



Presented to:
**Newport Beach
Aviation Committee**

John Wayne Airport Newport Beach Altitude Analysis

Presented by:
Tony Cangey
Airport Access/Noise Specialist II

October 16, 2023

**JOHN WAYNE AIRPORT
ORANGE COUNTY**

OVERVIEW

- Background
- Scope of the Altitude Analysis
- Altitude Factors
- Commercial Aircraft
- Commercial “Quiet” Aircraft
- Commuter Aircraft
- Cargo Aircraft
- Altitude Trend Results
- Aircraft Speed

Background

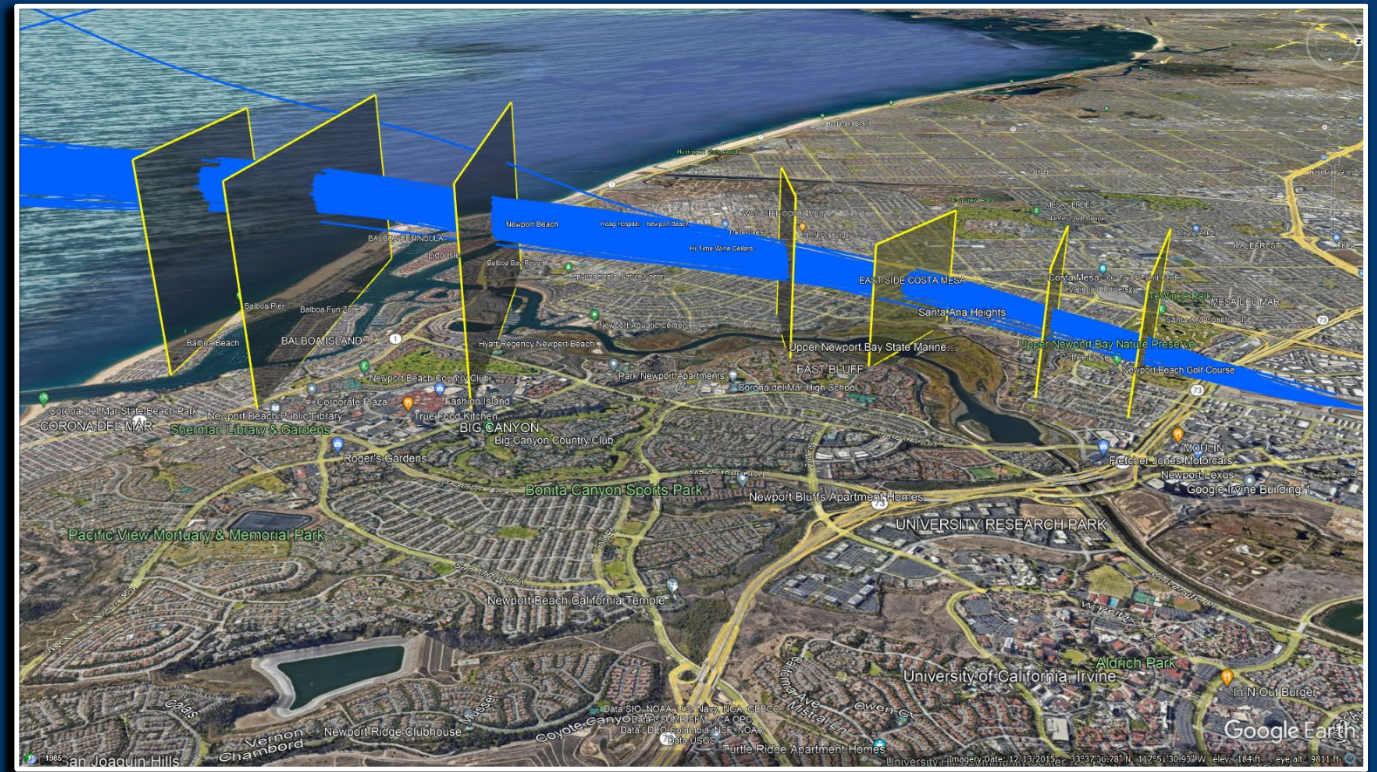
- JWA conducted an altitude analysis at the request of the City of Newport Beach and presented the results at the Newport Beach Aviation Committee meetings in 2017 & 2019
- The objective? Determine if there is a significant change in airline altitudes from year-to-year

Scope of the Altitude Analysis

- The JWA Access & Noise Office (ANO) collected average altitude data from airline departures
- The airline aircraft types were analyzed in August during the past ten years (2014 to 2023)
- Altitude data was collected utilizing “gates” at seven locations along the departure path

What is a Gate?

- Gates are created in envirosuite ANOMS™ the Airport Noise Monitoring System utilized by JWA
- An imaginary vertical surface or window in space that aircraft pass through along their flight paths



Gate Coordinates

Location	Latitude	Longitude	Distance
NMS 1S & 2S	33.660165	-117.878215	0.4 nm
NMS 3S	33.654828	-117.880980	0.7 nm
NMS 4S & 5S	33.647189	-117.887183	1.3 nm
NMS 6S	33.638740	-117.88909	1.8 nm
NMS 7S	33.619063	-117.892059	2.9 nm
Balboa Island	33.607043	-117.895655	4.4 nm
Balboa Peninsula	33.654834	-117.895553	4.9 nm

Altitude Factors

■ Aircraft

- Model / Variant
- Gross Takeoff Weights (GTOW)
- Flight Management System (FMS)
- Airspeed, Thrust & Climb Rate

■ Departure Procedures

- NADP 1
- NADP 2
- RNAV Waypoints

■ Weather

- Temperature
- Humidity
- Pressure
- Wind Speed
- Wind Direction

JWA Airline Fleet Mix

Aircraft Type		2019	2020	2021	2020	2023*
Airbus A300-600	A306	261	265	260	273	164
Airbus A319	A319	1,990	1,105	1,701	2,224	772
Airbus A320	A320	3,812	1,931	3,523	4,896	1,830
Airbus A321	A321	107	285	516	550	450
Boeing 717-200	B712	1,248	0	0	0	0
Boeing 737-600	B736	29	17	0	0	0
Boeing 737-700	B737	16,479	7,719	12,599	18,021	11,586
Boeing 737-800	B738	11,012	6,196	10,097	9,352	7,577
Boeing 757-200	B752	1,664	734	908	1,186	1,036
Canadair Challenger 600	CL60	1	3	0	0	0
Canadair CRJ7	CRJ7	353	331	232	341	235
Canadair CRJ9	CRJ9	0	1	0	0	0
Bombardier Dash 8	DH8D	6	0	0	0	0
Embraer ERJ-135	E135	2,312	1,086	1,944	2,228	860
Embraer ERJ-145	E145	13	226	378	329	600
Embraer ERJ-175	E175	7,546	4,565	3,632	3,389	2,904
Embraer ERJ-190	E190	0	0	0	0	29
Embraer ERJ-195	E195	0	0	0	0	57

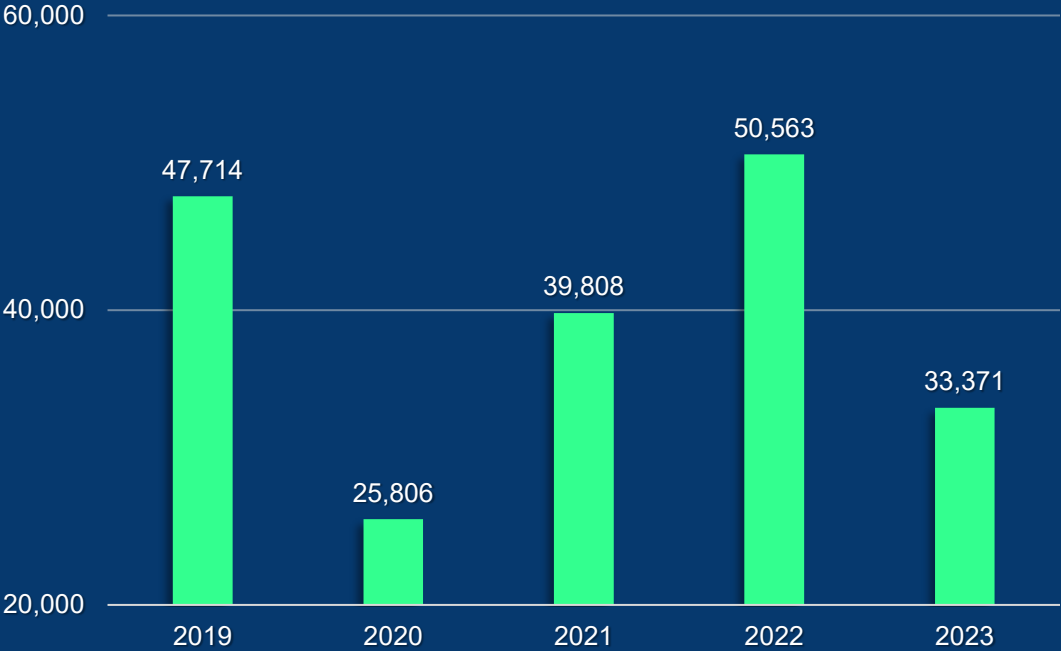
*Departure Totals through August 2023

New Generation Aircraft Type		2019	2020	2021	2022	2023*
Boeing 737-800 MAX	B38M	5	0	353	3143	972
Airbus A320neo	A20N	450	365	1,550	2,019	1,336
Airbus A321neo	A21N	1	1	44	25	275
Airbus A220-100	A220	425	976	2,018	1,524	1,170
Airbus A220-300	A223	0	0	53	1,063	1,518

*Departure Totals through August 2023

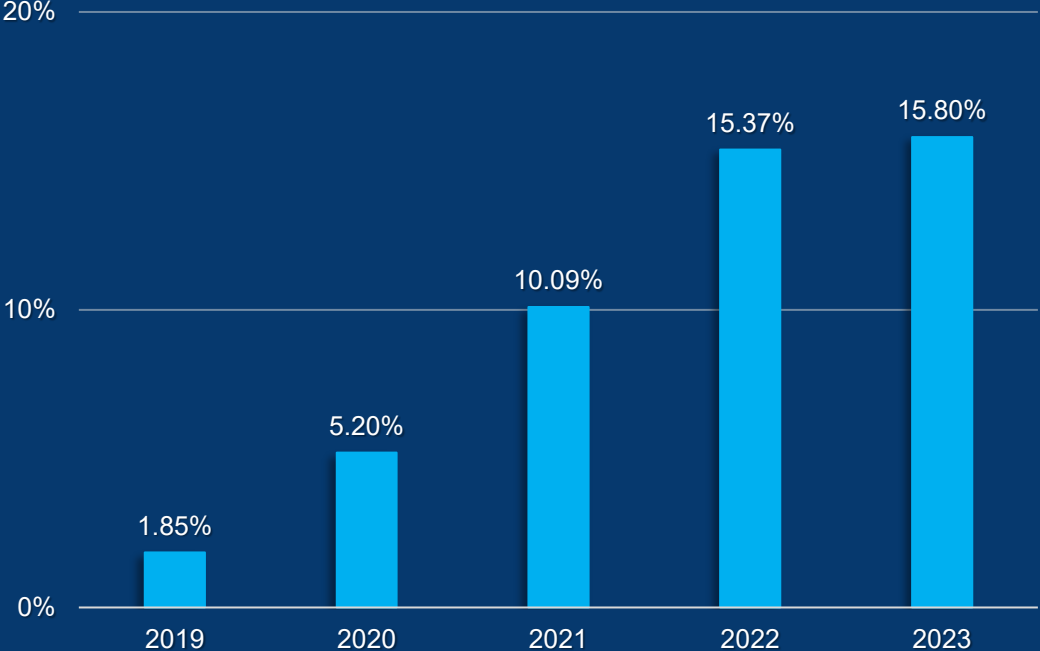
JWA Airline Fleet Mix

Annual Airline Departures



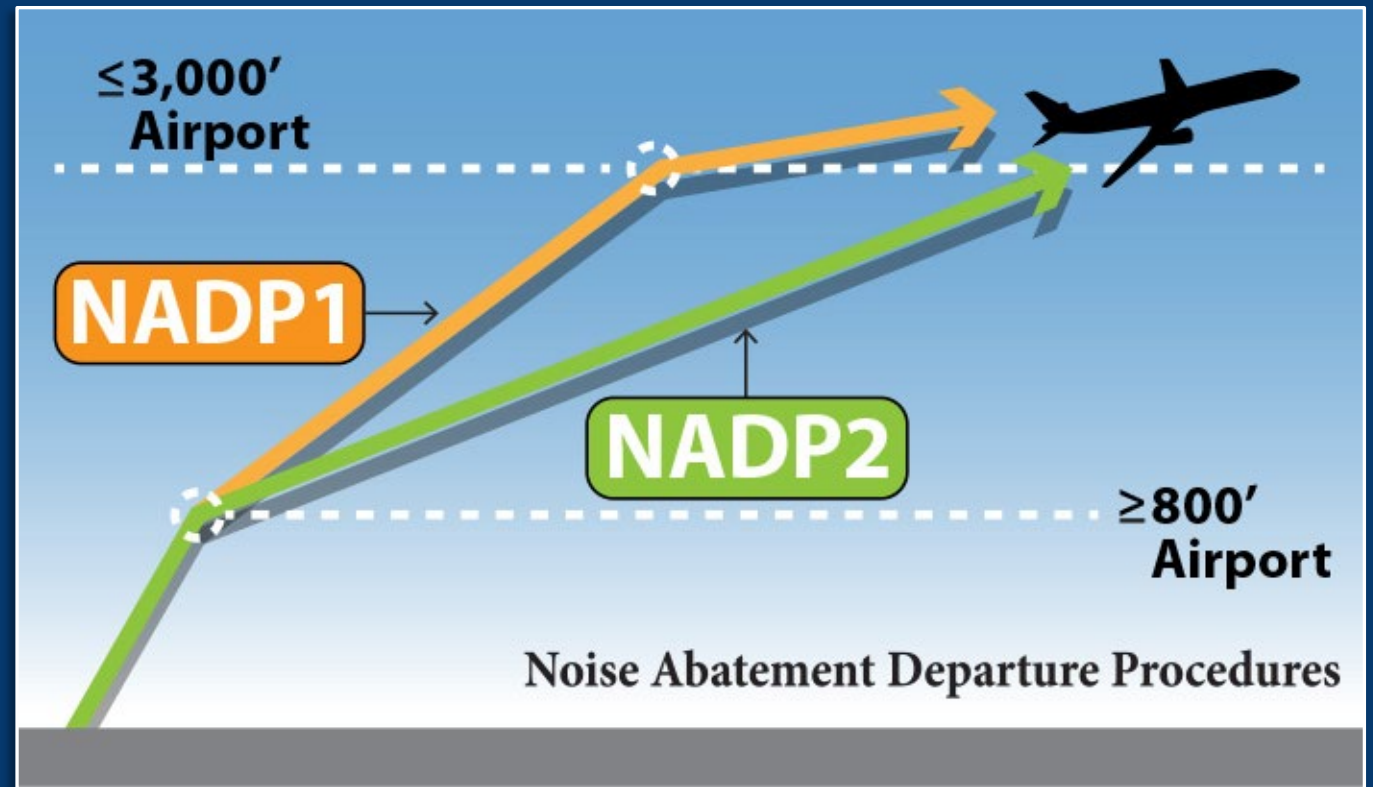
Departure totals through August 2023

% of New Generation Aircraft



Noise Abatement Departure Procedures (NADP)

- FAA AC 91-53A : Describes acceptable criteria for two safe departure profiles known as “close-in” and “distant” NADPs
- NADP 1: Close-in Procedure Quieter near the Airport
- NADP 2: Distant Procedure Quieter farther from the Airport
- Airlines develop their own AC 91-53A according to their operational specifications of each aircraft type
- The use of NADPs is at the discretion of each airline

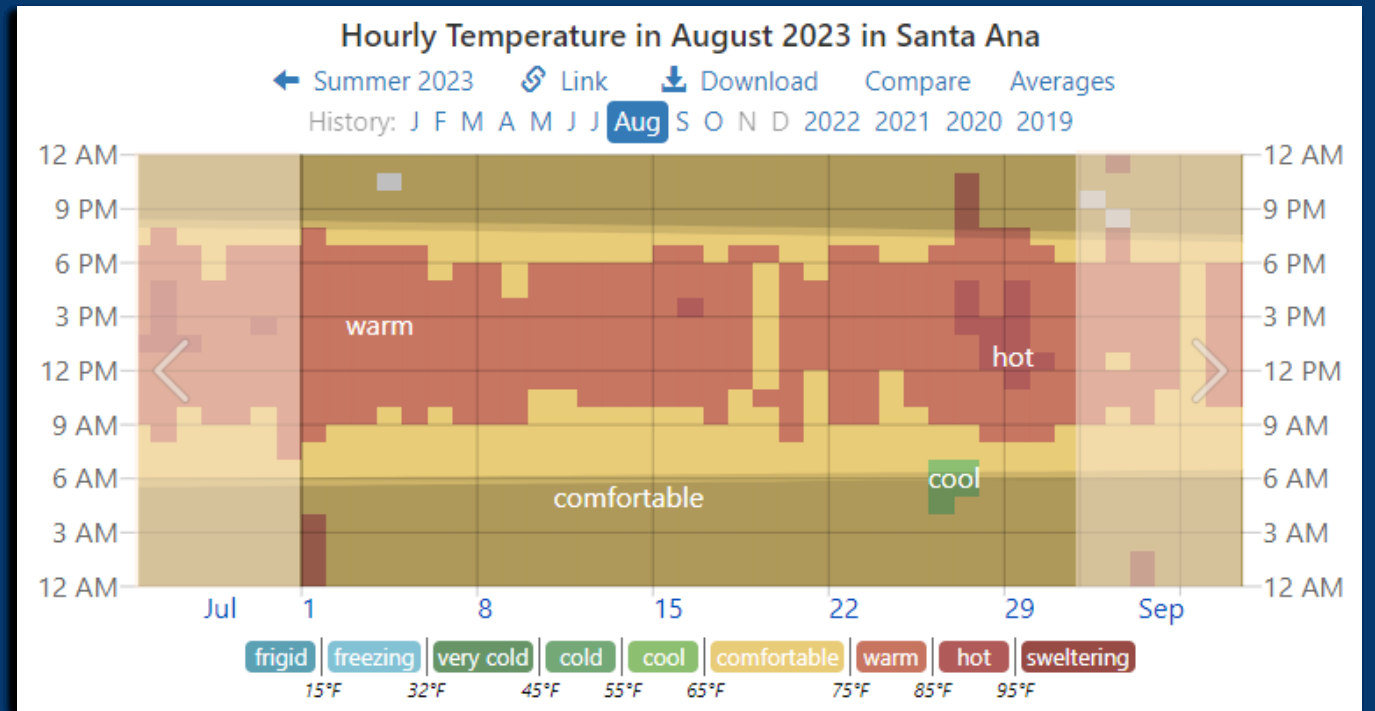


<https://www.newportbeachca.gov/government/departments/city-manager/john-wayne-airport/aircraft-noise-emission>

