111.4622769	103.9567894	97.1553292	90.98173452	85.36862113	80.25654785
190905A00021	9/5/2019	2.08	9/5/2029	9/5/2019	114.9177	114.9177	114.9177	108.7571056	100.7066423	93.36655062	86.66910478	80.55328132	74.96419901
190905A00024	9/5/2019	2.08	9/5/2029	9/5/2019	114.9177	114.9177	114.9177	108.7571056	100.7066423	93.36655062	86.66910478	80.55328132	74.96419901

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190913A00018	9/13/2019	2.11	9/11/2026	9/13/2019	106.27038	106.2703786	106.2703786	104.7663369	101.3615148	98.11826345	95.02796618	92.08194141	89.27206723
190930A00026	9/30/2019	1.95	9/30/2024	9/30/2019	106.96577	106.9657683	106.9657683	105.3458376	101.2034597	97.25751389	93.49771282	89.91416467	86.49756054
191105A00012	11/5/2019	2.07	11/3/2034	11/5/2019	115.41578	115.4157847	115.2495827	108.8677862	101.3349835	94.52594319	88.36056021	82.76819966	77.68673181
191112A00023	11/12/2019	2.36	11/13/2029	11/12/2019	117.6642	117.6642001	117.6642001	111.189936	102.8634175	95.2823845	88.37467265	82.07539647	76.32629666
191113A00013	11/13/2019	2.17	11/13/2026	11/13/2019	111.63461	111.6346062	111.6346062	108.0897209	102.0009434	96.31464335	91.00190933	86.03593043	81.39196315
191209A00005	12/9/2019	2.22	12/10/2029	12/9/2019	114.91266	114.912659	114.912659	109.2600125	101.7515837	94.89164395	88.61868705	82.8772287	77.61738635
200109A00006	1/9/2020	1.95	1/9/2030	1/9/2020	109.62461	109.6246082	109.6246082	106.5447624	101.4331754	96.66873286	92.22416857	88.0742204	84.19584425
200130A00046	1/30/2020	1.81	1/29/2027	1/30/2020	105.47314	105.4731414	105.4731414	103.8545496	100.3176935	96.9560025	93.75964818	90.71887552	87.82458125
171207A00024	12/7/2017	2.93	12/7/2027	12/7/2017	118.64531	118.6453126	118.6453126	114.0032137	106.9123827	100.3474155	94.26601719	88.6293421	83.40187436
180215A00034	2/15/2018	2.9	2/15/2023	2/15/2018	107.62769	107.6276866	107.6276866	106.5516341	103.6417935	100.8293731	98.11077352	95.48232153	92.94051
180309A00015	3/9/2018	3.37	3/10/2031	3/9/2018	118.34147	118.341473	118.341473	114.3425044	108.2914141	102.6915851	97.50407909	92.6933177	88.22712218
181214A00010	12/14/2018	3.41	12/14/2028	12/14/2018	122.52454	122.5245394	122.5245394	117.4537771	110.0921455	103.3109788	97.05993261	91.29309817	85.96882846
181218A00086	12/18/2018	3.06	10/18/2023	12/18/2018	109.22778	109.2277776	109.2277776	107.9796738	104.645464	101.4398551	98.35738283	95.3925432	92.54011381
181218A00089	12/18/2018	3.05	6/19/2023	12/18/2018	108.47303	108.4730294	108.4730294	107.3281552	104.2589883	101.2998064	98.44637995	95.69432558	93.03946598
190104A00035	1/4/2019	3.1	1/5/2026	1/4/2019	115.20576	115.2057553	115.2057553	112.5196437	107.0495643	101.8980004	97.04469205	92.47056055	88.15784895
190205A00027	2/5/2019	2.87	2/7/2022	2/5/2019	105.11059	105.1105888	105.1105888	104.3516016	102.3914601	100.4787335	98.61219782	96.79044165	95.01210699
190308A00016	3/8/2019	3.18	3/8/2034	3/8/2019	133.5466	133.5466035	132.8179511	121.7618546	110.7035277	100.9223858	92.25682153	84.56609554	77.7283411
190315A00029	3/15/2019	2.88	3/15/2034	3/15/2019	121.17328	121.1732805	121.0888294	114.8451279	107.2271444	100.3121522	94.02535991	88.30043444	83.07873769
190327A00035	3/27/2019	2.68	3/27/2034	3/27/2019	119.55507	119.5550697	119.4714921	113.3105805	105.793897	98.9709044	92.76779452	87.11910767	81.96697845
190503A00015	5/3/2019	3.03	5/3/2034	5/3/2019	121.01627	121.016274	120.9139333	114.6148626	106.9787058	100.051569	93.75751201	88.02924996	82.80735487
190605A00023	6/5/2019	2.64	6/5/2029	6/5/2019	119.35154	119.35154	119.35154	113.2786216	105.1327712	97.68756946	90.87784313	84.64468429	78.93497631
190605A00025	6/5/2019	2.64	6/5/2029	6/5/2019	119.35153	119.3515313	119.3515313	113.2786172	105.1327704	97.68757178	90.87784814	84.64469161	78.93498562
190607A00013	6/7/2019	2.59	6/7/2034	6/7/2019	117.55862	117.5586151	117.4489231	111.274055	103.8204596	97.06249927	90.92529302	85.34254183	80.25572512
190621A00020	6/21/2019	2.58	6/21/2034	6/21/2019	117.47845	117.4784503	117.3685734	111.1976537	103.7489622	96.99548456	90.86237952	85.28338413	80.20001038
190702A00068	7/2/2019	2.69	7/1/2039	7/2/2019	138.34773	138.3477336	134.0792093	118.9187418	105.0707973	93.29050251	83.23748192	74.63049621	67.23687797
190809A00017	8/9/2019	2.27	8/9/2034	8/9/2019	115.17055	115.1705542	115.0418613	108.884907	101.514134	94.83824832	88.78170511	83.27771416	78.267395
190813A00052	8/13/2019	2.24	8/13/2029	8/13/2019	116.21195	116.2119454	116.2119454	110.0657954	101.9804277	94.60402818	87.86940499	81.71596315	76.08917371
190906A00009	9/6/2019	2.08	9/6/2034	9/6/2019	113.72439	113.7243856	113.5862587	107.4537737	100.1418009	93.52262366	87.52055575	82.0687297	77.10823359
191004A00023	10/4/2019	2.02	10/4/2029	10/4/2019	114.50396	114.5039567	114.5039567	108.2776361	100.2018105	92.84380109	86.13464965	80.01231194	74.4210323
191101A00004	11/1/2019	1.91	11/1/2029	11/1/2019	113.86477	113.8647723	113.8647723	108.3077247	100.871858	94.07520746	87.857404	82.16401221	76.94607059
200109A00008	1/9/2020	1.95	1/9/2030	1/9/2020	109.6246	109.6246036	109.6246036	106.5447604	101.4331758	96.66873525	92.22417271	88.07422605	84.1958512
200110A00037	1/10/2020	2.32	1/10/2030	1/10/2020	117.56092	117.5609161	117.5609161	110.9117555	102.4947478	94.84184422	87.87810946	81.53623178	75.75585975
011115A00014	11/15/2001	5.19	11/16/2021	11/15/2001	106.74843	106.7484332	106.7484332	106.1136029	104.7707089	103.4548955	102.1654973	100.9017799	99.66303503

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
030605A00010	6/5/2003	3.97	6/5/2023	6/5/2003	107.39402	107.394015	107.394015	106.6257574	104.6864431	102.8033562	100.9745392	99.19799923	97.47183029
050823A00088	8/23/2005	4.78	8/25/2025	8/23/2005	121.84535	121.8453482	121.8453482	119.6410049	114.7037197	110.0275291	105.596937	101.3972974	97.41492553
110824A00006	8/24/2011	2.69	8/24/2026	8/24/2011	109.30637	109.3063671	109.3063671	107.6369726	103.9763698	100.4954413	97.18354322	94.03075047	91.0277995
120423A00011	4/23/2012	2.07	4/25/2022	4/24/2017	102.22676	102.2267625	102.2267625	101.7032499	100.4768026	99.27122242	98.09453403	96.94576143	95.82397128
120614A00015	6/14/2012	1.89	6/14/2022	6/14/2012	103.59479	103.5947885	103.5947885	102.8288111	100.8128557	98.85015515	96.93898893	95.07769137	93.26466079
120827A00052	8/27/2012	2.01	8/27/2027	8/27/2012	107.80562	107.8056152	107.8056152	105.7644868	101.7185071	97.89612301	94.28263823	90.86438336	87.62869597
121120A00011	11/20/2012	2.22	11/22/2027	11/20/2012	112.02583	112.0258346	112.0258346	108.6057691	102.9228719	97.62411445	92.6801009	88.06389471	83.75078587
121220A00023	12/20/2012	1.82	12/20/2022	12/20/2012	104.33763	104.3376285	104.3376285	103.3797492	100.8551088	98.40912922	96.03889773	93.7416273	91.51464958
130528A00020	5/28/2013	2.43	5/30/2023	5/29/2018	105.72428	105.7242818	105.7242818	104.7153926	102.0313735	99.43904507	96.93490092	94.51539535	92.1771452
150601A00011	6/1/2015	5.17	8/3/2022	6/1/2015	112.07446	112.0744605	112.0744605	111.1518762	108.6707302	106.2602775	103.9184062	101.642751	99.43104372
150601A00033	6/1/2015	5.96	12/24/2025	6/1/2015	130.72454	130.7245354	130.7245354	127.9344264	122.1224606	116.6392995	111.4644944	106.5786546	101.9637173
150601A00100	6/1/2015	3.26	1/7/2021	6/1/2015	101.39417	101.3941672	101.3941672	101.1089936	100.6371337	100.1713482	99.71150657	99.25748225	98.8091524
150601A00261	6/1/2015	3.19	2/11/2033	6/1/2015	129.15664	129.1566392	129.0546597	120.0310233	110.3769204	101.7277636	93.96704385	86.99261145	80.71490701
150601A00396	6/1/2015	3.61	1/3/2029	6/1/2015	114.58547	114.5854705	114.5854705	112.1147821	107.5584505	103.2750003	99.24548074	95.45192233	91.87778314
150601A00478	6/1/2015	2	6/16/2021	6/1/2015	101.17521	101.1752132	101.1752132	100.7945102	100.1090575	99.43241153	98.76718363	98.11306344	97.46975236
150601A00505	6/1/2015	2.07	7/8/2021	6/1/2015	101.29283	101.2928264	101.2928264	100.898106	100.1731374	99.45795762	98.75498976	98.06390386	97.38438233
150601A00690	6/1/2015	2.34	2/28/2025	6/1/2015	105.11497	105.1149679	105.1149679	104.1200838	101.6014425	99.17647776	96.84169649	94.592955	92.42633085
150601A00745	6/1/2015	1.76	5/7/2021	6/1/2015	100.93224	100.9322416	100.9322416	100.5704367	99.93944835	99.31593968	98.70295157	98.10018904	97.50736868
150601A00770	6/1/2015	1.47	5/15/2020	6/1/2015	100.17302	100.1730167	100.1730167	100.0883099	99.94424698	99.80080367	99.65797554	99.51575825	99.3741475
150601A00772	6/1/2015	1.84	5/13/2022	6/1/2015	101.75663	101.7566273	101.7566273	101.2388529	100.1041481	98.99148114	97.9019586	96.83490036	95.78965233
150601A00778	6/1/2015	1.56	5/19/2020	6/1/2015	100.19302	100.1930241	100.1930241	100.1049936	99.9553781	99.80642905	99.65814153	99.5105107	99.36353176
150601A00832	6/1/2015	7.17	8/28/2025	6/1/2015	119.00399	119.0039885	119.0039885	117.7874224	114.7707392	111.8735779	109.0909847	106.4173719	103.8474665
150601A00938	6/1/2015	6.35	12/21/2020	6/1/2015	105.36878	105.3687838	105.3687838	104.8229207	103.9388354	103.0700606	102.2161982	101.3768639	100.5516865
020918A00047	9/18/2002	4.72	9/19/2022	9/18/2002	107.71444	107.7144412	107.7144412	107.0052229	105.3072191	103.6510453	102.0354221	100.4590153	98.92054597
080220A00035	2/20/2008	4.65	2/22/2022	2/20/2008	104.92879	104.9287934	104.9287934	104.4413938	103.3453303	102.2735242	101.2261195	100.2023574	99.20150882
120210A00004	2/10/2012	1.98	2/10/2022	2/10/2012	103.14116	103.1411558	103.1411558	102.4754506	100.8014491	99.16773634	97.57338762	96.01718817	94.49796977
120217A00007	2/17/2012	2.25	2/20/2024	2/17/2012	106.07368	106.0736769	106.0736769	104.984429	102.1342844	99.39622345	96.76538512	94.23682606	91.80586207
120523A00024	5/23/2012	2.6	5/24/2027	5/23/2012	108.82204	108.8220421	108.8220421	106.9344215	103.0750878	99.42140766	95.96057854	92.68039508	89.56952133
121219A00045	12/19/2012	1.75	12/19/2022	12/19/2017	102.25863	102.2586306	102.2586306	101.6209251	100.0992789	98.61393497	97.16531326	95.75221088	94.37347363
130925A00035	9/25/2013	1.53	6/25/2025	9/25/2013	104.15472	104.1547246	104.1547246	102.9786741	100.0830705	97.30951819	94.65175871	92.10389728	89.66038211
150601A00035	6/1/2015	5.73	4/1/2038	6/1/2015	150.58755	150.5875503	149.7033994	140.3827282	130.0590013	120.8450298	112.600797	105.2054546	98.55481705
150601A00330	6/1/2015	2.6	8/2/2023	6/1/2015	104.01362	104.013621	104.013621	103.3043424	101.5555207	99.85453598	98.2008539	96.59277463	95.02867222
150601A00394	6/1/2015	2.1	12/31/2020	6/1/2015	100.84388	100.8438845	100.8438845	100.5631563	100.0986465	99.64005775	99.18726401	98.7401431	98.29857647

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00438	6/1/2015	1.91	3/18/2021	6/1/2015	100.91761	100.9176125	100.9176125	100.5824948	100.0165814	99.45866898	98.90925584	98.36812631	97.83507238
150601A00448	6/1/2015	2.61	4/26/2024	6/1/2015	104.87277	104.8727721	104.8727721	104.0356668	101.9171603	99.86649483	97.88189802	95.96068797	94.10031163
150601A00451	6/1/2015	1.91	4/30/2021	6/1/2015	101.02278	101.0227807	101.0227807	100.6635571	100.0352219	99.41411524	98.80356209	98.20326253	97.61292868
150601A00458	6/1/2015	1.86	5/14/2021	6/1/2015	101.01364	101.013636	101.013636	100.6474405	100.0047594	99.36968904	98.74539844	98.13158473	97.52795699
150601A00730	6/1/2015	1.55	5/1/2020	6/1/2015	100.16795	100.1679521	100.1679521	100.0909297	99.95965397	99.82889858	99.69866012	99.56893525	99.43972066
150601A00889	6/1/2015	6.55	3/2/2029	6/1/2015	133.4895	133.4895025	133.4895025	130.147822	124.2506135	118.7285166	113.5540875	108.7016481	104.14763
150601A00906	6/1/2015	6.2	11/1/2029	6/1/2015	133.3629	133.3629045	133.3629045	129.6801955	123.496921	117.7289415	112.3440883	107.312515	102.6069575
150601A00947	6/1/2015	6.19	8/20/2021	6/1/2015	108.99537	108.9953677	108.9953677	108.312146	106.7857208	105.2890686	103.8218321	102.3832044	100.9724075
150601A00953	6/1/2015	6.6	6/10/2032	6/1/2015	146.89836	146.8983607	146.8983607	140.6757592	132.2292591	124.4840743	117.3732596	110.8365319	104.8199084
150601A00955	6/1/2015	5.84	7/15/2032	6/1/2015	135.44204	135.4420361	135.4420361	130.5346007	123.5450223	117.1051212	111.1642112	105.6763682	100.6003737
150601A01011	6/1/2015	5.05	9/8/2025	6/1/2015	113.20204	113.2020436	113.2020436	112.0213477	109.0968646	106.2896277	103.5946793	101.0064972	98.51987324
150601A01041	6/1/2015	5.99	10/2/2036	6/1/2015	156.59882	156.5988181	155.8818704	145.6859968	134.4885469	124.4833131	115.524399	107.4851193	100.2555697
151123A00067	11/23/2015	1.68	11/23/2020	11/23/2015	100.6508	100.6508042	100.6508042	100.3769826	99.92107589	99.47039894	99.02485177	98.58433709	98.14876022
160210A00068	2/10/2016	2.76	2/10/2031	2/10/2021	113.63538	113.6353809	113.6353809	110.1140198	104.6162712	99.51438364	94.77515767	90.36810216	86.26557894
120411A00021	4/11/2012	3.25	4/12/2027	4/11/2017	116.88695	116.8869483	116.8869483	113.481017	107.6519051	102.2037561	97.10958941	92.34359918	87.8820227
120614A00013	6/14/2012	1.89	6/14/2022	6/14/2012	103.59482	103.5948201	103.5948201	102.8288375	100.8128645	98.85014689	96.93896424	95.07765084	93.26460497
120827A00048	8/27/2012	2.01	8/27/2027	8/27/2012	107.80561	107.8056137	107.8056137	105.7644862	101.7185073	97.89612387	94.28263967	90.86438531	87.62869835
120907A00005	9/7/2012	1.76	9/7/2022	9/7/2012	102.43353	102.4335287	102.4335287	101.7555357	100.1292675	98.5429238	96.99522251	95.48490321	94.01075698
120907A00032	9/7/2012	1.86	9/9/2024	9/7/2012	105.96791	105.9679113	105.9679113	104.652003	101.2874011	98.06789336	94.9861669	92.03528255	89.20869597
121219A00036	12/19/2012	2.2	12/19/2022	12/19/2017	104.83316	104.8331615	104.8331615	103.8748699	101.3510918	98.90563502	96.53560992	94.23825091	92.01090982
130207A00012	2/7/2013	2.9	2/7/2033	2/7/2013	117.03439	117.0343891	117.017429	111.9664339	105.3901017	99.3789137	93.87622039	88.83148437	84.199724
130510A00033	5/10/2013	1.45	5/29/2020	5/10/2013	100.43977	100.4397685	100.4397685	100.2443922	99.91573993	99.5892395	99.26486986	98.94261021	98.62244001
130913A00018	9/13/2013	3.72	9/13/2028	9/13/2013	115.9602	115.9601966	115.9601966	113.2910214	108.4325307	103.8694149	99.58023401	95.54532619	91.74661318
130918A00010	9/18/2013	2.43	9/18/2020	9/18/2013	101.4097	101.409703	101.409703	101.0449446	100.4390101	99.84056028	99.24945564	98.6655601	98.08874096
140325A00012	3/25/2014	3.61	3/26/2029	3/25/2019	115.44722	115.4472221	115.4472221	112.6784818	107.8377068	103.3043167	99.05731358	95.07519997	91.33828468
150601A00024	6/1/2015	5.58	11/8/2022	6/1/2015	114.38387	114.3838679	114.3838679	113.3618799	110.6029819	107.928592	105.3358864	102.8218459	100.3835846
150601A00370	6/1/2015	2.58	10/31/2023	6/1/2015	104.25567	104.2556668	104.2556668	103.5053143	101.6346372	99.81803874	98.05460035	96.34232972	94.67932426
150601A00371	6/1/2015	1.88	10/30/2020	6/1/2015	100.60563	100.6056302	100.6056302	100.3801926	100.003097	99.62995386	99.26069391	98.89524967	98.53355533
150601A00387	6/1/2015	2.81	12/19/2023	6/1/2015	104.85204	104.8520408	104.8520408	104.0761685	102.1325741	100.2467758	98.41763882	96.6429947	94.92077391
150601A00390	6/1/2015	2.39	5/20/2022	6/1/2015	103.09707	103.0970654	103.0970654	102.5041061	101.1356242	99.79671082	98.48682911	97.20513495	95.95081499
150601A00409	6/1/2015	1.98	1/22/2021	6/1/2015	100.83265	100.8326469	100.8326469	100.5353984	100.0433448	99.55791507	99.07896054	98.60633712	98.13990529
150601A00411	6/1/2015	3.38	1/24/2029	6/1/2015	113.65376	113.6537601	113.6537601	111.1697177	106.6140896	102.3331421	98.30766907	94.51948509	90.9518573
150601A00436	6/1/2015	1.99	3/18/2021	6/1/2015	100.92461	100.924611	100.924611	100.6003651	100.0562431	99.51980857	98.99126474	98.47041777	97.95708048

