

Table S1: Simplified model of NEFA

Supplementary material for "Towards true Climate Neutrality for Global Aviation: A Negative Emissions Fund for Airlines"

Authors: Sascha Nick, Philippe Thalmann

Updated 23.10.2022

		CO ₂ emissions [Mt]	Cumulative emissions [Mt]	% removed	CO ₂ to be removed [Mt]	Removal capacity [Mt]	Actual removals [Mt]	Net emissions [Mt]	Cumulative removals [Mt]	Fund active	Removal cost [\$/t]	Removal cost paid by fund [\$ bn]	Discounted cost [\$ bn]	Payment to fund for future removal [\$ bn]	Discounted payment to fund [\$ bn]	Balance of fund [\$ bn]	
Simulation parameters	2025	1000.0	1000.0	12.5%	125.0	0.0	0.0	1000.0	0.0	1	400.0	0.00	0.00	28.73	28.73	28.73	
Emission reduction p.a.	8.80%	2026	912.0	1912.0	32.5%	296.4	1.0	-1.0	911.0	1.0	1	394.0	-0.39	-0.39	68.13	66.80	97.05
Initial emissions [Mt/p.a.]	1000	2027	831.7	2743.7	52.5%	436.7	1.5	-1.5	830.2	2.5	1	388.0	-0.58	-0.56	100.38	96.48	198.79
Final emissions [Mt/p.a.]	100	2028	758.6	3502.3	72.5%	549.9	2.3	-2.3	756.3	4.8	1	382.0	-0.86	-0.81	126.42	119.13	328.32
NE growth 2027-36	50.0%	2029	691.8	4194.1	92.5%	639.9	3.4	-3.4	688.4	8.1	1	376.0	-1.27	-1.17	147.10	135.90	480.72
NE growth 2037+	25.0%	2030	630.9	4825.0	100.0%	630.9	5.1	-5.1	625.9	13.2	1	370.0	-1.87	-1.70	145.03	131.36	633.49
Max removals Mt p.a.]	400	2031	575.4	5400.4	100.0%	575.4	7.6	-7.6	567.8	20.8	1	364.0	-2.76	-2.45	132.27	117.45	775.66
Removal cost start [\$ /t]	400	2032	524.8	5925.2	100.0%	524.8	11.4	-11.4	513.4	32.2	1	358.0	-4.08	-3.55	120.63	105.01	907.73
in year	2025	2033	478.6	6403.8	100.0%	478.6	17.1	-17.1	461.5	49.3	1	352.0	-6.01	-5.13	110.01	93.90	1,029.88
Removal cost final [\$ /t]	250	2034	436.5	6840.2	100.0%	436.5	25.6	-25.6	410.8	74.9	1	346.0	-8.87	-7.42	100.33	83.95	1,141.95
from year	2050	2035	398.1	7238.3	100.0%	398.1	38.4	-38.4	359.6	113.3	1	340.0	-13.07	-10.72	91.50	75.06	1,243.22
Interest rate	2.00%	2036	363.0	7601.3	100.0%	363.0	57.7	-57.7	305.4	171.0	1	334.0	-19.26	-15.49	83.45	67.12	1,332.27
Simulation results	2037	331.1	7932.4	100.0%	331.1	72.1	-72.1	259.0	243.1	1	328.0	-23.64	-18.64	76.11	60.01	1,411.38	
CO ₂ price [\$ /t]	229.87	2038	301.9	8234.4	100.0%	301.9	90.1	-90.1	211.8	333.2	1	322.0	-29.01	-22.43	69.41	53.66	1,480.01
Σ NE payments [\$ bn]	3256.16	2039	275.4	8509.7	100.0%	275.4	112.6	-112.6	162.8	445.8	1	316.0	-35.59	-26.97	63.30	47.97	1,537.32
Removed excess CO ₂ by	2072	2040	251.1	8760.9	100.0%	251.1	140.8	-140.8	110.4	586.6	1	310.0	-43.64	-32.43	57.73	42.90	1,582.15
Cash flow summary	2041	229.0	8989.9	100.0%	229.0	176.0	-176.0	53.1	762.6	1	304.0	-53.50	-38.97	52.65	38.35	1,612.95	
Total discounted cash flow [\$ bn]	2042	208.9	9198.8	100.0%	208.9	220.0	-220.0	-11.1	982.5	1	298.0	-65.55	-46.82	48.02	34.29	1,627.67	