Weather Temperatures

Temperature Average in August

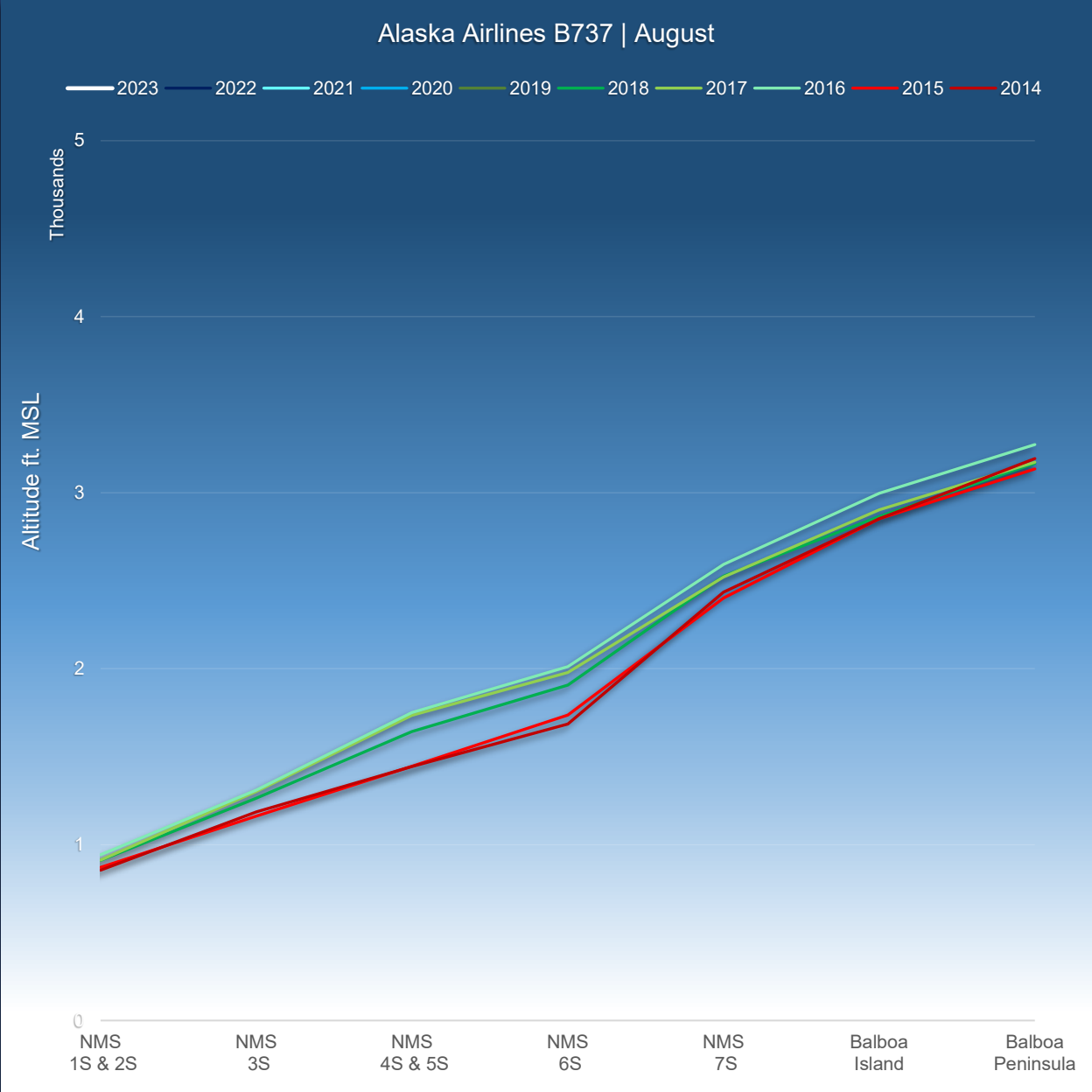
Year	High °F	Low °F	Daily °F
2023	86.5	66.5	76.5
2022	87.9	67.5	77.7
2021	85.6	65.7	75.6
2020	87.8	67.4	77.6
2019	85.4	65.7	75.5
2018	88.1	69.1	78.6
2017	86.1	67.7	76.9
2016	85.5	66.4	76.0
2015	88.0	68.7	78.4
2014	85.9	67.1	76.5



COMMERCIAL AIRCRAFT

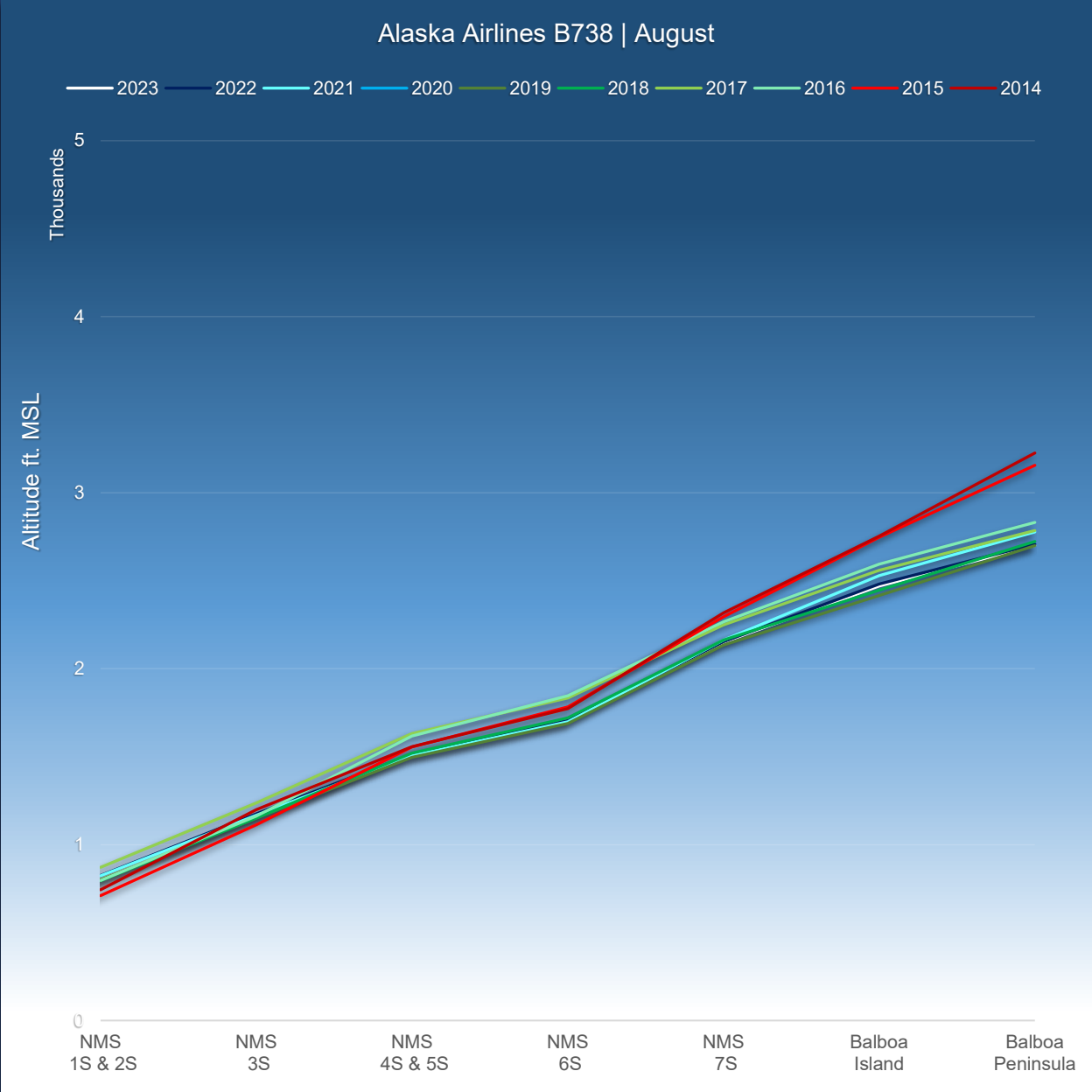
Alaska Airlines Boeing 737-700
Alaska Airlines Boeing 737-800
Alaska Airlines Airbus A320
Allegiant Air Airbus A319
Allegiant Air Airbus A320
American Airlines Airbus A319
American Airlines Airbus A320
American Airlines Airbus A321
American Airlines Boeing 737-800
Breeze Airways Embraer 195
Delta Air Lines Airbus A319
Delta Air Lines Boeing 737-800
Delta Air Lines Boeing 757-200

Frontier Airlines Airbus A320
Horizon Air Embraer 175
SkyWest Airlines Embraer 175
Southwest Airlines Boeing 737-700
Southwest Airlines Boeing 737-800
Spirit Airlines Airbus A320
United Airlines Airbus A319
United Airlines Airbus A320
United Airlines Boeing 737-700
United Airlines Boeing 737-800
WestJet Boeing 737-700



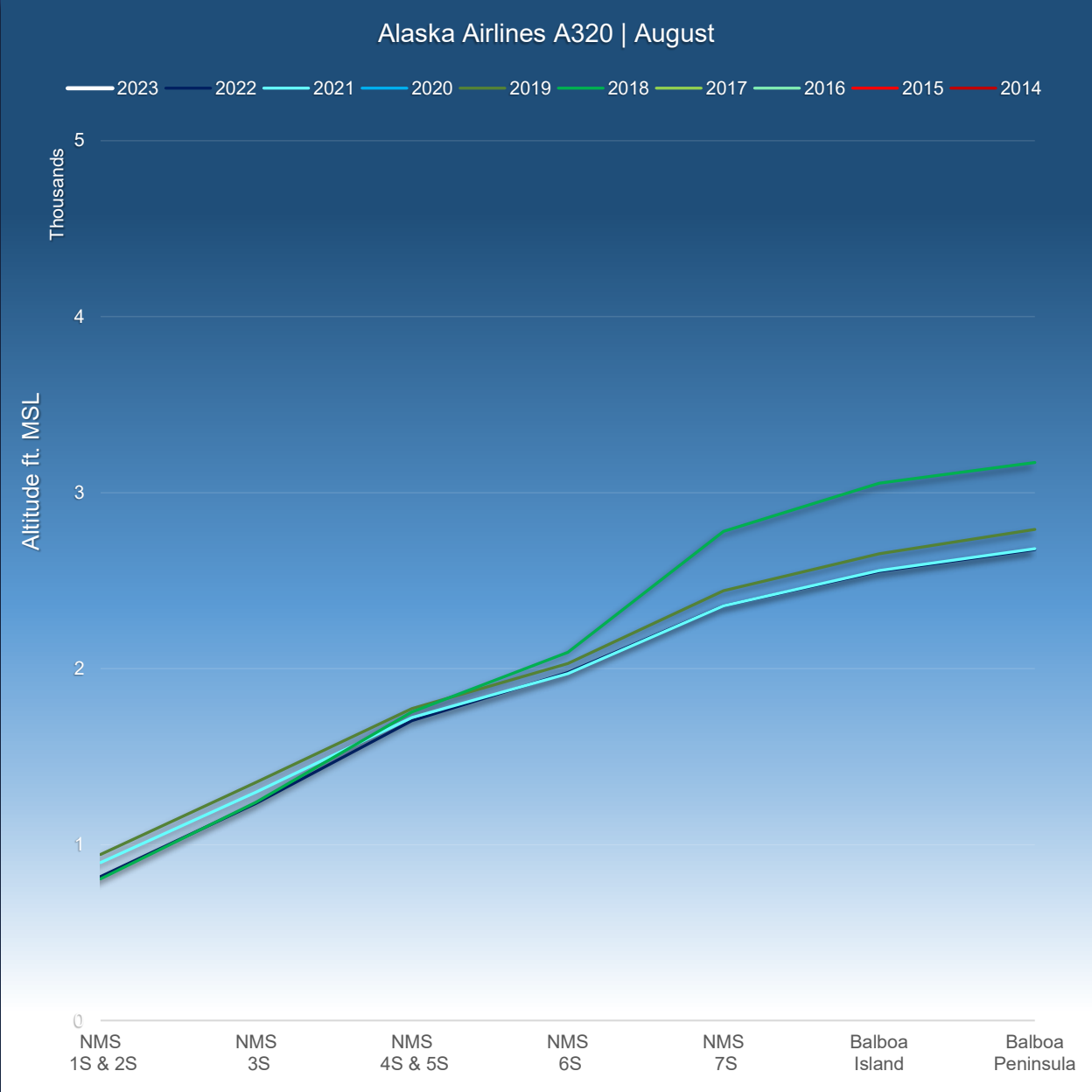
Alaska Airlines Boeing 737-700

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023								2	
2022									
2021									
2020									
2019								2	
2018	910	1,264	1,642	1,907	2,525	2,864	3,166	30	130,307
2017	912	1,302	1,735	1,978	2,520	2,902	3,173	22	129,200
2016	942	1,309	1,751	2,011	2,592	2,997	3,273	65	127,110
2015	871	1,162	1,445	1,736	2,401	2,852	3,134	37	127,121
2014	855	1,186	1,444	1,686	2,434	2,851	3,193	149	136,766



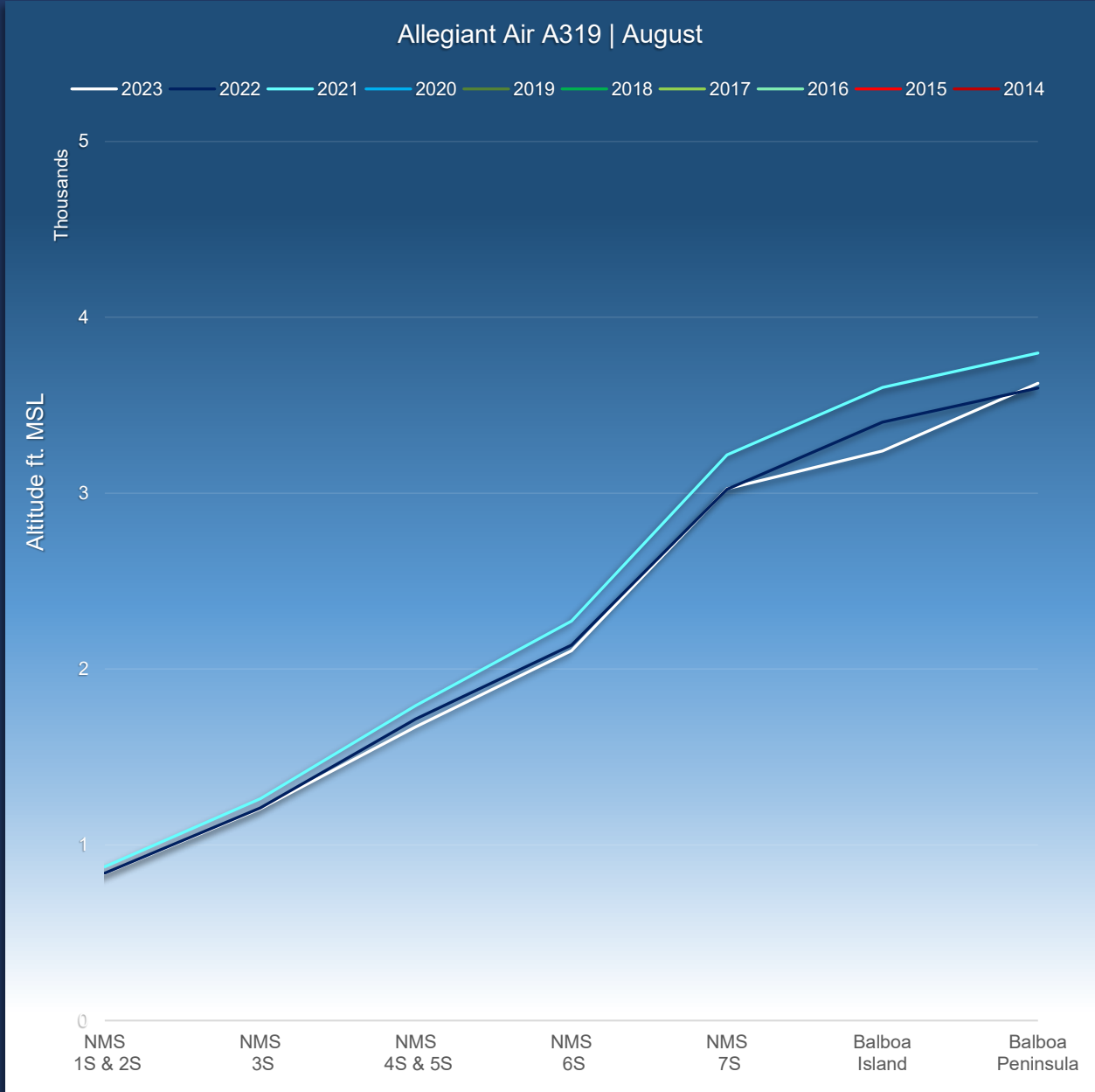
Alaska Airlines Boeing 737-800

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	800	1,154	1,511	1,713	2,150	2,470	2,701	325	144,332
2022	825	1,174	1,513	1,706	2,153	2,481	2,707	88	146,105
2021	823	1,166	1,506	1,698	2,162	2,528	2,777	47	144,211
2020									
2019	801	1,151	1,496	1,688	2,134	2,416	2,698	219	145,388
2018	794	1,151	1,519	1,721	2,163	2,445	2,722	347	145,608
2017	870	1,236	1,631	1,834	2,249	2,559	2,785	309	145,624
2016	796	1,162	1,617	1,846	2,266	2,593	2,831	286	146,185
2015	710	1,113	1,554	1,782	2,295	2,747	3,155	287	145,245
2014	744	1,198	1,557	1,773	2,317	2,753	3,226	143	144,311



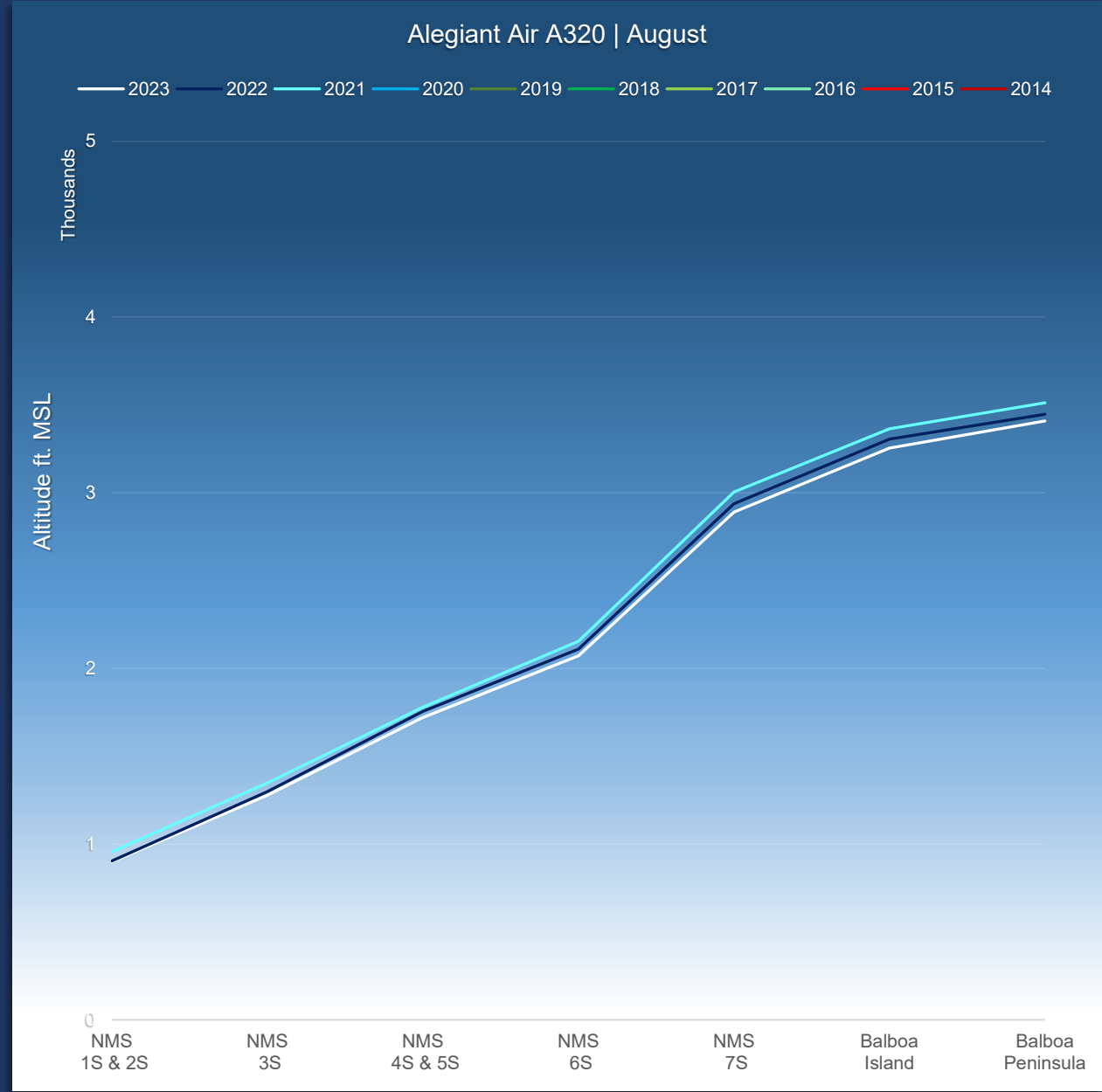
Alaska Airlines Airbus 320

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023									
2022	818	1,235	1,705	1,978	2,357	2,552	2,677	203	144,380
2021	897	1,299	1,722	1,972	2,357	2,557	2,681	212	143,579
2020									
2019	944	1,354	1,773	2,029	2,443	2,653	2,791	153	142,744
2018	806	1,242	1,753	2,093	2,780	3,054	3,172	11	148,145