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00557	6/1/2015	2.03	9/2/2021	6/1/2015	101.37661	101.3766059	101.3766059	100.9592583	100.1690206	99.39026804	98.62517127	97.87335953	97.13447588
150601A00678	6/1/2015	2.12	1/30/2025	6/1/2015	104.51211	104.5121141	104.5121141	103.5327231	101.0500995	98.65904101	96.35618638	94.13751314	91.99921211
150601A00872	6/1/2015	7.42	7/31/2028	6/1/2015	134.51806	134.5180572	134.5180572	131.6375945	126.2052548	121.0928324	116.2786535	111.7421455	107.4643237
150601A00901	6/1/2015	7.16	7/26/2029	6/1/2015	132.16387	132.1638668	132.1638668	129.1724173	123.8222018	118.8029723	114.0908276	109.6632291	105.4994977
150601A00917	6/1/2015	5.72	4/21/2020	6/1/2015	101.22605	101.2260487	101.2260487	101.09343	100.8701686	100.6479128	100.4266555	100.2063901	99.98710988
050812A00050	8/12/2005	4.97	8/12/2025	8/12/2005	114.45373	114.4537254	114.4537254	113.1278505	109.9138491	106.8360337	103.8874944	101.0615717	98.35199996
080423A00066	4/23/2008	4.41	4/24/2023	4/23/2008	107.56979	107.5697907	107.5697907	106.8560814	105.070915	103.3317198	101.6433591	100.003898	98.41149173
081226A00013	12/26/2008	3.99	12/26/2023	12/26/2008	109.00228	109.0022848	109.0022848	108.0231598	105.5643187	103.1867516	100.8872615	98.66268343	96.51000245
110414A00007	4/14/2011	3.95	1/21/2025	4/14/2011	109.90919	109.9091858	109.9091858	108.7932138	105.9806826	103.2773818	100.6821973	98.18985348	95.7953715
120228A00007	2/28/2012	3.27	2/27/2032	2/28/2017	118.01257	118.0125713	118.0125713	113.5714206	107.3676702	101.6623028	96.40855809	91.5643171	87.09181737
120410A00005	4/10/2012	2.35	4/12/2027	4/10/2012	108.4335	108.4335008	108.4335008	106.596079	102.8124125	99.22710459	95.83108597	92.61239227	89.55991383
120423A00014	4/23/2012	3.25	4/23/2027	4/24/2017	115.18582	115.1858224	115.1858224	112.2425863	107.0042099	102.0926568	97.48583711	93.16210403	89.10149817
121126A00009	11/26/2012	1.07	11/30/2020	11/26/2012	100.56101	100.5610114	100.5610114	100.2051008	99.62093114	99.04474305	98.47635697	97.91559893	97.36230037
121219A00029	12/19/2012	1.75	12/19/2022	12/21/2017	102.13999	102.1399886	102.1399886	101.5328486	100.0898743	98.68161313	97.3073134	95.96589345	94.65631402
130425A00032	4/25/2013	2.59	4/25/2028	4/25/2018	109.72906	109.729058	109.729058	107.4583475	103.1924165	99.17516837	95.39244503	91.82793151	88.46658844
130510A00036	5/10/2013	1.45	5/29/2020	5/10/2013	100.43977	100.4397685	100.4397685	100.2443922	99.91573993	99.5892395	99.26486986	98.94261021	98.62244001
140314A00026	3/14/2014	2.99	3/14/2024	3/14/2019	110.05907	110.059066	110.059066	108.7111174	105.1443807	101.7262706	98.4511098	95.31202292	92.30250696
140414A00009	4/14/2014	2.32	4/30/2024	4/14/2014	105.00234	105.0023434	105.0023434	104.1160222	101.8434217	99.64612547	97.52642051	95.4808786	93.50625028
150601A00005	6/1/2015	4.84	6/9/2025	6/1/2015	122.69945	122.6994517	122.6994517	120.4798376	115.3359726	110.462692	105.8443815	101.4661142	97.3139177
150601A00038	6/1/2015	5.77	6/2/2023	6/1/2015	117.77656	117.7765629	117.7765629	116.5336795	113.1966081	109.9784937	106.8747679	103.8807268	100.9918857
150601A00270	6/1/2015	3.12	3/21/2031	6/1/2015	127.30766	127.3076575	127.3076575	119.341867	110.0585872	101.6748137	94.09526363	87.23521542	81.01943647
150601A00299	6/1/2015	1.8	4/11/2023	6/1/2015	102.44957	102.4495721	102.4495721	101.7843465	100.1628129	98.5829147	97.04447448	95.54607141	94.0863443
150601A00319	6/1/2015	1.94	6/26/2020	6/1/2015	100.34131	100.3413145	100.3413145	100.2205841	100.0159288	99.81248585	99.6102433	99.40918939	99.20931253
150601A00410	6/1/2015	2.68	1/24/2024	6/1/2015	104.71524	104.7152361	104.7152361	103.9238735	101.9350472	100.0066074	98.13725414	96.32468935	94.56672143
150601A00424	6/1/2015	1.95	2/19/2021	6/1/2015	100.88366	100.8836593	100.8836593	100.5644933	100.0322125	99.50755258	98.99042913	98.48066175	97.97807608
150601A00461	6/1/2015	1.94	5/14/2021	6/1/2015	101.03498	101.0349833	101.0349833	100.6762102	100.0505365	99.43283521	98.82524788	98.22750121	97.63933218
150601A00509	6/1/2015	2.52	7/8/2024	6/1/2015	104.89084	104.8908402	104.8908402	104.0195003	101.807149	99.66834768	97.60095706	95.60199049	93.6686083
150601A00526	6/1/2015	2	7/28/2021	6/1/2015	101.27137	101.2713748	101.2713748	100.8705981	100.1285094	99.39666265	98.67741151	97.97041546	97.27534664
150601A00558	6/1/2015	2.51	8/30/2024	6/1/2015	105.03047	105.0304743	105.0304743	104.1307425	101.8436809	99.63481344	97.50169976	95.44109716	93.44992576
120119A00015	1/19/2012	2.27	1/19/2024	1/19/2012	106.80206	106.8020625	106.8020625	105.5886187	102.4290945	99.39235271	96.47280228	93.66514085	90.96433822
120315A00002	3/14/2012	2.56	3/15/2027	3/14/2022	109.02672	109.0267235	109.0267235	107.230536	103.5065133	99.97680209	96.63166515	93.45955592	90.44974386
120621A00009	6/21/2012	3.18	6/21/2032	6/21/2012	123.16552	123.1655234	123.1655234	116.2539334	108.2201337	100.9524168	94.36775892	88.39276458	82.96257861
121214A00014	12/14/2012	2.16	12/14/2027	12/14/2017	109.10386	109.1038563	109.1038563	106.8205373	102.4341697	98.29929479	94.39891288	90.71724325	87.23969596

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
130624A00017	6/24/2013	3.4	6/26/2023	6/24/2013	109.30466	109.3046603	109.3046603	108.1616304	105.0995727	102.1470404	99.29946954	96.55250672	93.90200354
140311A00037	3/11/2014	2.59	3/11/2021	3/11/2014	102.44624	102.4462354	102.4462354	101.8705408	100.8177742	99.77961357	98.76361933	97.76908161	96.79532061
141124A00024	11/24/2014	2.27	11/30/2021	11/24/2014	103.84579	103.8457933	103.8457933	103.1222103	101.3401598	99.59793251	97.8944054	96.22849662	94.59916129
150601A00030	6/1/2015	5.28	11/26/2027	6/1/2015	134.34632	134.3463194	134.3463194	129.7326075	122.3956257	115.5801548	109.2453787	103.3536377	97.87044925
150601A00040	6/1/2015	5.45	7/14/2023	6/1/2015	109.19467	109.1946748	109.1946748	108.4454419	106.5952627	104.7955547	103.0457526	101.3440698	99.68879749
150601A00165	6/1/2015	2.66	6/4/2032	6/1/2015	115.60278	115.6027812	115.6027812	111.2143203	105.0467833	99.3721348	94.14451333	89.32244077	84.86870486
150601A00348	6/1/2015	2.11	9/16/2020	6/1/2015	100.57706	100.5770582	100.5770582	100.3898758	100.0746086	99.76212726	99.4523907	99.14535873	98.84099197
150601A00395	6/1/2015	2.86	1/3/2024	6/1/2015	105.00042	105.0004204	105.0004204	104.2168818	102.2515815	100.3452244	98.49660814	96.70350816	94.96380196
150601A00426	6/1/2015	3.37	2/21/2029	6/1/2015	113.73137	113.7313658	113.7313658	111.2088513	106.6134362	102.297266	98.24065468	94.42499094	90.83316027
150601A00473	6/1/2015	2.22	5/31/2024	6/1/2015	104.54548	104.5454842	104.5454842	103.6905319	101.5218224	99.4241164	97.39543406	95.43292399	93.53387384
150601A00475	6/1/2015	3.04	6/1/2029	6/1/2015	112.62046	112.6204569	112.6204569	109.9849344	105.2957845	100.8995984	96.77512371	92.90237558	89.26301534
150601A00492	6/1/2015	1.92	6/25/2021	6/1/2015	101.14475	101.1447542	101.1447542	100.7588921	100.0586155	99.36751643	98.68813151	98.02014324	97.36324604
150601A00527	6/1/2015	2.5	7/26/2024	6/1/2015	104.90416	104.9041559	104.9041559	104.0230523	101.7846353	99.62139462	97.53108459	95.51062945	93.55710587
150601A00529	6/1/2015	2.08	7/28/2021	6/1/2015	101.26439	101.2643856	101.2643856	100.8765137	100.1709428	99.4746906	98.79026393	98.11734226	97.45561714
150601A00660	6/1/2015	2.26	1/5/2022	6/1/2015	104.03632	104.0363235	104.0363235	103.2970831	101.4129704	99.57293558	97.7758527	96.02045977	94.30554038
150601A00679	6/1/2015	1.86	2/4/2022	6/1/2015	101.56879	101.5687861	101.5687861	101.0883324	100.0876723	99.10460553	98.14061799	97.19517241	96.26775154
150601A00739	6/1/2015	2.35	5/6/2025	6/1/2015	105.33908	105.3390777	105.3390777	104.2997891	101.6829836	99.16668295	96.74691605	94.41912261	92.17899196
150601A00847	6/1/2015	6.59	1/31/2022	6/1/2015	111.44924	111.4492421	111.4492421	110.7085244	108.8662868	107.0667591	105.3093638	103.5928315	101.9159408
150601A00912	6/1/2015	5.96	11/30/2029	6/1/2015	132.07195	132.0719477	132.0719477	128.4056044	122.2606379	116.5292798	111.179436	106.1813398	101.5078029
150601A00914	6/1/2015	7.34	2/24/2020	6/1/2015	100.22491	100.2249079	100.2249079	100.2072909	100.1754311	100.1436168	100.1118478	100.0801241	100.0484456
150601A00943	6/1/2015	6.44	5/9/2031	6/1/2015	140.95682	140.9568189	140.9568189	135.9288964	128.4740842	121.5887152	115.2226821	109.3303514	103.8705155
150601A00964	6/1/2015	5.25	1/6/2033	6/1/2015	132.9945	132.9945028	132.9930468	127.805479	120.6865091	114.147613	108.1334217	102.594028	97.48480061
150601A00976	6/1/2015	6.8	9/22/2033	6/1/2015	151.47128	151.4712766	151.4288151	144.2101794	135.0899479	126.7795269	119.1958031	112.2646812	105.920384
150601A00993	6/1/2015	5.37	6/9/2034	6/1/2015	142.83115	142.8311521	142.6989161	135.077248	125.9242656	117.6313195	110.1054437	103.2643767	97.03553401
150601A01008	6/1/2015	5.08	4/15/2025	6/1/2015	112.34859	112.3485855	112.3485855	111.2722164	108.5614142	105.952782	103.4424272	101.0257693	98.69847569
150601A01015	6/1/2015	5.61	10/28/2025	6/1/2015	127.50055	127.5005538	127.5005538	124.9636234	119.4909282	114.3190502	109.4296913	104.805474	100.4301948
150819A00027	8/19/2015	3.05	8/19/2030	8/19/2020	115.78643	115.7864263	115.7864263	112.4206165	106.991882	101.941845	97.23974524	92.85719179	88.76837557
160506A00016	5/6/2016	1.28	5/6/2021	5/6/2016	100.71356	100.7135629	100.7135629	100.3197176	99.62441398	98.9369524	98.26144688	97.59755366	96.94494283
160930A00032	9/30/2016	2.15	9/30/2031	9/30/2016	110.85429	110.8542921	110.8542921	107.0086423	101.3258503	96.07546362	91.21920074	86.72219021	82.55298471
170616A00003	6/16/2017	1.91	6/17/2024	6/16/2017	104.07615	104.0761492	104.0761492	103.1957474	100.9591932	98.79695522	96.70687329	94.68593225	92.73126529
171206A00020	12/6/2017	2.62	12/6/2027	12/6/2017	109.30648	109.3064774	109.3064774	107.3237821	103.3421732	99.57675605	96.01404238	92.64096304	89.44539907
180725A00035	7/25/2018	2.85	7/25/2023	7/25/2018	104.94978	104.9497787	104.9497787	104.2187337	102.4172609	100.6650482	98.96155155	97.30502009	95.69377905
181003A00044	10/3/2018	2.78	10/2/2020	10/3/2018	101.09516	101.0951607	101.0951607	100.8504735	100.4406654	100.035001	99.63341107	99.23582799	98.84218571

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
181226A00040	12/26/2018	2.84	12/28/2020	12/26/2018	101.2975	101.2974992	101.2974992	100.9951096	100.4944005	99.99999835	99.51177052	99.02958833	98.55332688
190701A00022	7/1/2019	2.28	7/1/2021	7/1/2019	101.58503	101.5850257	101.5850257	101.1625393	100.3806221	99.60943176	98.85144564	98.1063085	97.37367827
191114A00013	11/14/2019	1.9	11/14/2022	11/14/2019	102.36022	102.3602226	102.3602226	101.7473654	100.3062845	98.89833416	97.52392798	96.18199161	94.87149388
191115A00029	11/15/2019	2.07	11/15/2029	11/15/2019	108.77953	108.7795313	108.7795313	105.9459356	101.1186025	96.60839447	92.39111944	88.44423418	84.74713201
180716A00046	7/16/2018	2.9	7/16/2025	7/16/2018	107.73648	107.7364838	107.7364838	106.6243782	103.8413763	101.1678763	98.59937852	96.13081514	93.75740088
180814A00020	8/14/2018	2.7	8/14/2020	8/14/2018	100.80269	100.8026856	100.8026856	100.6091956	100.2820946	99.9576113	99.63571105	99.31635982	98.99952423
181015A00043	10/15/2018	2.91	10/15/2020	10/15/2018	101.10179	101.1017897	101.1017897	100.8550097	100.441909	100.0330448	99.62834501	99.22773916	98.83115851
190513A00026	5/13/2019	2.55	5/13/2021	5/13/2019	101.61971	101.6197121	101.6197121	101.2232189	100.5219842	99.82890584	99.14775119	98.47818204	97.81987358
050823A00085	8/23/2005	4.78	8/25/2025	8/23/2005	121.84528	121.8452793	121.8452793	119.6409443	114.7036751	110.0274994	105.596921	101.3972941	97.41493403
111128A00006	11/28/2011	3.03	11/28/2031	11/28/2011	118.35764	118.3576441	118.3576441	113.8477381	107.4229568	101.5047904	96.04621394	91.00509482	86.3435876
120210A00005	2/10/2012	1.64	2/10/2022	2/10/2012	101.63671	101.6367134	101.6367134	101.1618495	100.0978524	99.05740819	98.04062834	97.04678133	96.07516419
121120A00010	11/20/2012	1.93	11/22/2027	11/20/2012	107.92392	107.9239194	107.9239194	105.692246	101.3739748	97.301433	93.45804839	89.82850659	86.39864127
130206A00004	2/6/2013	2.14	2/7/2028	2/6/2013	108.33036	108.3303571	108.3303571	106.2291907	102.1571988	98.31682519	94.69253288	91.26982329	88.03529134
130624A00019	6/24/2013	3.4	6/26/2023	6/24/2013	109.30466	109.3046603	109.3046603	108.1616304	105.0995727	102.1470404	99.29946954	96.55250672	93.90200354
141031A00015	10/31/2014	2.38	10/31/2024	10/31/2019	105.71677	105.7167728	105.7167728	104.7267754	102.2102569	99.78398528	97.44659647	95.19402374	93.02241919
150601A00001	6/1/2015	5.43	6/15/2037	6/1/2015	153.64504	153.6450426	152.6750255	141.978607	130.5379652	120.3668376	111.3037358	103.209297	95.96329718
150601A00096	6/1/2015	2.32	11/23/2020	6/1/2015	100.8929	100.8928962	100.8928962	100.6467485	100.2365969	99.83108693	99.43013103	99.0336438	98.64154209
150601A00397	6/1/2015	2.2	12/31/2020	6/1/2015	100.88268	100.8826827	100.8826827	100.6042726	100.1434029	99.68836629	99.23903947	98.7953028	98.35704018
150601A00449	6/1/2015	2.12	4/28/2021	6/1/2015	101.13855	101.138549	101.138549	100.7805094	100.1599926	99.54696516	98.94415032	98.35126469	97.76803593
150601A00477	6/1/2015	3.21	6/1/2029	6/1/2015	117.18809	117.1880929	117.1880929	113.7984653	108.0800562	102.7465524	97.76842148	93.1183206	88.77122885
150601A00508	6/1/2015	1.97	7/8/2021	6/1/2015	101.20452	101.2045238	101.2045238	100.8132953	100.0979665	99.39219743	98.69845057	98.01640058	97.34573435
150601A00555	6/1/2015	2.13	9/2/2021	6/1/2015	101.48657	101.4865667	101.4865667	101.0632921	100.2560403	99.46070667	98.67939976	97.91173826	97.15735507
150601A00693	6/1/2015	2.31	2/27/2025	6/1/2015	105.05087	105.0508688	105.0508688	104.0540199	101.5308749	99.10176285	96.76316365	94.51091163	92.34106377
150601A00715	6/1/2015	1.34	4/1/2020	6/1/2015	100.09161	100.0916055	100.0916055	100.0427827	99.95790652	99.87326622	99.78886073	99.70468902	99.62075004
150601A00851	6/1/2015	7.12	4/30/2027	6/1/2015	128.05892	128.0589227	128.0589227	125.9342891	121.4317227	117.1617181	113.1105813	109.2649297	105.6123041
150601A00868	6/1/2015	7.08	6/5/2028	6/1/2015	132.72749	132.7274901	132.7274901	129.9048417	124.5529461	119.5146236	114.7687612	110.2953061	106.0757432
150601A00909	6/1/2015	6.14	11/30/2020	6/1/2015	102.33621	102.3362132	102.3362132	102.0986466	101.7018217	101.3092798	100.9209434	100.5367373	100.1565879
150601A00939	6/1/2015	5.79	1/17/2031	6/1/2015	134.48241	134.4824099	134.4824099	130.0335829	123.2121197	116.894119	111.036661	105.6004712	100.5499822
150601A01009	6/1/2015	4.6	5/27/2020	6/1/2015	100.71539	100.7153874	100.7153874	100.6196201	100.4570256	100.2952123	100.1341739	99.97390422	99.81439717
150601A01012	6/1/2015	5.43	9/15/2023	6/1/2015	117.72079	117.7207899	117.7207899	116.3994958	112.8657084	109.4661	106.1950928	103.0470353	100.0165595
150601A01040	6/1/2015	5.4	10/2/2026	6/1/2015	130.35726	130.3572622	130.3572622	126.8946633	120.5924276	114.6828508	109.1389183	103.9353529	99.04877648
160928A00029	9/28/2016	2.52	9/29/2036	9/28/2016	119.09019	119.0901866	118.5305172	111.063429	102.7388575	95.28874093	88.60586968	82.59751661	77.18329254
150601A00925	6/1/2015	5.73	7/21/2020	6/1/2015	101.31573	101.3157291	101.3157291	101.174446	100.9350806	100.6973385	100.4612013	100.2266509	99.99366953

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00932	6/1/2015	5.84	10/20/2020	6/1/2015	104.00742	104.0074157	104.0074157	103.5728222	102.8563971	102.1501005	101.4537172	100.7670383	100.0898607
150601A00966	6/1/2015	4.84	2/3/2023	6/1/2015	107.1027	107.1027047	107.1027047	106.4534167	104.9065425	103.3970252	101.9250602	100.4894071	99.0888765
150601A01055	6/1/2015	5.29	3/16/2022	6/1/2015	110.52974	110.5297372	110.5297372	109.7253304	107.6193087	105.5655915	103.5628369	101.6094246	99.70379888
151119A00027	11/19/2015	1.64	11/19/2020	11/19/2015	100.63086	100.6308565	100.6308565	100.357804	99.9030326	99.45345653	99.00897699	98.56949784	98.13492551
170705A00027	7/5/2017	1.73	7/6/2020	7/5/2017	100.41659	100.4165867	100.4165867	100.2515985	99.97207514	99.69442959	99.41864115	99.14468947	98.87255451
170705A00028	7/5/2017	1.86	7/6/2021	7/5/2017	101.25226	101.25226	101.25226	100.8305369	100.0496905	99.27957601	98.52266589	97.77860458	97.04704969
180719A00077	7/19/2018	3.06	7/19/2023	7/19/2018	109.08596	109.0859574	109.0859574	107.8667432	104.5854564	101.4261466	98.38383985	95.45354485	92.63051146
180727A00030	7/27/2018	2.89	7/27/2021	7/27/2018	102.08051	102.0805089	102.0805089	101.6550019	100.8665514	100.0890053	99.3248404	98.57369529	97.83522186
180830A00066	8/30/2018	3.02	8/30/2023	8/30/2018	109.23452	109.2345241	109.2345241	107.9752744	104.5935777	101.340792	98.21149673	95.20028817	92.30203106
181003A00072	10/3/2018	2.78	10/2/2020	10/3/2018	101.09516	101.0951607	101.0951607	100.8504735	100.4406654	100.035001	99.63341106	99.23582799	98.84218571
181029A00097	10/29/2018	3.53	10/27/2028	10/29/2018	121.71809	121.7180934	121.7180934	117.133007	110.2710123	103.9312501	98.06953645	92.64546431	87.62231385
181214A00026	12/14/2018	2.92	12/14/2020	12/14/2018	101.32846	101.3284593	101.3284593	101.0282589	100.5308377	100.0396058	99.55443545	99.07520219	98.60178531
190118A00031	1/18/2019	2.81	1/19/2021	1/18/2019	101.38002	101.3800163	101.3800163	101.0533057	100.512761	99.9795627	99.45354439	98.93454514	98.42240905
190813A00019	8/13/2019	2.13	8/13/2021	8/13/2019	101.54727	101.5472674	101.5472674	101.1103021	100.2859185	99.47342973	98.67513648	97.89065471	97.11961462
970806A00017	8/1/1997	7.02	7/23/2026	8/1/1997	122.55323	122.5532254	122.5532254	120.997774	117.3865965	113.9381351	110.6442521	107.4964942	104.4869373
970806A00059	8/1/1997	8.25	9/22/2025	8/1/1997	140.8408	140.8407965	140.8407965	138.133272	132.1843586	126.5574988	121.2334489	116.1938588	111.4215985
150601A00585	6/1/2015	2.45	10/8/2024	6/1/2015	104.99606	104.996056	104.996056	104.0779652	101.7436665	99.490633	97.31621678	95.21700127	93.18974379
150601A00680	6/1/2015	2.23	2/6/2025	6/1/2015	104.78945	104.7894451	104.7894451	103.8074303	101.3186035	98.92158911	96.61301517	94.38884713	92.24526446
150601A00685	6/1/2015	1.91	2/10/2022	6/1/2015	101.62852	101.6285185	101.6285185	101.1462321	100.139385	99.15032097	98.18050959	97.22940798	96.29649344
150601A00714	6/1/2015	1.67	4/1/2022	6/1/2015	101.49006	101.4900571	101.4900571	100.987733	99.90709186	98.84667183	97.80772352	96.78962703	95.79178593
150601A00848	6/1/2015	6.36	2/18/2022	6/1/2015	106.4058	106.4057965	106.4057965	105.9000885	104.8422091	103.8031528	102.7844203	101.7854359	100.8056458
150601A00864	6/1/2015	7.37	3/31/2028	6/1/2015	133.33273	133.3327323	133.3327323	130.6053578	125.3459108	120.388672	115.7136995	111.3019749	107.135915
150601A00897	6/1/2015	6.15	5/28/2029	6/1/2015	131.24325	131.2432539	131.2432539	127.9257506	122.1213826	116.6893805	111.6022067	106.8341251	102.3615383
150601A00900	6/1/2015	6.06	6/28/2024	6/1/2015	113.69034	113.6903428	113.6903428	112.7320735	110.2892055	107.9275109	105.6446007	103.437194	101.3021709
150601A00905	6/1/2015	6.14	10/29/2029	6/1/2015	132.74688	132.7468813	132.7468813	129.1270782	123.0123324	117.3055653	111.975389	106.9926507	102.3307046
150601A00929	6/1/2015	5.91	8/30/2030	6/1/2015	134.66837	134.6683682	134.6683682	130.3727482	123.6411768	117.3961261	111.5970596	106.206769	101.1914816
150601A00946	6/1/2015	6.28	8/22/2031	6/1/2015	140.96909	140.9690897	140.9690897	135.712788	128.0875547	121.0573244	114.5686566	108.5730222	103.0266865
150601A00952	6/1/2015	6.34	2/13/2032	6/1/2015	143.49186	143.4918639	143.4918639	137.7030343	129.6391643	122.2290737	115.4118043	109.1322861	103.34108
150601A00988	6/1/2015	4.57	3/22/2024	6/1/2015	108.80452	108.8045241	108.8045241	107.9609444	105.8354267	103.7762904	101.7819526	99.84983207	97.9774696
150601A00997	6/1/2015	5.46	9/30/2022	6/1/2015	113.32781	113.3278096	113.3278096	112.360412	109.754866	107.2263563	104.7724488	102.3904528	100.0777941
150601A01005	6/1/2015	5.82	3/10/2025	6/1/2015	125.63109	125.6310873	125.6310873	123.6123202	118.7104134	114.0530791	109.6268657	105.4187859	101.4166586
150601A01013	6/1/2015	5.21	9/29/2023	6/1/2015	117.15575	117.1557507	117.1557507	115.8261837	112.2677218	108.8456325	105.5541666	102.3875325	99.34023192
150601A01020	6/1/2015	5.22	10/19/2020	6/1/2015	101.82973	101.8297266	101.8297266	101.6053098	101.229652	100.8578515	100.4898422	100.1255598	99.76494133