Paid by fund	-1816.79	2043	190.5	9389.3	100.0%	190.5	275.0	-275.0	-84.5	1257.5	1	292.0	-80.29	-56.22	43.79	30.66	1,623.73
Paid into fund	1816.79	2044	173.7	9563.0	100.0%	173.7	343.7	-343.7	-170.0	1601.2	1	286.0	-98.30	-67.48	39.94	27.41	1,597.84
Fund inbalance	0.00	2045	158.5	9721.5	100.0%	158.5	400.0	-400.0	-241.5	2001.2	1	280.0	-112.00	-75.37	36.42	24.51	1,554.22
		2046	144.5	9866.0	100.0%	144.5	400.0	-400.0	-255.5	2401.2	1	274.0	-109.60	-72.31	33.22	21.92	1,508.92
		2047	131.8	9997.8	100.0%	131.8	400.0	-400.0	-268.2	2801.2	1	268.0	-107.20	-69.34	30.30	19.60	1,462.20
		2048	120.2	10118.0	100.0%	120.2	400.0	-400.0	-279.8	3201.2	1	262.0	-104.80	-66.46	27.63	17.52	1,414.27
		2049	109.6	10227.6	100.0%	109.6	400.0	-400.0	-290.4	3601.2	1	256.0	-102.40	-63.66	25.20	15.67	1,365.35
		2050	100.0	10327.6	100.0%	100.0	400.0	-400.0	-300.0	4001.2	1	250.0	-100.00	-60.95	22.99	14.01	1,315.65
		2051	100.0	10427.6	100.0%	100.0	400.0	-400.0	-300.0	4401.2	1	250.0	-100.00	-59.76	22.99	13.74	1,264.95
		2052	100.0	10527.6	100.0%	100.0	400.0	-400.0	-300.0	4801.2	1	250.0	-100.00	-58.59	22.99	13.47	1,213.23
		2053	100.0	10627.6	100.0%	100.0	400.0	-400.0	-300.0	5201.2	1	250.0	-100.00	-57.44	22.99	13.20	1,160.49
		2054	100.0	10727.6	100.0%	100.0	400.0	-400.0	-300.0	5601.2	1	250.0	-100.00	-56.31	22.99	12.94	1,106.68
		2055	100.0	10827.6	100.0%	100.0	400.0	-400.0	-300.0	6001.2	1	250.0	-100.00	-55.21	22.99	12.69	1,051.80
		2056	100.0	10927.6	100.0%	100.0	400.0	-400.0	-300.0	6401.2	1	250.0	-100.00	-54.12	22.99	12.44	995.83
		2057	100.0	11027.6	100.0%	100.0	400.0	-400.0	-300.0	6801.2	1	250.0	-100.00	-53.06	22.99	12.20	938.73
		2058	100.0	11127.6	100.0%	100.0	400.0	-400.0	-300.0	7201.2	1	250.0	-100.00	-52.02	22.99	11.96	880.49
		2059	100.0	11227.6	100.0%	100.0	400.0	-400.0	-300.0	7601.2	1	250.0	-100.00	-51.00	22.99	11.72	821.09
		2060	100.0	11327.6	100.0%	100.0	400.0	-400.0	-300.0	8001.2	1	250.0	-100.00	-50.00	22.99	11.49	760.50
		2061	100.0	11427.6	100.0%	100.0	400.0	-400.0	-300.0	8401.2	1	250.0	-100.00	-49.02	22.99	11.27	698.70
		2062	100.0	11527.6	100.0%	100.0	400.0	-400.0	-300.0	8801.2	1	250.0	-100.00	-48.06	22.99	11.05	635.66
		2063	100.0	11627.6	100.0%	100.0	400.0	-400.0	-300.0	9201.2	1	250.0	-100.00	-47.12	22.99	10.83	571.36
		2064	100.0	11727.6	100.0%	100.0	400.0	-400.0	-300.0	9601.2	1	250.0	-100.00	-46.19	22.99	10.62	505.77
		2065	100.0	11827.6	100.0%	100.0	400.0	-400.0	-300.0	10001.2	1	250.0	-100.00	-45.29	22.99	10.41	438.88
		2066	100.0	11927.6	100.0%	100.0	400.0	-400.0	-300.0	10401.2	1	250.0	-100.00	-44.40	22.99	10.21	370.64
		2067	100.0	12027.6	100.0%	100.0	400.0	-400.0	-300.0	10801.2	1	250.0	-100.00	-43.53	22.99	10.01	301.04
		2068	100.0	12127.6	100.0%	100.0	400.0	-400.0	-300.0	11201.2	1	250.0	-100.00	-42.68	22.99	9.81	230.05