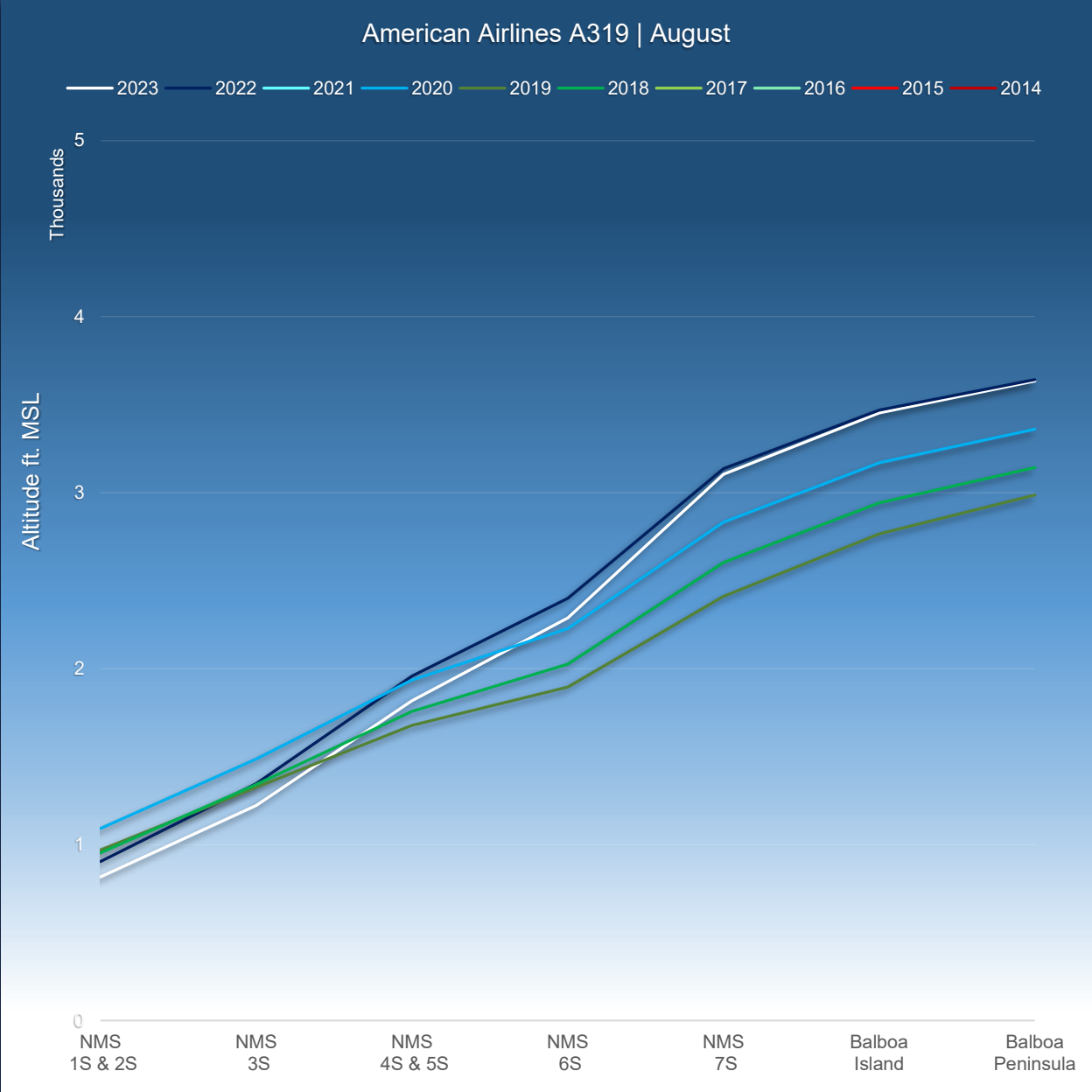
Allegiant Air Airbus 319

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	838	1,205	1,671	2,103	3,025	3,240	3,625	16	136,694
2022	839	1,209	1,715	2,136	3,021	3,404	3,598	15	131,747
2021	875	1,262	1,792	2,272	3,217	3,601	3,797	45	126,518



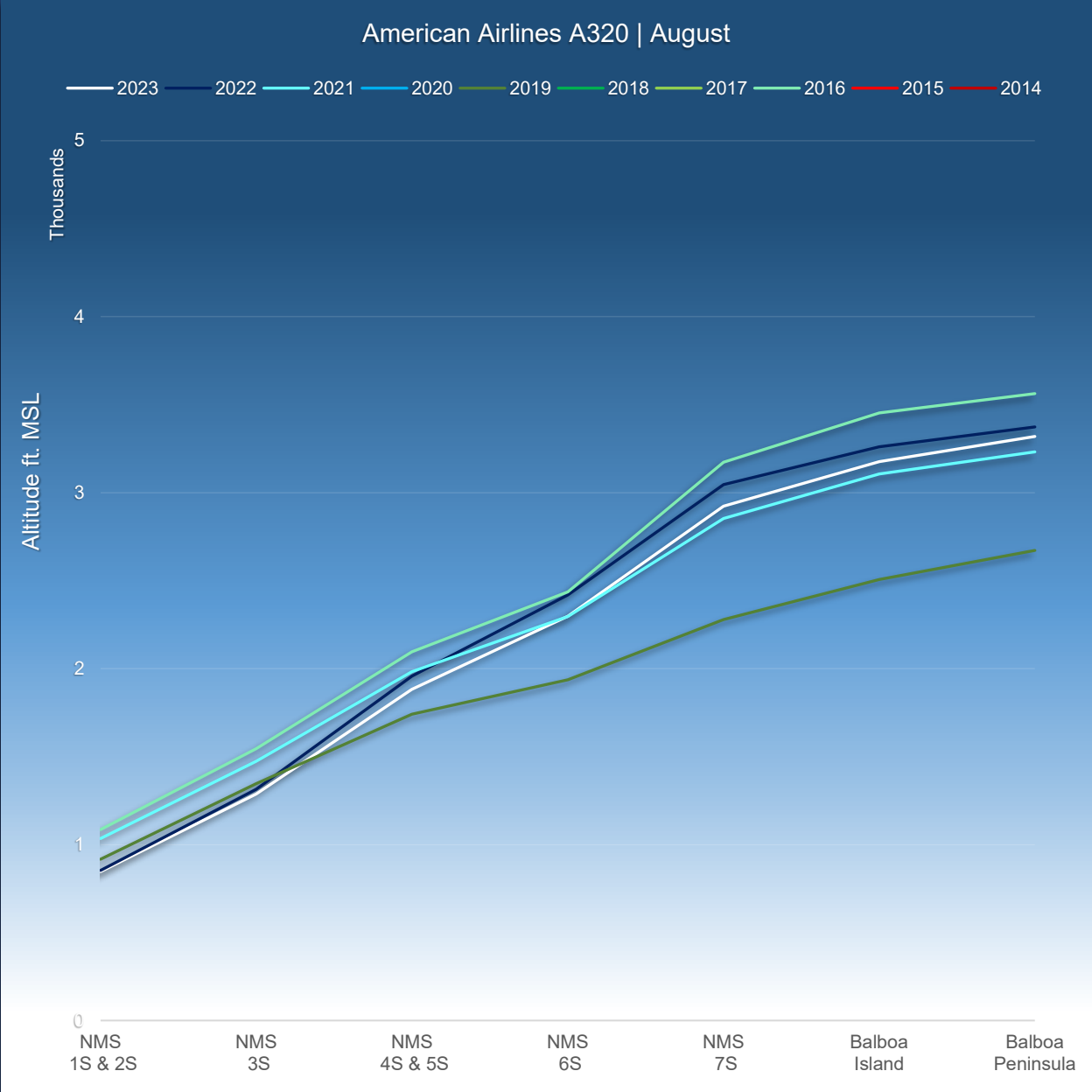
Allegiant Air Airbus 320

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	900	1,278	1,720	2,072	2,890	3,254	3,409	64	145,531
2022	904	1,299	1,755	2,110	2,938	3,305	3,446	77	143,430
2021	957	1,348	1,779	2,154	3,005	3,364	3,512	18	141,961



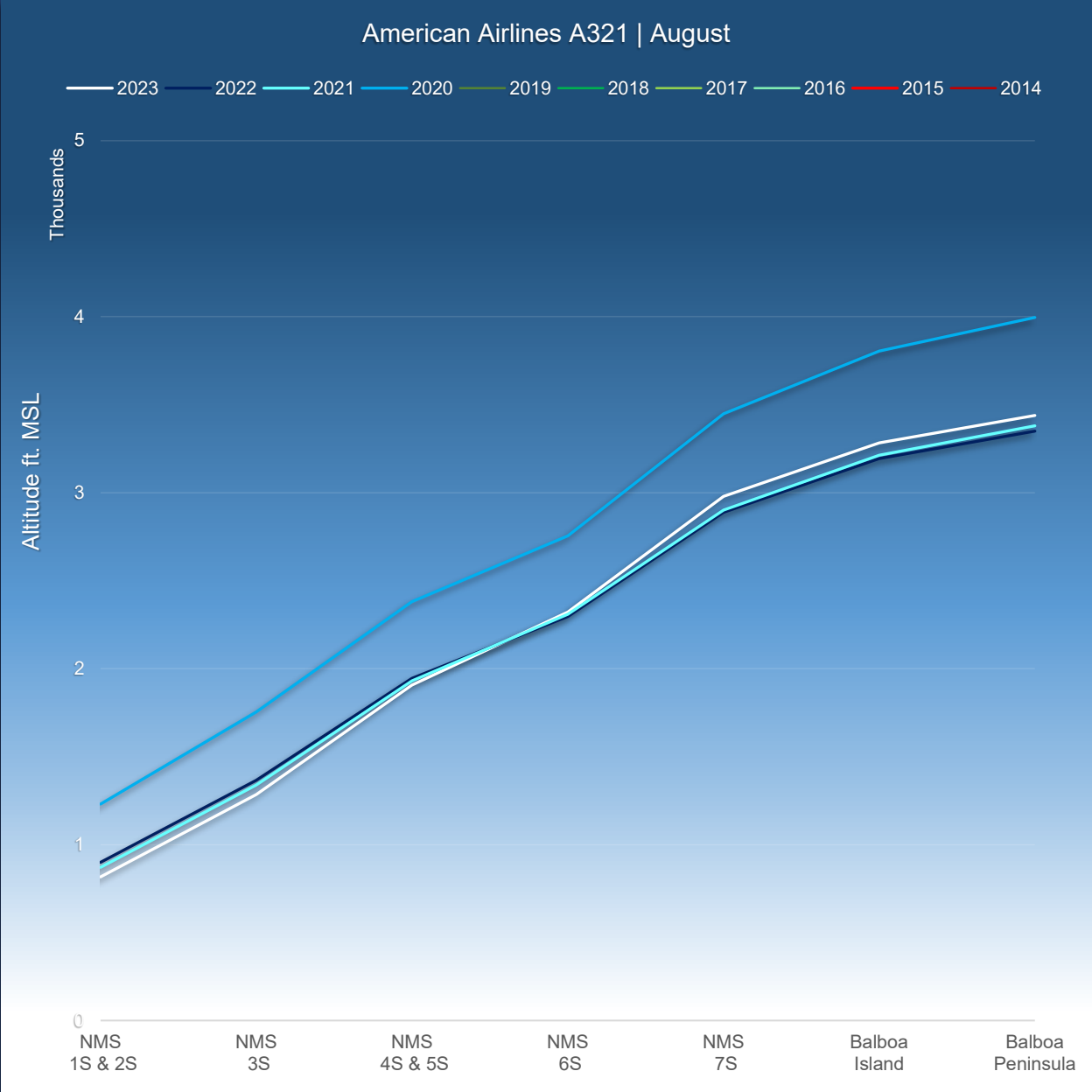
American Airlines Airbus 319

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	816	1,223	1,818	2,289	3,105	3,453	3,635	29	139,294
2022	904	1,346	1,957	2,399	3,137	3,469	3,642	28	135,109
2021								1	135,762
2020	1,092	1,487	1,935	2,227	2,833	3,169	3,361	30	126,329
2019	969	1,326	1,677	1,896	2,411	2,766	2,986	4	133,988
2018	953	1,342	1,757	2,025	2,604	2,942	3,142	30	131,068
2017									
2016								1	127,470



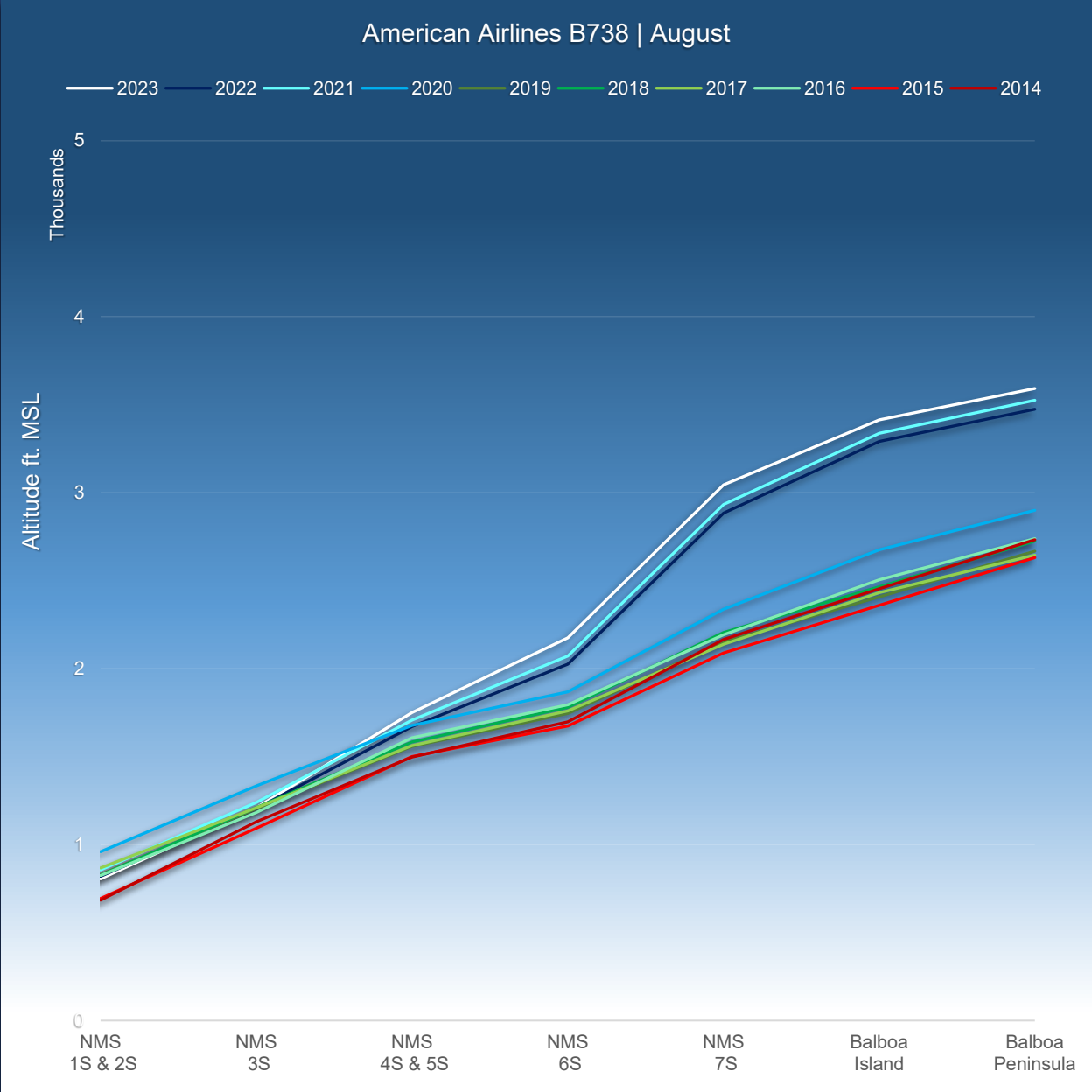
American Airlines Airbus 320

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	847	1,288	1,883	2,298	2,923	3,176	3,320	28	141,017
2022	853	1,314	1,957	2,418	3,046	3,261	3,373	18	139,110
2021	1,035	1,473	1,982	2,296	2,853	3,106	3,231	26	137,916
2020									
2019	917	1,347	1,741	1,936	2,279	2,507	2,671	30	138,611
2018								4	138,267
2017								3	138,052
2016	1,086	1,546	2,096	2,436	3,173	3,453	3,563	11	132,098



