

TREASURY INFLATION-PROTECTED SECURITIES (TIPS)
Ref CPI and Index Ratios for
July 2019

Security:			3-5/8% 30-Year TIPS	3-7/8% 30-Year TIPS	3-3/8% 30-1/2-Year TIPS	2-3/8% 20-1/2-Year TIPS
Description:			TIPS of April 2028	TIPS of April 2029	TIPS of April 2032	TIPS of January 2025
CUSIP Number:			912810FD5	912810FH6	912810FQ6	912810FR4
Dated Date:			April 15, 1998	April 15, 1999	October 15, 2001	July 15, 2004
Original Issue Date:			April 15, 1998	April 15, 1999	October 15, 2001	July 30, 2004
Additional Issue Date(s):			July 15, 1998	October 15, 1999 October 16, 2000		January 31, 2005 July 29, 2005
Maturity Date:			April 15, 2028	April 15, 2029	April 15, 2032	January 15, 2025
Ref CPI on Dated Date:			161.74000	164.39333	177.50000	188.49677
Date	Ref CPI	Index Ratio	Index Ratio	Index Ratio	Index Ratio	
July 1 2019	255.54800	1.57999	1.55449	1.43971	1.35572	
July 2 2019	255.56555	1.58010	1.55460	1.43981	1.35581	
July 3 2019	255.58310	1.58021	1.55470	1.43990	1.35590	
July 4 2019	255.60065	1.58032	1.55481	1.44000	1.35599	
July 5 2019	255.61819	1.58043	1.55492	1.44010	1.35609	
July 6 2019	255.63574	1.58054	1.55503	1.44020	1.35618	
July 7 2019	255.65329	1.58064	1.55513	1.44030	1.35627	
July 8 2019	255.67084	1.58075	1.55524	1.44040	1.35637	
July 9 2019	255.68839	1.58086	1.55535	1.44050	1.35646	
July 10 2019	255.70594	1.58097	1.55545	1.44060	1.35655	
July 11 2019	255.72348	1.58108	1.55556	1.44070	1.35665	
July 12 2019	255.74103	1.58119	1.55567	1.44079	1.35674	
July 13 2019	255.75858	1.58129	1.55577	1.44089	1.35683	
July 14 2019	255.77613	1.58140	1.55588	1.44099	1.35693	
July 15 2019	255.79368	1.58151	1.55599	1.44109	1.35702	
July 16 2019	255.81123	1.58162	1.55609	1.44119	1.35711	
July 17 2019	255.82877	1.58173	1.55620	1.44129	1.35721	
July 18 2019	255.84632	1.58184	1.55631	1.44139	1.35730	
July 19 2019	255.86387	1.58195	1.55641	1.44149	1.35739	
July 20 2019	255.88142	1.58205	1.55652	1.44159	1.35748	
July 21 2019	255.89897	1.58216	1.55663	1.44168	1.35758	
July 22 2019	255.91652	1.58227	1.55673	1.44178	1.35767	
July 23 2019	255.93406	1.58238	1.55684	1.44188	1.35776	
July 24 2019	255.95161	1.58249	1.55695	1.44198	1.35786	
July 25 2019	255.96916	1.58260	1.55705	1.44208	1.35795	
July 26 2019	255.98671	1.58271	1.55716	1.44218	1.35804	
July 27 2019	256.00426	1.58281	1.55727	1.44228	1.35814	
July 28 2019	256.02181	1.58292	1.55737	1.44238	1.35823	
July 29 2019	256.03935	1.58303	1.55748	1.44248	1.35832	
July 30 2019	256.05690	1.58314	1.55759	1.44257	1.35842	
July 31 2019	256.07445	1.58325	1.55769	1.44267	1.35851	
CPI-U (NSA) for:	March 2019	254.202	April 2019	255.548	May 2019	256.092

TREASURY INFLATION-PROTECTED SECURITIES (TIPS)
Ref CPI and Index Ratios for
July 2019