		2069	100.0	12227.6	100.0%	100.0	400.0	-400.0	-300.0	11601.2	1	250.0	-100.00	-41.84	22.99	9.62	157.64
		2070	100.0	12327.6	100.0%	100.0	400.0	-400.0	-300.0	12001.2	1	250.0	-100.00	-41.02	22.99	9.43	83.78
		2071	100.0	12427.6	100.0%	100.0	400.0	-400.0	-300.0	12401.2	1	250.0	-100.00	-40.22	22.99	9.24	8.44
		2072	100.0	12527.6	100.0%	100.0	400.0	-126.4	-26.4	12527.6	1	250.0	-31.60	-12.46	22.99	9.06	0.00
		2073	100.0	12627.6	100.0%	100.0	400.0	-100.0	0.0	12627.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2074	100.0	12727.6	100.0%	100.0	400.0	-100.0	0.0	12727.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2075	100.0	12827.6	100.0%	100.0	400.0	-100.0	0.0	12827.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2076	100.0	12927.6	100.0%	100.0	400.0	-100.0	0.0	12927.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2077	100.0	13027.6	100.0%	100.0	400.0	-100.0	0.0	13027.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2078	100.0	13127.6	100.0%	100.0	400.0	-100.0	0.0	13127.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2079	100.0	13227.6	100.0%	100.0	400.0	-100.0	0.0	13227.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2080	100.0	13327.6	100.0%	100.0	400.0	-100.0	0.0	13327.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2081	100.0	13427.6	100.0%	100.0	400.0	-100.0	0.0	13427.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2082	100.0	13527.6	100.0%	100.0	400.0	-100.0	0.0	13527.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2083	100.0	13627.6	100.0%	100.0	400.0	-100.0	0.0	13627.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2084	100.0	13727.6	100.0%	100.0	400.0	-100.0	0.0	13727.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2085	100.0	13827.6	100.0%	100.0	400.0	-100.0	0.0	13827.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2086	100.0	13927.6	100.0%	100.0	400.0	-100.0	0.0	13927.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2087	100.0	14027.6	100.0%	100.0	400.0	-100.0	0.0	14027.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2088	100.0	14127.6	100.0%	100.0	400.0	-100.0	0.0	14127.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2089	100.0	14227.6	100.0%	100.0	400.0	-100.0	0.0	14227.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2090	100.0	14327.6	100.0%	100.0	400.0	-100.0	0.0	14327.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2091	100.0	14427.6	100.0%	100.0	400.0	-100.0	0.0	14427.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2092	100.0	14527.6	100.0%	100.0	400.0	-100.0	0.0	14527.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2093	100.0	14627.6	100.0%	100.0	400.0	-100.0	0.0	14627.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2094	100.0	14727.6	100.0%	100.0	400.0	-100.0	0.0	14727.6	0	250.0	0.00				