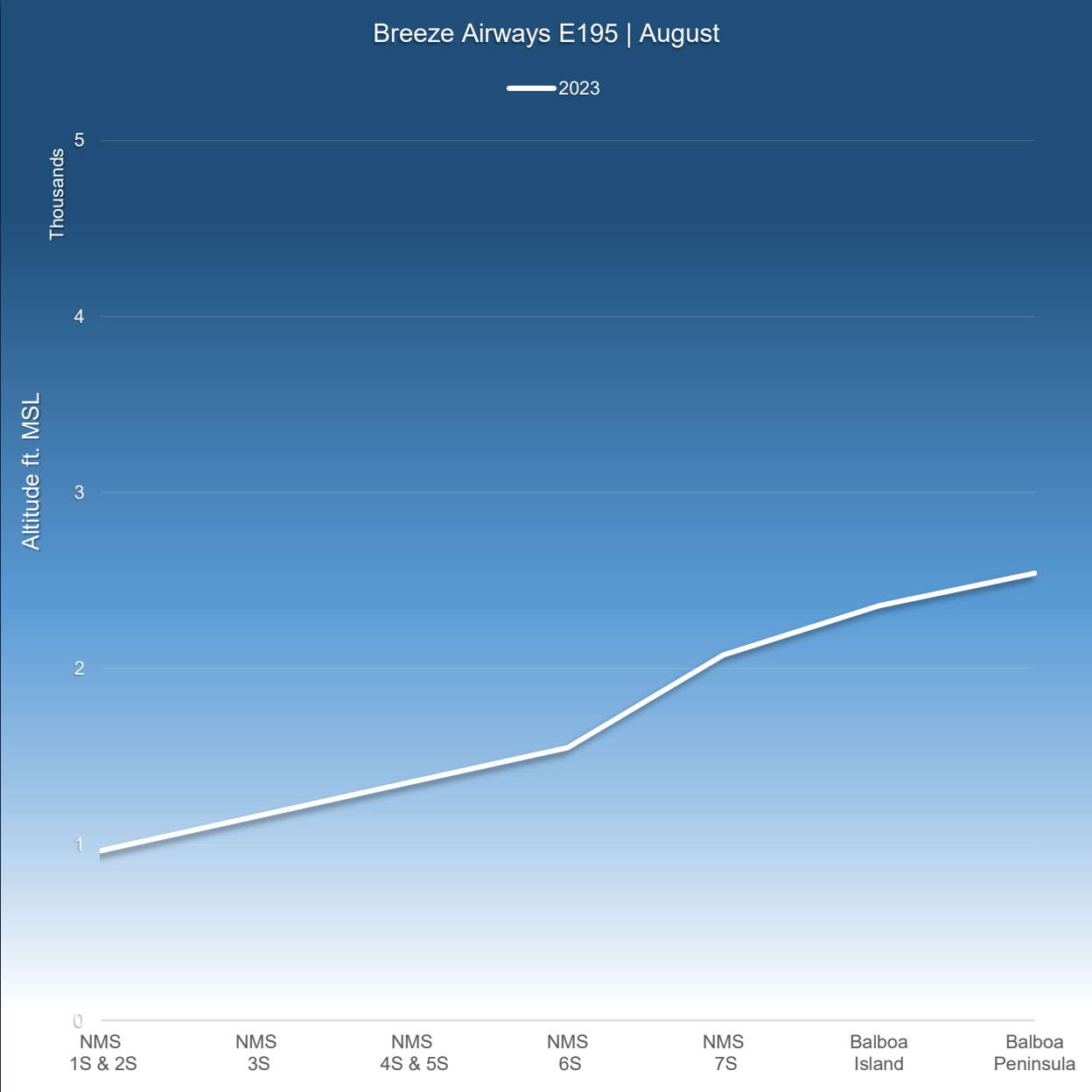
American Airlines Airbus 321

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	817	1284	1907	2322	2979	3283	3438	59	168,589
2022	900	1,366	1,944	2,297	2,888	3,194	3,349	60	167,643
2021	871	1,338	1,930	2,309	2,901	3,213	3,380	51	167,948
2020	1,230	1,754	2,380	2,755	3,448	3,805	3,996	39	148,423
2019								1	155,429
2018									
2017									
2016								1	160,400



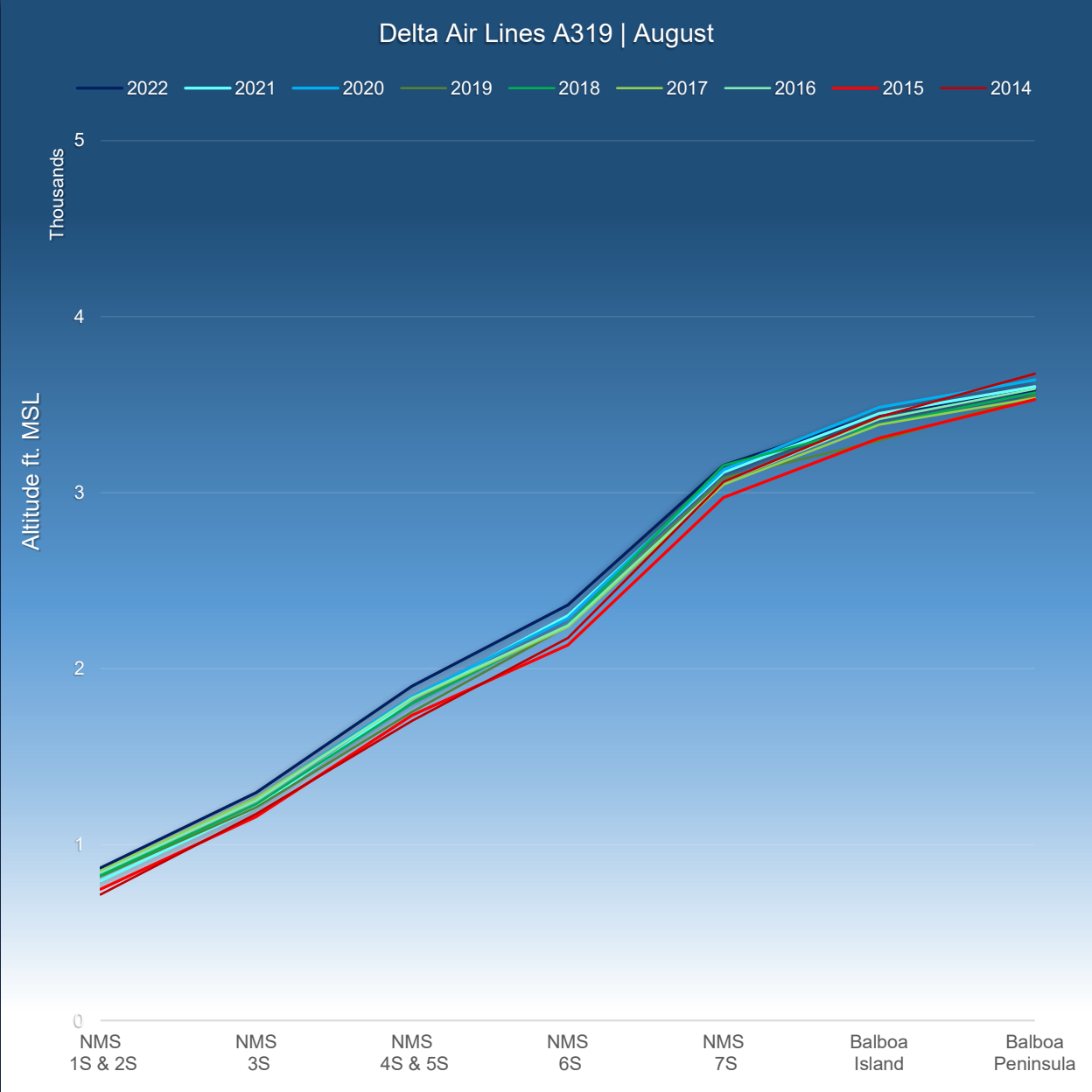
American Airlines Boeing 737-800

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	806	1,209	1,751	2,175	3,044	3,413	3,591	293	149,130
2022	820	1,205	1,671	2,026	2,884	3,290	3,473	306	148,885
2021	857	1,239	1,707	2,072	2,933	3,337	3,524	416	147,578
2020	959	1,334	1,678	1,868	2,337	2,675	2,900	248	139,338
2019	829	1,204	1,558	1,745	2,151	2,408	2,667	524	148,711
2018	826	1,211	1,584	1,780	2,205	2,465	2,724	529	148,085
2017	867	1,210	1,563	1,760	2,138	2,431	2,645	521	147,985
2016	825	1,182	1,607	1,795	2,192	2,505	2,739	523	144,440
2015	694	1,094	1,500	1,674	2,089	2,360	2,631	405	148,521
2014	685	1,130	1,498	1,698	2,166	2,454	2,732	425	146,201



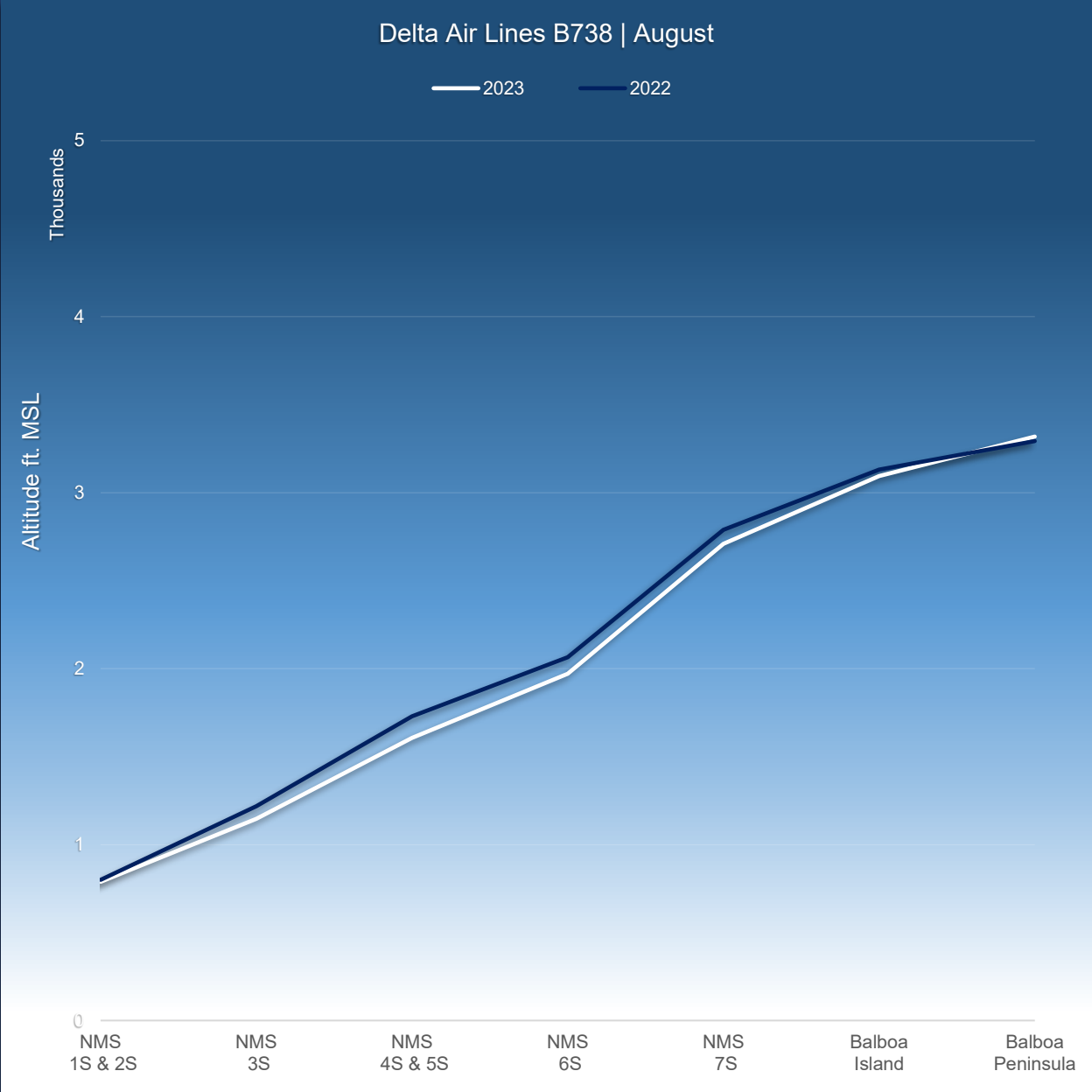
Breeze Airways Embraer 195

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	966	1,161	1,356	1,551	2,078	2,358	2,542	17	102,246



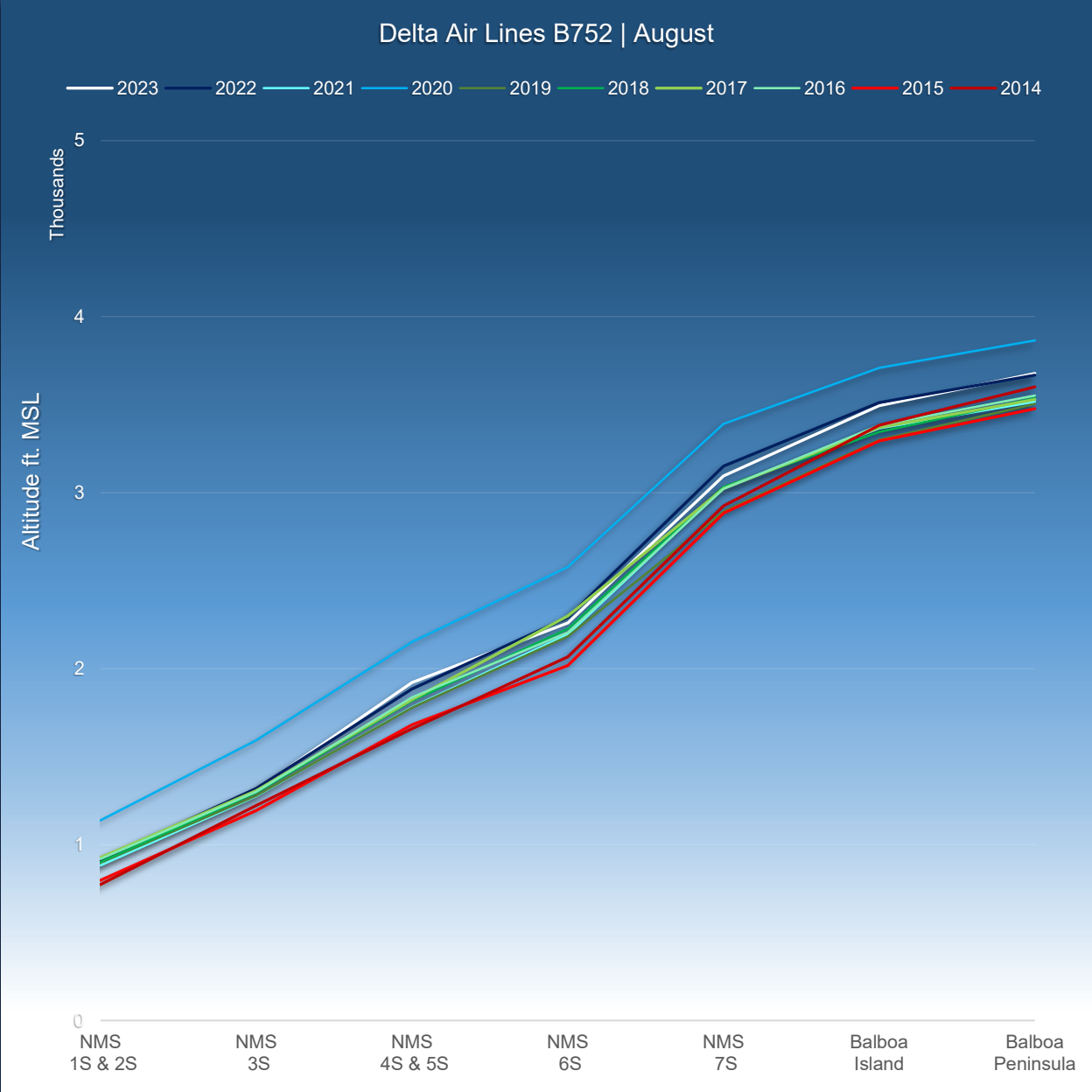
Delta Air Lines Airbus 319

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023									
2022	868	1,296	1,900	2,362	3,156	3,447	3,584	108	139,491
2021	795	1,211	1,825	2,301	3,116	3,450	3,603	47	142,215
2020	837	1,263	1,840	2,285	3,130	3,484	3,640	30	129,576
2019	819	1,211	1,753	2,241	3,084	3,296	3,552	87	140,052
2018	825	1,231	1,801	2,247	3,155	3,388	3,568	81	140,898
2017	851	1,266	1,827	2,236	3,045	3,386	3,538	82	141,191
2016	840	1,251	1,834	2,245	3,060	3,418	3,590	140	136,989
2015	746	1,159	1,735	2,134	2,973	3,310	3,530	152	135,995
2014	717	1,175	1,703	2,174	3,062	3,431	3,676	140	136,477



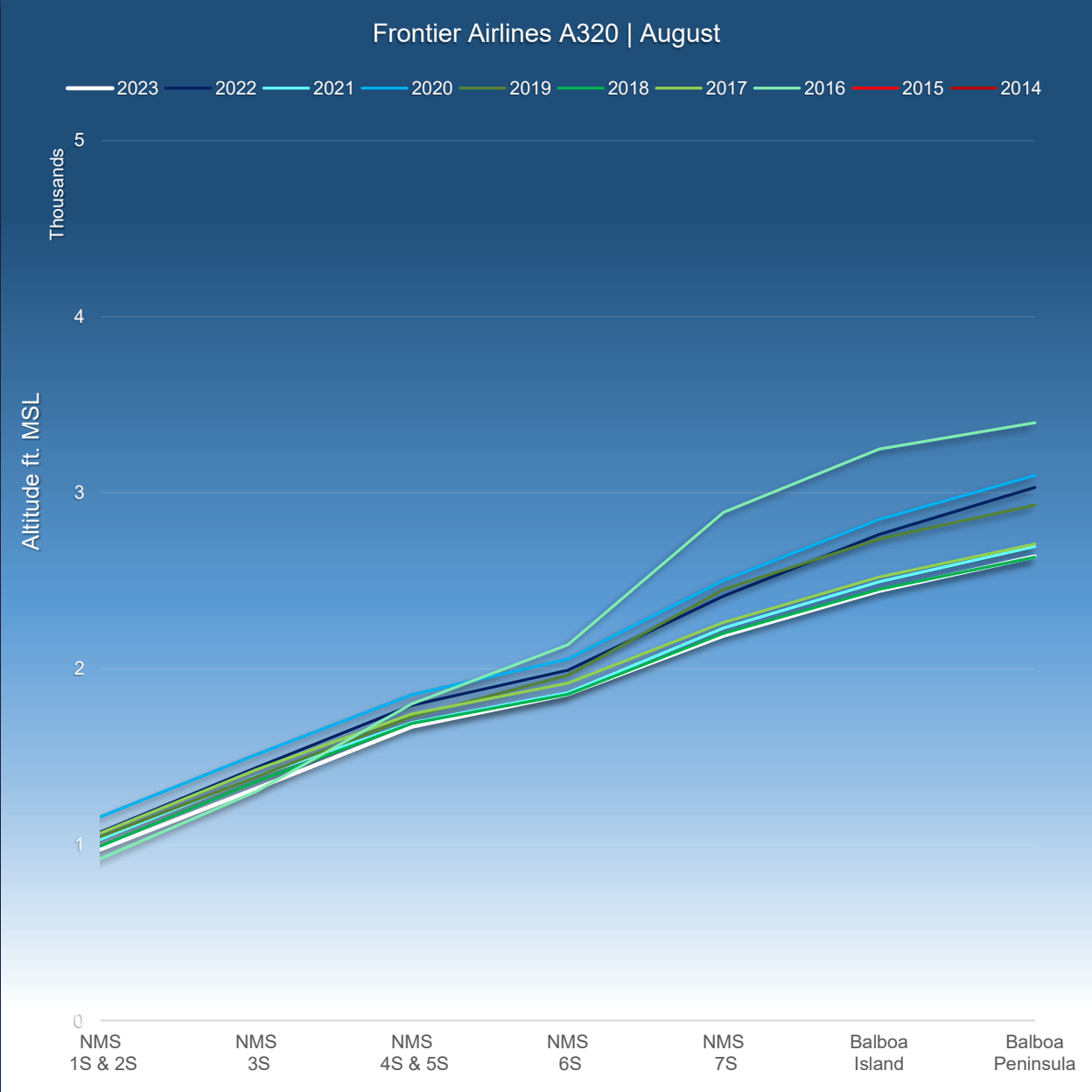
Delta Air Lines Boeing 737-800

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	788	1146	1607	1971	2709	3094	3319	5	141,436
2022	800	1,219	1,729	2,064	2,788	3,130	3,293	3	140,317
2021									
2020									
2019								1	125,782



Delta Air Lines Boeing 757-200

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	899	1,312	1,921	2,259	3,095	3,494	3,678	119	211,518
2022	911	1,320	1,884	2,292	3,150	3,511	3,668	93	210,686
2021	881	1,275	1,781	2,194	3,027	3,366	3,516	58	214,428
2020	1,138	1,593	2,151	2,578	3,391	3,709	3,865	30	193,163
2019	898	1,278	1,778	2,184	2,893	3,300	3,504	131	211,209
2018	901	1,296	1,818	2,226	3,033	3,344	3,538	130	212,200
2017	927	1,306	1,824	2,299	3,024	3,370	3,529	82	212,105
2016	919	1,300	1,837	2,205	3,021	3,383	3,551	89	209,023
2015	797	1,194	1,681	2,017	2,883	3,294	3,477	94	210,591
2014	774	1,222	1,658	2,067	2,924	3,383	3,601	95	210,155