Security: Description: CUSIP Number: Dated Date: Original Issue Date: Additional Issue Date(s):			2% 20-Year TIPS TIPS of January 2026 912810FS2 January 15, 2006 January 31, 2006 July 31, 2006	2-3/8% 20-Year TIPS TIPS of January 2027 912810PS1 January 15, 2007 January 31, 2007 July 31, 2007	1-3/4% 20-Year TIPS TIPS of January 2028 912810PV4 January 15, 2008 January 31, 2008 July 31, 2008	2-1/2% 20-Year TIPS TIPS of January 2029 912810PZ5 January 15, 2009 January 30, 2009 July 31, 2009	
Maturity Date: Ref CPI on Dated Date:			January 15, 2026 198.47742	January 15, 2027 201.66452	January 15, 2028 209.49645	January 15, 2029 214.69971	
Date			Ref CPI	Index Ratio	Index Ratio	Index Ratio	Index Ratio
July	1	2019	255.54800	1.28754	1.26719	1.21982	1.19026
July	2	2019	255.56555	1.28763	1.26728	1.21990	1.19034
July	3	2019	255.58310	1.28772	1.26737	1.21999	1.19042
July	4	2019	255.60065	1.28781	1.26745	1.22007	1.19050
July	5	2019	255.61819	1.28790	1.26754	1.22016	1.19058
July	6	2019	255.63574	1.28798	1.26763	1.22024	1.19067
July	7	2019	255.65329	1.28807	1.26772	1.22032	1.19075
July	8	2019	255.67084	1.28816	1.26780	1.22041	1.19083
July	9	2019	255.68839	1.28825	1.26789	1.22049	1.19091
July	10	2019	255.70594	1.28834	1.26798	1.22057	1.19099
July	11	2019	255.72348	1.28843	1.26806	1.22066	1.19108
July	12	2019	255.74103	1.28851	1.26815	1.22074	1.19116
July	13	2019	255.75858	1.28860	1.26824	1.22083	1.19124
July	14	2019	255.77613	1.28869	1.26832	1.22091	1.19132
July	15	2019	255.79368	1.28878	1.26841	1.22099	1.19140
July	16	2019	255.81123	1.28887	1.26850	1.22108	1.19148
July	17	2019	255.82877	1.28896	1.26859	1.22116	1.19157
July	18	2019	255.84632	1.28904	1.26867	1.22124	1.19165
July	19	2019	255.86387	1.28913	1.26876	1.22133	1.19173
July	20	2019	255.88142	1.28922	1.26885	1.22141	1.19181
July	21	2019	255.89897	1.28931	1.26893	1.22150	1.19189
July	22	2019	255.91652	1.28940	1.26902	1.22158	1.19197
July	23	2019	255.93406	1.28949	1.26911	1.22166	1.19206
July	24	2019	255.95161	1.28958	1.26920	1.22175	1.19214
July	25	2019	255.96916	1.28966	1.26928	1.22183	1.19222
July	26	2019	255.98671	1.28975	1.26937	1.22191	1.19230
July	27	2019	256.00426	1.28984	1.26946	1.22200	1.19238
July	28	2019	256.02181	1.28993	1.26954	1.22208	1.19246
July	29	2019	256.03935	1.29002	1.26963	1.22217	1.19255
July	30	2019	256.05690	1.29011	1.26972	1.22225	1.19263
July	31	2019	256.07445	1.29019	1.26980	1.22233	1.19271
CPI-U (NSA) for:			March 2019 254.202	April 2019 255.548	May 2019 256.092		

TREASURY INFLATION-PROTECTED SECURITIES (TIPS)
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July 2019

Date			Ref CPI	Index Ratio	Index Ratio	Index Ratio	Index Ratio	
July	1	2019	255.54800	1.19684	1.18175	1.18233	1.17178	
July	2	2019	255.56555	1.19693	1.18183	1.18241	1.17186	
July	3	2019	255.58310	1.19701	1.18191	1.18249	1.17194	
July	4	2019	255.60065	1.19709	1.18199	1.18257	1.17202	
July	5	2019	255.61819	1.19717	1.18207	1.18265	1.17210	
July	6	2019	255.63574	1.19726	1.18215	1.18273	1.17218	
July	7	2019	255.65329	1.19734	1.18223	1.18282	1.17226	
July	8	2019	255.67084	1.19742	1.18231	1.18290	1.17234	
July	9	2019	255.68839	1.19750	1.18240	1.18298	1.17242	
July	10	2019	255.70594	1.19758	1.18248	1.18306	1.17250	
July	11	2019	255.72348	1.19767	1.18256	1.18314	1.17258	
July	12	2019	255.74103	1.19775	1.18264	1.18322	1.17267	
July	13	2019	255.75858	1.19783	1.18272	1.18330	1.17275	
July	14	2019	255.77613	1.19791	1.18280	1.18338	1.17283	
July	15	2019	255.79368	1.19799	1.18288	1.18347	1.17291	
July	16	2019	255.81123		1.18296	1.18355	1.17299	
July	17	2019	255.82877		1.18304	1.18363	1.17307	
July	18	2019	255.84632		1.18313	1.18371	1.17315	
July	19	2019	255.86387		1.18321	1.18379	1.17323	
July	20	2019	255.88142		1.18329	1.18387	1.17331	
July	21	2019	255.89897		1.18337	1.18395	1.17339	
July	22	2019	255.91652		1.18345	1.18403	1.17347	
July	23	2019	255.93406		1.18353	1.18412	1.17355	
July	24	2019	255.95161		1.18361	1.18420	1.17363	
July	25	2019	255.96916		1.18369	1.18428	1.17371	
July	26	2019	255.98671		1.18377	1.18436	1.17379	
July	27	2019	256.00426		1.18386	1.18444	1.17387	
July	28	2019	256.02181		1.18394	1.18452	1.17395	
July	29	2019	256.03935		1.18402	1.18460	1.17403	
July	30	2019	256.05690		1.18410	1.18468	1.17411	
July	31	2019	256.07445		1.18418	1.18476	1.17419	
CPI-U (NSA) for:			March 2019	254.202	April 2019	255.548	May 2019	256.092