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Authors: Sascha Nick, Philippe Thalmann

Updated 23.10.2022

			CO ₂ emissions [Mt]	Cumulative emissions [Mt]	% removed	CO ₂ to be removed [Mt]	Removal capacity [Mt]	Actual removals [Mt]	Net emissions [Mt]	Cumulative removals [Mt]	Fund active	Removal cost [\$/t]	Removal cost paid by fund [\$ bn]	Discounted cost [\$ bn]	Payment to fund for future removal [\$ bn]	Discounted payment to fund [\$ bn]	Balance of fund [\$ bn]
		2122	100.0	17527.6	100.0%	100.0	400.0	-100.0	0.0	17527.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2123	100.0	17627.6	100.0%	100.0	400.0	-100.0	0.0	17627.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2124	100.0	17727.6	100.0%	100.0	400.0	-100.0	0.0	17727.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2125	100.0	17827.6	100.0%	100.0	400.0	-100.0	0.0	17827.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2126	100.0	17927.6	100.0%	100.0	400.0	-100.0	0.0	17927.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2127	100.0	18027.6	100.0%	100.0	400.0	-100.0	0.0	18027.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2128	100.0	18127.6	100.0%	100.0	400.0	-100.0	0.0	18127.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2129	100.0	18227.6	100.0%	100.0	400.0	-100.0	0.0	18227.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2130	100.0	18327.6	100.0%	100.0	400.0	-100.0	0.0	18327.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2131	100.0	18427.6	100.0%	100.0	400.0	-100.0	0.0	18427.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2132	100.0	18527.6	100.0%	100.0	400.0	-100.0	0.0	18527.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2133	100.0	18627.6	100.0%	100.0	400.0	-100.0	0.0	18627.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2134	100.0	18727.6	100.0%	100.0	400.0	-100.0	0.0	18727.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2135	100.0	18827.6	100.0%	100.0	400.0	-100.0	0.0	18827.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2136	100.0	18927.6	100.0%	100.0	400.0	-100.0	0.0	18927.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2137	100.0	19027.6	100.0%	100.0	400.0	-100.0	0.0	19027.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2138	100.0	19127.6	100.0%	100.0	400.0	-100.0	0.0	19127.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2139	100.0	19227.6	100.0%	100.0	400.0	-100.0	0.0	19227.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2140	100.0	19327.6	100.0%	100.0	400.0	-100.0	0.0	19327.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2141	100.0	19427.6	100.0%	100.0	400.0	-100.0	0.0	19427.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2142	100.0	19527.6	100.0%	100.0	400.0	-100.0	0.0	19527.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2143	100.0	19627.6	100.0%	100.0	400.0	-100.0	0.0	19627.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2144	100.0	19727.6	100.0%	100.0	400.0	-100.0	0.0	19727.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2145	100.0	19827.6	100.0%	100.0	400.0	-100.0	0.0	19827.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2146	100.0	19927.6	100.0%	100.0	400.0	-100.0	0.0	19927.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2147	100.0	20027.6	100.0%	100.0	400.0	-100.0	0.0	20027.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2148	100.0	20127.6	100.0%	100.0	400.0	-100.0	0.0	20127.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2149	100.0	20227.6	100.0%	100.0	400.0	-100.0	0.0	20227.6	0	250.0	0.00	0.00	0.00	0.00	0.00
		2150	100.0	20327.6	100.0%	100.0	400.0	-100.0	0.0	20327.6	0	250.0	0.00	0.00	0.00	0.00	0.00
											48		-3256.16	-1816.79	2386.42	1816.79	