Frontier Airlines Airbus 320

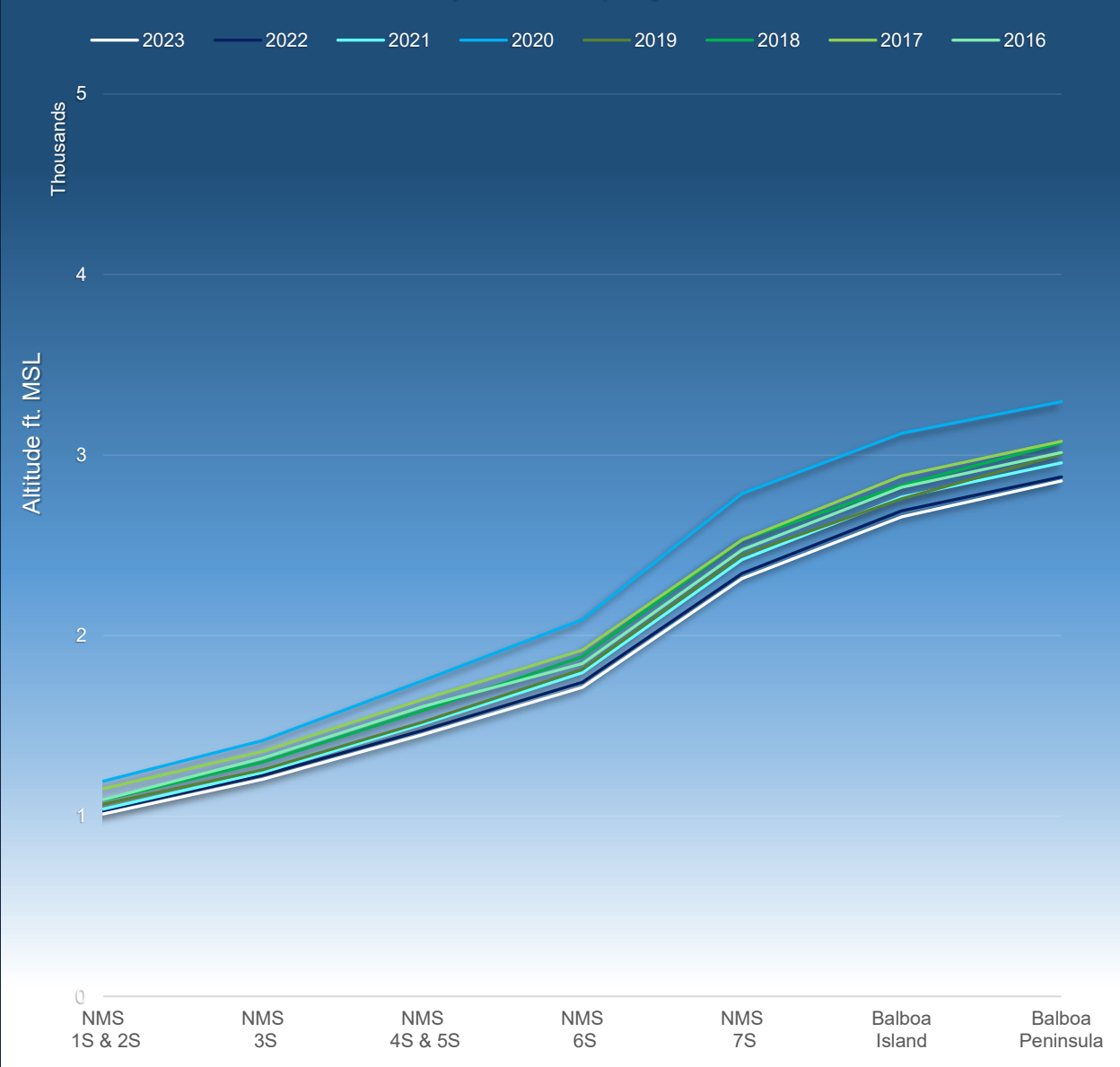
	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	973	1,318	1,670	1,855	2,188	2,442	2,637	4	147,221
2022	1,071	1,437	1,792	1,990	2,412	2,763	3,029	9	138,769
2021	1,029	1,387	1,693	1,864	2,231	2,494	2,694	14	145,516
2020	1,159	1,512	1,852	2,055	2,502	2,849	3,098	35	129,943
2019	1,046	1,385	1,728	1,962	2,451	2,737	2,929	29	148,352
2018	991	1,359	1,688	1,854	2,201	2,450	2,633	34	148,918
2017	1,066	1,426	1,743	1,917	2,263	2,520	2,708	42	148,220
2016	920	1,302	1,800	2,136	2,888	3,247	3,397	32	150,155



Horizon Air Embraer 175

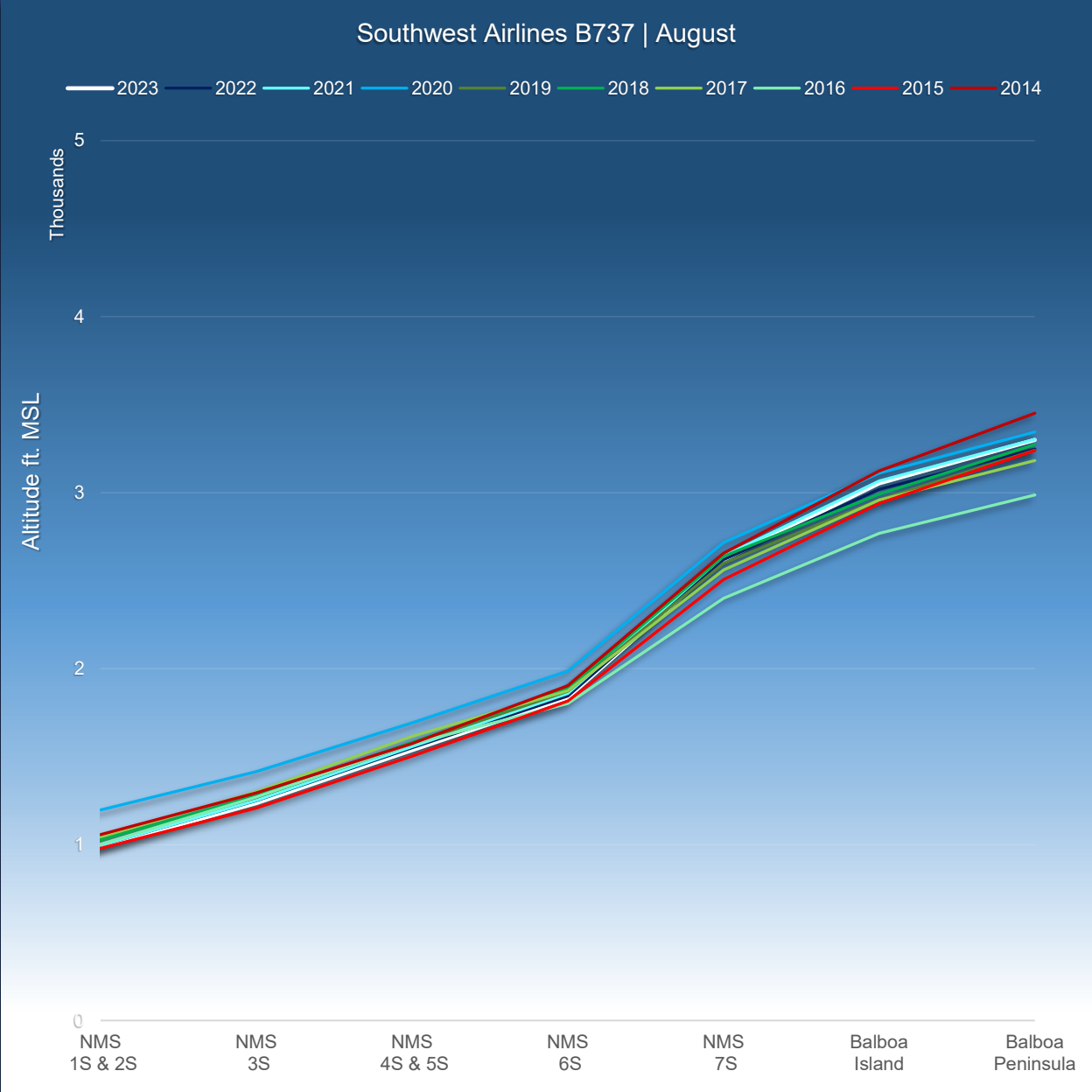
	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	923	1,129	1,346	1,571	2,101	2,400	2,585	122	77,279
2022	954	1,154	1,351	1,556	2,060	2,359	2,546	60	77,297
2021	982	1,178	1,395	1,631	2,183	2,500	2,684	162	75,757
2020	1,013	1,215	1,447	1,691	2,263	2,592	2,780	215	76,538
2019	1,052	1,253	1,480	1,742	2,355	2,686	2,868	184	72,904
2018	1,065	1,273	1,502	1,762	2,362	2,681	2,855	124	72,927
2017	1,036	1,320	1,606	1,793	2,250	2,678	2,994	14	70,357

SkyWest E175 | August



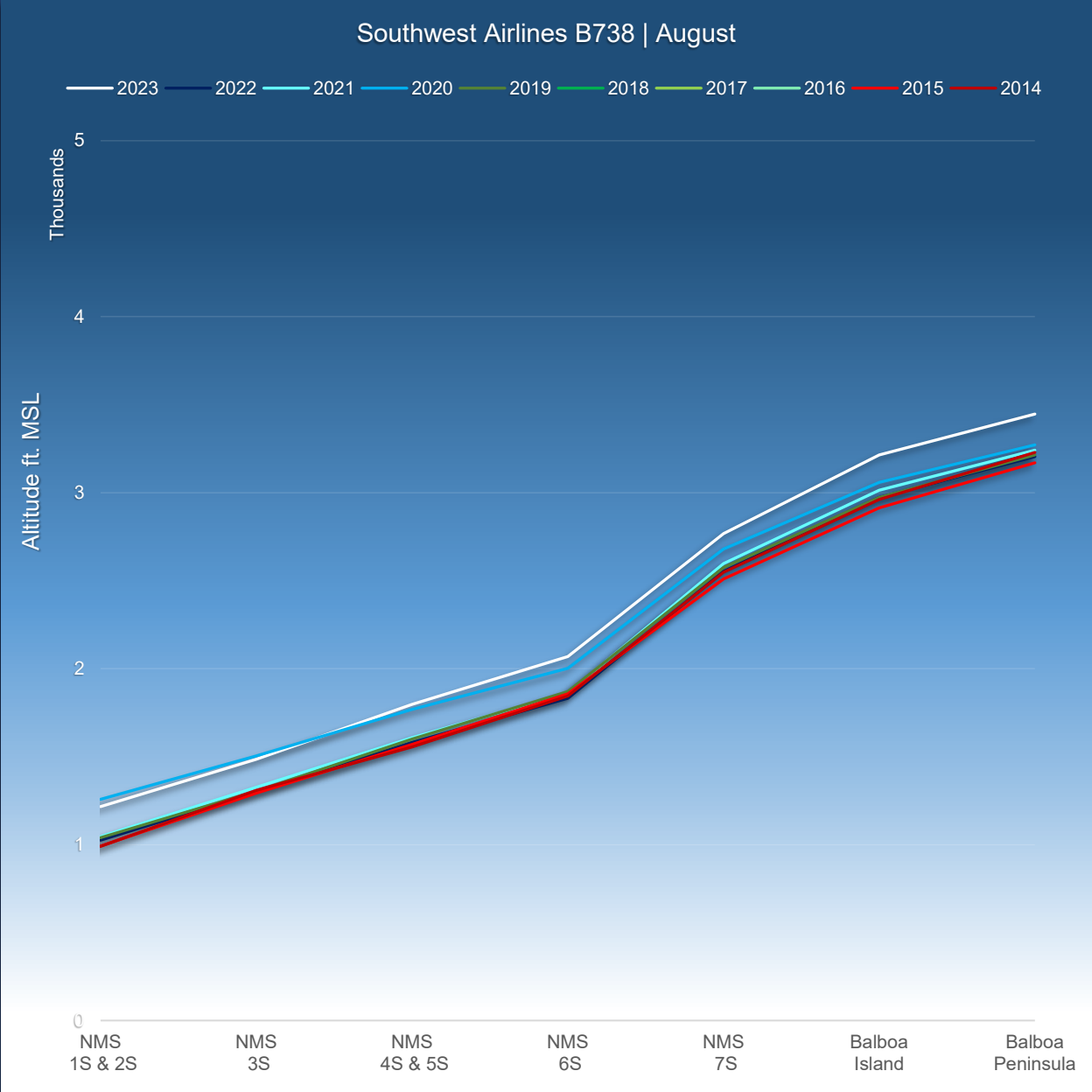
SkyWest Embraer 175

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	1,011	1,203	1,449	1,713	2,315	2,657	2,857	326	73,507
2022	1,029	1,226	1,474	1,741	2,344	2,690	2,879	251	72,997
2021	1,038	1,241	1,508	1,793	2,421	2,767	2,957	191	71,461
2020	1,192	1,418	1,749	2,087	2,787	3,120	3,295	125	66,457
2019	1,064	1,255	1,519	1,813	2,446	2,757	3,004	321	71,167
2018	1,087	1,299	1,583	1,882	2,528	2,833	3,068	271	70,747
2017	1,150	1,357	1,645	1,919	2,530	2,885	3,076	245	70,261
2016	1,091	1,321	1,606	1,845	2,475	2,821	3,014	213	70,063



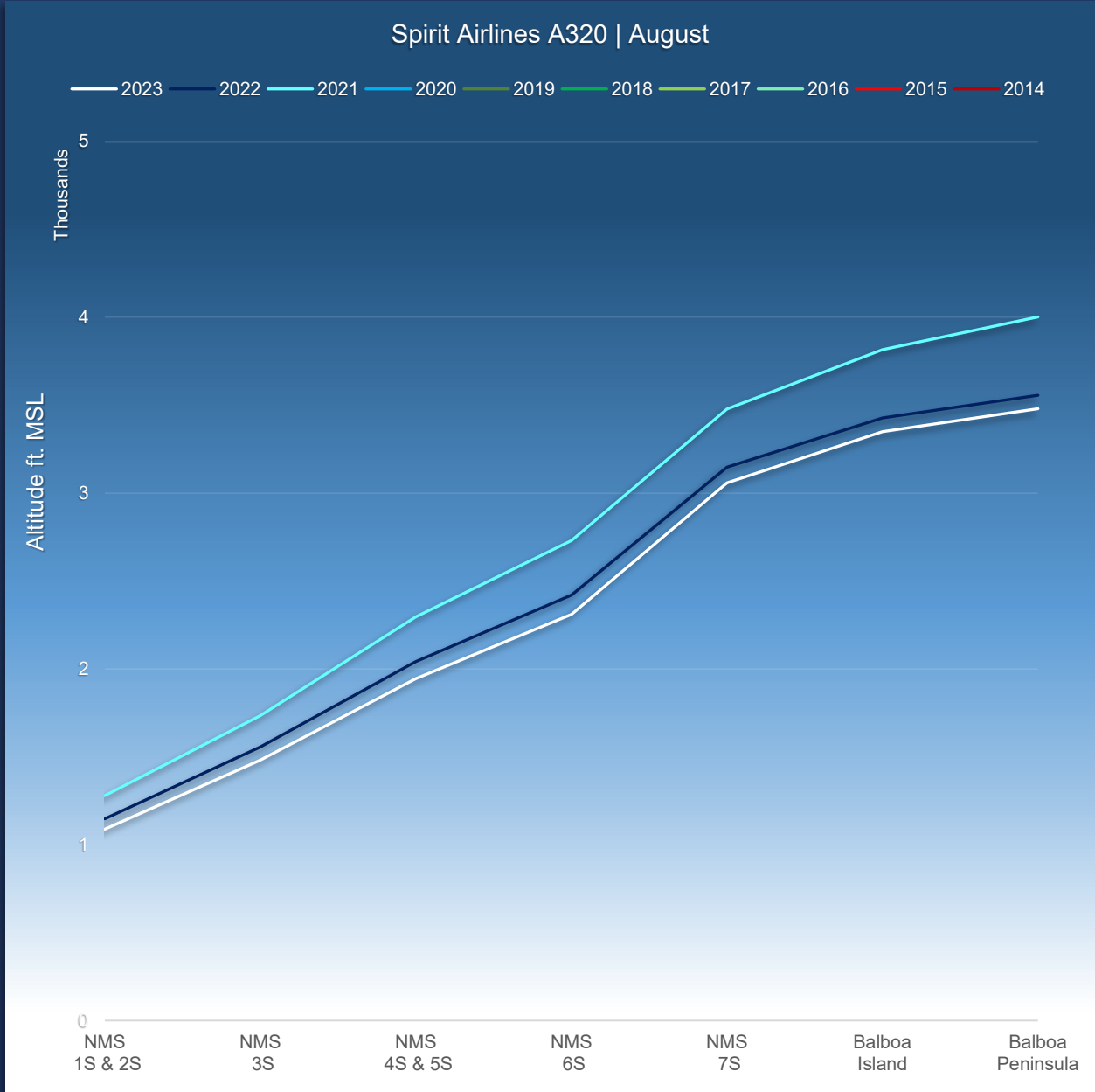
Southwest Airlines Boeing 737-700

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	988	1,236	1,536	1,835	2,619	3,052	3,300	1,253	127,381
2022	997	1,249	1,550	1,844	2,619	3,018	3,247	1,187	127,807
2021	997	1,251	1,556	1,859	2,640	3,066	3,303	1,167	128,130
2020	1,197	1,415	1,692	1,986	2,717	3,111	3,344	773	113,582
2019	1,030	1,269	1,573	1,871	2,599	2,959	3,242	1,172	125,214
2018	1,027	1,278	1,580	1,889	2,638	2,992	3,273	1,477	125,667
2017	1,044	1,301	1,616	1,874	2,560	2,958	3,183	1,470	124,826
2016	1,003	1,270	1,572	1,801	2,400	2,768	2,987	1,769	126,892
2015	979	1,208	1,502	1,816	2,507	2,939	3,240	1,674	126,922
2014	1,057	1,294	1,574	1,904	2,656	3,123	3,452	1,420	123,234