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A01030	6/1/2015	5.43	9/30/2020	6/1/2015	103.4746	103.4745985	103.4745985	103.0706206	102.4026989	101.7435386	101.0929676	100.4508184	99.81692777
150601A01047	6/1/2015	5.35	12/30/2024	6/1/2015	123.21724	123.217242	123.217242	121.2938471	116.5159236	111.9712986	107.6474763	103.5323707	99.61462334
150601A01051	6/1/2015	4.91	2/7/2025	6/1/2015	121.6954	121.6953998	121.6953998	119.7204899	114.8868486	110.2942667	105.9295272	101.7799047	97.83345628
150601A01056	6/1/2015	4.7	3/16/2022	6/1/2015	109.32798	109.3279838	109.3279838	108.5296365	106.4364817	104.395396	102.4050213	100.4637444	98.57001653
151110A00011	11/10/2015	3.23	11/12/2030	11/10/2020	116.00373	116.0037324	116.0037324	112.5323497	107.0265002	101.9105699	97.15237167	92.72226894	88.59336072
160210A00062	2/10/2016	1.36	2/10/2021	2/10/2016	100.63443	100.6344295	100.6344295	100.2876592	99.71038159	99.1414731	98.58079976	98.0281636	97.4833733
160928A00030	9/28/2016	2.52	9/29/2036	9/28/2016	119.09019	119.0901866	118.5305172	111.063429	102.7388575	95.28874093	88.60586968	82.59751661	77.18329254
150601A00921	6/1/2015	5.55	6/30/2020	6/1/2015	101.12687	101.1268698	101.1268698	101.0020414	100.7904189	100.5800842	100.3710245	100.1632266	99.95667806
150601A00928	6/1/2015	5.94	8/21/2030	6/1/2015	130.58227	130.5822683	130.5822683	126.9956709	121.1162361	115.6388324	110.5313013	105.7638614	101.3094134
150601A00935	6/1/2015	6.46	11/21/2030	6/1/2015	138.79594	138.7959401	138.7959401	134.2656864	127.2536799	120.7547101	114.7254774	109.1263114	103.9212486
150601A00950	6/1/2015	6.76	12/18/2031	6/1/2015	144.8702	144.8702044	144.8702044	139.3335037	131.4438401	124.1794197	117.4830564	111.3029398	105.5924744
150601A00960	6/1/2015	6.49	12/16/2032	6/1/2015	140.79237	140.7923687	140.7916747	135.4567798	128.050068	121.2396258	114.9690846	109.1875579	103.849499
150601A00963	6/1/2015	4.76	12/27/2022	6/1/2015	106.73004	106.7300424	106.7300424	106.0996283	104.6111057	103.1574803	101.7390941	100.3548048	99.00351623
150601A00978	6/1/2015	6.32	11/24/2033	6/1/2015	142.58708	142.5870802	142.5456611	136.4844227	128.5450166	121.2841203	114.6336328	108.5326236	102.9269231
150601A00994	6/1/2015	5.86	6/24/2022	6/1/2015	112.94916	112.9491638	112.9491638	112.0657507	109.7086578	107.4156872	105.1851211	103.0148969	100.9030327
150601A01014	6/1/2015	4.96	9/30/2020	6/1/2015	103.165	103.1650042	103.1650042	102.7619709	102.0956222	101.4380168	100.7889832	100.148354	99.51596623
150601A01016	6/1/2015	5.73	10/28/2025	6/1/2015	128.10161	128.1016071	128.1016071	125.5581681	120.0694708	114.8822437	109.9781604	105.339812	100.9509657
150601A01021	6/1/2015	5.28	10/3/2025	6/1/2015	113.98064	113.9806408	113.9806408	112.7787885	109.8117385	106.9645493	104.2320915	101.6086835	99.08896812
150601A01048	6/1/2015	5.27	1/3/2025	6/1/2015	122.90989	122.9098945	122.9098945	120.9826029	116.2025455	111.6564427	107.3317292	103.2162604	99.29862462
150914A00032	9/14/2015	1.49	9/14/2020	9/14/2015	100.4587	100.4586985	100.4586985	100.2393962	99.8704329	99.50484405	99.14257842	98.78358594	98.42781758
150914A00040	9/14/2015	1.85	9/14/2022	9/14/2015	102.15581	102.155812	102.155812	101.5676988	100.2095457	98.88114113	97.58312751	96.31456029	95.07453205
160928A00041	9/28/2016	3.26	9/29/2036	9/30/2019	125.47118	125.4711842	124.9036348	117.1715088	108.4947108	100.722334	93.74403954	87.46434435	81.80042492
170130A00036	1/30/2017	3.11	1/31/2033	1/30/2017	118.9263	118.9263009	118.9178873	113.8220553	107.0486971	100.8447888	95.15418144	89.92684421	85.11814745
170130A00039	1/30/2017	2.74	1/31/2028	1/30/2017	110.39724	110.3972441	110.3972441	108.2119128	103.9466369	99.9211449	96.11938409	92.52650945	89.12878401
170130A00043	1/30/2017	2.64	1/29/2027	1/30/2017	108.80512	108.8051159	108.8051159	107.0537403	103.2942873	99.72417881	96.33198505	93.10705663	90.03946571
170313A00041	3/13/2017	3.21	3/15/2032	3/13/2017	117.81191	117.8119141	117.8119141	113.5186671	107.3630183	101.6887888	96.45205516	91.61297282	87.13572624
170315A00005	3/15/2017	2.1	3/15/2022	3/15/2017	102.04733	102.0473338	102.0473338	101.5274111	100.4138139	99.32086549	98.24990076	97.2002883	96.17142045
190102A00015	1/2/2019	2.97	1/3/2034	1/2/2019	120.24882	120.2488193	120.1936483	114.5917246	107.4992243	101.0354721	95.13553532	89.74156885	84.80228877
190220A00012	2/20/2019	2.76	2/19/2021	2/20/2019	101.3859	101.3858987	101.3858987	101.0545325	100.5011616	99.95561847	99.41784665	98.88766097	98.36488254
190604A00010	6/4/2019	2.45	6/4/2021	6/4/2019	101.63743	101.6374252	101.6374252	101.2285854	100.4869233	99.75487812	99.03518886	98.3275218	97.63155583
190628A00007	6/28/2019	2.28	6/28/2034	6/28/2019	115.80135	115.8013483	115.705644	109.9676286	102.8996873	96.4783494	90.63485811	85.30822668	80.44457103
110223A00003	2/23/2011	3.41	2/23/2021	2/23/2011	101.81273	101.8127348	101.8127348	101.48262	100.8977384	100.3232342	99.75984915	99.20724212	98.66508602
111007A00007	10/7/2011	3.92	10/7/2031	10/7/2011	131.40253	131.4025288	131.4025288	123.5796633	114.452433	106.1981458	98.72323865	91.94497385	85.79004588

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
120716A00025	7/16/2012	1.83	7/18/2022	7/17/2017	102.30501	102.3050079	102.3050079	101.6886794	100.2169056	98.77971381	97.37607065	96.00493325	94.66529879
120907A00026	9/7/2012	1.71	9/7/2022	9/7/2012	103.61444	103.614436	103.614436	102.7708765	100.5448055	98.38214995	96.28071784	94.2383625	92.25302793
121211A00009	12/11/2012	2.87	12/13/2032	12/11/2019	117.70698	117.7069808	117.7001926	112.4342543	105.525775	99.20487886	93.41309987	88.09839244	83.21437353
140311A00039	3/11/2014	3.06	3/11/2024	3/11/2014	108.71573	108.7157332	108.7157332	107.4989217	104.2983785	101.2259776	98.27772825	95.4477742	92.73057235
140911A00033	9/11/2014	3.02	9/13/2027	9/11/2014	113.20695	113.2069476	113.2069476	110.4679112	105.5233888	100.8821913	96.52257881	92.42456615	88.56973902
150601A00018	6/1/2015	4.91	9/5/2025	6/1/2015	124.00198	124.0019777	124.0019777	121.5657785	116.1878004	111.1031233	106.2941461	101.7441355	97.43746957
150601A00075	6/1/2015	3.53	5/12/2020	6/1/2015	100.45357	100.4535748	100.4535748	100.3709691	100.2303955	100.0904112	99.95101223	99.81219456	99.67395419
150601A00089	6/1/2015	2.56	10/27/2020	6/1/2015	100.84733	100.8473324	100.8473324	100.6248875	100.2525868	99.88413118	99.51945444	99.1584918	98.8011801
150601A00407	6/1/2015	2.06	1/22/2021	6/1/2015	100.82455	100.8245491	100.8245491	100.5443101	100.0785716	99.61885175	99.16501942	98.71694761	98.27451322
150601A00447	6/1/2015	2.02	4/28/2021	6/1/2015	101.07646	101.0764615	101.0764615	100.7185946	100.0983691	99.48562936	98.88309852	98.29049326	97.7075413
150601A00459	6/1/2015	2.42	5/16/2024	6/1/2015	104.52128	104.5212761	104.5212761	103.6778948	101.5410046	99.47322979	97.47270762	95.53668652	93.66254804
150601A00497	6/1/2015	1.95	7/1/2021	6/1/2015	101.17552	101.1755249	101.1755249	100.7874877	100.0811426	99.38414013	98.69898106	98.02534447	97.36292149
150601A00736	6/1/2015	2.87	5/1/2030	6/1/2015	112.99387	112.9938723	112.9938723	109.8991049	104.7826232	100.0131728	95.5633602	91.40778967	87.52331646
150601A00875	6/1/2015	7.14	9/29/2028	6/1/2015	134.12832	134.1283167	134.1283167	131.1272305	125.5681849	120.3435468	115.4301762	110.8062022	106.4514707
150601A00883	6/1/2015	6.21	11/30/2028	6/1/2015	129.68747	129.6874679	129.6874679	126.7084491	121.2639115	116.1517673	111.3486473	106.8325227	102.5831177
150601A00888	6/1/2015	5.92	3/1/2029	6/1/2015	129.23752	129.2375222	129.2375222	126.0867057	120.4860063	115.2381369	110.3174765	105.7000033	101.363661
150601A00915	6/1/2015	5.6	2/28/2020	6/1/2015	100.21664	100.2166368	100.2166368	100.1943323	100.1539989	100.1137278	100.0735187	100.0333715	99.9932861
150601A00922	6/1/2015	6.51	7/7/2020	6/1/2015	102.7105	102.7104996	102.7104996	102.4539578	102.0201194	101.5900168	101.1636014	100.7408259	100.3216434
150601A00927	6/1/2015	6.08	8/7/2030	6/1/2015	131.20694	131.2069384	131.2069384	127.6314137	121.7497495	116.268735	111.1564414	106.3832805	101.9223205
150601A00931	6/1/2015	7.13	9/20/2030	6/1/2015	142.54749	142.5474941	142.5474941	138.028129	130.9333616	124.3502217	118.2361394	112.5520304	107.2624165
150601A00948	6/1/2015	6.04	10/22/2031	6/1/2015	133.18021	133.1802061	133.1802061	128.8671153	122.371164	116.3583164	110.7864347	105.6170179	100.8153154
151006A00015	10/6/2015	1.31	10/6/2020	10/6/2015	100.4342	100.4342025	100.4342025	100.1903327	99.78196741	99.37774717	98.97760238	98.58146508	98.18926889
160928A00042	9/28/2016	3.05	9/29/2036	9/28/2021	123.66036	123.6603606	123.0950473	115.4381348	106.861293	99.18036836	92.28591026	86.08321756	80.49015762
190327A00030	3/27/2019	2.9	3/27/2036	3/27/2019	121.02323	121.0232309	120.6681493	113.8064437	105.8837844	98.75121091	92.3169257	86.5005987	81.23209237
190523A00038	5/23/2019	2.54	5/24/2021	5/23/2019	101.61691	101.6169067	101.6169067	101.2204141	100.5169282	99.82200928	99.13886988	98.46718294	97.8066341
191216A00013	12/16/2019	1.95	12/16/2024	12/16/2019	104.14346	104.1434556	104.1434556	103.1723143	100.7056598	98.32844611	96.0374945	93.82892887	91.69907593
160930A00033	9/30/2016	1.8	9/30/2026	9/30/2016	105.07725	105.0772525	105.0772525	103.6198306	100.3137501	97.16323697	94.16007506	91.29593972	88.56304152
170130A00046	1/30/2017	2.52	1/30/2026	1/30/2017	107.24627	107.2462689	107.2462689	105.8711108	102.617667	99.50881683	96.53678856	93.6942871	90.97446148
170306A00008	3/6/2017	1.67	3/6/2020	3/6/2017	100.12555	100.1255527	100.1255527	100.0760364	99.98742122	99.89896802	99.81067632	99.72254567	99.63457561
180123A00010	1/23/2018	2.68	1/24/2028	1/23/2018	110.46232	110.4623179	110.4623179	108.4149186	104.338312	100.4857464	96.84305693	93.39656003	90.13357753
180126A00018	1/26/2018	2.34	1/26/2023	1/26/2018	103.46456	103.4645637	103.4645637	102.8193484	101.2799286	99.77768398	98.31280008	96.88404468	95.4902359
180529A00057	5/29/2018	3.09	5/30/2028	5/29/2018	114.93604	114.9360428	114.9360428	112.0129345	106.935977	102.1856217	97.73778179	93.56989692	89.66126926
180725A00034	7/25/2018	2.79	7/25/2022	7/25/2018	103.48949	103.4894936	103.4894936	102.9168941	101.6231798	100.3564248	99.11751072	97.90559472	96.71986664

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180928A00077	9/28/2018	2.85	9/28/2021	9/28/2018	102.41649	102.4164948	102.4164948	101.9622039	101.0873582	100.2257234	99.37944882	98.54811391	97.73131386
181120A00026	11/20/2018	2.92	11/20/2020	11/20/2018	101.21986	101.2198579	101.2198579	100.945453	100.4884478	100.0366641	99.59000253	99.14836645	98.71166171
181211A00042	12/11/2018	3.7	12/11/2028	12/11/2023	123.73718	123.7371842	123.7371842	118.8006468	111.5113519	104.7854598	98.57441874	92.83417918	87.52474903
190102A00022	1/2/2019	2.97	1/3/2034	1/2/2019	120.24858	120.24858	120.1934237	114.5916132	107.4991932	101.0355078	95.13562642	89.74170564	84.80246304
190102A00024	1/2/2019	2.97	1/3/2034	1/2/2019	120.24863	120.2486288	120.1934692	114.5916353	107.499199	101.0355001	95.13560756	89.74167762	84.80242756
190520A00020	5/20/2019	2.39	5/20/2026	5/20/2019	107.36829	107.368285	107.368285	105.9959699	102.7789791	99.70684864	96.77234146	93.96797874	91.28674599
190627A00020	6/27/2019	2.28	6/25/2021	6/27/2019	101.50862	101.5086154	101.5086154	101.0989726	100.354664	99.62013767	98.89806534	98.18810974	97.48994628
191114A00012	11/14/2019	1.89	11/15/2021	11/14/2019	101.54026	101.5402579	101.5402579	101.0664896	100.1193949	99.18765184	98.27309714	97.37525291	96.49365928
191114A00014	11/14/2019	1.9	11/14/2023	11/14/2019	103.16842	103.1684173	103.1684173	102.3957697	100.4620319	98.58523785	96.76431393	94.99713817	93.28168515
191231A00021	12/31/2019	1.9	2/28/2023	12/31/2019	102.42979	102.4297941	102.4297941	101.8039186	100.3205177	98.87207917	97.45890245	96.0798429	94.73380211
190823A00009	8/23/2019	1.8	8/23/2029	8/23/2019	108.20904	108.2090408	108.2090408	105.4772878	100.7423644	96.31326592	92.16708407	88.2824111	84.63964815
191231A00027	12/31/2019	1.9	4/28/2023	12/31/2019	102.42979	102.4297898	102.4297898	101.8039111	100.3204974	98.87204686	97.45885858	96.0797879	94.73373636
160928A00033	9/28/2016	2.46	9/29/2036	9/28/2016	118.57281	118.5728084	118.0137779	110.5681793	102.2721666	94.84817933	88.18926131	82.20290896	76.80893046
160928A00044	9/28/2016	2.89	9/29/2036	9/28/2023	122.28069	122.2806854	121.717076	114.1174689	105.6167841	98.00553744	91.17495461	85.03093048	79.49185873
170515A00037	5/15/2017	1.65	5/15/2020	5/15/2017	100.27589	100.275887	100.275887	100.1602779	99.9641069	99.76883216	99.57444704	99.38094493	99.18831929
170530A00019	5/30/2017	1.58	6/1/2021	5/30/2017	101.10116	101.1011648	101.1011648	100.6932434	99.95319692	99.22275383	98.50466455	97.79859497	97.1042235
170929A00046	9/29/2017	2.49	9/30/2027	9/29/2017	108.51269	108.5126922	108.5126922	106.6407893	102.7937832	99.15018226	95.69766577	92.42421312	89.31865784
190102A00020	1/2/2019	2.97	1/3/2034	1/2/2019	120.24867	120.2486707	120.1935072	114.5916509	107.499201	101.035491	95.13558957	89.74165267	84.80239718
190618A00009	6/18/2019	2.34	6/18/2021	6/18/2019	101.55169	101.5516887	101.5516887	101.1423237	100.3989128	99.66522788	98.94396303	98.23478224	97.53736212
070518A00023	5/18/2007	5.46	5/18/2027	5/18/2007	119.84365	119.8436456	119.8436456	117.8602183	113.7713005	109.8970343	106.2242069	102.7401955	99.43327042
120123A00012	1/23/2012	3.15	1/25/2027	1/23/2017	111.45009	111.4500892	111.4500892	109.5246195	105.4882152	101.6605531	98.02886104	94.58115082	91.30626233
121217A00009	12/17/2012	2.02	12/17/2027	12/17/2012	108.4767	108.4766984	108.4766984	106.1775831	101.7671053	97.61001368	93.6890877	89.98841752	86.49329491
130128A00009	1/28/2013	2.82	1/28/2028	1/28/2013	114.72273	114.7227346	114.7227346	111.1276082	105.2311043	99.73844799	94.61830491	89.84198662	85.38321162
141126A00006	11/26/2014	2.41	11/30/2021	11/26/2014	103.80396	103.8039648	103.8039648	103.0787039	101.2853204	99.53200823	97.81763901	96.14112574	94.50141847
150601A00019	6/1/2015	5.64	10/3/2022	6/1/2015	114.04435	114.0443467	114.0443467	113.0582231	110.3951562	107.8113501	105.3042383	102.8710423	100.509105
150601A00022	6/1/2015	5.43	10/26/2037	6/1/2015	146.74905	146.7490482	145.9940521	137.1142	127.1836714	118.3026196	110.3409781	103.1861444	96.74077018
150601A00023	6/1/2015	5.46	10/30/2037	6/1/2015	155.2798	155.2797955	154.1552777	143.0557242	131.3088223	120.8896893	111.6263349	103.3707767	95.99571213
150601A00058	6/1/2015	4.46	8/16/2024	6/1/2015	109.39343	109.3934334	109.3934334	108.4737507	106.1408702	103.8866495	101.7087259	99.6038651	97.56899421
150601A00061	6/1/2015	4.25	9/30/2024	6/1/2015	109.15256	109.1525629	109.1525629	108.2113141	105.822198	103.5154748	101.2885275	99.13791049	97.06035285
150601A00071	6/1/2015	3.83	4/9/2020	6/1/2015	100.334	100.3340044	100.3340044	100.2792475	100.1844854	100.0900054	99.99580599	99.90188587	99.8082437
150601A00422	6/1/2015	2.03	2/19/2021	6/1/2015	100.88007	100.8800717	100.8800717	100.5769488	100.0707096	99.57140207	99.0789953	98.59332907	98.11424841
150601A00425	6/1/2015	2.64	2/21/2024	6/1/2015	104.72905	104.7290486	104.7290486	103.9238942	101.8954915	99.92972559	98.02515477	96.17936708	94.3900635
150601A00496	6/1/2015	2.27	6/27/2024	6/1/2015	104.72806	104.728056	104.728056	103.8595976	101.6544533	99.52245988	97.46150229	95.46861481	93.5409775