Table S2: Aviation Key Metrics 1929-2070

	Ritchie et al. 2020	Airlines for America 2022	This paper	This paper	Airlines for America 2022	Sausen & Schumann 2000 (before 1990) Lee et al. 2021 (from 1990)	This paper	Lee et al. 2021
Year	Past RPK	Past RPK [10 ¹² p-km]	Future RPK (-7.3% p.a.)	Future RPK (-2.5% p.a.)	Load factor	CO ₂ emissions [Mt, right axis]	Future CO ₂ emissions [Mt, right axis]	Fuel [Mt, right axis]
1929	0.000170	0.000170						
1930	0.000270	0.000270						
1931	0.000330	0.000330						
1932	0.000405	0.000405						
1933	0.000545	0.000545						
1934	0.000650	0.000650						
1935	0.000920	0.000920						
1936	0.001225	0.001225						
1937	0.001410	0.001410						
1938	0.001685	0.001685						
1939	0.002030	0.002030						
1940	0.002530	0.002530				28.2		
1941	0.003	0.003				30.4		
1942	0.004	0.004				33.0		
1943	0.004	0.004				35.6		
1944	0.005	0.005				38.5		
1945	0.008	0.008				41.4		
1946	0.016	0.016				45.1		
1947	0.019	0.019				48.4		
1948	0.021	0.021				52.4		
1949	0.024	0.024				56.5		
1950	0.028	0.028			60.87%	61.2		
1951	0.035	0.035			63.64%	66.0		
1952	0.040	0.040			62.50%	71.1		
1953	0.047	0.047			62.67%	77.0		
1954	0.052	0.052			60.47%	83.2		
1955	0.061	0.061			61.62%	89.8		
1956	0.071	0.071			62.28%	97.2		
1957	0.082	0.082			61.65%	104.9		
1958	0.085	0.085			58.22%	113.3		
1959	0.098	0.098			60.49%	122.1		
1960	0.109	0.200			59.24%	132.0		
1961	0.117	0.117			55.19%	144.8		
1962	0.130	0.130			53.50%	159.5		
1963	0.147	0.147			53.65%	168.3		
1964	0.171	0.171			55.88%	176.0		
1965	0.198	0.198			55.93%	188.1		
1966	0.229	0.229			57.68%	203.9		
1967	0.273	0.273			56.99%	240.5		
1968	0.309	0.309			53.45%	272.4		
1969	0.351	0.351			51.99%	285.3		
1970	0.460	0.460			54.82%	286.0		
1971	0.494	0.494			54.06%	330.0		
1972	0.560	0.560			57.11%	352.0		
1973	0.618	0.618			57.63%	364.5		
1974	0.656	0.656			59.27%	352.0		
1975	0.697	0.697			59.15%	352.4		
1976	0.764	0.764			60.15%	353.5		
1977	0.818	0.818			60.78%	374.4		
1978	0.936	0.936			64.52%	387.6		
1979	1.060	1.060			65.97%	403.7		
1980	1.089	1.089			63.18%	406.6		
1981	1.119	1.119			63.71%	400.8		
1982	1.142	1.142			63.64%	405.2		
1983	1.190	1.190			64.24%	410.7		
1984	1.278	1.278			64.81%	438.2		
1985	1.367	1.367			65.71%	452.5		
1986	1.452	1.452			64.98%	476.3		
1987	1.590	1.589			67.14%	497.2		
1988	1.705	1.705			67.57%	518.5		
1989	1.774	1.774			68.01%	537.2		
1990	1.894	1.894			67.63%	549.6		173.90
1991	1.845	1.845			66.39%	531.5		168.20
1992	1.929	1.929			65.83%	532.8		168.60
1993	1.949	1.949			64.69%	535.7		169.50
1994	2.100	2.100			66.26%	561.2		177.60
1995	2.248	2.248			66.94%	574.9		181.90
1996	2.432	2.432			68.23%	600.9		190.20
1997	2.573	2.573			69.02%	619.2		195.90
1998	2.628	2.628			68.48%	631.4		199.80
1999	2.798	2.798			69.07%	651.8		206.30
2000	3.201	3.201			71.07%	685.5		216.90
2001	3.109	3.109			69.24%	659.4		208.70
2002	3.124	3.124			71.34%	660.7		209.10
2003	3.180	3.180			71.58%	660.3		209.00
2004	3.629	3.629			73.39%	701.9		222.10