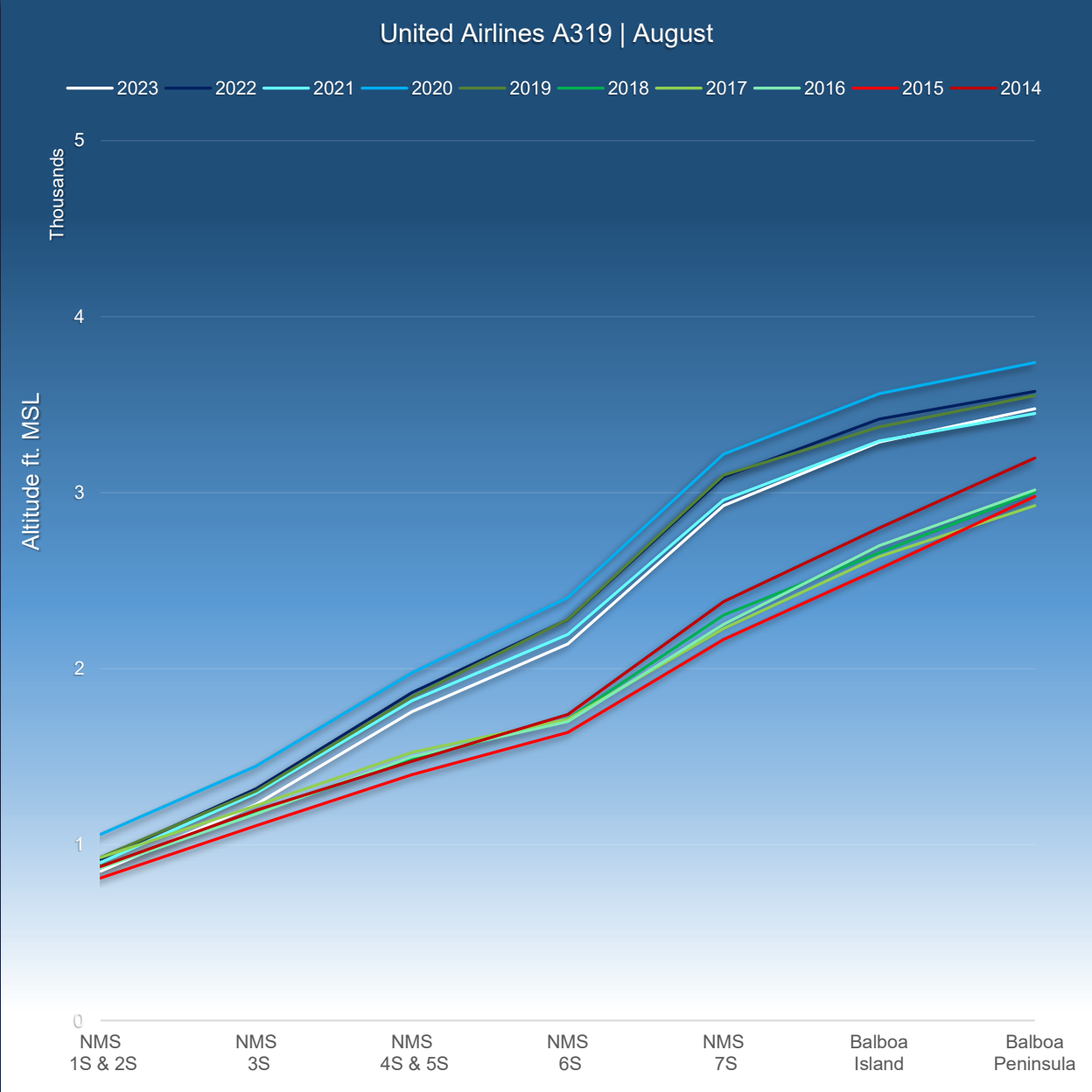
Southwest Airlines Boeing 737-800

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	1,216	1,485	1,796	2,068	2,767	3,214	3,446	3	130,603
2022	1,025	1,299	1,580	1,832	2,552	2,973	3,205	41	136,099
2021	1,046	1,326	1,608	1,862	2,597	3,013	3,241	320	136,453
2020	1,257	1,504	1,768	2,002	2,680	3,059	3,272	106	119,466
2019	1,040	1,303	1,600	1,870	2,575	2,973	3,215	6	132,770
2018								1	141,300
2017								2	137,670
2016								1	137,054
2015	992	1,293	1,569	1,857	2,510	2,913	3,169	106	134,276
2014	990	1,308	1,555	1,844	2,548	2,961	3,229	73	134,541



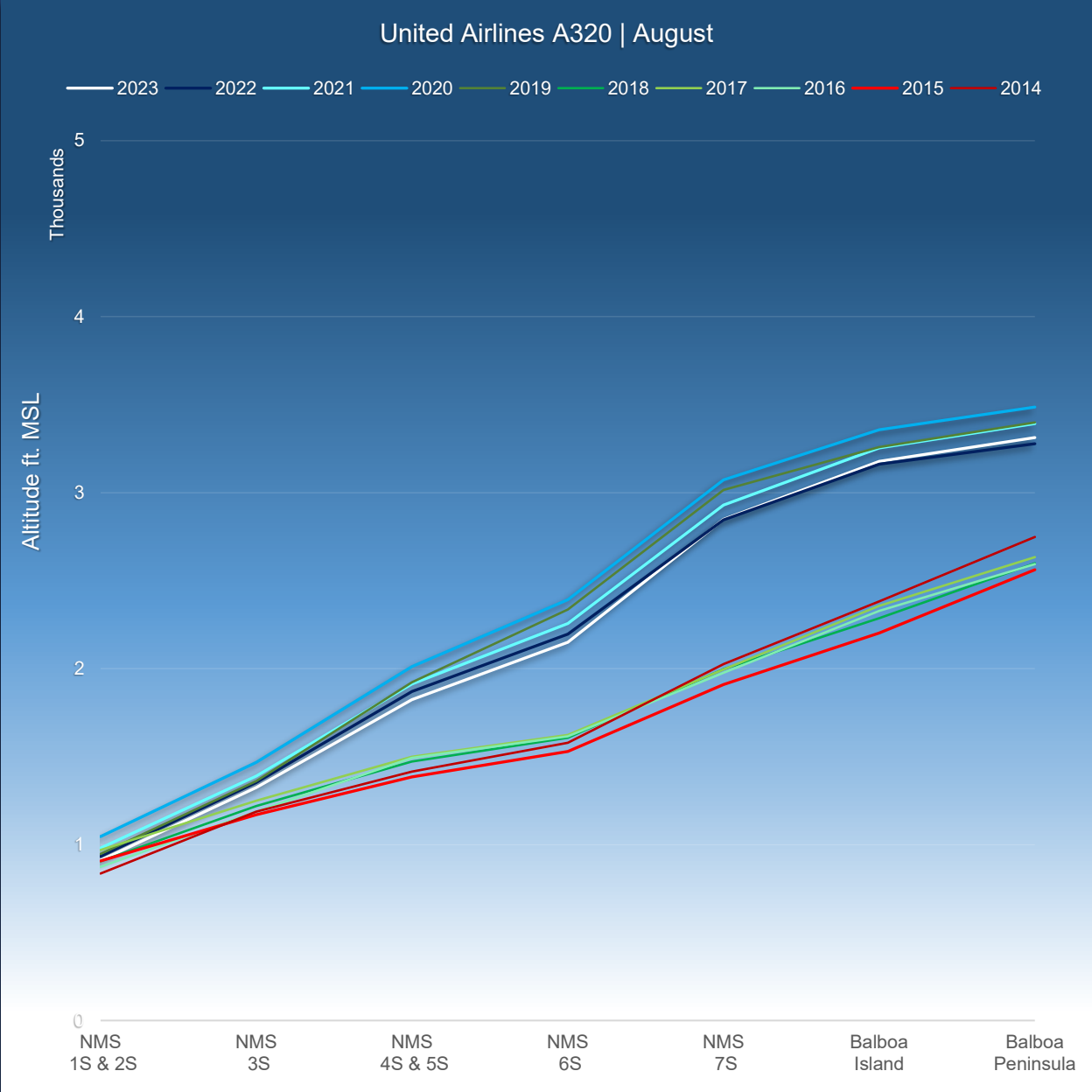
Spirit Airlines Airbus 320

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	1,088	1,482	1,944	2,310	3,059	3,350	3,480	50	137,795
2022	1,148	1,556	2,041	2,421	3,148	3,428	3,556	41	134,147
2021	1,280	1,734	2,296	2,731	3,479	3,816	4,000	23	126,000



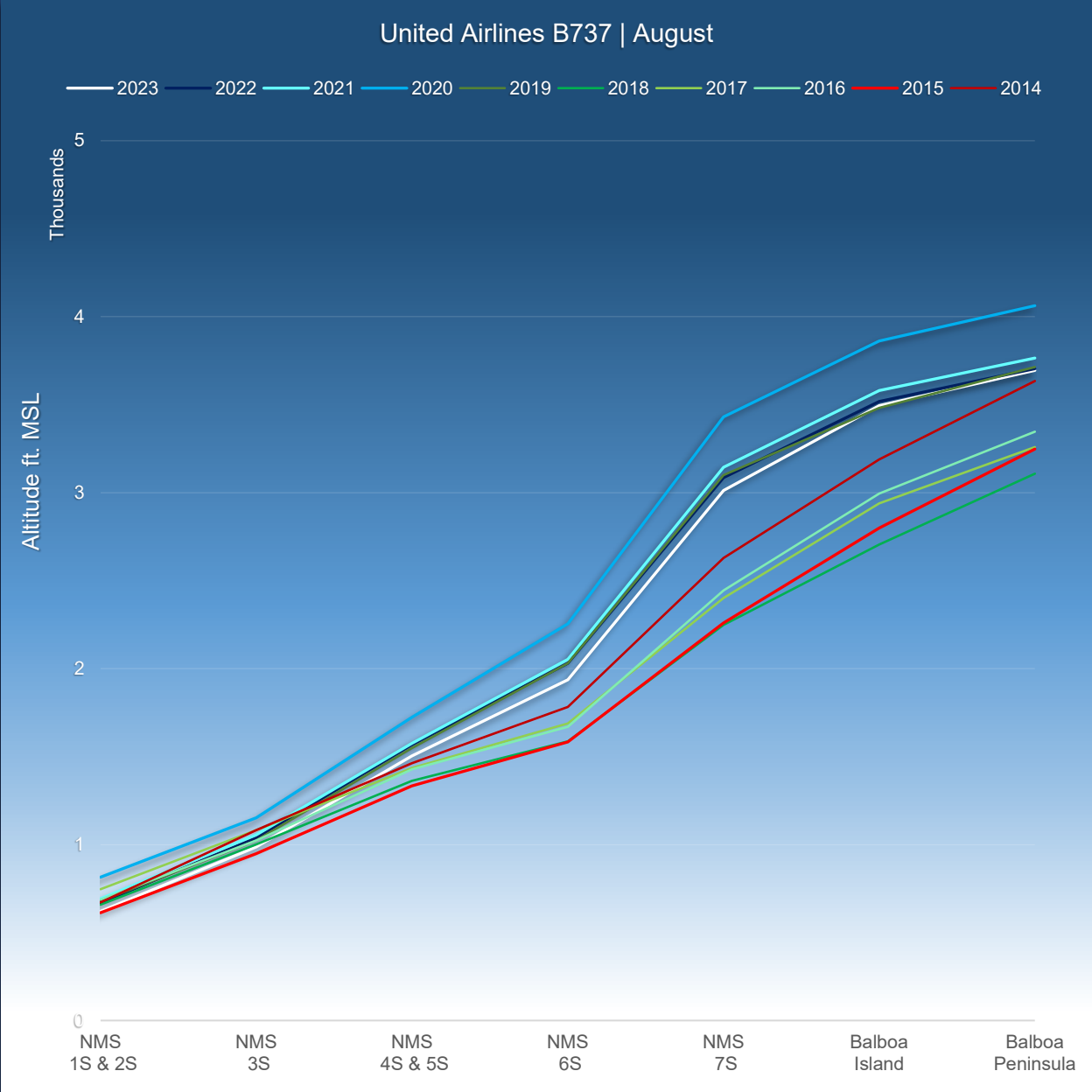
United Airlines Airbus 319

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	848	1,229	1,756	2,141	2,926	3,288	3,477	24	137,141
2022	916	1,318	1,863	2,279	3,088	3,418	3,575	47	131,989
2021	897	1,293	1,818	2,194	2,958	3,293	3,449	30	137,583
2020	1,059	1,447	1,977	2,404	3,219	3,562	3,739	82	125,069
2019	928	1,305	1,841	2,281	3,100	3,373	3,551	50	133,105
2018	877	1,181	1,484	1,714	2,304	2,659	3,004	82	133,140
2017	927	1,223	1,525	1,713	2,228	2,637	2,927	47	
2016	868	1,175	1,499	1,699	2,251	2,699	3,016	103	132,643
2015	810	1,108	1,397	1,637	2,166	2,566	2,979	101	
2014	875	1,195	1,473	1,740	2,381	2,799	3,196	108	



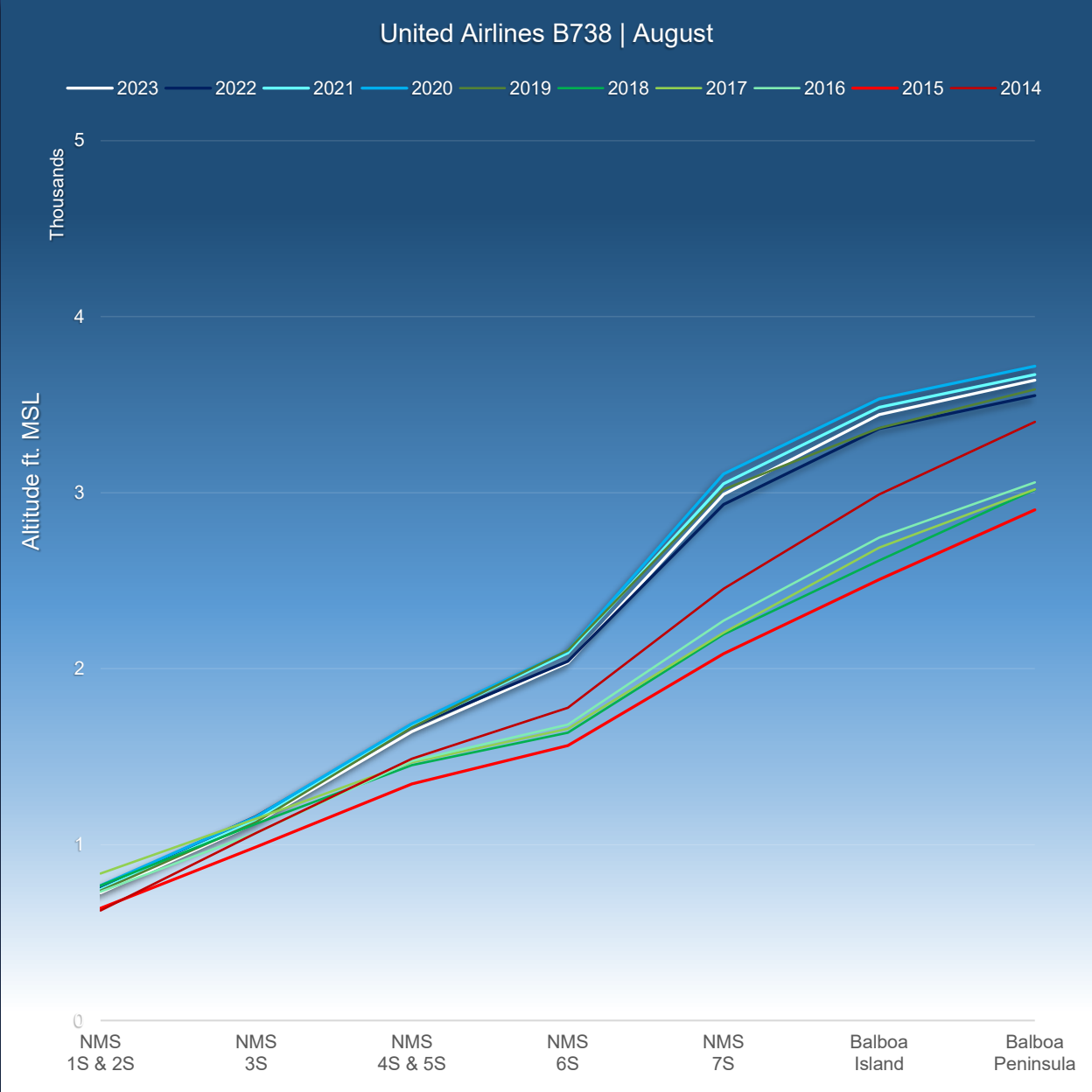
United Airlines Airbus 320

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	910	1,324	1,823	2,150	2,848	3,178	3,313	64	148,514
2022	933	1,353	1,870	2,196	2,845	3,161	3,278	93	146,125
2021	981	1,390	1,912	2,256	2,930	3,254	3,393	33	141,949
2020	1,046	1,467	2,012	2,392	3,073	3,357	3,487	13	127,463
2019	947	1,361	1,922	2,336	3,016	3,259	3,398	152	143,091
2018	906	1,219	1,472	1,607	1,997	2,286	2,599	235	147,188
2017	970	1,250	1,499	1,623	1,996	2,357	2,633	195	144,994
2016	874	1,187	1,492	1,615	1,976	2,328	2,594	76	146,331
2015	907	1,170	1,385	1,529	1,910	2,202	2,562	133	
2014	835	1,188	1,414	1,578	2,026	2,382	2,748	110	138,757



United Airlines Boeing 737-700

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	621	987	1,504	1,937	3,012	3,495	3,695	91	147,089
2022	668	1,040	1,567	2,031	3,086	3,518	3,704	235	143,172
2021	693	1,056	1,576	2,053	3,145	3,580	3,764	189	140,606
2020	815	1,152	1,723	2,255	3,431	3,862	4,063	13	121,775
2019	678	1,024	1,549	2,030	3,099	3,481	3,714	132	141,840
2018	659	1,001	1,363	1,587	2,249	2,705	3,108	114	143,754
2017	747	1,083	1,435	1,688	2,402	2,939	3,259	170	138,818
2016	688	1,024	1,427	1,670	2,444	2,994	3,346	264	137,004
2015	613	948	1,334	1,583	2,259	2,799	3,247	196	138,947
2014	672	1,083	1,462	1,783	2,628	3,188	3,635	211	138,992



United Airlines Boeing 737-800

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	726	1,125	1,643	2,034	2,990	3,444	3,639	361	147,330
2022	759	1,160	1,669	2,042	2,932	3,364	3,552	235	148,180
2021	745	1,139	1,672	2,090	3,051	3,485	3,671	131	142,552
2020	767	1,158	1,687	2,102	3,106	3,533	3,718	79	135,113
2019	739	1,128	1,666	2,103	3,019	3,367	3,587	230	147,063
2018	767	1,119	1,451	1,636	2,194	2,615	3,017	140	144,969
2017	836	1,148	1,467	1,658	2,204	2,687	3,019	132	142,246
2016	732	1,067	1,475	1,682	2,273	2,745	3,059	59	142,030
2015	639	986	1,344	1,563	2,084	2,506	2,902	50	144,647
2014	625	1,066	1,488	1,778	2,454	2,990	3,402	45	143,726