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150601A00543	6/1/2015	2.23	8/8/2024	6/1/2015	104.75896	104.7589583	104.7589583	103.8697496	101.6092538	99.42536728	97.31574943	95.27724453	93.30685436
150601A00544	6/1/2015	1.95	8/13/2021	6/1/2015	101.26865	101.2686454	101.2686454	100.8606338	100.0977875	99.34571919	98.60669957	97.8803756	97.16640737
150601A00563	6/1/2015	2.14	9/10/2021	6/1/2015	101.48802	101.4880243	101.4880243	101.065935	100.261942	99.46978581	98.69158828	97.92696987	97.17556518
150601A00624	6/1/2015	2.48	12/8/2021	6/1/2015	104.27744	104.2774388	104.2774388	103.5525011	101.7368907	99.96223858	98.2275615	96.53172609	94.87363837
150601A00732	6/1/2015	1.91	4/29/2022	6/1/2015	101.81502	101.8150228	101.8150228	101.3006613	100.178602	99.07813036	98.00039004	96.94471538	95.91046622
150601A00735	6/1/2015	2.35	5/1/2025	6/1/2015	105.33635	105.3363455	105.3363455	104.2977028	101.6822634	99.16723217	96.74864497	94.42194748	92.18283456
150601A00865	6/1/2015	6	4/3/2028	6/1/2015	123.94962	123.9496196	123.9496196	121.6853414	117.2045194	112.970468	108.9674988	105.1804368	101.5952325
150601A00871	6/1/2015	6.74	7/31/2028	6/1/2015	131.6783	131.6783047	131.6783047	128.7952066	123.3886555	118.3031674	113.5168419	109.0089378	104.7603198
150601A00893	6/1/2015	6.49	4/6/2029	6/1/2015	133.09076	133.0907645	133.0907645	129.7504212	123.8768207	118.3780829	113.2266553	108.396768	103.8647791
150601A00898	6/1/2015	6.66	6/8/2029	6/1/2015	130.47976	130.4797629	130.4797629	127.5530389	122.2827435	117.3367249	112.691724	108.325786	104.2187556
150601A00899	6/1/2015	7.07	6/14/2029	6/1/2015	131.36235	131.3623475	131.3623475	128.441646	123.1739392	118.2289553	113.5836326	109.2161818	105.1065955
150601A00918	6/1/2015	5.62	4/28/2025	6/1/2015	115.15117	115.1511717	115.1511717	113.9942713	111.0654079	108.2494798	105.5419744	102.9377761	100.4320484
150601A00919	6/1/2015	7.41	6/7/2030	6/1/2015	143.28529	143.2852917	143.2852917	138.9272766	131.9446986	125.4551261	119.4183953	113.797518	108.5588543
150601A00923	6/1/2015	7.03	7/7/2020	6/1/2015	102.93669	102.9366866	102.9366866	102.6793168	102.2440788	101.8125892	101.3847996	100.9606621	100.5401298
150601A00941	6/1/2015	6.23	3/8/2021	6/1/2015	106.48122	106.4812249	106.4812249	105.8818597	104.7977088	103.7301197	102.6849588	101.6615187	100.6591218
150601A00971	6/1/2015	6.42	6/20/2033	6/1/2015	147.40542	147.4054221	147.3815382	140.2863477	131.3163541	123.1408328	115.67885	108.8581811	102.6146291
151026A00034	10/26/2015	2.88	10/28/2030	10/26/2020	115.1032	115.1032012	115.1032012	111.657161	106.1761182	101.0830803	96.3460671	91.93563062	87.82503561
160331A00096	3/31/2016	1.32	11/30/2020	3/31/2016	100.48697	100.4869676	100.4869676	100.2122191	99.75502872	99.30312214	98.85639736	98.41475514	97.97809895
160928A00032	9/28/2016	2.52	9/29/2036	9/28/2016	119.09019	119.0901866	118.5305172	111.063429	102.7388575	95.28874093	88.60586968	82.59751661	77.18329254
170612A00024	6/12/2017	1.72	6/13/2022	6/12/2017	102.02254	102.0225356	102.0225356	101.4679859	100.2288509	99.01484388	97.82694512	96.66437543	95.52638548
170705A00029	7/5/2017	1.98	7/5/2022	7/5/2017	102.19282	102.192821	102.192821	101.6280591	100.3514915	99.10143196	97.87875451	96.68263373	95.51227591
180914A00035	9/14/2018	2.82	9/15/2020	9/14/2018	100.95474	100.9547446	100.9547446	100.7344086	100.3637327	99.99644972	99.632508	99.27185715	98.9144478
181220A00006	12/20/2018	2.93	12/20/2022	12/20/2018	103.98795	103.9879458	103.9879458	103.3549971	101.8566906	100.3935934	98.96602458	97.57283292	96.21291363
190111A00047	1/11/2019	2.8	1/11/2021	1/11/2019	101.3699	101.3698989	101.3698989	101.0438944	100.5051922	99.97376818	99.44945889	98.9321061	98.42155648
200130A00027	1/31/2020	1.79	1/31/2025	1/31/2020	103.8035	103.8034992	103.8034992	102.8172609	100.3160338	97.90689793	95.58648129	93.35074504	91.19586414
970806A00018	8/1/1997	6.7	10/23/2026	8/1/1997	122.34292	122.3429241	122.3429241	120.6933324	116.953955	113.3888442	109.9888949	106.7447979	103.6478433
081219A00006	12/19/2008	3.88	12/22/2023	12/19/2008	114.81181	114.8118133	114.8118133	113.3146723	109.2941746	105.4410169	101.7475021	98.20617978	94.80998604
100218A00013	2/18/2010	4.57	3/2/2020	2/18/2010	100.37126	100.3712572	100.3712572	100.3233261	100.2372701	100.1513642	100.065608	99.98000101	99.89454294
120419A00009	4/19/2012	2.76	4/19/2022	4/19/2012	105.51728	105.5172774	105.5172774	104.6934393	102.4777803	100.3198865	98.21789916	96.1699675	94.17431796
130211A00016	2/11/2013	2.27	2/15/2023	2/11/2013	106.06337	106.0633712	106.0633712	104.9549667	101.9324162	99.01285119	96.19227349	93.46677851	90.83263903
130501A00021	5/1/2013	2.27	5/1/2023	5/1/2013	106.46996	106.469958	106.469958	105.2848872	102.0551685	98.94137676	95.93869892	93.04250929	90.2484061
140701A00054	7/2/2014	2.65	7/2/2020	7/2/2014	101.02004	101.0200394	101.0200394	100.7702667	100.3478051	99.92887857	99.51344296	99.1014548	98.69287134
141218A00039	12/18/2014	2.29	12/18/2020	12/18/2014	101.80776	101.807755	101.807755	101.2626414	100.3802138	99.51313315	98.66100152	97.82343463	97.00006126

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150112A00019	1/12/2015	1.72	2/14/2020	1/12/2015	100.05561	100.0556063	100.0556063	100.034164	99.99537833	99.95663783	99.91794243	99.87929204	99.84068659
150115A00021	1/17/2017	2.26	1/18/2022	1/17/2017	103.90576	103.9057559	103.9057559	103.1493826	101.1998902	99.29698268	97.43935171	95.62564504	93.85456
150204A00016	2/6/2017	2.04	2/6/2020	2/6/2017	100.02934	100.0293356	100.0293356	100.0201414	100.0035078	99.98688988	99.97028766	99.9537011	99.93713018
150601A00356	6/1/2015	3.66	9/22/2023	6/1/2015	112.16543	112.1654277	112.1654277	110.792903	107.0853572	103.5235564	100.1010585	96.81163151	93.64935986
150731A00040	7/31/2015	2.01	7/31/2020	7/31/2015	100.89045	100.8904526	100.8904526	100.5938073	100.0926489	99.59646574	99.10518428	98.61873224	98.13703877
150824A00118	8/24/2015	1.65	8/24/2020	8/24/2015	100.87596	100.8759557	100.8759557	100.5373574	99.9701986	99.40942766	98.85493705	98.30662163	97.76437859
150909A00003	9/9/2015	3.11	9/9/2025	9/9/2015	115.81355	115.8135535	115.8135535	113.1814818	107.5070669	102.1569036	97.11081333	92.34987971	87.85646161
151030A00022	10/30/2015	1.8	10/30/2020	10/30/2015	101.16935	101.1693459	101.1693459	100.7145474	99.96638667	99.22929795	98.50303701	97.78736679	97.08205707
160125A00022	1/25/2016	1.74	5/5/2020	1/25/2016	100.3931	100.3931011	100.3931011	100.2366556	99.97431174	99.71334369	99.45374064	99.19549189	98.93858684
160210A00036	2/10/2016	1.77	2/10/2023	2/10/2016	105.0641	105.0641039	105.0641039	103.9617246	100.9558045	98.05237984	95.24745567	92.53714907	89.9177533
160211A00086	2/16/2016	2.8	2/16/2022	2/16/2016	105.17899	105.1789936	105.1789936	104.4001865	102.3569313	100.3639556	98.41980453	96.52296767	94.67199234
160216A00040	2/16/2016	1.49	2/16/2021	2/16/2016	101.45412	101.4541192	101.4541192	100.8542301	99.8117445	98.78927887	97.78765591	96.80624355	95.84443502
160216A00051	2/16/2016	1.49	2/16/2021	2/16/2016	101.45412	101.4541192	101.4541192	100.8542301	99.8117445	98.78927887	97.78765591	96.80624355	95.84443502
160303A00020	3/3/2016	2.97	3/3/2031	3/3/2016	131.85641	131.8564115	131.8564115	121.5987651	110.4408168	100.4420897	91.4748698	83.42608677	76.19564624
130206A00011	2/6/2013	1.56	2/18/2020	2/6/2013	100.07177	100.0717739	100.0717739	100.0441645	99.99422842	99.94435686	99.89454963	99.84480662	99.7951277
130211A00014	2/11/2013	1.61	2/18/2020	2/11/2013	100.06651	100.0665126	100.0665126	100.0389454	99.98908503	99.93928832	99.88955513	99.83988532	99.79027879
130211A00026	2/11/2013	2.27	2/15/2023	2/11/2013	106.06337	106.0633712	106.0633712	104.9549667	101.9324162	99.01285119	96.19227349	93.46677851	90.83263903
130716A00006	7/16/2013	2.81	7/30/2020	7/16/2013	101.28748	101.2874759	101.2874759	100.9917706	100.4921784	99.9975181	99.50771696	99.02270371	98.54240846
140314A00003	3/14/2014	3.32	3/14/2024	3/14/2014	112.55428	112.5542829	112.5542829	110.9889771	106.8092225	102.8122411	98.9891456	95.3314222	91.83102208
140930A00104	9/30/2016	3.23	9/30/2021	9/30/2016	104.95904	104.9590424	104.9590424	104.2527626	102.5850314	100.9518976	99.35243968	97.78567873	96.25067384
150211A00004	2/11/2015	1.94	2/18/2020	2/11/2015	100.08301	100.0830087	100.0830087	100.0554336	100.0055591	99.95574825	99.90600094	99.85631704	99.80669643
150601A00406	6/1/2015	3.71	1/17/2024	6/1/2015	113.42733	113.4273283	113.4273283	111.9174939	107.875218	104.003842	100.2953693	96.7420808	93.33666451
150601A00682	6/1/2015	2.3	2/9/2022	6/1/2015	104.03624	104.0362418	104.0362418	103.2663194	101.25537	99.29367929	97.37981554	95.51231038	93.68975101
150601A00775	6/1/2015	2.28	11/12/2021	6/1/2015	103.51579	103.5157893	103.5157893	102.7972596	101.0280403	99.29757782	97.60478552	95.94855912	94.32783653
150601A00791	6/1/2015	2.42	5/20/2022	6/1/2015	104.85453	104.8545308	104.8545308	104.0092204	101.7189869	99.49040797	97.3215282	95.21039106	93.1551174
150619A00028	6/19/2015	2.54	6/20/2022	6/19/2015	105.40848	105.4084824	105.4084824	104.5348982	102.1556327	99.84247408	97.59332288	95.40605959	93.27864725
150714A00061	7/14/2015	2.09	7/14/2020	7/14/2015	100.84371	100.8437116	100.8437116	100.5747176	100.1199746	99.66934614	99.2227764	98.78021061	98.34159498
150715A00017	7/15/2015	2.14	7/15/2020	7/15/2015	100.87188	100.8718781	100.8718781	100.6012162	100.1436717	99.69029161	99.24101922	98.79579873	98.35457538
150824A00031	8/24/2015	1.93	2/25/2021	8/24/2015	101.79236	101.7923589	101.7923589	101.1926076	100.1271877	99.0818969	98.05834174	97.05584991	96.07377658
151215A00027	12/15/2015	2.09	12/15/2020	12/15/2015	101.6139	101.6138996	101.6138996	101.0746793	100.20122	99.3428187	98.49908843	97.66965529	96.85415807
160201A00024	2/1/2016	2.16	2/1/2023	2/1/2016	105.65465	105.6546528	105.6546528	104.5602008	101.5841706	98.70861336	95.92966963	93.24356682	90.64670163
160210A00003	2/10/2016	1.63	2/10/2021	2/10/2016	101.41181	101.4118101	101.4118101	100.8135037	99.78928483	98.784895	97.80063214	96.83589604	95.89011018
160210A00021	2/10/2016	1.97	2/10/2023	2/10/2016	105.11919	105.1191878	105.1191878	104.020817	101.0269963	98.13496395	95.34077079	92.64056955	90.03068696

Classification | Public

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160211A00091	2/16/2016	3.55	2/16/2023	2/16/2016	110.00399	110.0039874	110.0039874	108.8697595	105.7842539	102.8033772	99.92312411	97.13953189	94.44881758
160217A00004	2/17/2016	1.54	2/17/2021	2/17/2016	101.51105	101.5110534	101.5110534	100.9109619	99.86554427	98.84016921	97.83574685	96.85164024	95.887238
061013A00024	10/13/2006	5.53	10/15/2021	10/13/2006	109.05124	109.0512449	109.0512449	108.319535	106.5759238	104.8689332	103.1976488	101.5610123	99.95800785
110609A00010	6/9/2011	3.83	6/9/2021	6/9/2011	104.87594	104.8759352	104.8759352	104.2540743	102.8922501	101.5535958	100.2387087	98.94700971	97.67793772
110706A00009	7/6/2011	3.93	7/6/2021	7/6/2011	105.27127	105.2712744	105.2712744	104.6205878	103.1818333	101.7698802	100.3842023	99.02412908	97.68901248
130205A00004	2/5/2013	1.76	2/18/2020	2/5/2013	100.07401	100.0740108	100.0740108	100.04644	99.99657324	99.94677011	99.8970305	99.84735428	99.79774135
140605A00058	6/6/2016	3.29	6/7/2021	6/6/2016	104.11828	104.1182789	104.1182789	103.5014441	102.1505495	100.8224729	99.51789642	98.23624947	96.97697949
140811A00047	8/11/2016	3.13	8/11/2021	8/11/2016	104.39749	104.3974932	104.3974932	103.7185519	102.1912082	100.6939435	99.2260647	97.7867767	96.37531279
140814A00004	8/14/2014	2.25	8/14/2020	8/14/2014	101.08427	101.0842688	101.0842688	100.7631229	100.2233964	99.68944975	99.16119044	98.63852779	98.12137306
150211A00005	2/11/2015	2.35	2/15/2022	2/11/2015	104.24263	104.242626	104.242626	103.4689378	101.4383775	99.45780641	97.52576158	95.64074304	93.80130808
150601A00188	6/1/2015	2.06	8/24/2021	6/1/2015	102.75701	102.7570066	102.7570066	102.0771166	100.5284603	99.01073667	97.52316501	96.06491443	94.63518415
150601A00334	6/1/2015	3.33	8/9/2022	6/1/2015	107.60691	107.6069126	107.6069126	106.6762171	104.1378213	101.6733154	99.28024255	96.95611562	94.69854998
150601A00718	6/1/2015	1.66	4/6/2020	6/1/2015	100.2534	100.2534011	100.2534011	100.1460841	99.96361782	99.78182278	99.60069519	99.42023136	99.24042762
150709A00014	7/9/2015	1.91	6/25/2020	7/9/2015	100.67345	100.6734535	100.6734535	100.4353368	100.0328463	99.63357787	99.23749307	98.8445539	98.45472299
150710A00025	7/10/2015	2.07	7/10/2020	7/10/2015	100.81427	100.8142661	100.8142661	100.5518106	100.1080488	99.66820467	99.23222644	98.80006317	98.37166484
151002A00011	10/2/2015	1.65	10/2/2020	10/2/2015	100.94718	100.9471761	100.9471761	100.5405061	99.86865273	99.20574439	98.5516035	97.9060571	97.26893678
151002A00038	10/2/2015	2.81	10/2/2025	10/2/2015	114.27886	114.2788569	114.2788569	111.5984955	105.9069302	100.5444872	95.49042653	90.72536131	86.23122556
151002A00091	10/2/2015	1.65	10/2/2020	10/2/2015	100.94718	100.9471761	100.9471761	100.5405061	99.86865273	99.20574439	98.5516035	97.9060571	97.26893678
151211A00037	12/11/2017	2.69	1/11/2023	12/11/2017	107.12358	107.1235773	107.1235773	106.0431763	103.0997118	100.2536342	97.5013008	94.83912124	92.26366293
160208A00024	2/8/2016	1.64	2/8/2021	2/8/2016	101.41482	101.4148171	101.4148171	100.8165201	99.7974902	98.79825608	97.81894091	96.85895381	95.91772708
160209A00010	2/9/2016	1.57	2/9/2021	2/9/2016	101.34572	101.3457247	101.3457247	100.7476477	99.72639722	98.72495381	97.74352814	96.78152482	95.83837184
160211A00093	2/16/2016	2.62	2/16/2021	2/16/2016	102.48274	102.4827404	102.4827404	101.8807642	100.8349064	99.8090665	98.80406564	97.81927336	96.85408446
160225A00023	2/25/2016	1.66	2/25/2021	2/25/2016	101.49958	101.4995841	101.4995841	100.9008378	99.83710002	98.79346714	97.77154585	96.77066443	95.7901786
110706A00010	7/6/2011	3.93	7/6/2021	7/6/2011	105.27127	105.2712744	105.2712744	104.6205878	103.1818333	101.7698802	100.3842023	99.02412908	97.68901248
110927A00009	9/27/2011	3.07	9/27/2021	9/27/2011	104.66645	104.6664479	104.6664479	103.962725	102.305733	100.683013	99.09365299	97.53668728	96.01118733
111024A00013	10/24/2011	3.24	10/25/2021	10/24/2011	105.18035	105.180352	105.180352	104.4615062	102.7254188	101.0264232	99.36347546	97.73549184	96.14143248
140625A00021	6/27/2016	3.2	6/25/2021	6/27/2016	104.1264	104.1264042	104.1264042	103.4914483	102.0908548	100.7156419	99.36554124	98.03992421	96.73818271
140923A00069	9/23/2014	2.63	9/23/2021	9/23/2014	103.903	103.9029974	103.9029974	103.2043284	101.5648151	99.95909266	98.38625523	96.84535596	95.33548428
150115A00022	1/17/2017	2.56	1/16/2024	1/17/2017	109.03951	109.0395078	109.0395078	107.5650033	103.6114254	99.82590327	96.20051451	92.7276548	89.4001209
150601A00246	6/1/2015	2	12/9/2022	6/1/2015	105.35702	105.357016	105.357016	104.3196624	101.4753342	98.72295295	96.05914421	93.48060016	90.98415441
150601A00677	6/1/2015	2.39	1/30/2025	6/1/2015	111.3086	111.3085962	111.3085962	109.2489438	104.2311476	99.47503548	94.96568723	90.68902077	86.63182948
150601A00683	6/1/2015	1.91	2/7/2020	6/1/2015	100.03089	100.0308878	100.0308878	100.020164	100.0007635	99.98138182	99.96201895	99.94267486	99.92334953
150601A00713	6/1/2015	2.2	4/1/2022	6/1/2015	104.0973	104.0972964	104.0972964	103.2937609	101.1427181	99.04686617	97.00445202	95.01374054	93.07306723

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
150821A00008	8/21/2015	1.83	8/21/2020	8/21/2015	100.89201	100.8920141	100.8920141	100.5591035	100.0009239	99.44893226	98.90302594	98.36310466	97.82907031
150929A00031	9/29/2015	1.81	9/29/2020	9/29/2015	101.04302	101.0430184	101.0430184	100.6413013	99.97717747	99.32178591	98.67495541	98.0365192	97.40631482
151002A00053	10/2/2017	2.17	10/4/2021	10/2/2017	103.19425	103.1942462	103.1942462	102.4940099	100.8309165	99.20257747	97.60801423	96.04623899	94.51630253
151027A00021	10/27/2015	2.02	10/27/2021	10/27/2015	103.05045	103.0504548	103.0504548	102.3404075	100.6180972	98.93278082	97.2833624	95.66875914	94.08793217
160210A00050	2/10/2016	1.64	2/10/2021	2/10/2016	101.42224	101.4222382	101.4222382	100.823897	99.79962035	98.79517348	97.81085438	96.84606283	95.90022227
160211A00034	2/11/2016	1.82	2/10/2023	2/11/2016	104.6605	104.6605021	104.6605021	103.5650314	100.578167	97.69292104	94.90534398	92.21159415	89.60800374
160212A00014	2/12/2016	1.61	2/12/2021	2/12/2016	101.39821	101.3982088	101.3982088	100.7999288	99.77058105	98.76109531	97.77194422	96.80251823	95.85223198
160711A00016	7/11/2016	1.42	7/12/2021	7/11/2016	101.65868	101.6586765	101.6586765	101.01681	99.58942381	98.18906692	96.81509599	95.46683116	94.14361546
161031A00027	10/31/2016	1.51	10/30/2020	10/31/2016	100.94967	100.949668	100.949668	100.4954151	99.74816728	99.01198188	98.28661489	97.57182939	96.86739534
161115A00021	11/15/2016	2.02	11/15/2021	11/15/2016	103.12324	103.1232406	103.1232406	102.4053819	100.6316836	98.89701445	97.20028477	95.54039117	93.9162716
170214A00047	2/14/2017	1.81	2/14/2020	2/14/2017	100.05911	100.0591054	100.0591054	100.0376615	99.9988728	99.9601293	99.92143091	99.88277753	99.84416908
130211A00035	2/11/2013	2.27	2/15/2023	2/11/2013	106.06337	106.0633712	106.0633712	104.9549667	101.9324162	99.01285119	96.19227349	93.46677851	90.83263903
130211A00040	2/11/2013	1.61	2/18/2020	2/11/2013	100.06651	100.0665126	100.0665126	100.0389454	99.98908503	99.93928832	99.88955513	99.83988532	99.79027879
130213A00038	2/13/2013	1.67	2/18/2020	2/13/2013	100.06951	100.0695119	100.0695119	100.0419432	99.99208031	99.94228104	99.89254527	99.84287291	99.79326381
130827A00012	8/27/2013	3.66	7/31/2023	8/27/2013	111.86868	111.8686784	111.8686784	110.5522256	106.9926099	103.5686602	100.2746082	97.10482233	94.05394657
130827A00014	8/27/2013	2.73	8/31/2020	8/27/2013	101.5445	101.5444983	101.5444983	101.192478	100.604079	100.0225088	99.44764897	98.87938407	98.31760111
140626A00028	6/27/2016	2.99	6/29/2020	6/27/2016	101.1416	101.1415955	101.1415955	100.8964754	100.481903	100.0707295	99.66291346	99.25841386	98.85719045
141002A00030	10/2/2014	2.33	10/2/2020	10/2/2014	101.4095	101.4094973	101.4094973	101.0017873	100.3281875	99.66354917	99.00769459	98.36045052	97.72164828
150120A00025	1/20/2015	2.54	1/21/2025	1/20/2015	111.18997	111.1899667	111.1899667	109.1624722	104.2011282	99.49647878	95.03400487	90.79998819	86.78155697
150601A00998	6/1/2015	5.37	10/25/2034	6/1/2015	172.85444	172.8544398	170.905672	153.593819	137.3801971	123.229313	110.8591237	100.0279116	90.52836347
150630A00119	6/30/2015	2.05	6/30/2020	6/30/2015	100.75517	100.7551701	100.7551701	100.5090399	100.0927042	99.67980443	99.27029839	98.86414445	98.46130167
150814A00024	8/14/2015	2.04	8/14/2020	8/14/2015	100.97003	100.9700289	100.9700289	100.6490942	100.1097248	99.57613248	99.04822479	98.52591108	98.00910264
151013A00007	10/13/2015	1.75	10/13/2020	10/13/2015	101.06086	101.0608556	101.0608556	100.6352172	99.9332726	99.24109648	98.55848587	97.88524339	97.22117707
151030A00001	10/30/2015	1.9	10/30/2020	10/30/2015	101.2451	101.245097	101.245097	100.7901102	100.0416347	99.30423452	98.57766533	97.86169002	97.15607835
151211A00040	12/11/2017	2.7	2/13/2023	12/11/2017	107.3711	107.3710954	107.3710954	106.2560321	103.2193606	100.2858216	97.45143819	94.712308	92.06470538
160209A00007	2/9/2016	1.53	2/9/2021	2/9/2016	101.30412	101.304123	101.304123	100.7061844	99.68516408	98.68394764	97.70274579	96.74096318	95.79802789
160209A00049	2/9/2016	1.92	2/9/2023	2/9/2016	104.96189	104.9618934	104.9618934	103.8653256	100.8767589	97.9897539	95.20037123	92.50477459	89.89930112
160210A00053	2/10/2016	1.99	2/10/2023	2/10/2016	105.18035	105.1803458	105.1803458	104.0815884	101.0868402	98.193903	95.3988277	92.69776627	90.08704472
160222A00019	2/22/2016	3.09	2/21/2031	2/22/2016	130.70458	130.7045786	130.7045786	120.6766887	109.7156455	99.88623807	91.06444942	83.14039964	76.0167592
160309A00015	3/9/2016	1.84	3/9/2021	3/9/2016	101.74666	101.7466597	101.7466597	101.1469348	100.0546041	98.97852001	97.92548735	96.89477158	95.88566907
160315A00003	3/15/2016	1.88	3/15/2021	3/15/2016	101.81809	101.8180909	101.8180909	101.2180504	100.1123849	99.02035407	97.95205368	96.90671662	95.88360854
160404A00040	4/4/2016	1.65	4/5/2021	4/4/2016	101.6254	101.6254007	101.6254007	101.0259386	99.87498756	98.73009619	97.61131715	96.51776539	95.4485954
160316A00009	3/16/2016	1.95	3/16/2021	3/16/2016	101.89079	101.8907876	101.8907876	101.290565	100.1824767	99.08758919	98.01654514	96.96857204	95.94293051