TREASURY INFLATION-PROTECTED SECURITIES (TIPS)
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July 2019

Date			Ref CPI	Index Ratio	Index Ratio	Index Ratio	Index Ratio	
July	1	2019	255.54800	1.16821	1.16693	1.13383	1.12907	
July	2	2019	255.56555	1.16829	1.16701	1.13391	1.12915	
July	3	2019	255.58310	1.16837	1.16709	1.13399	1.12923	
July	4	2019	255.60065	1.16845	1.16717	1.13407	1.12930	
July	5	2019	255.61819	1.16853	1.16725	1.13415	1.12938	
July	6	2019	255.63574	1.16861	1.16733	1.13422	1.12946	
July	7	2019	255.65329	1.16869	1.16741	1.13430	1.12954	
July	8	2019	255.67084	1.16877	1.16749	1.13438	1.12961	
July	9	2019	255.68839	1.16885	1.16757	1.13446	1.12969	
July	10	2019	255.70594	1.16893	1.16766	1.13454	1.12977	
July	11	2019	255.72348	1.16901	1.16774	1.13461	1.12985	
July	12	2019	255.74103	1.16909	1.16782	1.13469	1.12992	
July	13	2019	255.75858	1.16917	1.16790	1.13477	1.13000	
July	14	2019	255.77613	1.16925	1.16798	1.13485	1.13008	
July	15	2019	255.79368	1.16933	1.16806	1.13492	1.13016	
July	16	2019	255.81123	1.16941	1.16814	1.13500	1.13023	
July	17	2019	255.82877	1.16949	1.16822	1.13508	1.13031	
July	18	2019	255.84632	1.16957	1.16830	1.13516	1.13039	
July	19	2019	255.86387	1.16965	1.16838	1.13524	1.13047	
July	20	2019	255.88142	1.16973	1.16846	1.13531	1.13054	
July	21	2019	255.89897	1.16981	1.16854	1.13539	1.13062	
July	22	2019	255.91652	1.16989	1.16862	1.13547	1.13070	
July	23	2019	255.93406	1.16997	1.16870	1.13555	1.13078	
July	24	2019	255.95161	1.17005	1.16878	1.13563	1.13085	
July	25	2019	255.96916	1.17013	1.16886	1.13570	1.13093	
July	26	2019	255.98671	1.17021	1.16894	1.13578	1.13101	
July	27	2019	256.00426	1.17029	1.16902	1.13586	1.13109	
July	28	2019	256.02181	1.17037	1.16910	1.13594	1.13116	
July	29	2019	256.03935	1.17045	1.16918	1.13601	1.13124	
July	30	2019	256.05690	1.17053	1.16926	1.13609	1.13132	
July	31	2019	256.07445	1.17061	1.16934	1.13617	1.13140	
CPI-U (NSA) for:			March 2019	254.202	April 2019	255.548	May 2019	256.092

TREASURY INFLATION-PROTECTED SECURITIES (TIPS)
Ref CPI and Index Ratios for
July 2019