Table S2: Aviation Key Metrics 1929-2070

	Ritchie et al. 2020	Airlines for America 2022	This paper	This paper	Airlines for America 2022	Sausen & Schumann 2000 (before 1990) Lee et al. 2021 (from 1990)	This paper	Lee et al. 2021
Year	Past RPK	Past RPK [10 ¹² p-km]	Future RPK (−7.3% p.a.)	Future RPK (−2.5% p.a.)	Load factor	CO ₂ emissions [Mt, right axis]	Future CO ₂ emissions [Mt, right axis]	Fuel [Mt, right axis]
2005	3.919	3.919			74.94%	736.4		233.00
2006	4.171	4.171			75.82%	744.9		235.70
2007	4.513	4.513			76.80%	766.6		242.60
2008	4.609	4.608			76.01%	763.0		241.50
2009	4.561	4.561			76.68%	723.6		229.00
2010	4.924	4.930			78.17%	760.1		240.50
2011	5.248	5.264			78.01%	782.7		247.70
2012	5.529	5.545			78.86%	791.1		250.40
2013	5.833	5.850			79.48%	813.6		257.50
2014	6.181	6.199			79.72%	839.2		265.60
2015	6.645	6.664			80.24%	885.1		280.10
2016	7.136	7.157			80.29%	927.9		293.60
2017	7.707	7.730			81.48%	982.6		311.00
2018	8.258	8.293			81.72%	1033.7		327.10
2019	8.677	8.677			82.39%			
2020	2.990	2.990			65.29%			
2021		3.609	3.609	3.609	67.20%			
2022			4.882	4.882	70.90%			
2023			6.155	6.155	74.60%			
2024			7.427	7.427	78.30%			
2025			8.700	8.700	82.00%		1000.0	
2026			8.065	8.483	83.00%		912.0	
2027			7.476	8.270	84.00%		831.8	
2028			6.930	8.064	85.00%		758.6	
2029			6.424	7.862	86.00%		691.8	
2030			5.955	7.666	87.00%		631.0	
2031			5.521	7.474	88.00%		575.4	
2032			5.118	7.287	89.00%		524.8	
2033			4.744	7.105	90.00%		478.6	
2034			4.398	6.927	90.00%		436.5	
2035			4.077	6.754	90.00%		398.1	
2036			3.779	6.585	90.00%		363.1	
2037			3.503	6.421	90.00%		331.1	
2038			3.248	6.260	90.00%		302.0	
2039			3.010	6.104	90.00%		275.4	
2040			2.791	5.951	90.00%		251.2	
2041			2.587	5.802	90.00%		229.1	
2042			2.398	5.657	90.00%		208.9	
2043			2.223	5.516	90.00%		190.5	
2044			2.061	5.378	90.00%		173.8	
2045			1.910	5.243	90.00%		158.5	
2046			1.771	5.112	90.00%		144.5	
2047			1.642	4.984	90.00%		131.8	
2048			1.522	4.860	90.00%		120.2	
2049			1.411	4.738	90.00%		109.6	
2050			1.308	4.620	90.00%		100.0	
2051			1.300	4.504	90.00%		100.0	
2052			1.300	4.392	90.00%		100.0	
2053			1.300	4.282	90.00%		100.0	
2054			1.300	4.175	90.00%		100.0	
2055			1.300	4.071	90.00%		100.0	
2056			1.300	3.969	90.00%		100.0	
2057			1.300	3.870	90.00%		100.0	
2058			1.300	3.773	90.00%		100.0	
2059			1.300	3.679	90.00%		100.0	
2060			1.300	3.587	90.00%		100.0	
2061			1.300	3.497	90.00%		100.0	
2062			1.300	3.409	90.00%		100.0	
2063			1.300	3.324	90.00%		100.0	
2064			1.300	3.241	90.00%		100.0	
2065			1.300	3.160	90.00%		100.0	
2066			1.300	3.081	90.00%		100.0	
2067			1.300	3.004	90.00%		100.0	
2068			1.300	2.929	90.00%		100.0	
2069			1.300	2.856	90.00%		100.0	
2070			1.300	2.784	90.00%		100.0	

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