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160331A00056	3/31/2016	2.09	3/30/2023	3/31/2016	105.7223	105.7222994	105.7222994	104.573432	101.4409712	98.41849556	95.50155215	92.68584638	89.96728624
161017A00015	10/17/2016	1.68	10/18/2021	10/17/2016	102.41751	102.4175132	102.4175132	101.7144209	100.0213498	98.36429389	96.74218992	95.15399567	93.59871063
161031A00028	10/31/2016	1.51	10/30/2020	10/31/2016	100.94967	100.949668	100.949668	100.4954151	99.74816728	99.01198188	98.28661489	97.57182939	96.86739534
170214A00045	2/14/2017	1.81	2/14/2020	2/14/2017	100.05911	100.0591054	100.0591054	100.0376615	99.9988728	99.9601293	99.92143091	99.88277753	99.84416908
170404A00002	4/4/2017	2.42	4/4/2023	4/4/2017	106.80418	106.804182	106.804182	105.6432853	102.4804008	99.42880068	96.48397422	93.64156279	90.89741425
170405A00031	4/5/2017	2.22	4/4/2022	4/5/2017	104.2285	104.2285033	104.2285033	103.4221475	101.2615704	99.15658598	97.10542256	95.10632671	93.15761663
170519A00019	5/19/2017	2	11/19/2021	5/19/2017	103.12404	103.1240432	103.1240432	102.4045275	100.6196967	98.87435016	97.16740336	95.49775095	93.8643281
170622A00044	6/22/2017	2.38	6/21/2024	6/22/2017	109.17216	109.1721642	109.1721642	107.510703	103.1435339	98.97923363	95.00743857	91.2182779	87.60243634
170918A00051	12/18/2017	2.24	12/19/2022	12/18/2017	105.66122	105.6612215	105.6612215	104.6151408	101.7525149	98.98292486	96.30294559	93.7092105	91.19849795
171110A00006	11/10/2017	2.11	11/10/2020	11/10/2017	101.4606	101.4605998	101.4605998	100.9850342	100.2060681	99.43909145	98.68382894	97.94001362	97.20738662
171219A00032	12/19/2017	2.42	12/20/2021	12/19/2017	104.05334	104.0533435	104.0533435	103.31442	101.4391512	99.60700427	97.81683036	96.06742319	94.35761889
180124A00073	1/24/2018	2.46	1/25/2021	1/24/2018	102.18115	102.1811493	102.1811493	101.5865121	100.6002822	99.63315873	98.68459037	97.75404689	96.8410181
180201A00022	2/1/2018	2.99	2/3/2025	2/1/2018	113.53886	113.5388603	113.5388603	111.463654	106.4113266	101.6212668	97.07858089	92.76918743	88.67987886
180205A00047	2/5/2018	2.56	2/5/2021	2/5/2018	102.35033	102.3503336	102.3503336	101.748981	100.7326371	99.73611083	98.75926191	97.80151173	96.86230418
180518A00046	5/25/2018	3.62	5/18/2027	5/25/2018	124.24663	124.2466253	124.2466253	119.5113384	112.0245529	105.0733937	98.61659511	92.61618336	87.03729396
180628A00020	6/28/2018	2.79	6/29/2020	6/28/2018	101.05831	101.0583144	101.0583144	100.8133165	100.3989513	99.98798375	99.58037241	99.17607631	98.77505517
180821A00029	8/21/2018	3.01	8/21/2023	8/21/2018	109.73228	109.7322831	109.7322831	108.4090669	104.8313942	101.3921165	98.08523481	94.90493231	91.84568084
190315A00039	3/15/2019	2.64	9/15/2021	3/15/2019	103.86768	103.8676817	103.8676817	103.1724907	101.5551724	99.97088226	98.41875764	96.89788306	95.40737764
190318A00017	3/19/2019	2.7	3/18/2022	3/19/2019	105.17065	105.1706487	105.1706487	104.3723997	102.246565	100.1744924	98.1545371	96.18503274	94.26437929
190322A00024	3/22/2019	2.55	3/22/2021	3/22/2019	102.61062	102.610616	102.610616	102.0077489	100.8823837	99.76766782	98.67753943	97.61119152	96.56785202
160218A00014	2/18/2016	1.57	2/18/2021	2/18/2016	101.54695	101.5469463	101.5469463	100.946723	99.8984913	98.87032317	97.86321627	96.87652877	95.90964471
160307A00029	3/7/2016	3.21	3/7/2031	3/7/2016	132.13665	132.1366491	132.1366491	121.9953344	110.9304303	101.009358	92.10650064	84.11060687	76.92316135
161123A00035	11/23/2016	2.16	11/23/2021	11/23/2016	103.41796	103.4179632	103.4179632	102.695653	100.8976105	99.13952784	97.42033269	95.73891716	94.09421301
161125A00002	11/25/2016	2.62	11/27/2023	11/25/2016	108.95937	108.9593706	108.9593706	107.5420285	103.7186303	100.0526176	96.53680026	93.16426035	89.92843426
170727A00020	7/27/2017	1.94	7/27/2021	7/27/2017	102.48849	102.4884854	102.4884854	101.8283103	100.3555773	98.91144931	97.49524395	96.10622302	94.74367387
170814A00034	8/14/2017	2.1	8/15/2022	8/14/2017	104.62699	104.6269872	104.6269872	103.7075073	101.1914503	98.74925383	96.37839589	94.07637685	91.8408008
170822A00023	8/23/2017	3.95	8/23/2028	8/23/2017	131.23486	131.2348589	131.2348589	124.892516	116.0009234	107.8373833	100.337946	93.44448122	87.10424837
171219A00022	12/19/2017	2.26	12/18/2020	12/19/2017	101.78096	101.7809568	101.7809568	101.2359211	100.3536228	99.48666987	98.63466439	97.79722213	96.97397192
171228A00023	12/28/2017	2.69	3/29/2024	12/28/2017	110.03756	110.0375642	110.0375642	108.4743897	104.3069783	100.3239216	96.51612619	92.87492706	89.39213735
171228A00024	12/28/2017	2.71	6/28/2024	12/28/2017	110.67746	110.6774595	110.6774595	108.9940786	104.5759291	100.3634201	96.34602636	92.51371314	88.85701258
180118A00008	1/18/2018	2.44	1/19/2021	1/18/2018	102.12513	102.1251312	102.1251312	101.5367551	100.5669425	99.61561925	98.68226027	97.76636007	96.86743198
180123A00067	1/23/2018	2.67	1/23/2023	1/23/2018	107.14268	107.1426799	107.1426799	106.0486783	103.0738498	100.1984825	97.41881098	94.73113061	92.13190159
180130A00062	1/30/2018	2.51	2/1/2021	1/30/2018	102.27441	102.2744063	102.2744063	101.6733688	100.6679065	99.68219128	98.71573285	97.76797118	96.83836773

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					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	107.73581	107.735809	107.735809	106.6803179	103.7954851	101.0039001	98.3021717	95.68693641	93.15497501
180328A00042	3/28/2018	2.95	3/28/2023	3/28/2018	108.45105	108.4510529	108.4510529	107.2865617	104.1162498	101.0566801	98.10341776	95.25215012	92.49876727
180625A00012	6/25/2018	3.07	6/23/2023	6/25/2018	109.49686	109.4968601	109.4968601	108.2370262	104.8179302	101.5259114	98.3557018	95.30216252	92.3603986
180726A00044	7/26/2018	2.94	7/27/2020	7/26/2018	101.33033	101.3303341	101.3303341	101.0394288	100.54789	100.0611293	99.57907739	99.10166611	98.62882868
181016A00019	10/18/2018	3.32	10/16/2023	10/18/2018	111.30923	111.3092276	111.3092276	109.9179379	106.1621751	102.5564371	99.09395498	95.76821889	92.57305513
181023A00042	10/23/2018	3.09	10/23/2020	10/23/2018	102.09145	102.0914524	102.0914524	101.6463111	100.9132417	100.1907428	99.47858681	98.77655267	98.08442552
181203A00039	12/3/2018	3.27	12/1/2023	12/3/2018	111.49785	111.4978479	111.4978479	110.0571196	106.1749686	102.4524737	98.88237593	95.45766031	92.17167014
190311A00030	3/11/2019	2.68	3/11/2021	3/11/2019	102.69877	102.6987656	102.6987656	102.0956687	100.9933907	99.90656526	98.84309837	97.80224265	96.78328232
100216A00010	2/16/2010	4.22	3/2/2020	2/16/2010	100.35269	100.3526866	100.3526866	100.3047022	100.2185516	100.1325524	100.0467041	99.9610064	99.87545887
111213A00004	12/13/2011	2.96	12/13/2021	12/13/2011	105.03218	105.0321769	105.0321769	104.2924372	102.4260947	100.6022248	98.81973032	97.07743302	95.37419554
140605A00056	6/6/2016	3.07	6/8/2020	6/6/2016	101.01059	101.0105873	101.0105873	100.798897	100.4421153	100.0878637	99.73611551	99.38684407	99.04002325
150316A00005	3/16/2015	1.94	3/16/2020	3/16/2015	100.2121	100.2121029	100.2121029	100.1404826	100.0159025	99.89164766	99.76771685	99.64410876	99.52082209
150601A00332	6/1/2015	2.72	8/7/2020	6/1/2015	101.27385	101.2738533	101.2738533	100.9644282	100.4430874	99.92712791	99.4164666	98.91102211	98.41071471
150601A00625	6/1/2015	3.96	12/9/2044	6/1/2015	187.30022	187.3002177	172.7041619	144.5824791	121.4383832	102.8565573	87.87162319	75.73039606	65.84406666
150601A00656	6/1/2015	2.59	12/17/2021	6/1/2015	104.28478	104.2847758	104.2847758	103.5463792	101.6766942	99.84982322	98.06463643	96.31994047	94.61458378
150630A00097	6/30/2015	3.05	7/1/2024	6/30/2015	112.21002	112.2100191	112.2100191	110.5094768	106.0502119	101.7984209	97.74349039	93.87528873	90.18425735
150706A00019	7/6/2015	1.93	7/6/2020	7/6/2015	100.73297	100.7329653	100.7329653	100.4771276	100.0444835	99.61556161	99.19031417	98.76869402	98.35065486
150731A00016	7/31/2015	3.04	7/31/2025	7/31/2015	115.11988	115.1198774	115.1198774	112.6079531	107.053916	101.812447	96.86440286	92.19179837	87.7778419
150824A00043	8/24/2015	1.82	8/24/2020	8/24/2015	100.89385	100.8938464	100.8938464	100.5557982	99.98954838	99.42966306	98.8760354	98.32856087	97.78713729
150824A00046	8/24/2015	1.82	8/24/2020	8/24/2015	100.89385	100.8938464	100.8938464	100.5557982	99.98954838	99.42966306	98.8760354	98.32856087	97.78713729
150930A00059	9/30/2015	1.78	9/30/2020	9/30/2015	101.02709	101.0270873	101.0270873	100.6236409	99.95688199	99.29892379	98.64959315	98.00872141	97.37614427
151008A00025	10/8/2015	2.91	10/8/2025	10/8/2015	114.89176	114.8917596	114.8917596	112.1865653	106.4631776	101.0713028	95.99000725	91.19972636	86.68223184
151013A00012	10/13/2015	1.58	10/13/2020	10/13/2015	101.03871	101.0387135	101.0387135	100.6123489	99.90922787	99.21590985	98.53219076	97.85787215	97.19276101
151214A00051	12/14/2015	2.92	12/15/2025	12/14/2015	115.43415	115.4341465	115.4341465	112.5162935	106.6073273	101.0504273	95.82288504	90.90346317	86.27239729
160208A00004	2/8/2016	1.46	2/8/2021	2/8/2016	101.39276	101.3927643	101.3927643	100.7931587	99.77190068	98.77051914	97.78913601	96.82715709	95.8840115
160210A00041	2/10/2016	1.97	2/10/2023	2/10/2016	105.11919	105.1191878	105.1191878	104.020817	101.0269963	98.13496395	95.3407708	92.64056955	90.03068696
160210A00052	2/10/2016	1.64	2/10/2021	2/10/2016	101.42224	101.4222382	101.4222382	100.823897	99.79962035	98.79517348	97.81085438	96.84606283	95.90022227
160211A00056	2/11/2016	1.82	2/10/2023	2/11/2016	104.6605	104.6605021	104.6605021	103.5650314	100.578167	97.69292104	94.90534398	92.21159415	89.60800374
160212A00017	2/12/2016	1.57	2/12/2021	2/12/2016	101.35627	101.3562748	101.3562748	100.7581351	99.72902113	98.71976587	97.73084201	96.7616401	95.81157482
160405A00012	4/5/2016	1.43	4/3/2020	4/5/2016	100.20816	100.2081608	100.2081608	100.1059901	99.93181883	99.75825551	99.58529697	99.41294005	99.24118162
160516A00008	5/16/2016	1.42	5/18/2020	5/16/2016	100.3512	100.3511952	100.3511952	100.1738867	99.87599331	99.57988024	99.2855315	98.99293128	98.70206395
160627A00021	6/27/2016	1.24	6/25/2020	6/27/2016	100.4019	100.4018983	100.4018983	100.1641727	99.76234529	99.36373611	98.96830665	98.57601899	98.18683579
160711A00022	1/10/2018	1.91	1/10/2025	1/10/2018	107.98661	107.9866064	107.9866064	106.0112708	101.1550161	96.54973116	92.18124924	88.03620311	84.10204651

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
160712A00019	7/12/2017	2.32	7/12/2027	7/12/2017	115.03665	115.0366497	115.0366497	110.2841565	102.9888756	96.2322003	89.97160415	84.16804292	78.78573348
160729A00017	7/31/2017	2.47	7/31/2029	7/31/2017	120.54887	120.5488698	120.5488698	113.2702206	104.0306301	95.63396428	87.99859939	81.05113363	74.72560215
161005A00007	10/5/2016	1.51	10/5/2020	10/5/2016	100.86246	100.8624574	100.8624574	100.4508784	99.77126043	99.10080609	98.43933108	97.78665595	97.14260602
161221A00053	12/23/2016	3.05	12/23/2021	12/23/2016	105.27839	105.2783939	105.2783939	104.5319791	102.6369678	100.7856246	98.97680626	97.20928615	95.48188111
170202A00009	2/2/2017	1.78	2/3/2020	2/2/2017	100.01259	100.0125879	100.0125879	100.0079911	99.99967441	99.99136488	99.98306252	99.97476731	99.96647924
170428A00027	4/28/2017	1.78	4/28/2020	4/28/2017	100.37381	100.3738145	100.3738145	100.2288454	99.98573861	99.74380896	99.5030479	99.26344702	99.02499798
170628A00044	10/9/2018	2.12	10/8/2021	10/9/2018	103.1298	103.1297959	103.1297959	102.4280266	100.7549614	99.11702986	97.51323262	95.94256574	94.40406484
170703A00024	7/3/2017	2.95	7/6/2027	7/3/2017	119.69662	119.6966205	119.6966205	114.8836662	107.4369752	100.5353897	94.13612534	88.19986278	82.690553
170908A00021	9/8/2017	1.96	9/8/2022	9/8/2017	104.37813	104.3781299	104.3781299	103.4384822	100.8623489	98.3632283	95.93841558	93.58525418	91.30120063
180312A00014	3/12/2018	3	3/13/2023	3/12/2018	108.49845	108.498445	108.498445	107.3498503	104.2181852	101.1947897	98.27539436	95.45582499	92.73210108
180312A00049	3/12/2018	2.6	3/12/2020	3/12/2018	100.26713	100.2671268	100.2671268	100.2022656	100.0886745	99.97535561	99.86230783	99.7495302	99.63702172
180515A00022	5/15/2018	3.19	5/15/2023	5/15/2018	109.59737	109.5973718	109.5973718	108.3765228	105.0594456	101.8621265	98.77966836	95.80730474	92.94049571
180524A00003	5/24/2018	2.91	5/24/2021	5/24/2018	103.49688	103.4968799	103.4968799	102.8896658	101.5856593	100.2992389	99.03708337	97.79852955	96.58293856
180621A00068	6/21/2018	3.32	6/23/2025	6/21/2018	116.355	116.3549968	116.3549968	113.9329798	108.4418765	103.2538064	98.35057281	93.71504119	89.33119262
180626A00026	6/26/2018	2.92	6/25/2021	6/26/2018	103.72982	103.7298159	103.7298159	103.0964606	101.6987684	100.3264187	98.97913277	97.65628319	96.35726318
180713A00024	7/13/2018	2.96	7/13/2021	7/13/2018	103.91974	103.9197353	103.9197353	103.2675679	101.8204997	100.4007892	99.007847	97.64098178	96.2995256
180821A00039	8/21/2018	2.99	7/21/2023	8/21/2018	109.43056	109.4305648	109.4305648	108.1419256	104.6506303	101.2918609	98.05999354	94.94955928	91.95535486
160302A00013	3/2/2016	1.63	3/2/2021	3/2/2016	101.66095	101.6609465	101.6609465	101.0602081	99.98090642	98.92098846	97.88342682	96.8675204	95.87259713
160304A00015	3/4/2016	1.82	3/4/2021	3/4/2016	101.70287	101.7028655	101.7028655	101.1033464	100.022033	98.95914806	97.91875367	96.90014204	95.90263478
160311A00005	3/11/2016	1.91	3/11/2021	3/11/2016	101.83397	101.8339657	101.8339657	101.2339125	100.1367609	99.05499002	97.99650193	96.96055115	95.94642373
160323A00030	3/23/2016	2.22	3/22/2023	3/23/2016	106.09452	106.0945217	106.0945217	104.9517919	101.8341949	98.82541097	95.9210731	93.11695587	90.40903178
160331A00088	3/31/2016	1.69	3/30/2021	3/31/2016	101.64982	101.6498169	101.6498169	101.0503186	99.91361092	98.78399797	97.6797941	96.60015	95.54425382
160406A00012	4/6/2016	1.62	4/6/2021	4/6/2016	101.59331	101.5933138	101.5933138	100.9939607	99.84076148	98.69349998	97.57246627	96.47676929	95.40555791
160520A00018	9/20/2017	2.34	9/20/2024	9/20/2017	109.50291	109.5029108	109.5029108	107.706116	103.0979213	98.71416557	94.54278574	90.57236898	86.79217795
160711A00020	8/24/2017	1.59	8/24/2022	8/24/2017	103.35114	103.3511376	103.3511376	102.4306281	99.90756289	97.45917238	95.08286259	92.776088	90.53640972
160714A00018	9/6/2016	2.28	9/4/2026	9/6/2016	113.07023	113.0702295	113.0702295	109.328328	102.8436121	96.7890196	91.13383632	85.84962441	80.91011232
160801A00007	8/1/2016	1.47	8/2/2021	8/1/2016	101.80092	101.8009197	101.8009197	101.1384511	99.65539931	98.20143436	96.77583385	95.37784074	94.00672444
160830A00068	11/30/2016	1.95	11/30/2023	11/30/2016	106.39004	106.3900384	106.3900384	104.9890942	101.20649	97.58045966	94.10381523	90.76966235	87.5714593
170327A00078	3/27/2019	3.04	3/27/2026	3/27/2019	116.90201	116.9020106	116.9020106	113.6437355	107.4336759	101.6086678	96.14281403	91.01202218	86.19394085
170531A00055	5/31/2017	2.13	5/31/2022	5/31/2017	104.31926	104.3192553	104.3192553	103.4674918	101.1549627	98.90542221	96.71690108	94.58742072	92.51507791
170609A00052	6/11/2018	2.9	6/9/2027	6/11/2018	119.13419	119.1341867	119.1341867	114.4142143	107.0528267	100.2257006	93.89127142	88.01131043	82.55074027
170612A00035	6/12/2017	1.85	6/12/2020	6/12/2017	100.59142	100.5914221	100.5914221	100.3739569	100.0071686	99.64306551	99.28161818	98.92279753	98.56657492
170614A00019	6/14/2017	2.48	6/13/2025	6/14/2017	111.7379	111.7378996	111.7378996	109.3895019	104.0452342	98.99636883	94.22516494	89.71494397	85.45011033