Security: Description: CUSIP Number: Dated Date: Original Issue Date: Additional Issue Date(s):			0-3/4% 30-Year TIPS TIPS of February 2042 912810QV3 February 15, 2012 February 29, 2012 June 29, 2012 October 31, 2012	0-1/8% 10-Year TIPS Series D-2022 912828TE0 July 15, 2012 July 31, 2012 September 28, 2012 November 30, 2012	0-1/8% 10-Year TIPS Series A-2023 912828UH1 January 15, 2013 January 31, 2013 March 28, 2013 May 31, 2013	0-5/8% 30-Year TIPS TIPS of February 2043 912810RA8 February 15, 2013 February 28, 2013 June 28, 2013 October 31, 2013
Maturity Date: Ref CPI on Dated Date:			February 15, 2042 225.96062	July 15, 2022 229.96306	January 15, 2023 230.82203	February 15, 2043 229.91100
Date	Ref CPI	Index Ratio	Index Ratio	Index Ratio	Index Ratio	
July 1 2019	255.54800	1.13094	1.11126	1.10712	1.11151	
July 2 2019	255.56555	1.13102	1.11133	1.10720	1.11158	
July 3 2019	255.58310	1.13110	1.11141	1.10727	1.11166	
July 4 2019	255.60065	1.13117	1.11149	1.10735	1.11174	
July 5 2019	255.61819	1.13125	1.11156	1.10743	1.11181	
July 6 2019	255.63574	1.13133	1.11164	1.10750	1.11189	
July 7 2019	255.65329	1.13141	1.11171	1.10758	1.11197	
July 8 2019	255.67084	1.13148	1.11179	1.10765	1.11204	
July 9 2019	255.68839	1.13156	1.11187	1.10773	1.11212	
July 10 2019	255.70594	1.13164	1.11194	1.10781	1.11220	
July 11 2019	255.72348	1.13172	1.11202	1.10788	1.11227	
July 12 2019	255.74103	1.13179	1.11210	1.10796	1.11235	
July 13 2019	255.75858	1.13187	1.11217	1.10803	1.11242	
July 14 2019	255.77613	1.13195	1.11225	1.10811	1.11250	
July 15 2019	255.79368	1.13203	1.11233	1.10819	1.11258	
July 16 2019	255.81123	1.13211	1.11240	1.10826	1.11265	
July 17 2019	255.82877	1.13218	1.11248	1.10834	1.11273	
July 18 2019	255.84632	1.13226	1.11255	1.10841	1.11281	
July 19 2019	255.86387	1.13234	1.11263	1.10849	1.11288	
July 20 2019	255.88142	1.13242	1.11271	1.10857	1.11296	
July 21 2019	255.89897	1.13249	1.11278	1.10864	1.11303	
July 22 2019	255.91652	1.13257	1.11286	1.10872	1.11311	
July 23 2019	255.93406	1.13265	1.11294	1.10879	1.11319	
July 24 2019	255.95161	1.13273	1.11301	1.10887	1.11326	
July 25 2019	255.96916	1.13280	1.11309	1.10895	1.11334	
July 26 2019	255.98671	1.13288	1.11316	1.10902	1.11342	
July 27 2019	256.00426	1.13296	1.11324	1.10910	1.11349	
July 28 2019	256.02181	1.13304	1.11332	1.10917	1.11357	
July 29 2019	256.03935	1.13311	1.11339	1.10925	1.11365	
July 30 2019	256.05690	1.13319	1.11347	1.10933	1.11372	
July 31 2019	256.07445	1.13327	1.11355	1.10940	1.11380	
CPI-U (NSA) for:	March 2019	254.202	April 2019	255.548	May 2019	256.092