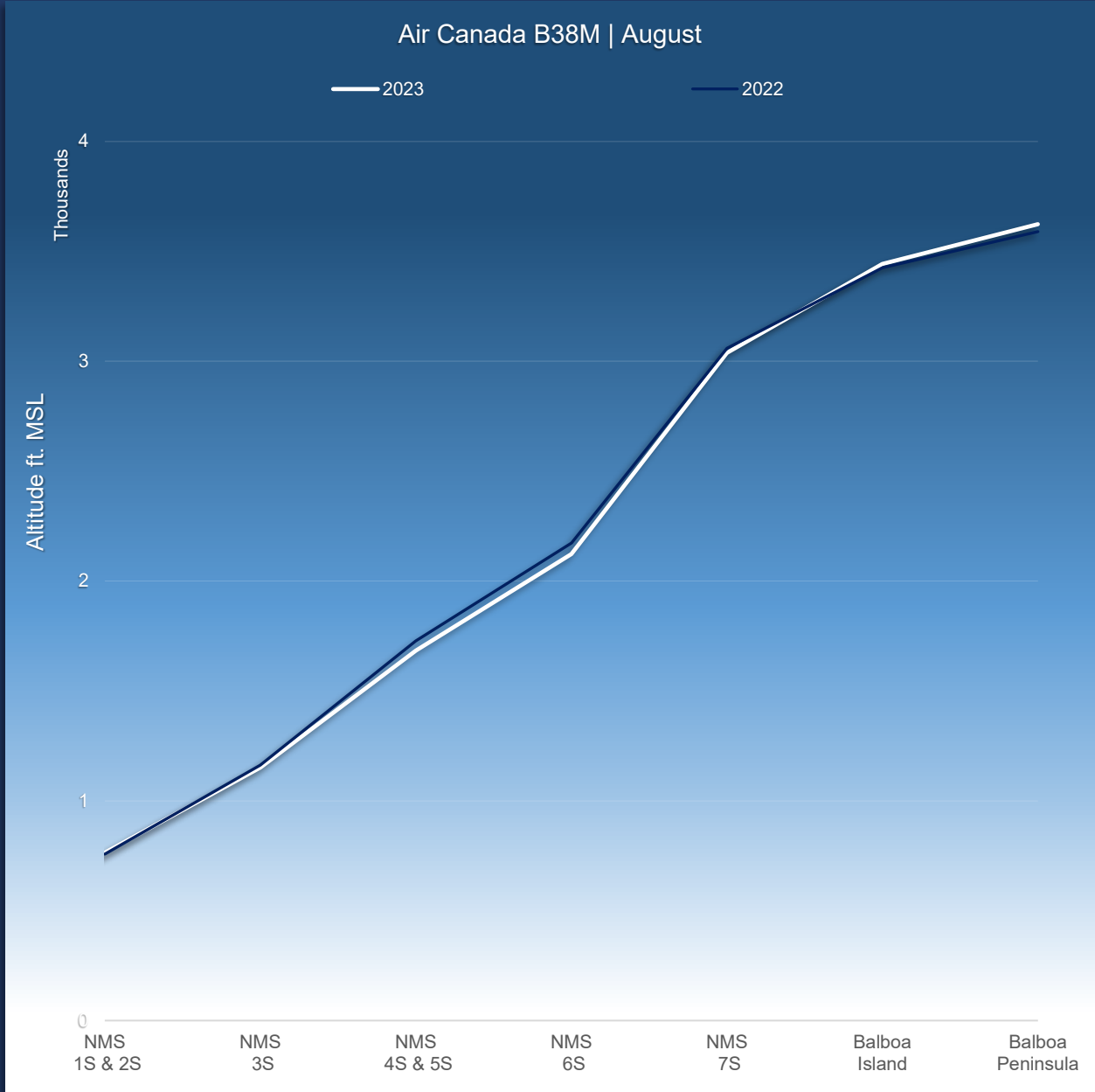


WestJet Boeing 737-700

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	811	1,162	1,472	1,712	2,654	3,335	3,714	30	131,427
2022	817	1182	1509	1748	2635	3254	3584	31	130,601
2021									
2020									
2019	844	1,173	1,473	1,744	2,714	3,258	3,653	31	130,490
2018	845	1,198	1,512	1,771	2,737	3,268	3,656	31	131,100
2017	875	1,201	1,534	1,794	2,673	3,324	3,667	27	128,820
2016	783	1,108	1,479	1,778	2,668	3,393	3,731	27	127,026
2015	730	1,082	1,503	1,706	2,393	3,068	3,515	31	129,748
2014	703	1,124	1,489	1,700	2,482	3,164	3,591	31	130,960

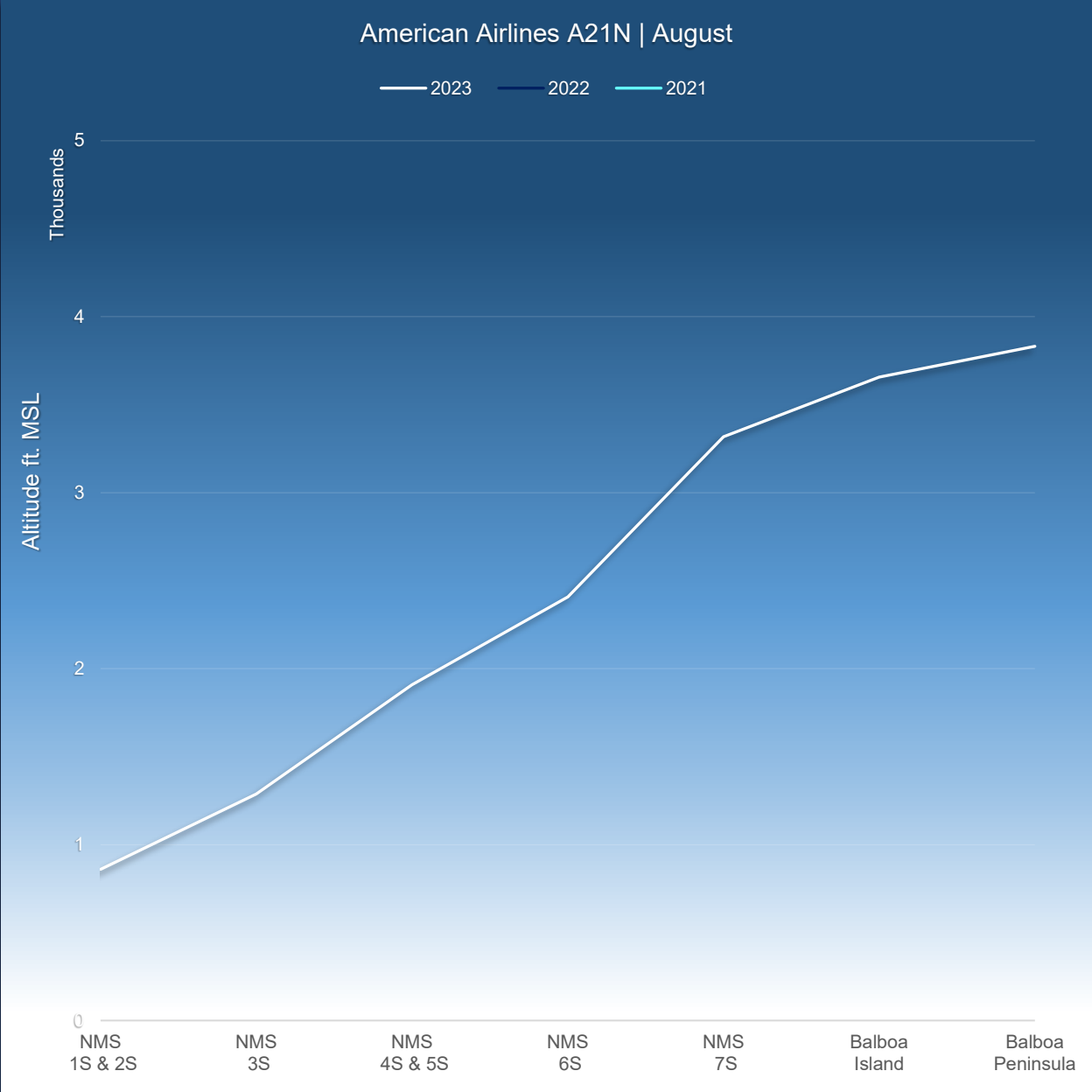
COMMERCIAL NEXT GENERATION AIRCRAFT

Air Canada Boeing 737 MAX 8
American Airlines Airbus A321 Neo
American Airlines Boeing 737 MAX 8
Breeze Airways Airbus A220-300
Delta Air Lines Airbus A220-100
Delta Air Lines Airbus A220-300
Frontier Airlines Airbus A320 Neo
Southwest Airlines Boeing 737 MAX 8
Spirit Airlines Airbus A320 Neo
United Airlines Boeing 737 MAX 8



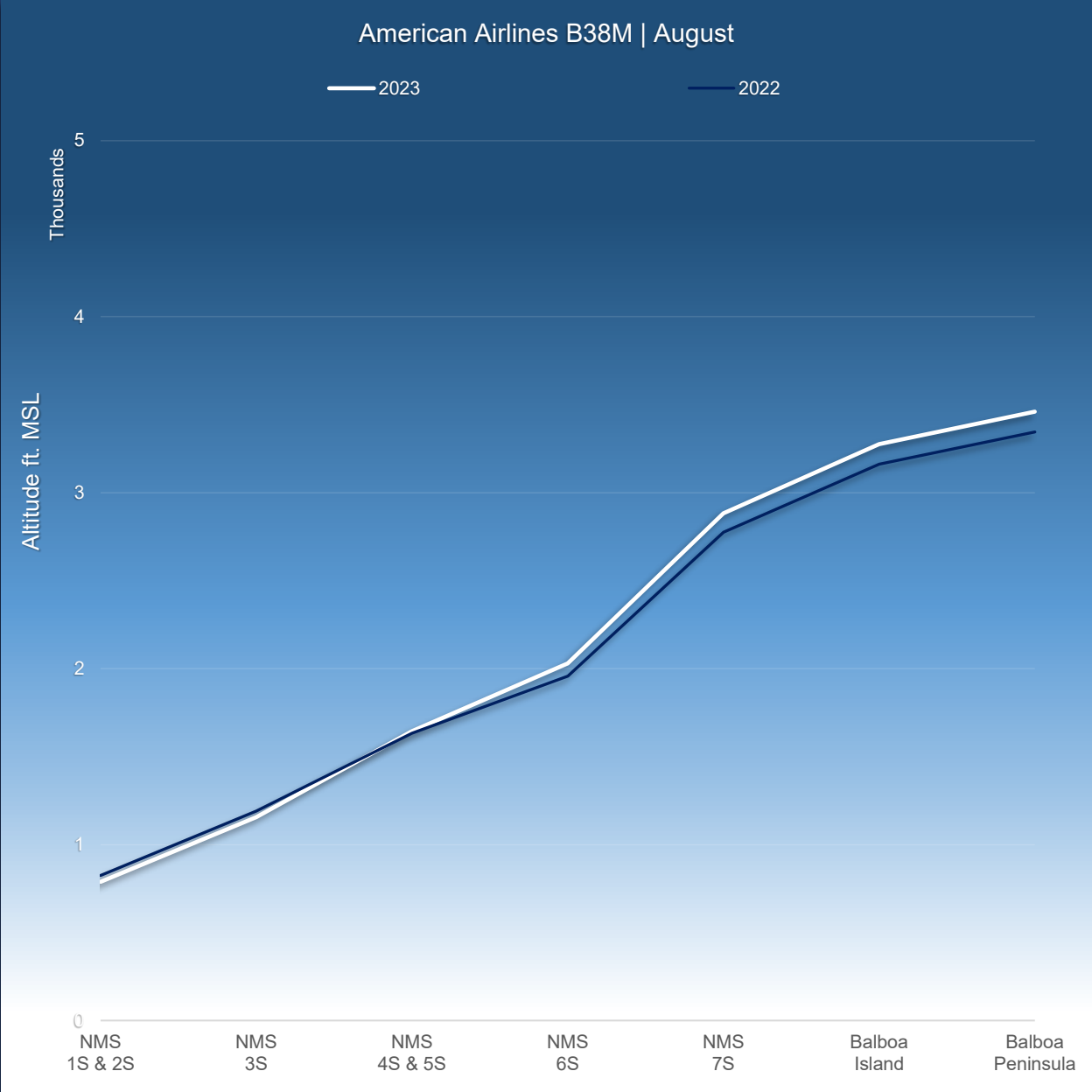
Air Canada Boeing 737 MAX 8

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	765	1,151	1,683	2,123	3,038	3,442	3,624	30	152,673
2022	758	1162	1728	2173	3059	3425	3590	31	147,305



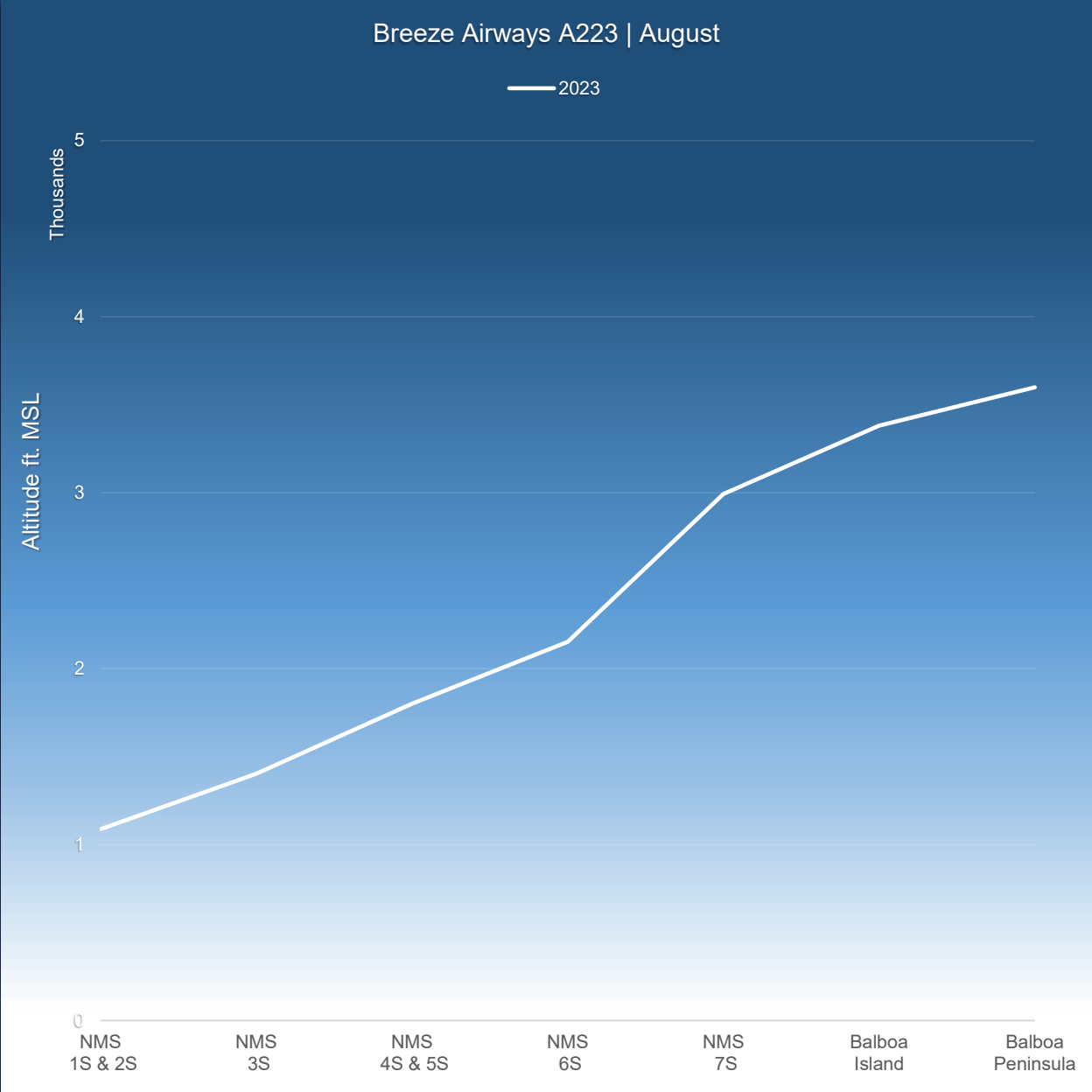
American Airlines Airbus 321 Neo

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	859	1,287	1,908	2,408	3,317	3,657	3,832	84	173,306
2022								1	158,381
2021								3	155,131



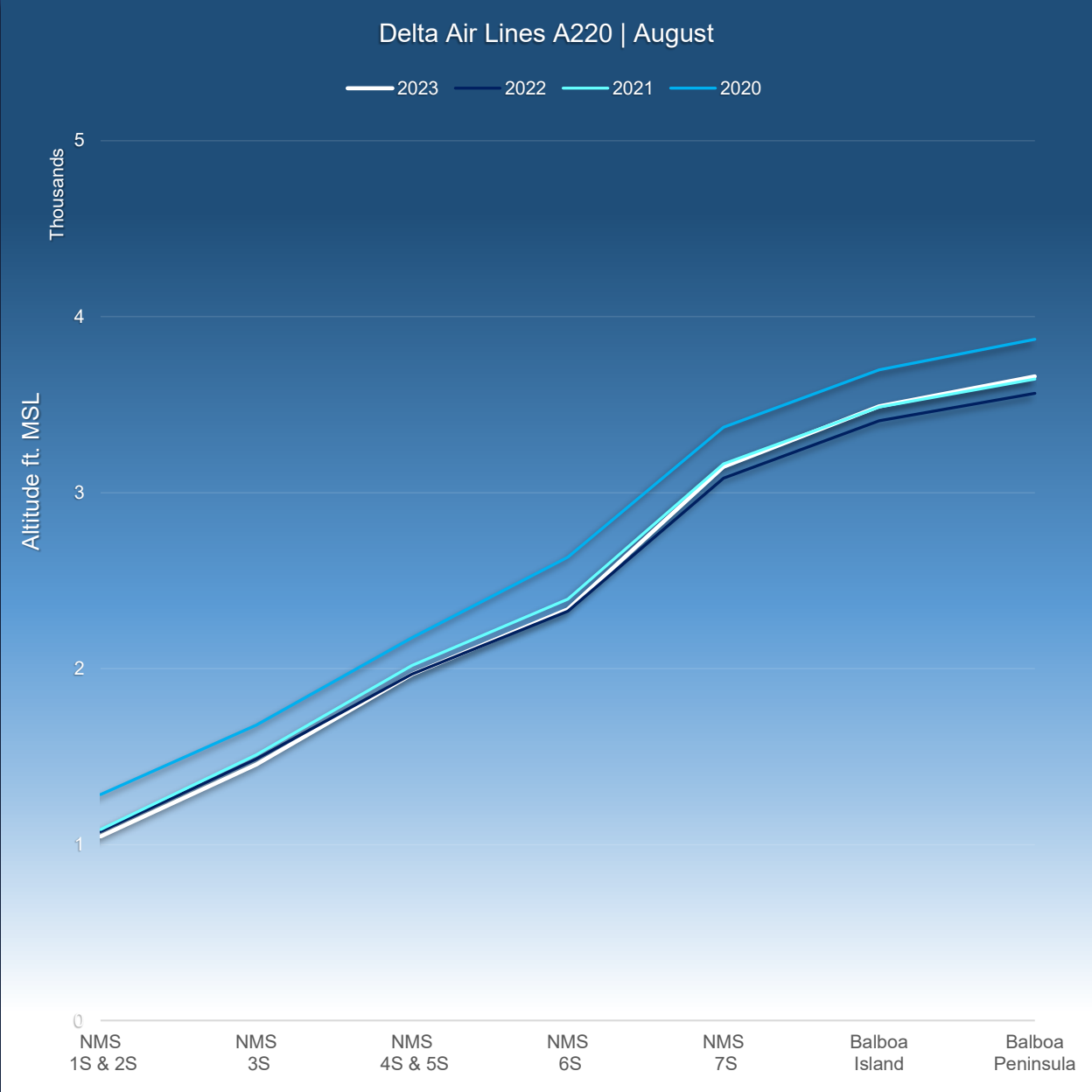
American Airlines Boeing 737 MAX 8

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	789	1,157	1,645	2,030	2,883	3,275	3,460	59	158,139
2022	825	1,191	1,633	1,958	2,775	3,161	3,345	106	156,205
2021								2	145,652