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170703A00022	7/3/2017	2.86	7/3/2026	7/3/2017	116.47101	116.4710086	116.4710086	112.8940096	106.4538712	100.4290859	94.79076804	89.51207996	84.56817906
170816A00029	8/16/2017	1.79	8/17/2020	8/16/2017	100.8523	100.8523024	100.8523024	100.5263689	99.97916399	99.43791028	98.90251093	98.37287124	97.8488985
171110A00008	11/10/2017	2.65	11/12/2024	11/10/2017	111.2913	111.2913011	111.2913011	109.3919292	104.6059511	100.0587829	95.7373094	91.62913532	87.72261279
171110A00019	5/4/2018	2.46	5/4/2023	5/4/2018	107.11068	107.1106809	107.1106809	105.9181693	102.6703016	99.53916256	96.51992197	93.60792477	90.79874042
180104A00016	1/4/2018	2.56	1/4/2023	1/4/2018	106.69305	106.6930498	106.6930498	105.623176	102.7041844	99.88123164	97.15074476	94.50920387	91.95324279
170404A00003	4/4/2017	2.74	4/4/2025	4/4/2017	112.67594	112.6759439	112.6759439	110.4867733	105.296192	100.3829395	95.73076958	91.32441074	87.14956712
170518A00008	5/18/2018	3.06	5/18/2028	5/18/2018	122.88339	122.8833885	122.8833885	117.0310769	108.7043399	101.0475529	94.00306836	87.51841471	81.54587881
170622A00045	6/22/2017	2.76	6/22/2027	6/22/2017	118.18805	118.1880455	118.1880455	113.4440282	106.0842834	99.261801	92.93456269	87.06394489	81.61452331
170726A00025	7/26/2017	2.14	7/26/2022	7/26/2017	104.62761	104.6276126	104.6276126	103.726469	101.2625631	98.86985178	96.54595505	94.28850348	92.09522399
170816A00030	8/16/2017	1.95	8/16/2021	8/16/2017	102.59585	102.5958517	102.5958517	101.9215232	100.3952903	98.8993305	97.43288933	95.99516239	94.58537407
171219A00031	12/19/2017	2.42	12/20/2021	12/19/2017	104.05334	104.0533435	104.0533435	103.31442	101.4391512	99.60700427	97.81683036	96.06742319	94.35761889
171229A00031	12/29/2017	2.36	12/29/2020	12/29/2017	101.93425	101.9342503	101.9342503	101.3692094	100.4566978	99.56056955	98.68038648	97.81572596	96.96618018
180105A00021	1/5/2018	2.33	1/5/2021	1/5/2018	101.94665	101.946655	101.946655	101.3729491	100.4415668	99.5272551	98.6295479	97.74799594	96.88216604
180110A00011	1/10/2018	2.38	1/11/2021	1/10/2018	102.01948	102.0194841	102.0194841	101.439551	100.4917919	99.56170542	98.64880038	97.75260384	96.87266002
180131A00022	1/31/2018	2.96	1/30/2025	1/31/2018	113.35873	113.3587277	113.3587277	111.2926361	106.255746	101.4798788	96.95023934	92.65283585	88.57454335
180403A00024	4/3/2018	2.96	4/3/2023	4/3/2018	108.52689	108.5268875	108.5268875	107.3557086	104.1682141	101.0925205	98.1241266	95.25866034	92.49195645
180404A00018	4/4/2018	2.89	4/4/2022	4/4/2018	105.70122	105.7012236	105.7012236	104.8872944	102.7104263	100.5894554	98.52262892	96.50818402	94.54442996
180518A00025	5/18/2018	2.96	5/18/2021	5/18/2018	103.51863	103.5186287	103.5186287	102.9114214	101.6271019	100.3567829	99.11198507	97.89194715	96.6959382
180518A00041	5/25/2018	3.32	5/20/2024	5/25/2018	113.11018	113.110181	113.110181	111.4571928	107.0883148	102.9176216	98.93517785	95.13149143	91.49759934
180518A00071	5/25/2018	3.56	5/18/2026	5/25/2018	120.57748	120.577482	120.577482	117.1003363	110.648837	104.6035986	98.93690852	93.62298449	88.63793132
180613A00046	6/13/2018	3	1/13/2022	6/13/2018	105.3397	105.3396988	105.3396988	104.5797382	102.6289446	100.7243632	98.86473745	97.04873413	95.27506859
180613A00047	6/13/2018	3.17	1/12/2024	6/13/2018	111.44324	111.4432428	111.4432428	109.9547129	105.9644202	102.1427377	98.48177495	94.97393187	91.61200779
180615A00039	6/15/2018	3.49	6/15/2028	6/15/2018	126.69726	126.6972635	126.6972635	120.6773425	112.1333724	104.2791277	97.05501513	90.40677019	84.28507212
180720A00022	7/20/2018	2.88	7/20/2020	7/20/2018	101.24946	101.2494593	101.2494593	100.9700635	100.4978458	100.030049	99.56661117	99.10747151	98.65257028
180912A00017	9/12/2018	3.13	9/12/2023	9/12/2018	110.33393	110.3339281	110.3339281	108.9844145	105.3372231	101.8328682	98.46506319	95.22773072	92.11509969
181003A00023	10/3/2018	3.17	4/4/2022	10/3/2018	106.31669	106.3166888	106.3166888	105.4995945	103.3159183	101.1882665	99.11489427	97.09403484	95.12399374
190329A00012	3/29/2019	2.61	3/29/2024	3/29/2019	109.70215	109.7021503	109.7021503	108.1416937	103.9811681	100.0047787	96.20343764	92.56848847	89.09175248
190422A00030	4/22/2019	2.93	12/22/2025	4/22/2019	115.54339	115.5433903	115.5433903	112.6021429	106.6728903	101.0979098	95.85428523	90.92058975	86.27688706
190508A00009	5/8/2019	2.55	5/8/2020	5/8/2019	100.62597	100.6259736	100.6259736	100.4644558	100.1934672	99.92394747	99.65588455	99.38926661	99.12408193
190529A00078	5/29/2019	2.39	11/30/2020	5/29/2019	101.79092	101.7909156	101.7909156	101.2778763	100.4438211	99.62346345	98.81646834	98.02251142	97.24127879
190530A00049	5/30/2019	2.44	5/30/2023	5/30/2019	107.19866	107.1986605	107.1986605	105.9780258	102.6615449	99.4664983	96.38791227	93.42095093	90.56100431
190621A00034	6/21/2019	2.17	6/15/2023	6/21/2019	106.37435	106.3743494	106.3743494	105.1437183	101.7985807	98.57756513	95.47551413	92.48742918	89.60854789
190722A00047	11/22/2019	2.03	11/22/2021	11/22/2019	103.19315	103.1931489	103.1931489	102.4721573	100.6785831	98.92483667	97.20983918	95.53248374	93.8917033

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190722A00056	12/19/2019	2.02	12/20/2021	12/19/2019	103.29005	103.2900511	103.2900511	102.5547662	100.6868828	98.86199811	97.07895008	95.33653625	93.63359641
190815A00041	8/15/2019	1.86	8/15/2024	8/15/2019	107.15416	107.1541602	107.1541602	105.4308716	100.9671871	96.71786239	92.67156153	88.81754029	85.14567919
190829A00016	8/29/2019	1.82	8/29/2022	8/29/2019	103.96785	103.9678469	103.9678469	103.0392787	100.4952263	98.02666902	95.63098313	93.30558585	91.04800312
180911A00007	9/11/2018	3.12	9/8/2023	9/11/2018	110.26648	110.2664754	110.2664754	108.9213173	105.2861877	101.7930792	98.4357614	95.20820586	92.10468704
180925A00033	9/25/2018	3.26	9/25/2023	9/25/2018	110.91367	110.9136718	110.9136718	109.5473738	105.8544409	102.3071981	98.89917089	95.62411461	92.4761022
181001A00031	10/1/2018	3.23	9/29/2023	10/1/2018	110.83541	110.8354086	110.8354086	109.4658072	105.7634433	102.2075196	98.79150668	95.50911248	92.35436617
181119A00020	11/19/2018	3.06	11/19/2020	11/19/2018	102.27093	102.270934	102.270934	101.7767845	100.9701516	100.1763009	99.39493003	98.62574622	97.86846569
181203A00033	12/3/2018	3.1	12/3/2020	12/3/2018	102.41332	102.4133237	102.4133237	101.8932158	101.0482308	100.2172488	99.39992365	98.59592069	97.80491603
181210A00068	12/10/2018	3.34	12/10/2025	12/10/2018	117.87221	117.8722117	117.8722117	114.9417285	108.9757443	103.3632916	98.08166913	93.10962526	88.42737775
190123A00059	1/23/2019	2.95	1/24/2022	1/23/2019	105.32175	105.3217531	105.3217531	104.5544023	102.5749323	100.643043	98.75741331	96.91665121	95.11941607
190206A00010	2/12/2019	2.84	2/11/2022	2/12/2019	105.22697	105.2269686	105.2269686	104.4502356	102.4211309	100.4417334	98.51061771	96.62629862	94.78734738
190221A00011	2/21/2019	2.81	8/23/2021	2/21/2019	103.98658	103.9865768	103.9865768	103.3020146	101.7460541	100.2210883	98.72636872	97.26106297	95.82436892
190311A00069	3/25/2019	2.78	3/27/2023	3/25/2019	107.90284	107.90284	107.90284	106.7429947	103.583942	100.5352466	97.59248537	94.7513622	92.00778305
190311A00072	3/25/2019	2.79	9/25/2023	3/25/2019	109.18309	109.1830899	109.1830899	107.8293857	104.16782	100.6510514	97.27261947	94.02631208	90.9062332
190520A00048	5/20/2019	2.53	5/20/2024	5/20/2019	109.68531	109.6853133	109.6853133	108.0609002	103.7646325	99.66417904	95.74967104	92.01171098	88.44142605
190604A00019	6/4/2019	2.27	6/4/2024	6/4/2019	108.63945	108.6394504	108.6394504	107.0040792	102.6915736	98.57759268	94.65208747	90.9054836	87.32874032
190829A00080	8/29/2019	1.8	12/29/2023	8/29/2019	105.93072	105.930721	105.930721	104.5008849	100.6536243	96.96870362	93.43852037	90.05579869	86.81364206
190904A00037	9/4/2019	1.73	6/15/2022	9/4/2019	103.43627	103.4362688	103.4362688	102.5773336	100.235221	97.95801939	95.74364557	93.59002839	91.49517694
190904A00043	9/4/2019	1.72	12/15/2022	9/4/2019	104.13124	104.1312352	104.1312352	103.0987943	100.2685483	97.53017097	94.88026876	92.31552645	89.83277094
160222A00005	2/22/2016	2.79	2/22/2028	2/22/2016	120.06152	120.0615214	120.0615214	114.5316691	106.5191892	99.13750118	92.33351827	86.05879481	80.26918814
160222A00018	2/22/2016	2.59	2/23/2026	2/22/2016	113.92098	113.9209843	113.9209843	110.8029513	104.7608099	99.09022894	93.76648443	88.7665336	84.06898077
160229A00027	2/29/2016	1.74	3/1/2021	2/29/2016	101.60237	101.6023656	101.6023656	101.0032261	99.92895242	98.87441185	97.84202069	96.83108717	95.84094805
160301A00006	3/1/2016	1.69	3/1/2021	3/1/2016	101.54759	101.5475941	101.5475941	100.948644	99.87468755	98.82045962	97.78837652	96.7777466	95.78790673
160308A00011	3/8/2016	1.81	2/16/2021	3/8/2016	101.6246	101.6246042	101.6246042	101.0255231	99.9844951	98.96341677	97.96310982	96.98294545	96.02231999
160309A00008	3/9/2016	1.83	3/3/2021	3/9/2016	101.70959	101.7095866	101.7095866	101.1100549	100.0308547	98.9705211	97.93256758	96.91629162	95.92101981
160309A00014	3/9/2016	1.84	3/9/2021	3/9/2016	101.74666	101.7466597	101.7466597	101.1469348	100.0546041	98.97852001	97.92548735	96.89477158	95.88566907
160405A00018	4/5/2016	1.61	4/5/2021	4/5/2016	101.57771	101.5777105	101.5777105	100.9784229	99.82776981	98.68317251	97.56468289	96.47141599	95.40252645
160627A00019	6/27/2016	1.24	6/25/2020	6/27/2016	100.4019	100.4018983	100.4018983	100.1641727	99.76234529	99.36373611	98.96830665	98.57601899	98.18683579
161118A00026	12/20/2016	3.03	12/21/2026	12/20/2016	118.83571	118.8357103	118.8357103	114.6555605	107.7217808	101.2625617	95.24297405	89.63072431	84.39604854
170202A00011	2/2/2017	1.78	2/3/2020	2/2/2017	100.01259	100.0125879	100.0125879	100.0079911	99.99967441	99.99136488	99.98306252	99.97476731	99.96647924
170331A00031	3/31/2017	2.03	3/31/2021	3/31/2017	102.05438	102.0543806	102.0543806	101.4534036	100.3120502	99.17739059	98.06829307	96.98390169	95.92339835
170412A00019	4/12/2017	2.56	4/12/2024	4/12/2017	109.57935	109.5793453	109.5793453	108.0033809	103.8082928	99.80037828	95.97031251	92.30922948	88.80875689
171016A00016	10/16/2017	2.23	10/17/2022	10/16/2017	105.29635	105.2963482	105.2963482	104.3154625	101.6236133	99.01471858	96.4857371	94.03371341	91.65582329

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
171219A00024	12/19/2017	2.26	12/18/2020	12/19/2017	101.78096	101.7809568	101.7809568	101.2359211	100.3536228	99.48666987	98.63466439	97.79722213	96.97397192
180110A00012	1/10/2018	2.38	1/11/2021	1/10/2018	102.01948	102.0194841	102.0194841	101.439551	100.4917919	99.56170542	98.64880038	97.75260384	96.87266002
180125A00038	2/1/2018	2.91	2/3/2025	2/1/2018	113.13539	113.1353906	113.1353906	111.0640782	106.021639	101.2411001	96.70758163	92.40701826	88.32621776
180302A00011	3/2/2018	2.68	3/2/2021	3/2/2018	102.63874	102.6387391	102.6387391	102.035999	100.9535574	99.89049749	98.84978471	97.83071995	96.83263293
180424A00028	4/24/2018	2.98	4/23/2021	4/24/2018	103.3576	103.3575967	103.3575967	102.7514011	101.5449859	100.3426445	99.16875865	98.02232645	96.90239263
180518A00024	5/18/2018	2.81	5/18/2020	5/18/2018	100.76799	100.7679916	100.7679916	100.5902089	100.2915091	99.99459329	99.69944544	99.4060497	99.11439042
180518A00042	5/25/2018	3.42	5/19/2025	5/25/2018	116.59992	116.5999218	116.5999218	114.2642521	108.8572586	103.7436758	98.9061163	94.32820751	89.99463226
190311A00061	3/25/2019	2.75	3/25/2022	3/25/2019	105.32572	105.3257234	105.3257234	104.5212659	102.3752669	100.2838796	98.24541367	96.25816447	94.32049595
190311A00068	3/25/2019	2.76	9/26/2022	3/25/2019	106.60497	106.6049661	106.6049661	105.6368891	102.9825953	100.408569	97.91195891	95.48995634	93.13987432
190318A00016	3/19/2019	2.7	3/18/2022	3/19/2019	105.17065	105.1706487	105.1706487	104.3723997	102.246565	100.1744924	98.1545371	96.18503274	94.26437929
190501A00024	5/1/2019	2.62	5/1/2024	5/1/2019	109.95413	109.9541269	109.9541269	108.3526306	104.0993462	100.0377816	96.15828126	92.45167676	88.90931568
190515A00030	5/15/2019	2.49	5/15/2024	5/15/2019	109.48175	109.4817471	109.4817471	107.865639	103.5864554	99.50181666	95.60191576	91.87742357	88.31953298
190621A00035	6/21/2019	2.19	12/15/2023	6/21/2019	107.39547	107.3954678	107.3954678	105.970071	102.1301143	98.45041697	94.9235632	91.54243597	88.30028576
190807A00043	8/7/2019	1.8	8/7/2023	8/7/2019	105.33524	105.3352357	105.3352357	104.0576157	100.5936347	97.26342009	94.06116236	90.98126852	88.01842118
190829A00013	8/29/2019	1.78	8/29/2024	8/29/2019	106.8454	106.8454007	106.8454007	105.1041628	100.6120565	96.33718477	92.26797808	88.39348164	84.70338207
190829A00028	8/29/2019	1.78	8/29/2024	8/29/2019	106.8454	106.8454007	106.8454007	105.1041628	100.6120565	96.33718477	92.26797808	88.39348164	84.70338207
190829A00073	8/29/2019	1.81	3/15/2023	8/29/2019	104.76638	104.7663825	104.7663825	103.6397235	100.5610117	97.58944427	94.72073094	91.95072801	89.27548482
190904A00034	9/4/2019	1.74	6/1/2022	9/4/2019	103.40464	103.4046447	103.4046447	102.5569775	100.2525842	98.01110711	95.83056027	93.70896523	91.64441891
190904A00040	9/4/2019	1.73	6/22/2022	9/4/2019	103.46387	103.4638719	103.4638719	102.599241	100.2381415	97.9429631	95.71157333	93.54185372	91.4317686
120614A00005	6/14/2012	2.22	6/15/2022	6/14/2012	105.04735	105.0473462	105.0473462	104.176857	101.8065008	99.50186613	97.26085953	95.08137985	92.96140755
130205A00006	2/5/2013	1.89	2/18/2020	2/5/2013	100.08051	100.0805093	100.0805093	100.0529354	100.003063	99.95325432	99.90350915	99.85382739	99.80420891
140811A00037	8/11/2016	2.97	8/11/2020	8/11/2016	101.45333	101.4533307	101.4533307	101.1366954	100.6039807	100.0768804	99.55530599	99.03917074	98.52838975
140923A00070	9/23/2014	2.88	9/23/2022	9/23/2014	106.90531	106.9053135	106.9053135	105.9381185	103.2879647	100.717726	98.22457993	95.8057374	93.45852967
150126A00024	1/26/2015	1.9	6/22/2020	1/26/2015	100.65567	100.6556657	100.6556657	100.4223129	100.0280562	99.63689563	99.24879472	98.86371766	98.48162914
150601A00189	6/1/2015	2.18	8/24/2022	6/1/2015	104.79624	104.7962425	104.7962425	103.8675415	101.3257377	98.85900892	96.46477167	94.14046788	91.88364657
150601A00211	6/1/2015	2.63	9/25/2020	6/1/2015	101.53894	101.5389396	101.5389396	101.1432037	100.488049	99.84136848	99.2029986	98.57277985	97.95055682
150601A00672	6/1/2015	1.96	1/28/2022	6/1/2015	103.29631	103.2963148	103.2963148	102.5361795	100.5668366	98.64521711	96.76994526	94.93961818	93.15288517
150630A00091	6/30/2015	2.31	6/30/2021	6/30/2015	102.89376	102.8937618	102.8937618	102.2587651	100.8534475	99.47411014	98.12018874	96.79104217	95.48605044
150731A00020	7/31/2015	2.47	7/29/2022	7/31/2015	105.47386	105.4738586	105.4738586	104.5652617	102.0829486	99.67249904	97.33151702	95.05760411	92.84845962
150812A00026	8/12/2015	1.86	8/12/2020	8/12/2015	100.86319	100.8631876	100.8631876	100.5459024	100.0122937	99.48434345	98.96196192	98.44506119	97.93355523
150929A00024	9/29/2015	1.81	9/29/2020	9/29/2015	101.04302	101.0430184	101.0430184	100.6413013	99.97717747	99.32178591	98.67495541	98.0365192	97.40631482
151002A00007	10/2/2015	1.65	10/2/2020	10/2/2015	100.94718	100.9471761	100.9471761	100.5405061	99.86865273	99.20574439	98.5516035	97.9060571	97.26893678
151002A00067	10/2/2015	1.48	10/2/2020	10/2/2015	100.92601	100.9260066	100.9260066	100.5186485	99.84567802	99.18168443	98.52648913	97.8799182	97.2418023