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July 2019

Security: Description: CUSIP Number: Dated Date: Original Issue Date: Additional Issue Date(s):			0-3/8% 10-Year TIPS Series D-2023 912828VM9 July 15, 2013 July 31, 2013 September 30, 2013 November 29, 2013	0-5/8% 10-Year TIPS Series A-2024 912828B25 January 15, 2014 January 31, 2014 March 31, 2014 May 30, 2014	1-3/8% 30-Year TIPS TIPS of February 2044 912810RF7 February 15, 2014 February 28, 2014 June 30, 2014 October 31, 2014	0-1/8% 10-Year TIPS Series D-2024 912828WU0 July 15, 2014 July 31, 2014 September 30, 2014 November 28, 2014
Maturity Date: Ref CPI on Dated Date:			July 15, 2023 232.71797	January 15, 2024 233.33058	February 15, 2044 233.05900	July 15, 2024 237.44594
Date	Ref CPI	Index Ratio	Index Ratio	Index Ratio	Index Ratio	
July 1 2019	255.54800	1.09810	1.09522	1.09649	1.07624	
July 2 2019	255.56555	1.09818	1.09529	1.09657	1.07631	
July 3 2019	255.58310	1.09825	1.09537	1.09665	1.07638	
July 4 2019	255.60065	1.09833	1.09544	1.09672	1.07646	
July 5 2019	255.61819	1.09840	1.09552	1.09680	1.07653	
July 6 2019	255.63574	1.09848	1.09559	1.09687	1.07661	
July 7 2019	255.65329	1.09855	1.09567	1.09695	1.07668	
July 8 2019	255.67084	1.09863	1.09575	1.09702	1.07675	
July 9 2019	255.68839	1.09870	1.09582	1.09710	1.07683	
July 10 2019	255.70594	1.09878	1.09590	1.09717	1.07690	
July 11 2019	255.72348	1.09886	1.09597	1.09725	1.07698	
July 12 2019	255.74103	1.09893	1.09605	1.09732	1.07705	
July 13 2019	255.75858	1.09901	1.09612	1.09740	1.07712	
July 14 2019	255.77613	1.09908	1.09620	1.09747	1.07720	
July 15 2019	255.79368	1.09916	1.09627	1.09755	1.07727	
July 16 2019	255.81123	1.09923	1.09635	1.09762	1.07735	
July 17 2019	255.82877	1.09931	1.09642	1.09770	1.07742	
July 18 2019	255.84632	1.09938	1.09650	1.09777	1.07749	
July 19 2019	255.86387	1.09946	1.09657	1.09785	1.07757	
July 20 2019	255.88142	1.09953	1.09665	1.09793	1.07764	
July 21 2019	255.89897	1.09961	1.09672	1.09800	1.07771	
July 22 2019	255.91652	1.09969	1.09680	1.09808	1.07779	
July 23 2019	255.93406	1.09976	1.09687	1.09815	1.07786	
July 24 2019	255.95161	1.09984	1.09695	1.09823	1.07794	
July 25 2019	255.96916	1.09991	1.09702	1.09830	1.07801	
July 26 2019	255.98671	1.09999	1.09710	1.09838	1.07808	
July 27 2019	256.00426	1.10006	1.09717	1.09845	1.07816	
July 28 2019	256.02181	1.10014	1.09725	1.09853	1.07823	
July 29 2019	256.03935	1.10021	1.09732	1.09860	1.07831	
July 30 2019	256.05690	1.10029	1.09740	1.09868	1.07838	
July 31 2019	256.07445	1.10036	1.09747	1.09875	1.07845	
CPI-U (NSA) for:	March 2019	254.202	April 2019	255.548	May 2019	256.092

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Ref CPI and Index Ratios for
July 2019

Security: Description: CUSIP Number: Dated Date: Original Issue Date: Additional Issue Date(s):			0-1/4% 10-Year TIPS Series A-2025 912828H45 January 15, 2015 January 30, 2015 March 31, 2015 May 29, 2015	0-3/4% 30-Year TIPS TIPS of February 2045 912810RL4 February 15, 2015 February 27, 2015 June 30, 2015 October 30, 2015	0-1/8% 5-Year TIPS Series X-2020 912828K33 April 15, 2015 April 30, 2015 August 31, 2015 December 31, 2015	0-3/8% 10-Year TIPS Series D-2025 912828XL9 July 15, 2015 July 31, 2015 September 30, 2015 November 30, 2015
Maturity Date: Ref CPI on Dated Date:			January 15, 2025 236.85403	February 15, 2045 235.48150	April 15, 2020 234.18067	July 15, 2025 237.14365
Date	Ref CPI	Index Ratio	Index Ratio	Index Ratio	Index Ratio	
July 1 2019	255.54800	1.07893	1.08521	1.09124	1.07761	
July 2 2019	255.56555	1.07900	1.08529	1.09132	1.07768	
July 3 2019	255.58310	1.07907	1.08536	1.09139	1.07776	
July 4 2019	255.60065	1.07915	1.08544	1.09147	1.07783	
July 5 2019	255.61819	1.07922	1.08551	1.09154	1.07790	
July 6 2019	255.63574	1.07930	1.08559	1.09162	1.07798	
July 7 2019	255.65329	1.07937	1.08566	1.09169	1.07805	
July 8 2019	255.67084	1.07944	1.08574	1.09177	1.07813	
July 9 2019	255.68839	1.07952	1.08581	1.09184	1.07820	
July 10 2019	255.70594	1.07959	1.08589	1.09192	1.07827	
July 11 2019	255.72348	1.07967	1.08596	1.09199	1.07835	
July 12 2019	255.74103	1.07974	1.08603	1.09207	1.07842	
July 13 2019	255.75858	1.07982	1.08611	1.09214	1.07850	
July 14 2019	255.77613	1.07989	1.08618	1.09222	1.07857	
July 15 2019	255.79368	1.07996	1.08626	1.09229	1.07864	
July 16 2019	255.81123	1.08004	1.08633	1.09237	1.07872	
July 17 2019	255.82877	1.08011	1.08641	1.09244	1.07879	
July 18 2019	255.84632	1.08019	1.08648	1.09252	1.07887	
July 19 2019	255.86387	1.08026	1.08656	1.09259	1.07894	
July 20 2019	255.88142	1.08033	1.08663	1.09267	1.07901	
July 21 2019	255.89897	1.08041	1.08671	1.09274	1.07909	
July 22 2019	255.91652	1.08048	1.08678	1.09282	1.07916	
July 23 2019	255.93406	1.08056	1.08685	1.09289	1.07924	
July 24 2019	255.95161	1.08063	1.08693	1.09297	1.07931	
July 25 2019	255.96916	1.08070	1.08700	1.09304	1.07938	
July 26 2019	255.98671	1.08078	1.08708	1.09312	1.07946	
July 27 2019	256.00426	1.08085	1.08715	1.09319	1.07953	
July 28 2019	256.02181	1.08093	1.08723	1.09327	1.07961	
July 29 2019	256.03935	1.08100	1.08730	1.09334	1.07968	
July 30 2019	256.05690	1.08107	1.08738	1.09342	1.07975	
July 31 2019	256.07445	1.08115	1.08745	1.09349	1.07983	
CPI-U (NSA) for:	March 2019	254.202	April 2019	255.548	May 2019	256.092

TREASURY INFLATION-PROTECTED SECURITIES (TIPS)
Ref CPI and Index Ratios for
July 2019

Date			Ref CPI	Index Ratio	Index Ratio	Index Ratio	Index Ratio	
July	1	2019	255.54800	1.07549	1.07851	1.07823	1.06611	
July	2	2019	255.56555	1.07556	1.07859	1.07830	1.06618	
July	3	2019	255.58310	1.07564	1.07866	1.07838	1.06626	
July	4	2019	255.60065	1.07571	1.07874	1.07845	1.06633	
July	5	2019	255.61819	1.07578	1.07881	1.07853	1.06640	
July	6	2019	255.63574	1.07586	1.07888	1.07860	1.06648	
July	7	2019	255.65329	1.07593	1.07896	1.07867	1.06655	
July	8	2019	255.67084	1.07600	1.07903	1.07875	1.06662	
July	9	2019	255.68839	1.07608	1.07911	1.07882	1.06670	
July	10	2019	255.70594	1.07615	1.07918	1.07890	1.06677	
July	11	2019	255.72348	1.07623	1.07925	1.07897	1.06684	
July	12	2019	255.74103	1.07630	1.07933	1.07904	1.06692	
July	13	2019	255.75858	1.07637	1.07940	1.07912	1.06699	
July	14	2019	255.77613	1.07645	1.07948	1.07919	1.06706	
July	15	2019	255.79368	1.07652	1.07955	1.07927	1.06714	
July	16	2019	255.81123	1.07660	1.07963	1.07934	1.06721	
July	17	2019	255.82877	1.07667	1.07970	1.07941	1.06728	
July	18	2019	255.84632	1.07674	1.07977	1.07949	1.06735	
July	19	2019	255.86387	1.07682	1.07985	1.07956	1.06743	
July	20	2019	255.88142	1.07689	1.07992	1.07964	1.06750	
July	21	2019	255.89897	1.07696	1.08000	1.07971	1.06757	
July	22	2019	255.91652	1.07704	1.08007	1.07978	1.06765	
July	23	2019	255.93406	1.07711	1.08014	1.07986	1.06772	
July	24	2019	255.95161	1.07719	1.08022	1.07993	1.06779	
July	25	2019	255.96916	1.07726	1.08029	1.08001	1.06787	
July	26	2019	255.98671	1.07733	1.08037	1.08008	1.06794	
July	27	2019	256.00426	1.07741	1.08044	1.08015	1.06801	
July	28	2019	256.02181	1.07748	1.08051	1.08023	1.06809	
July	29	2019	256.03935	1.07756	1.08059	1.08030	1.06816	
July	30	2019	256.05690	1.07763	1.08066	1.08038	1.06823	
July	31	2019	256.07445	1.07770	1.08074	1.08045	1.06831	
CPI-U (NSA) for:			March 2019	254.202	April 2019	255.548	May 2019	256.092

TREASURY INFLATION-PROTECTED SECURITIES (TIPS)
Ref CPI and Index Ratios for
July 2019