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
151211A00041	12/11/2017	2.71	3/13/2023	12/11/2017	107.58691	107.5869129	107.5869129	106.4441964	103.3267249	100.3171685	97.41125809	94.60483123	91.89391891
160203A00013	2/3/2016	1.72	2/3/2021	2/3/2016	101.47814	101.4781387	101.4781387	100.8796831	99.87332617	98.88668839	97.91945579	96.97106046	96.0409565
160205A00004	2/5/2016	1.7	2/5/2021	2/5/2016	101.46542	101.4654235	101.4654235	100.866989	99.85549207	98.8637455	97.89161021	96.93850914	96.00388765
160209A00026	2/9/2016	1.57	2/8/2021	2/9/2016	101.34221	101.342208	101.342208	100.7441519	99.72552282	98.72668387	97.74775836	96.78815556	95.84730787
160211A00005	2/11/2016	1.3	2/11/2021	2/11/2016	101.2364	101.2364003	101.2364003	100.6372889	99.60906992	98.60076614	97.61276254	96.64445114	95.695248
160211A00036	2/11/2016	2.41	2/11/2026	2/11/2016	112.75602	112.7560171	112.7560171	109.6875808	103.7119884	98.10267113	92.8353465	87.88737836	83.23774183
160212A00002	2/12/2016	1.58	11/17/2020	2/12/2016	101.06057	101.0605671	101.0605671	100.573295	99.77738917	98.99403688	98.22294286	97.46382102	96.71639413
181113A00073	11/13/2018	3.17	11/13/2020	11/13/2018	102.32008	102.3200761	102.3200761	101.8367679	101.0459958	100.2675051	99.50101077	98.74623694	98.00291597
181120A00035	11/20/2018	3.12	4/15/2021	11/20/2018	103.45634	103.4563403	103.4563403	102.8499987	101.6628845	100.4807902	99.32618662	98.19812211	97.09568869
181226A00046	12/26/2018	2.9	12/28/2020	12/26/2018	102.42577	102.4257655	102.4257655	101.8610322	100.9487641	100.0528157	99.17275194	98.30815304	97.45861395
190311A00031	3/11/2019	2.71	9/8/2021	3/11/2019	103.93588	103.9358751	103.9358751	103.2432958	101.6445852	100.078255	98.54348242	97.03937853	95.56508774
190314A00004	3/14/2019	2.71	3/16/2020	3/14/2019	100.30833	100.3083267	100.3083267	100.2366459	100.1119593	99.98759827	99.86356148	99.73984763	99.61645543
190325A00022	3/25/2019	2.55	11/25/2022	3/25/2019	106.41474	106.4147369	106.4147369	105.3894087	102.5785185	99.85702285	97.22168719	94.6693226	92.19687642
190501A00014	5/1/2019	2.62	5/1/2024	5/1/2019	109.95413	109.9541269	109.9541269	108.3526306	104.0993462	100.0377816	96.15828126	92.45167676	88.90931568
190514A00006	5/14/2019	2.43	5/17/2021	5/14/2019	102.81764	102.8176403	102.8176403	102.2131563	100.9369102	99.67400854	98.43675895	97.224386	96.0361457
190514A00017	5/14/2019	2.43	5/17/2021	5/14/2019	102.81764	102.8176403	102.8176403	102.2131563	100.9369102	99.67400854	98.43675895	97.224386	96.0361457
190523A00035	5/23/2019	2.34	11/23/2021	5/23/2019	103.74802	103.7480212	103.7480212	103.0241706	101.2230524	99.46194396	97.73977871	96.05544731	94.40788002
190530A00040	5/30/2019	2.32	11/30/2021	5/30/2019	103.75041	103.7504119	103.7504119	103.0238453	101.2037712	99.42449035	97.68494664	95.98402741	94.32065802
190531A00051	6/3/2019	2.27	6/3/2021	6/3/2019	102.70223	102.7022324	102.7022324	102.0950176	100.765164	99.45743825	98.17269367	96.91037676	95.66995136
190625A00018	6/25/2019	2.19	6/25/2020	6/25/2019	100.78694	100.7869392	100.7869392	100.5486591	100.1458914	99.74634755	99.34998888	98.95677744	98.56667585
190722A00054	12/19/2019	2.02	12/20/2021	12/19/2019	103.29005	103.2900511	103.2900511	102.5547662	100.6868828	98.86199811	97.07895008	95.33653625	93.63359641
190829A00017	8/29/2019	1.8	8/29/2023	8/29/2019	105.4265	105.4265033	105.4265033	104.1258249	100.6036903	97.21925065	93.96644384	90.83944423	87.83271737
190829A00076	8/29/2019	1.81	6/30/2023	8/29/2019	105.21199	105.2119901	105.2119901	103.9748744	100.6098055	97.37122128	94.25378703	91.25235165	88.36201031
190917A00033	1/10/2020	2.03	1/10/2023	1/10/2020	105.15507	105.1550737	105.1550737	104.0879955	101.1761785	98.36088398	95.6384749	93.00539308	90.45823666
180529A00072	5/29/2018	3	5/30/2023	5/29/2018	109.07901	109.0790118	109.0790118	107.845643	104.4979709	101.2725553	98.16441674	95.16869067	92.28073985
180621A00022	6/21/2018	2.92	6/21/2021	6/21/2018	103.70071	103.7007145	103.7007145	103.0715061	101.6850728	100.3234053	98.9864351	97.67354828	96.38415069
180726A00046	7/26/2018	3.2	12/26/2023	7/26/2018	111.42691	111.4269139	111.4269139	109.9582114	106.0123591	102.2314142	98.60775012	95.13401154	91.80322512
180910A00039	9/10/2018	3.03	9/9/2022	9/10/2018	107.20085	107.2008513	107.2008513	106.2441961	103.6282605	101.0902838	98.62757133	96.23743399	93.91729719
181120A00036	11/20/2018	3.02	4/15/2020	11/20/2018	100.57684	100.5768388	100.5768388	100.453878	100.246184	100.0393607	99.83340262	99.62830434	99.4240604
181206A00021	12/6/2018	3.15	12/6/2023	12/6/2018	111.07317	111.0731677	111.0731677	109.6299546	105.742863	102.0162395	98.44275706	95.01534197	91.72728322
181210A00066	12/10/2018	3.13	12/11/2023	12/10/2018	111.03455	111.0345487	111.0345487	109.5859327	105.6865834	101.9487341	98.36498512	94.92819564	91.6315922
181220A00077	12/20/2018	3.06	12/20/2023	12/20/2018	110.83043	110.8304305	110.8304305	109.3731303	105.4543437	101.6988438	98.09910048	94.64785429	91.33822135
190215A00026	2/15/2019	2.8	2/14/2020	2/15/2019	100.0976	100.0975958	100.0975958	100.0761336	100.0373119	99.99853545	99.95980412	99.92111784	99.88247653

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190221A00012	2/21/2019	2.83	8/23/2022	2/21/2019	106.55535	106.5553498	106.5553498	105.6176327	103.0557513	100.5692984	98.1557104	95.8124204	93.53696881
190517A00023	5/17/2019	2.51	5/17/2024	5/17/2019	109.58035	109.5803502	109.5803502	107.9607778	103.6743992	99.58308448	95.6770017	91.94679396	88.38362746
190530A00048	5/30/2019	2.41	5/31/2022	5/30/2019	104.97875	104.9787497	104.9787497	104.1234605	101.8031404	99.54596269	97.34996523	95.21316469	93.13365324
190614A00007	6/14/2019	2.22	6/15/2021	6/14/2019	102.69886	102.6988576	102.6988576	102.0796049	100.7167306	99.37767959	98.06267275	96.77111854	95.50244442
190621A00037	6/21/2019	2.21	5/15/2024	6/21/2019	108.27171	108.2717086	108.2717086	106.6656683	102.4120608	98.35216546	94.47619837	90.77486363	87.23938573
190722A00051	11/22/2019	2.03	11/22/2021	11/22/2019	103.19315	103.1931489	103.1931489	102.4721573	100.6785831	98.92483667	97.20983918	95.53248374	93.8917033
190726A00014	7/26/2019	2.23	7/24/2024	7/26/2019	108.72952	108.7295158	108.7295158	107.0248586	102.5819001	98.34948739	94.31663823	90.4729166	86.80848594
190829A00075	8/29/2019	1.8	6/15/2023	8/29/2019	105.1157	105.1156976	105.1156976	103.8936765	100.5696835	97.36924892	94.28722033	91.31861884	88.45870089
190829A00078	8/29/2019	1.8	12/15/2023	8/29/2019	105.8727	105.8726991	105.8726991	104.4589243	100.6481673	96.99679676	93.49741486	90.14293735	86.92664599
190904A00036	9/4/2019	1.74	6/8/2022	9/4/2019	103.43244	103.4324401	103.4324401	102.5790736	100.2556727	97.99618482	95.79857592	93.66082139	91.5809744
160212A00005	2/12/2016	1.42	2/16/2021	2/12/2016	101.37989	101.379892	101.379892	100.7802539	99.73818676	98.71613373	97.7149175	96.73390613	95.77249301
160216A00007	2/16/2016	1.68	2/16/2021	2/16/2016	101.48688	101.4868786	101.4868786	100.8882622	99.84800934	98.8276952	97.82814161	96.84871998	95.88882692
160225A00024	2/25/2016	2.22	2/26/2024	2/25/2016	107.89777	107.8977746	107.8977746	106.3895749	102.34868	98.48399775	94.78698722	91.24948846	87.8637834
160304A00016	3/4/2016	1.82	3/4/2021	3/4/2016	101.70287	101.7028655	101.7028655	101.1033464	100.022033	98.95914806	97.91875367	96.90014204	95.90263478
160422A00019	4/22/2016	1.69	4/22/2021	4/22/2016	101.75131	101.7513127	101.7513127	101.1511519	99.95759686	98.76810423	97.60677699	96.47262423	95.36470108
160516A00007	5/16/2016	1.42	5/18/2020	5/16/2016	100.3512	100.3511952	100.3511952	100.1738867	99.87599331	99.57988024	99.2855315	98.99293128	98.70206395
160520A00017	9/20/2017	2.34	9/20/2024	9/20/2017	109.50291	109.5029108	109.5029108	107.706116	103.0979213	98.71416557	94.54278574	90.57236898	86.79217795
160524A00015	11/25/2016	2.71	11/25/2026	11/25/2016	116.45304	116.4530449	116.4530449	112.394093	105.6011709	99.2703	93.3676914	87.86210927	82.7247478
160527A00021	5/27/2016	1.68	5/27/2021	5/27/2016	101.8752	101.8751975	101.8751975	101.2742733	99.97158957	98.68814738	97.42815929	96.19101694	94.97613292
160601A00021	6/1/2016	1.71	6/1/2021	6/1/2016	101.93517	101.9351709	101.9351709	101.3329784	100.0140006	98.71680278	97.44232164	96.1900124	94.9593472
160627A00068	6/27/2016	1.4	6/28/2021	6/27/2016	101.58612	101.5861192	101.5861192	100.9584223	99.56821266	98.20356997	96.86400017	95.54887318	94.25757955
160714A00024	9/20/2016	2.5	9/20/2028	9/20/2016	118.97341	118.9734139	118.9734139	112.8070851	104.3452663	96.59325752	89.48761253	82.97082431	76.99078677
160819A00015	10/12/2016	2.3	10/13/2026	10/12/2016	113.41413	113.4141335	113.4141335	109.5399943	102.9497028	96.80257898	91.06649791	85.71179931	80.71111403
161005A00008	10/5/2016	1.51	10/5/2020	10/5/2016	100.86246	100.8624574	100.8624574	100.4508784	99.77126043	99.10080609	98.43933108	97.78665595	97.14260602
161017A00007	10/17/2016	1.99	10/18/2023	10/17/2016	106.34466	106.3446643	106.3446643	104.9878458	101.3182978	97.79652848	94.41578677	91.16963483	88.05196852
161123A00037	11/23/2016	2.16	11/23/2021	11/23/2016	103.41796	103.4179632	103.4179632	102.695653	100.8976105	99.13952784	97.42033269	95.73891716	94.09421301
170627A00018	6/27/2017	1.83	6/29/2020	6/27/2017	100.65856	100.658565	100.658565	100.4141537	100.000783	99.59080408	99.18417538	98.78085604	98.38080585
171110A00007	11/10/2017	2.38	11/10/2022	11/10/2017	105.845	105.8450031	105.8450031	104.8374108	102.0747614	99.39890531	96.80665213	94.29488808	91.86063665
171222A00037	12/22/2017	2.71	12/29/2023	12/22/2017	109.51882	109.5188234	109.5188234	108.0613824	104.1446753	100.3924011	96.79691311	93.35085647	90.04725919
180328A00015	3/28/2018	2.93	3/28/2023	3/28/2018	108.38736	108.3873631	108.3873631	107.2232865	104.0539788	100.9953879	98.04307902	95.19274042	92.44026298
180504A00039	5/4/2018	3.33	5/5/2025	5/4/2018	116.00429	116.0042918	116.0042918	113.7098672	108.3538112	103.2867678	98.49163509	93.95233456	89.6538261
180518A00048	5/25/2018	3.65	5/18/2028	5/25/2018	127.78524	127.7852389	127.7852389	121.8327234	113.3136186	105.47552	98.26004819	91.61403364	85.48911794
180618A00036	6/18/2018	3.89	6/18/2048	6/18/2018	199.19672	199.1967229	179.569296	147.4319704	121.8062621	101.7520123	85.96288624	73.45108852	63.46770387

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
180627A00065	6/27/2018	2.9	6/25/2021	6/27/2018	103.70149	103.7014882	103.7014882	103.0682472	101.6707622	100.2986171	98.95153216	97.62888026	96.33005464
180709A00081	7/9/2018	3.05	7/7/2023	7/9/2018	109.53441	109.5344127	109.5344127	108.2599829	104.8032588	101.4763617	98.27384811	95.19041484	92.22101339
180821A00041	8/21/2018	3	9/21/2023	8/21/2018	109.92666	109.926658	109.926658	108.5714004	104.9071706	101.3873343	98.00548172	94.75543497	91.63132967
180823A00043	8/23/2018	2.83	9/23/2020	8/23/2018	101.68526	101.6852581	101.6852581	101.2927466	100.6424695	100.0005347	99.36678236	98.74105664	98.12320568
180919A00012	9/19/2018	3	9/18/2020	9/19/2018	101.75861	101.758608	101.758608	101.3748064	100.7378159	100.1088301	99.48769877	98.87427523	98.26841648
181031A00070	3/1/2019	3.77	3/1/2029	3/1/2019	131.46982	131.4698244	131.4698244	124.4755483	115.1094511	106.5520454	98.72860068	91.57156129	85.01994056
181220A00078	12/20/2018	3.17	12/20/2024	12/20/2018	114.09369	114.0936862	114.0936862	112.100662	107.1501109	102.4504946	97.98790928	93.74917384	89.72190597
190110A00036	1/10/2019	2.88	10/9/2020	1/10/2019	101.83444	101.834439	101.834439	101.4138141	100.7196494	100.0349825	99.35961924	98.6933708	98.03605339
190311A00073	3/14/2019	2.81	3/14/2024	3/14/2019	110.43701	110.4370052	110.4370052	108.888713	104.7520184	100.7967418	97.01402953	93.3954207	89.93291673
190328A00077	3/28/2019	2.46	9/28/2021	3/28/2019	103.6499	103.6498967	103.6498967	102.9502794	101.2992604	99.68247813	98.09899367	96.54784142	95.02809316
190426A00023	4/26/2019	2.91	6/24/2026	4/26/2019	116.72964	116.7296387	116.7296387	113.1792224	106.7532235	100.7400275	95.1110359	89.83966783	84.90131102
190515A00032	5/15/2019	2.49	5/15/2024	5/15/2019	109.48175	109.4817471	109.4817471	107.865639	103.5864554	99.50181666	95.60191576	91.87742357	88.31953298
190607A00040	6/7/2019	2.12	6/7/2022	6/7/2019	104.33083	104.3308327	104.3308327	103.473433	101.1420006	98.87455215	96.66906973	94.52352877	92.43598239
190621A00039	6/21/2019	2.21	6/17/2024	6/21/2019	108.3996	108.3995986	108.3995986	106.7498787	102.4098395	98.2711582	94.32356083	90.55726686	86.96304511
190826A00046	8/26/2019	1.77	8/26/2024	8/26/2019	106.78712	106.7871174	106.7871174	105.0508181	100.5675811	96.30086575	92.23915548	88.37154477	84.68776574
190904A00044	9/4/2019	1.72	12/30/2022	9/4/2019	104.19028	104.1902844	104.1902844	103.1413832	100.271912	97.49676827	94.81242259	92.21542931	89.70249264
191002A00038	1/13/2020	1.76	1/13/2023	1/13/2020	104.36462	104.364616	104.364616	103.2990982	100.3912822	97.58022027	94.86224367	92.23377522	89.69139546
180417A00028	4/17/2018	2.88	4/16/2021	4/17/2018	103.183	103.1830044	103.1830044	102.577574	101.3895563	100.2064209	99.05087591	97.92196388	96.8187714
180621A00031	6/21/2018	3.07	6/21/2023	6/21/2018	109.48163	109.4816288	109.4816288	108.2238596	104.8103939	101.5236085	98.35826011	95.30923307	92.37165419
180727A00017	7/27/2018	3.16	7/27/2023	7/27/2018	110.07302	110.0730155	110.0730155	108.7734746	105.2554814	101.871504	98.61583638	95.48292609	92.46749174
180821A00040	8/21/2018	2.99	8/21/2023	8/21/2018	109.66056	109.6605646	109.6605646	108.3378595	104.7614541	101.3234084	98.01772402	94.83858519	91.78046505
180910A00037	9/10/2018	3.03	9/9/2022	9/10/2018	107.20085	107.2008513	107.2008513	106.2441961	103.6282605	101.0902838	98.62757133	96.23743399	93.91729719
180919A00013	9/19/2018	3.14	9/19/2022	9/19/2018	107.56882	107.5688243	107.5688243	106.6013025	103.9532171	101.3846532	98.89282901	96.4749787	94.12845556
181031A00030	10/31/2018	3.1	4/30/2020	10/31/2018	100.71217	100.7121715	100.7121715	100.5634646	100.3143114	100.0663869	99.81968214	99.5741882	99.32989621
181130A00022	11/30/2018	3.06	5/29/2020	11/30/2018	100.92899	100.9289875	100.9289875	100.7333005	100.4041108	100.0770691	99.75215443	99.42934624	99.10862408
181220A00041	12/20/2018	3.36	12/18/2026	12/20/2018	121.09232	121.0923219	121.0923219	116.8884429	109.8873147	103.3633787	97.2816165	91.60963444	86.31757107
181220A00079	12/20/2018	3.23	6/20/2025	12/20/2018	115.84273	115.8427311	115.8427311	113.4337277	107.9638825	102.7956759	97.91101115	93.29284948	88.92526018
181227A00001	12/27/2018	2.92	12/27/2021	12/27/2018	105.0583	105.0582973	105.0582973	104.310736	102.4073603	100.5480826	98.73173561	96.95707477	95.22289981
190122A00018	1/22/2019	2.98	12/1/2022	1/22/2019	107.68279	107.6827947	107.6827947	106.6439491	103.7990127	101.0448613	98.37824072	95.79591624	93.29479008
190221A00009	2/21/2019	2.81	2/22/2021	2/21/2019	102.72574	102.7257356	102.7257356	102.1228326	101.0598999	100.0171157	98.99582462	97.99536714	97.01511033
190311A00076	3/14/2019	2.88	9/16/2024	3/14/2019	111.99724	111.99724	111.99724	110.1841355	105.5297701	101.1008467	96.88531877	92.87176119	89.04942285
190327A00027	3/27/2019	2.66	1/15/2025	3/27/2019	111.75218	111.7521778	111.7521778	109.731131	104.771168	100.0668306	95.60371691	91.36821062	87.34753267
190530A00028	5/30/2019	2.35	5/28/2021	5/30/2019	102.77624	102.7762407	102.7762407	102.1717852	100.8595643	99.56726136	98.29830828	97.05211043	95.82809328

Classification | Public

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190607A00041	6/7/2019	2.12	6/7/2022	6/7/2019	104.33083	104.3308327	104.3308327	103.473433	101.1420006	98.87455215	96.66906973	94.52352877	92.43598239
191002A00042	1/13/2020	1.76	1/13/2023	1/13/2020	104.36462	104.364616	104.364616	103.2990982	100.3912822	97.58022027	94.86224367	92.23377522	89.69139546
100217A00004	2/17/2010	4.2	3/2/2020	2/17/2010	100.35096	100.3509645	100.3509645	100.302981	100.2168319	100.1308341	100.0449873	99.95929108	99.87374502
110805A00021	8/5/2011	3.36	8/5/2021	8/5/2011	104.70207	104.7020732	104.7020732	104.0255448	102.5117994	101.027692	99.57255943	98.1456248	96.74613842
120531A00008	5/31/2012	2.27	5/31/2022	5/31/2012	104.649	104.6490025	104.6490025	103.7954761	101.4790515	99.22569245	97.03343316	94.90029271	92.82436557
130214A00027	2/14/2013	1.67	2/18/2020	2/14/2013	100.06951	100.0695119	100.0695119	100.0419432	99.99208031	99.94228104	99.89254527	99.84287291	99.79326381
141117A00011	11/17/2014	3.81	11/17/2034	11/17/2014	151.40924	151.4092374	149.4253198	133.215154	118.3438227	105.4163856	94.16254458	84.35109792	75.78415607
141215A00062	12/15/2014	2.65	12/16/2024	12/15/2014	112.48661	112.4866063	112.4866063	110.5037626	105.571874	100.8908803	96.4468332	92.22653117	88.21757356
150601A00333	6/1/2015	3.06	8/9/2021	6/1/2015	104.2016	104.2016037	104.2016037	103.5247159	102.0042294	100.5136418	99.05226306	97.6193052	96.21400824
150601A00341	6/1/2015	3.09	8/21/2020	6/1/2015	101.5734	101.5733984	101.5733984	101.2391895	100.6788164	100.1246486	99.57658345	99.03452034	98.49836094
150601A00355	6/1/2015	2.86	9/24/2020	6/1/2015	101.68128	101.6812789	101.6812789	101.2870032	100.6340318	99.98947098	99.3531589	98.72493793	98.10465439
150619A00025	6/19/2015	2.01	6/19/2020	6/19/2015	100.68468	100.6846833	100.6846833	100.4560292	100.0698971	99.68673696	99.30651448	98.92919588	98.55474792
150624A00075	6/24/2015	2.1	6/24/2020	6/24/2015	100.74533	100.7453284	100.7453284	100.5086882	100.108753	99.71199898	99.31838816	98.92788333	98.54044779
150731A00036	7/31/2015	2.01	7/31/2020	7/31/2015	100.89045	100.8904526	100.8904526	100.5938073	100.0926489	99.59646574	99.10518428	98.61873224	98.13703877
150812A00040	8/12/2015	2.94	8/12/2025	8/12/2015	114.65339	114.6533869	114.6533869	112.1127759	106.5409891	101.2844786	96.32383296	91.64082933	87.2184602
150909A00017	9/9/2015	2.02	9/9/2020	9/9/2015	101.08645	101.0864453	101.0864453	100.7200073	100.109779	99.50693191	98.91133272	98.3228512	97.74136023
150929A00085	9/29/2015	1.81	9/29/2020	9/29/2015	101.04302	101.0430184	101.0430184	100.6413013	99.97717747	99.32178591	98.67495541	98.0365192	97.40631482
151002A00014	10/2/2015	1.65	10/2/2020	10/2/2015	100.94718	100.9471761	100.9471761	100.5405061	99.86865273	99.20574439	98.5516035	97.9060571	97.26893678
151027A00020	10/27/2015	1.75	10/27/2020	10/27/2015	101.11901	101.1190088	101.1190088	100.6694327	99.92955292	99.20051087	98.48206978	97.77399979	97.07607762
151215A00010	12/15/2015	2.16	12/15/2020	12/15/2015	101.67585	101.6758468	101.6758468	101.1364479	100.2626923	99.40399823	98.55997871	97.73025977	96.91448012
160203A00012	2/3/2016	1.54	2/3/2021	2/3/2016	101.45625	101.4562458	101.4562458	100.8564806	99.8479333	98.85918513	97.88991948	96.93956526	96.00757349
160209A00019	2/9/2016	2.52	2/9/2026	2/9/2016	113.41088	113.410884	113.410884	110.3403919	104.351087	98.72825909	93.44764709	88.48662824	83.82418833
160210A00042	2/10/2016	2.57	2/10/2026	2/10/2016	113.7198	113.7197991	113.7197991	110.6426044	104.6415735	99.0077276	93.71675621	88.74598943	84.07436967
160211A00089	2/16/2016	3.91	2/16/2024	2/16/2016	114.73626	114.7362627	114.7362627	113.1836808	109.0335741	105.0617672	101.259772	97.61940541	94.13292348
160212A00027	2/12/2016	2.53	2/12/2026	2/12/2016	113.48942	113.4894189	113.4894189	110.4091192	104.4093988	98.77720206	93.48817122	88.51959587	83.85038229
160212A00037	2/12/2016	3.03	2/12/2031	2/12/2016	129.97775	129.9777479	129.9777479	120.0147605	109.1115891	99.33278391	90.55530864	82.6701276	75.58063921
160223A00012	2/23/2016	1.89	2/23/2023	2/23/2016	105.49544	105.4954433	105.4954433	104.3797193	101.3296159	98.38439622	95.53993378	92.79221983	90.1374295
160229A00028	2/29/2016	1.74	3/1/2021	2/29/2016	101.60237	101.6023656	101.6023656	101.0032261	99.92895242	98.87441185	97.84202069	96.83108717	95.84094805
160331A00085	3/31/2016	1.5	3/30/2020	3/31/2016	100.20639	100.2063947	100.2063947	100.1110434	99.94788385	99.7852545	99.6231528	99.46157621	99.30052221
160406A00009	4/6/2016	1.62	4/6/2021	4/6/2016	101.59331	101.5933138	101.5933138	100.9939607	99.84076148	98.69349998	97.57246627	96.47676929	95.40555791
160629A00021	6/29/2016	1.32	6/29/2020	6/29/2016	100.4462	100.4461981	100.4461981	100.2020984	99.78925611	99.37980238	98.97369571	98.57089527	98.1713609
170327A00077	3/27/2019	2.74	3/27/2024	3/27/2019	110.23376	110.233757	110.233757	108.6714065	104.5051434	100.5229363	96.71572063	93.07485511	89.59217466
170327A00079	3/27/2019	3.19	3/29/2027	3/27/2019	120.70915	120.7091473	120.7091473	116.189129	108.9485119	102.2195807	95.96338288	90.14406424	84.72867334