Date			Ref CPI	Index Ratio	Index Ratio	Index Ratio	Index Ratio	
July	1	2019	255.54800	1.05791	1.05864	1.05079	1.04468	
July	2	2019	255.56555	1.05798	1.05871	1.05086	1.04475	
July	3	2019	255.58310	1.05806	1.05879	1.05094	1.04482	
July	4	2019	255.60065	1.05813	1.05886	1.05101	1.04490	
July	5	2019	255.61819	1.05820	1.05893	1.05108	1.04497	
July	6	2019	255.63574	1.05827	1.05900	1.05115	1.04504	
July	7	2019	255.65329	1.05835	1.05908	1.05123	1.04511	
July	8	2019	255.67084	1.05842	1.05915	1.05130	1.04518	
July	9	2019	255.68839	1.05849	1.05922	1.05137	1.04525	
July	10	2019	255.70594	1.05856	1.05930	1.05144	1.04533	
July	11	2019	255.72348	1.05864	1.05937	1.05151	1.04540	
July	12	2019	255.74103	1.05871	1.05944	1.05159	1.04547	
July	13	2019	255.75858	1.05878	1.05951	1.05166	1.04554	
July	14	2019	255.77613	1.05885	1.05959	1.05173	1.04561	
July	15	2019	255.79368	1.05893	1.05966	1.05180	1.04568	
July	16	2019	255.81123	1.05900	1.05973	1.05187	1.04576	
July	17	2019	255.82877	1.05907	1.05980	1.05195	1.04583	
July	18	2019	255.84632	1.05915	1.05988	1.05202	1.04590	
July	19	2019	255.86387	1.05922	1.05995	1.05209	1.04597	
July	20	2019	255.88142	1.05929	1.06002	1.05216	1.04604	
July	21	2019	255.89897	1.05936	1.06009	1.05224	1.04612	
July	22	2019	255.91652	1.05944	1.06017	1.05231	1.04619	
July	23	2019	255.93406	1.05951	1.06024	1.05238	1.04626	
July	24	2019	255.95161	1.05958	1.06031	1.05245	1.04633	
July	25	2019	255.96916	1.05965	1.06039	1.05252	1.04640	
July	26	2019	255.98671	1.05973	1.06046	1.05260	1.04647	
July	27	2019	256.00426	1.05980	1.06053	1.05267	1.04655	
July	28	2019	256.02181	1.05987	1.06060	1.05274	1.04662	
July	29	2019	256.03935	1.05994	1.06068	1.05281	1.04669	
July	30	2019	256.05690	1.06002	1.06075	1.05288	1.04676	
July	31	2019	256.07445	1.06009	1.06082	1.05296	1.04683	
CPI-U (NSA) for:			March 2019	254.202	April 2019	255.548	May 2019	256.092

TREASURY INFLATION-PROTECTED SECURITIES (TIPS)
Ref CPI and Index Ratios for
July 2019

Security: Description: CUSIP Number: Dated Date: Original Issue Date: Additional Issue Date(s):			0-1/2% 10-Year TIPS Series A-2028 9128283R9 January 15, 2018 January 31, 2018 March 29, 2018 May 31, 2018	1% 30-Year TIPS TIPS of February 2048 912810SB5 February 15, 2018 February 28, 2018 June 29, 2018 October 31, 2018	0-5/8% 5-Year TIPS Series X-2023 9128284H0 April 15, 2018 April 30, 2018 August 31, 2018 December 31, 2018	0-3/4% 10-Year TIPS Series D-2028 912828Y38 July 15, 2018 July 31, 2018 September 28, 2018 November 30, 2018
Maturity Date: Ref CPI on Dated Date:			January 15, 2028 246.66571	February 15, 2048 246.59650	April 15, 2023 248.39153	July 15, 2028 251.01658
Date	Ref CPI	Index Ratio	Index Ratio	Index Ratio	Index Ratio	
July 1 2019	255.54800	1.03601	1.03630	1.02881	1.01805	
July 2 2019	255.56555	1.03608	1.03637	1.02888	1.01812	
July 3 2019	255.58310	1.03615	1.03644	1.02895	1.01819	
July 4 2019	255.60065	1.03622	1.03651	1.02902	1.01826	
July 5 2019	255.61819	1.03629	1.03658	1.02909	1.01833	
July 6 2019	255.63574	1.03637	1.03666	1.02916	1.01840	
July 7 2019	255.65329	1.03644	1.03673	1.02924	1.01847	
July 8 2019	255.67084	1.03651	1.03680	1.02931	1.01854	
July 9 2019	255.68839	1.03658	1.03687	1.02938	1.01861	
July 10 2019	255.70594	1.03665	1.03694	1.02945	1.01868	
July 11 2019	255.72348	1.03672	1.03701	1.02952	1.01875	
July 12 2019	255.74103	1.03679	1.03708	1.02959	1.01882	
July 13 2019	255.75858	1.03686	1.03715	1.02966	1.01889	
July 14 2019	255.77613	1.03693	1.03723	1.02973	1.01896	
July 15 2019	255.79368	1.03701	1.03730	1.02980	1.01903	
July 16 2019	255.81123	1.03708	1.03737	1.02987	1.01910	
July 17 2019	255.82877	1.03715	1.03744	1.02994	1.01917	
July 18 2019	255.84632	1.03722	1.03751	1.03001	1.01924	
July 19 2019	255.86387	1.03729	1.03758	1.03008	1.01931	
July 20 2019	255.88142	1.03736	1.03765	1.03015	1.01938	
July 21 2019	255.89897	1.03743	1.03772	1.03022	1.01945	
July 22 2019	255.91652	1.03750	1.03779	1.03029	1.01952	
July 23 2019	255.93406	1.03757	1.03787	1.03037	1.01959	
July 24 2019	255.95161	1.03765	1.03794	1.03044	1.01966	
July 25 2019	255.96916	1.03772	1.03801	1.03051	1.01973	
July 26 2019	255.98671	1.03779	1.03808	1.03058	1.01980	
July 27 2019	256.00426	1.03786	1.03815	1.03065	1.01987	
July 28 2019	256.02181	1.03793	1.03822	1.03072	1.01994	
July 29 2019	256.03935	1.03800	1.03829	1.03079	1.02001	
July 30 2019	256.05690	1.03807	1.03836	1.03086	1.02008	
July 31 2019	256.07445	1.03814	1.03844	1.03093	1.02015	
CPI-U (NSA) for:	March 2019	254.202	April 2019	255.548	May 2019	256.092

TREASURY INFLATION-PROTECTED SECURITIES (TIPS)
Ref CPI and Index Ratios for
July 2019

Date			Ref CPI	Index Ratio	Index Ratio	Index Ratio		
July	1	2019	255.54800	1.01206	1.01555	1.01324		
July	2	2019	255.56555	1.01213	1.01562	1.01331		
July	3	2019	255.58310	1.01220	1.01569	1.01338		
July	4	2019	255.60065	1.01227	1.01576	1.01345		
July	5	2019	255.61819	1.01234	1.01583	1.01352		
July	6	2019	255.63574	1.01241	1.01590	1.01359		
July	7	2019	255.65329	1.01248	1.01597	1.01366		
July	8	2019	255.67084	1.01255	1.01604	1.01373		
July	9	2019	255.68839	1.01262	1.01611	1.01380		
July	10	2019	255.70594	1.01269	1.01618	1.01387		
July	11	2019	255.72348	1.01276	1.01625	1.01394		
July	12	2019	255.74103	1.01283	1.01632	1.01401		
July	13	2019	255.75858	1.01290	1.01639	1.01408		
July	14	2019	255.77613	1.01296	1.01645	1.01415		
July	15	2019	255.79368	1.01303	1.01652	1.01422		
July	16	2019	255.81123	1.01310	1.01659	1.01428		
July	17	2019	255.82877	1.01317	1.01666	1.01435		
July	18	2019	255.84632	1.01324	1.01673	1.01442		
July	19	2019	255.86387	1.01331	1.01680	1.01449		
July	20	2019	255.88142	1.01338	1.01687	1.01456		
July	21	2019	255.89897	1.01345	1.01694	1.01463		
July	22	2019	255.91652	1.01352	1.01701	1.01470		
July	23	2019	255.93406	1.01359	1.01708	1.01477		
July	24	2019	255.95161	1.01366	1.01715	1.01484		
July	25	2019	255.96916	1.01373	1.01722	1.01491		
July	26	2019	255.98671	1.01380	1.01729	1.01498		
July	27	2019	256.00426	1.01387	1.01736	1.01505		
July	28	2019	256.02181	1.01394	1.01743	1.01512		
July	29	2019	256.03935	1.01401	1.01750	1.01519		
July	30	2019	256.05690	1.01408	1.01757	1.01526		
July	31	2019	256.07445	1.01415	1.01764	1.01533		
CPI-U (NSA) for:			March 2019	254.202	April 2019	255.548	May 2019	256.092