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
170327A00080	3/27/2019	3.43	3/27/2029	3/27/2019	128.60092	128.6009213	128.6009213	121.58177	112.2772061	103.7845086	96.02795497	88.93921038	82.45663597
170331A00032	3/31/2017	2.03	3/31/2021	3/31/2017	102.05438	102.0543806	102.0543806	101.4534036	100.3120502	99.17739059	98.06829307	96.98390169	95.92339835
180130A00063	1/30/2018	2.63	1/31/2022	1/30/2018	104.72541	104.7254138	104.7254138	103.9562416	101.9645308	100.0211731	98.1247977	96.27397767	94.46733929
180130A00064	1/30/2018	2.75	1/30/2023	1/30/2018	107.43075	107.4307473	107.4307473	106.3270768	103.3298182	100.4333377	97.63379954	94.92742853	92.31061824
180612A00031	6/12/2018	3.04	6/13/2022	6/12/2018	106.56084	106.5608367	106.5608367	105.6866331	103.3123902	101.0035219	98.75799055	96.57371518	94.44869528
180726A00045	7/26/2018	3.1	7/26/2022	7/26/2018	107.03697	107.0369728	107.0369728	106.1224566	103.6283016	101.2059707	98.85310415	96.56731295	94.34630512
181015A00034	4/15/2019	3.25	4/15/2021	4/15/2019	103.61493	103.6149316	103.6149316	103.0080013	101.8198753	100.6367821	99.48119556	98.35216393	97.24877871
181029A00051	2/5/2019	3.69	2/5/2029	2/5/2019	130.52537	130.5253663	130.5253663	123.6329714	114.3696526	105.9017292	98.15612619	91.06673557	84.57384009
181206A00018	12/6/2018	3.13	12/6/2023	12/6/2018	110.99557	110.9955712	110.9955712	109.5529472	105.6673344	101.9421458	98.37005507	94.9439903	91.65724199
181220A00076	12/20/2018	3.02	1/20/2023	12/20/2018	108.17306	108.1730629	108.1730629	107.0760038	104.0935975	101.2105027	98.42298678	95.72736154	93.12010245
190122A00017	1/22/2019	2.94	5/2/2022	1/22/2019	106.01513	106.0151255	106.0151255	105.1790223	102.9225476	100.7256235	98.58631921	96.50270988	94.47295134
190206A00009	2/12/2019	2.84	2/11/2022	2/12/2019	105.22697	105.2269686	105.2269686	104.4502356	102.4211309	100.4417334	98.51061771	96.62629862	94.78734738
190425A00041	4/25/2019	2.56	6/15/2021	4/25/2019	103.17106	103.171058	103.171058	102.5499201	101.1836528	99.84125251	98.52295295	97.22816104	95.95630275
190529A00077	5/29/2019	2.48	5/29/2020	5/29/2019	100.73737	100.7373651	100.7373651	100.5419109	100.2131165	99.88646826	99.56194518	99.23952661	98.91919218
190530A00018	5/30/2019	2.36	5/28/2021	5/30/2019	102.78963	102.7896309	102.7896309	102.1851231	100.8728092	99.58041449	98.31137117	97.06508459	95.84098016
190530A00066	5/30/2019	2.44	5/30/2023	5/30/2019	107.19866	107.1986605	107.1986605	105.9780258	102.6615449	99.4664983	96.38791227	93.42095093	90.56100431
190815A00040	8/15/2019	1.86	8/15/2023	8/15/2019	105.58259	105.5825895	105.5825895	104.2950625	100.8061565	97.45254302	94.22831977	91.12780613	88.14560281
190829A00072	8/29/2019	1.81	12/15/2022	8/29/2019	104.39232	104.3923239	104.3923239	103.3582922	100.5242813	97.78222686	95.1287365	92.56049202	90.07431758
190917A00030	1/10/2020	2.03	1/10/2023	1/10/2020	105.15507	105.1550737	105.1550737	104.0879955	101.1761785	98.36088398	95.6384749	93.00539308	90.45823666
070906A00048	9/10/2007	3.79	9/12/2022	3/10/2020	109.01346	109.0134623	109.0134623	108.0456224	105.4340652	103.0926133	101.2941833	100.2342712	99.81335878
081028A00036	10/30/2008	4.22	10/30/2023		114.50631	114.5063078	114.5063078	113.0790387	109.2352189	105.5453175	102.0023297	98.59955489	95.33064951
180404A00037	4/6/2018	2.51	4/6/2028	4/6/2022	119.75087	119.750869	119.750869	114.9161575	108.6843256	103.9634065	100.3325788	97.40209125	94.90032301
180406A00015	4/10/2018	2.61	4/10/2028	4/10/2023	120.60415	120.604148	120.604148	115.6941259	109.2564984	104.1036819	99.83788198	96.15840222	92.87331105
180925A00059	9/25/2018	3.01	9/25/2028	9/25/2023	125.248	125.2480022	125.2480022	119.6566332	112.5225109	106.6850593	101.7720096	97.50282947	93.68993051
181004A00034	10/4/2018	2.58	10/5/2020	4/6/2020	101.51671	101.5167108	101.5167108	101.1042812	100.4320412	99.95864676	99.73708911	99.5628056	99.39140827
181004A00037	10/4/2018	2.48	10/5/2020	4/6/2020	101.44792	101.4479224	101.4479224	101.0356608	100.368209	99.92592557	99.71840558	99.54541806	99.3740432
181031A00046	11/2/2018	3.05	10/29/2021	11/2/2020	104.7175	104.7175011	104.7175011	103.999944	102.2759178	100.7515097	99.58984949	98.69004255	97.91201905
181203A00046	12/4/2018	2.8	12/4/2023	12/4/2020	109.38146	109.3814571	109.3814571	107.9700473	104.4208467	101.679997	99.82141743	98.54844369	97.56642636
181210A00035	12/12/2018	2.65	1/16/2024	1/15/2021	109.06976	109.0697648	109.0697648	107.6171695	104.0267548	101.3090489	99.45983383	98.15282864	97.10228658
190104A00032	1/4/2019	2.33	1/4/2024	3/4/2020	107.72984	107.7298419	107.7298419	106.3110572	102.9028435	100.6660667	99.80082896	99.52682442	99.3480646
190417A00010	4/17/2019	2.09	4/17/2024	4/17/2020	108.40062	108.400622	108.400622	106.8581786	103.2082492	100.7878154	99.79214002	99.4543386	99.2341316
190426A00017	4/26/2019	2.31	4/26/2022	4/27/2020	104.36605	104.3660512	104.3660512	103.5455566	101.4550311	100.1004481	99.63060604	99.38535225	99.15725271
190426A00018	4/26/2019	2.14	4/26/2024	4/27/2020	107.47994	107.479938	107.479938	105.9592573	102.4570234	100.3497532	99.6222146	99.34513355	99.11562364

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190426A00024	4/26/2019	2.24	4/26/2022	4/27/2020	104.20808	104.2080823	104.2080823	103.3886489	101.3160346	100.0324961	99.60924831	99.36889189	99.14107319
190509A00033	5/9/2019	2.41	5/9/2022	5/10/2021	104.66469	104.6646948	104.6646948	103.8320459	101.6726358	99.88434689	98.44072861	97.17538599	95.99177347
190509A00063	5/9/2019	2.11	5/9/2024	5/11/2020	107.41349	107.4134932	107.4134932	105.8816133	102.3867426	100.3161401	99.5491186	99.21768427	98.94807105
190510A00019	5/10/2019	2.39	5/10/2022	5/10/2021	104.62441	104.6244127	104.6244127	103.7912055	101.6323859	99.84673995	98.40191603	97.13087412	95.93893512
190513A00033	5/13/2019	2.35	5/15/2023	5/13/2022	106.54117	106.5411666	106.5411666	105.3557079	102.3065499	99.65672973	97.29297261	95.10099423	93.01657444
190513A00065	5/13/2019	2.01	5/13/2022	5/13/2020	104.37	104.3699957	104.3699957	103.5323556	101.4094128	100.0621084	99.54142523	99.23717463	98.95712854
190515A00056	5/15/2019	1.81	5/15/2024	5/15/2020	107.3384	107.3383976	107.3383976	105.7924435	102.2925227	100.2555323	99.50975069	99.16839024	98.88048768
190515A00061	5/15/2019	2	5/15/2024	5/15/2020	106.96745	106.967445	106.967445	105.4419293	102.0286383	100.1218574	99.46094283	99.13681246	98.85136508
190516A00018	5/16/2019	2.03	5/16/2024	5/18/2020	107.10135	107.1013517	107.1013517	105.5707955	102.128307	100.1701264	99.47617831	99.14605237	98.86005699
190516A00028	5/16/2019	2.03	5/16/2024	5/18/2020	107.10135	107.1013517	107.1013517	105.5707955	102.128307	100.1701264	99.47617831	99.14605237	98.86005699
190522A00029	5/22/2019	2.41	5/22/2024	5/22/2023	108.77468	108.7746766	108.7746766	107.1819282	103.1700481	99.59238247	96.32336281	93.26714366	90.36932785
190523A00048	5/23/2019	2.32	5/23/2024	5/23/2023	108.39008	108.3900828	108.3900828	106.8020432	102.8130073	99.25918462	96.00807857	92.96472169	90.07592137
190523A00050	5/23/2019	2.3	5/23/2023	5/23/2022	106.41796	106.4179629	106.4179629	105.2222417	102.1502789	99.49289908	97.12429159	94.92380347	92.82745176
190529A00115	5/29/2019	1.92	5/29/2024	5/29/2020	106.68138	106.6813845	106.6813845	105.1509354	101.7838487	99.98008871	99.36168721	99.01273473	98.69170906
190530A00057	5/30/2019	1.71	5/30/2024	6/1/2020	106.9706	106.9705975	106.9705975	105.4191524	101.9729148	100.0623324	99.3876221	99.02968279	98.7069115
190530A00092	5/30/2019	1.69	5/30/2024	6/1/2020	106.883	106.882997	106.882997	105.334394	101.9073229	100.031652	99.37756667	99.02280372	98.7003594
190530A00108	5/30/2019	1.88	5/30/2024	6/1/2020	106.51144	106.511436	106.511436	104.9859785	101.6572677	99.9255505	99.34275404	98.99917589	98.67863959
190603A00067	6/3/2019	1.72	6/3/2024	6/3/2020	105.82935	105.8293474	105.8293474	104.3287834	101.1944276	99.74184353	99.22678932	98.87796351	98.54525545
190605A00032	6/5/2019	1.92	6/3/2022	6/3/2020	103.64812	103.6481155	103.6481155	102.8039366	100.7787371	99.73046898	99.29119387	98.94956358	98.6171217
190606A00030	6/6/2019	1.48	6/6/2024	6/8/2020	105.9895	105.9895025	105.9895025	104.4715411	101.2853347	99.78025388	99.24327542	98.8857191	98.54640523
190606A00032	6/6/2019	1.75	6/6/2024	6/8/2020	105.97144	105.9714367	105.9714367	104.461723	101.2833962	99.77070031	99.23053364	98.87345187	98.53525935
190606A00054	6/6/2019	1.8	6/6/2024	6/8/2020	106.1901	106.1900957	106.1900957	104.6710489	101.432143	99.82913446	99.25426131	98.89139999	98.55258658
190607A00016	6/7/2019	1.75	6/7/2024	6/8/2020	105.97515	105.9751499	105.9751499	104.464309	101.2832855	99.76991257	99.23034369	98.87343208	98.53526086
190607A00022	6/7/2019	1.5	6/7/2024	6/8/2020	106.0813	106.0813023	106.0813023	104.5581381	101.3434673	99.80158372	99.25221875	98.89282752	98.55333525
190607A00025	6/7/2019	1.48	6/7/2024	6/8/2020	105.99326	105.9932596	105.9932596	104.4740482	101.2846373	99.7791004	99.24301139	98.88569173	98.54640573
190610A00069	6/10/2019	2.04	6/10/2022	6/10/2020	103.96346	103.9634567	103.9634567	103.1108784	101.0105468	99.8171706	99.31108918	98.94403938	98.59273588
190613A00024	6/13/2019	2.18	6/13/2024	6/13/2023	107.88612	107.8861155	107.8861155	106.2819532	102.2828453	98.71828041	95.44824903	92.38027229	89.46473049
190702A00051	7/2/2019	1.46	7/2/2024	7/2/2020	105.99779	105.9977856	105.9977856	104.4548798	101.2531659	99.70665806	99.0818826	98.64710739	98.23703199
190702A00079	7/2/2019	1.69	7/2/2024	7/5/2022	107.02616	107.0261635	107.0261635	105.4373092	101.7485111	98.77646121	96.22110952	93.88861119	91.68667517
190702A00082	7/2/2019	1.63	6/30/2022	6/30/2020	103.69289	103.69289	103.69289	102.8245161	100.7426853	99.65471624	99.1538134	98.74133498	98.33787731
190703A00023	7/3/2019	1.9	6/30/2022	6/30/2020	103.71385	103.7138518	103.7138518	102.8492155	100.769027	99.66849301	99.16338493	98.75149066	98.3491251
190712A00038	7/12/2019	1.87	7/12/2021	7/13/2020	102.56611	102.56611	102.56611	101.9188695	100.5677512	99.70771276	99.2000363	98.76036519	98.3309042
190712A00044	7/12/2019	1.73	7/12/2022	7/13/2020	103.99087	103.9908718	103.9908718	103.1090589	100.9589819	99.73423592	99.14868253	98.69954167	98.26932244

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	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
190712A00047	7/12/2019	1.54	7/12/2024	7/13/2020	106.39481	106.3948146	106.3948146	104.8237869	101.5011803	99.78977751	99.0854631	98.6180947	98.18590099
190725A00018	7/25/2019	1.78	7/25/2024	7/27/2020	106.28943	106.2894317	106.2894317	104.7181935	101.4172045	99.71680059	98.99283052	98.49377461	98.02782677
190725A00022	7/25/2019	1.7	7/25/2022	7/27/2020	103.97358	103.9735842	103.9735842	103.0807074	100.912471	99.67645415	99.06342962	98.57966105	98.11396098
190731A00008	7/31/2019	1.53	7/31/2024	7/31/2020	106.42403	106.4240339	106.4240339	104.8301466	101.4756148	99.72270456	98.96579948	98.44443681	97.95883399
190801A00025	8/1/2019	1.68	8/1/2024	8/3/2020	105.86363	105.8636276	105.8636276	104.3059663	101.1231974	99.5729849	98.89537953	98.39064806	97.90862617
190805A00014	8/5/2019	1.49	8/5/2024	8/5/2022	106.26095	106.2609543	106.2609543	104.6640681	101.0341144	98.09223735	95.52267282	93.15032254	90.89693152
190807A00035	8/7/2019	1.45	8/7/2024	8/7/2020	104.8402	104.8401955	104.8401955	103.3397889	100.5116789	99.29822631	98.6974154	98.18664649	97.68889059
190807A00056	8/7/2019	1.49	8/7/2024	8/7/2020	105.02189	105.0218923	105.0218923	103.50871	100.6129746	99.33743708	98.72076523	98.20763766	97.70955026
190808A00013	8/8/2019	1.23	8/8/2024	8/10/2020	105.08325	105.0832471	105.0832471	103.5589812	100.6413517	99.35553876	98.73535779	98.22021411	97.72033161
190809A00026	8/9/2019	1.52	8/9/2024	8/10/2020	105.1644	105.1644002	105.1644002	103.6399079	100.6917562	99.36827201	98.73852029	98.22343032	97.72505875
190812A00020	8/12/2019	1.47	8/12/2024	8/12/2020	104.94595	104.94595	104.94595	103.4337326	100.5602649	99.30232434	98.68061718	98.15590083	97.6454438
190812A00026	8/12/2019	1.48	8/12/2024	8/12/2020	104.99151	104.9915107	104.9915107	103.4760961	100.5858516	99.31234285	98.686605	98.16128578	97.65074313
190812A00027	8/12/2019	1.71	8/12/2024	8/12/2022	106.03941	106.0394056	106.0394056	104.4529111	100.859879	97.94238289	95.38542482	93.01853503	90.76720652
190814A00019	8/14/2019	1.46	8/14/2024	8/14/2020	104.9063	104.9062973	104.9062973	103.3953169	100.5346859	99.28655708	98.66328823	98.13399254	97.61859944
190816A00028	8/16/2019	1.33	8/16/2022	8/17/2020	103.11779	103.117794	103.117794	102.222109	100.265726	99.31201066	98.7363483	98.21068958	97.69384823
190816A00029	8/16/2019	1.11	8/16/2024	8/17/2020	104.5564	104.5563957	104.5563957	103.0641786	100.3407134	99.215831	98.61980591	98.09279263	97.57618954
190820A00068	8/20/2019	1.39	8/20/2024	8/20/2020	104.60357	104.6035691	104.6035691	103.1108341	100.3615093	99.20153372	98.58662654	98.0453852	97.51544272
190821A00024	8/21/2019	1.65	8/21/2024	8/22/2022	105.79729	105.7972936	105.7972936	104.2130193	100.6457943	97.74471998	95.19079413	92.81891539	90.55884773
190821A00046	8/21/2019	1.44	8/21/2024	8/21/2020	104.83536	104.8353632	104.8353632	103.3239275	100.4824378	99.24553534	98.611093	98.06494922	97.53218719
190823A00023	8/23/2019	1.37	8/23/2024	8/24/2020	104.52014	104.5201368	104.5201368	103.0318399	100.3148079	99.18030158	98.56878255	98.02578686	97.49345292
190828A00011	8/28/2019	1.1	8/28/2024	8/28/2020	104.54305	104.5430487	104.5430487	103.0410855	100.3034774	99.15159955	98.52062658	97.95806063	97.40651397
190828A00021	8/28/2019	1.36	8/28/2024	8/28/2020	104.48768	104.4876825	104.4876825	102.9985454	100.2878021	99.14845585	98.52113177	97.96057195	97.41080419
190830A00028	8/30/2019	1.39	8/30/2024	8/31/2020	104.6312	104.6312017	104.6312017	103.1285936	100.3584447	99.17570821	98.53959514	97.97791687	97.42800583
190909A00021	9/9/2019	1.2	9/9/2024	9/9/2020	105.04174	105.041741	105.041741	103.4939973	100.5687915	99.21699257	98.50234616	97.90026626	97.3177696
190911A00012	9/11/2019	1.27	9/11/2024	9/11/2020	105.37442	105.3744206	105.3744206	103.801141	100.7567282	99.29291328	98.53947628	97.92631499	97.33780168
190917A00040	9/17/2019	1.63	9/17/2024	9/17/2020	105.79736	105.797363	105.797363	104.1994554	101.0137955	99.39415999	98.57157799	97.93459118	97.33131024
190924A00014	9/24/2019	1.54	9/24/2024	9/24/2020	105.40044	105.4004369	105.4004369	103.8206382	100.7556899	99.25350944	98.46461878	97.82009026	97.20148027
191008A00020	10/8/2019	1.58	10/8/2024	10/11/2022	105.63309	105.6330859	105.6330859	104.0074597	100.3832313	97.39901155	94.74441592	92.26862273	89.90696536
191008A00028	10/11/2019	1.08	10/8/2024	10/8/2020	104.55929	104.559289	104.559289	103.0274647	100.2655602	98.9833912	98.22168094	97.55059132	96.89780017
191011A00020	10/11/2019	1.53	10/11/2024	10/13/2020	105.40694	105.406937	105.406937	103.8109873	100.7405739	99.19648401	98.35351305	97.66619418	97.01012923
191017A00012	10/17/2019	1.43	10/17/2022	10/19/2020	103.60036	103.600359	103.600359	102.6466494	100.4676191	99.21376006	98.42111028	97.72560785	97.05176833
191029A00020	10/29/2019	1.51	10/31/2022	11/2/2020	103.87401	103.8740086	103.8740086	102.9021228	100.6310489	99.26608202	98.4084849	97.67216225	96.96304138
191121A00031	11/21/2019	1.54	11/21/2024	11/21/2022	106.91335	106.9133541	106.9133541	105.1642683	101.2581681	98.03088169	95.1822481	92.54824936	90.05122588

	Parallel-Shift Sensitivity Analysis												
2/28/2020					Price								
REFERENCE	SETTLEMENT	Rate	MATURITY	First/Next	-400	-300	-200	-100	Base	100	200	300	400
191209A00045	12/9/2019	1.56	12/9/2024	12/9/2022	107.08229	107.0822885	107.0822885	105.3042902	101.3469666	98.06576902	95.16605377	92.48589898	89.94732707
191211A00013	12/11/2019	1.57	12/11/2024	12/12/2022	107.13945	107.1394483	107.1394483	105.3562983	101.3896239	98.10187539	95.19819637	92.51568259	89.97564716
200128A00045	1/28/2020	1.45	1/28/2025	1/28/2021	105.34698	105.3469764	105.3469764	103.6502739	100.5221737	98.76227223	97.62211551	96.65338104	95.73260798
200130A00029	1/30/2020	1.3	1/30/2023	2/1/2021	102.79889	102.7988946	102.7988946	101.7981162	99.73081098	98.44278332	97.43858035	96.4988739	95.58313049
200131A00023	1/31/2020	1.56	1/31/2025	1/31/2023	105.90849	105.9084922	105.9084922	104.1337996	100.2779632	97.03629482	94.12020237	91.39349917	88.79587864
060124A00098	1/30/2006	3.94	2/1/2021	1/30/2007	103.628	103.6280018	103.6280018	103.0234043	102.0120445	101.0204766	100.076804	99.35768976	99.1421929
060517A00115	5/19/2006	4.52	5/19/2021	5/21/2007	105.44265	105.4426458	105.4426458	104.8288505	103.5301095	102.2511003	101.0467284	100.0940937	99.9257803
061128A00049	11/30/2006	3.84	11/30/2021	2/28/2007	106.90763	106.907627	106.907627	106.1641107	104.3082576	102.5105268	100.928659	99.83827059	99.85319237
070727A00036	7/31/2007	4.23	8/1/2022	10/31/2007	109.72896	109.7289585	109.7289585	108.7952755	106.255666	103.8479268	101.8678397	100.5053395	99.81442539

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