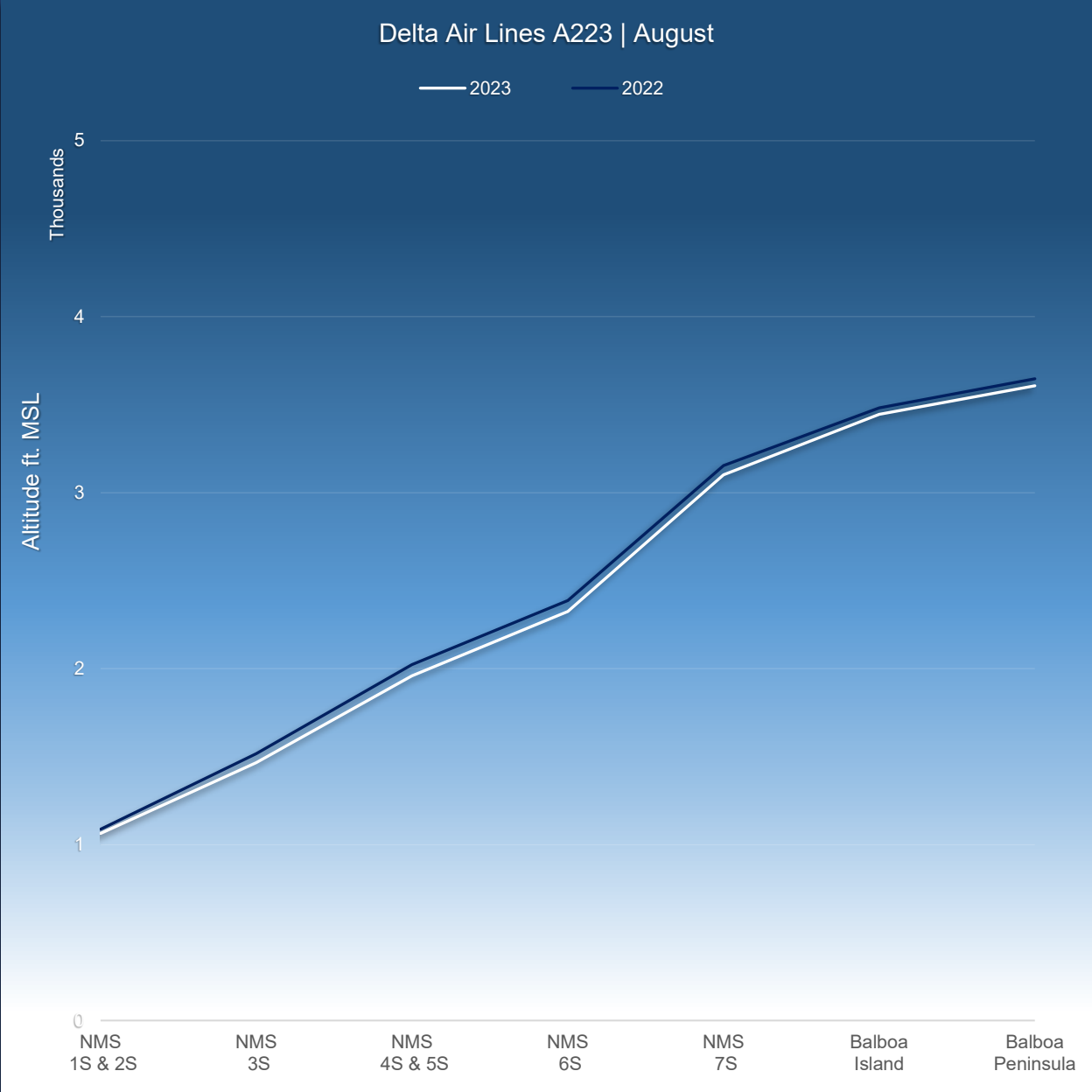
Breeze Airways Airbus 220-300

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
2023	1S & 2S	3S	4S & 5S	6S	7S	3,381	3,598	87	131,500



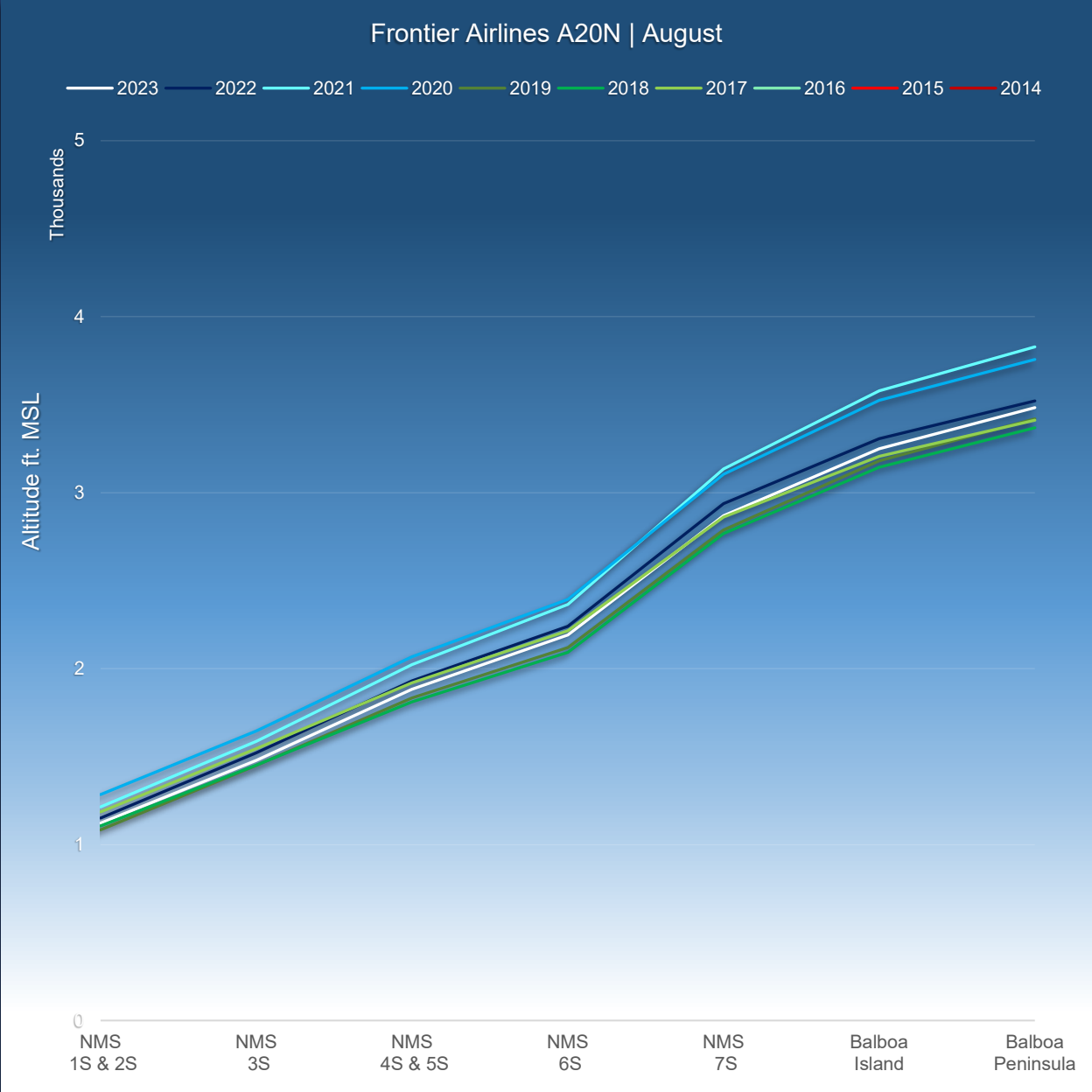
Delta Air Lines Airbus 220-100

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	1,046	1,456	1,967	2,336	3,146	3,490	3,660	222	120,905
2022	1,074	1,487	1,969	2,326	3,082	3,409	3,564	126	119,927
2021	1,086	1,510	2,017	2,395	3,163	3,486	3,645	150	118,244
2020	1,284	1,679	2,175	2,634	3,372	3,698	3,872	59	106,462



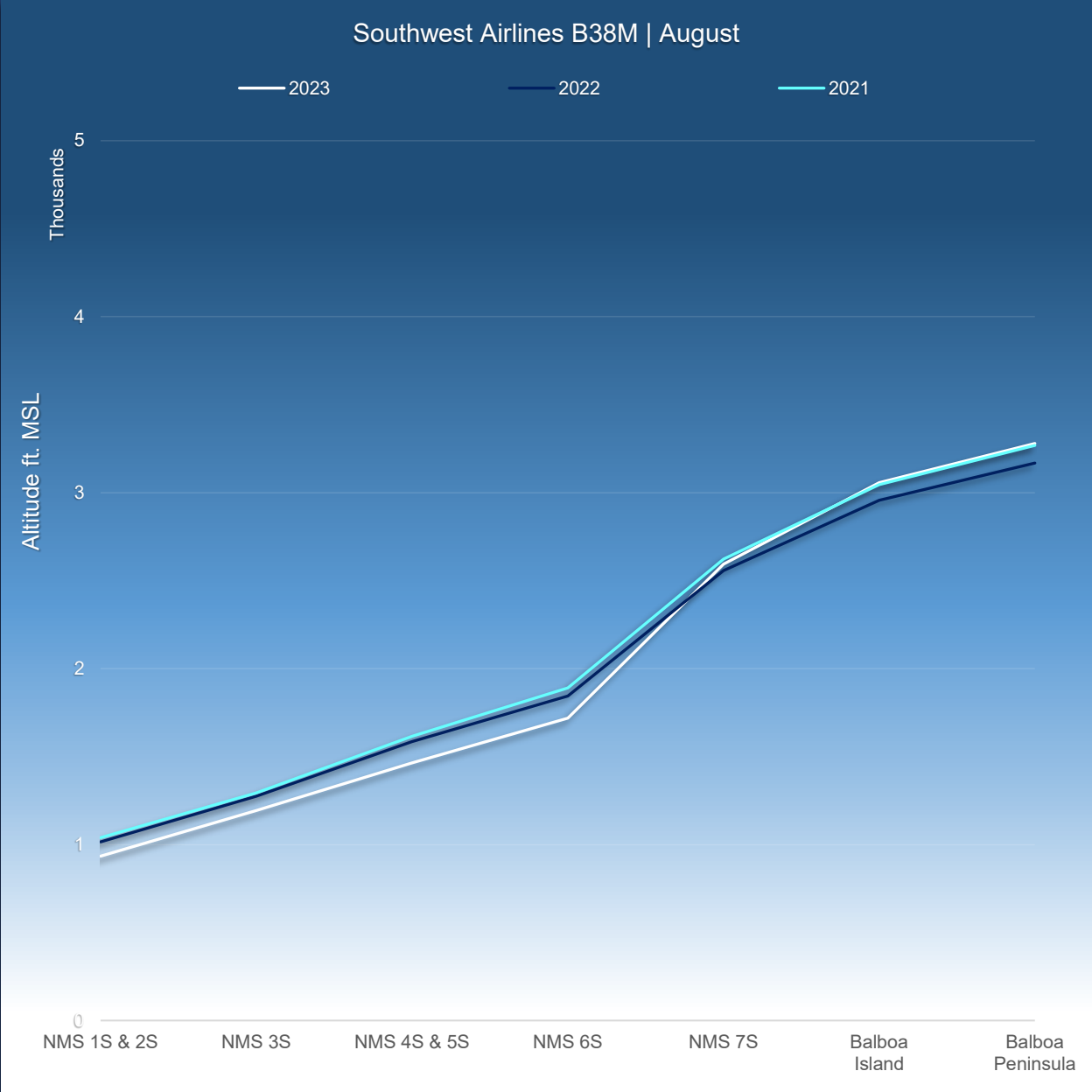
Delta Air Lines Airbus 220-300

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	1,063	1,466	1,959	2,325	3,102	3,445	3,608	81	130,635
2022	1,087	1,517	2,022	2,387	3,153	3,482	3,647	117	129,014



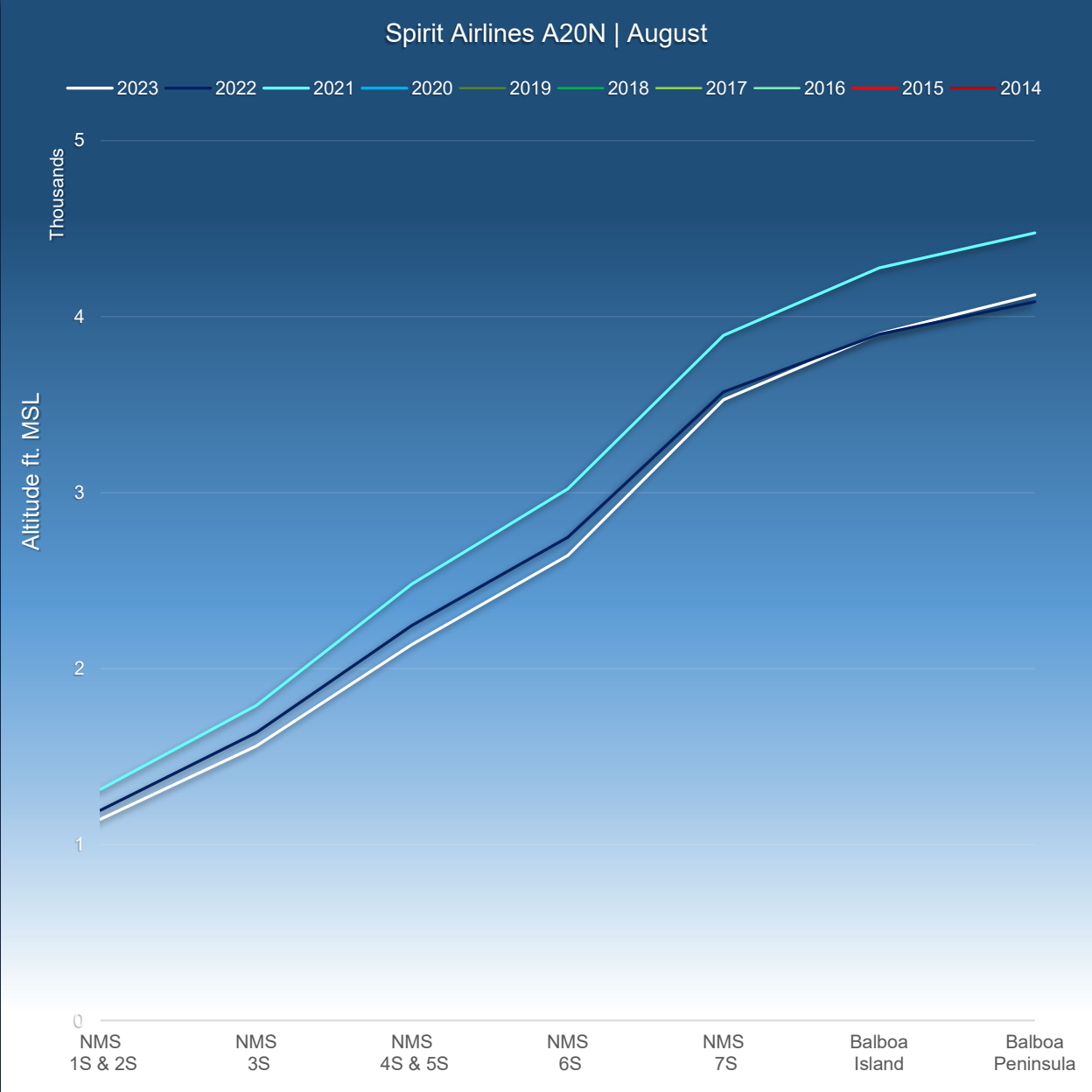
Frontier Airlines Airbus 320 Neo

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	1,122	1,479	1,882	2,191	2,869	3,250	3,483	107	146,623
2022	1,150	1,521	1,930	2,240	2,938	3,307	3,521	83	144,049
2021	1,215	1,587	2,022	2,364	3,134	3,578	3,829	78	139,193
2020	1,284	1,646	2,067	2,393	3,104	3,525	3,756	11	135,345
2019	1,084	1,450	1,833	2,119	2,788	3,181	3,420	31	149,952
2018	1,106	1,451	1,811	2,092	2,767	3,145	3,369	27	151,611
2017	1,186	1,546	1,919	2,215	2,861	3,206	3,411	18	148,220



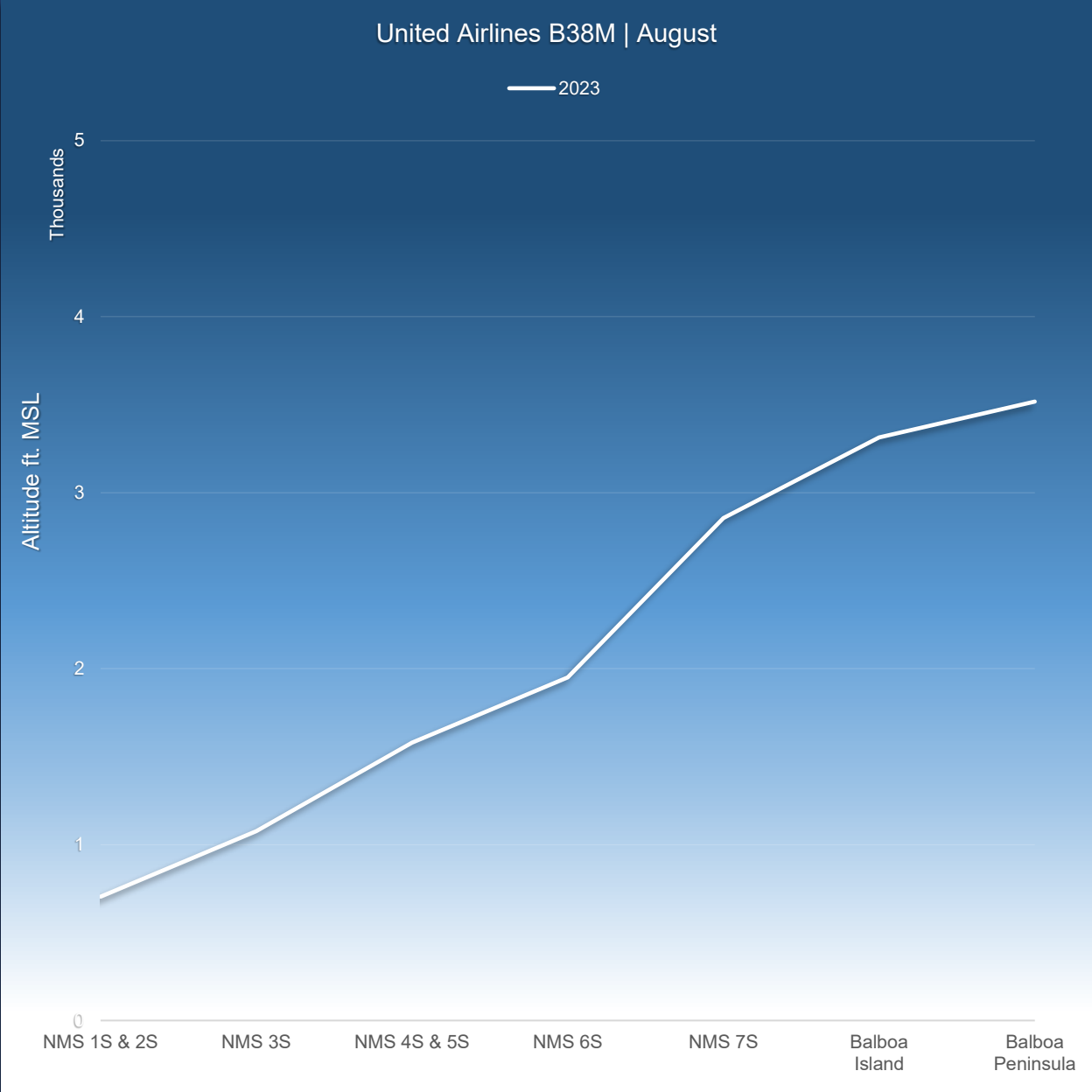
Southwest Airlines Boeing 737 MAX 8

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	934	1,194	1,464	1,718	2,594	3,056	3,280	3	146,647
2022	1,016	1,275	1,585	1,844	2,557	2,957	3,168	325	140,560
2021	1,039	1,294	1,616	1,890	2,622	3,046	3,269	50	140,377



Spirit Airlines Airbus 320 Neo

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	1,144	1,560	2,137	2,643	3,527	3,903	4,124	67	139,808
2022	1,196	1,636	2,246	2,747	3,573	3,900	4,085	112	135,689
2021	1,314	1,791	2,480	3,022	3,893	4,277	4,476	119	127,948



United Airlines Boeing 737 MAX 8

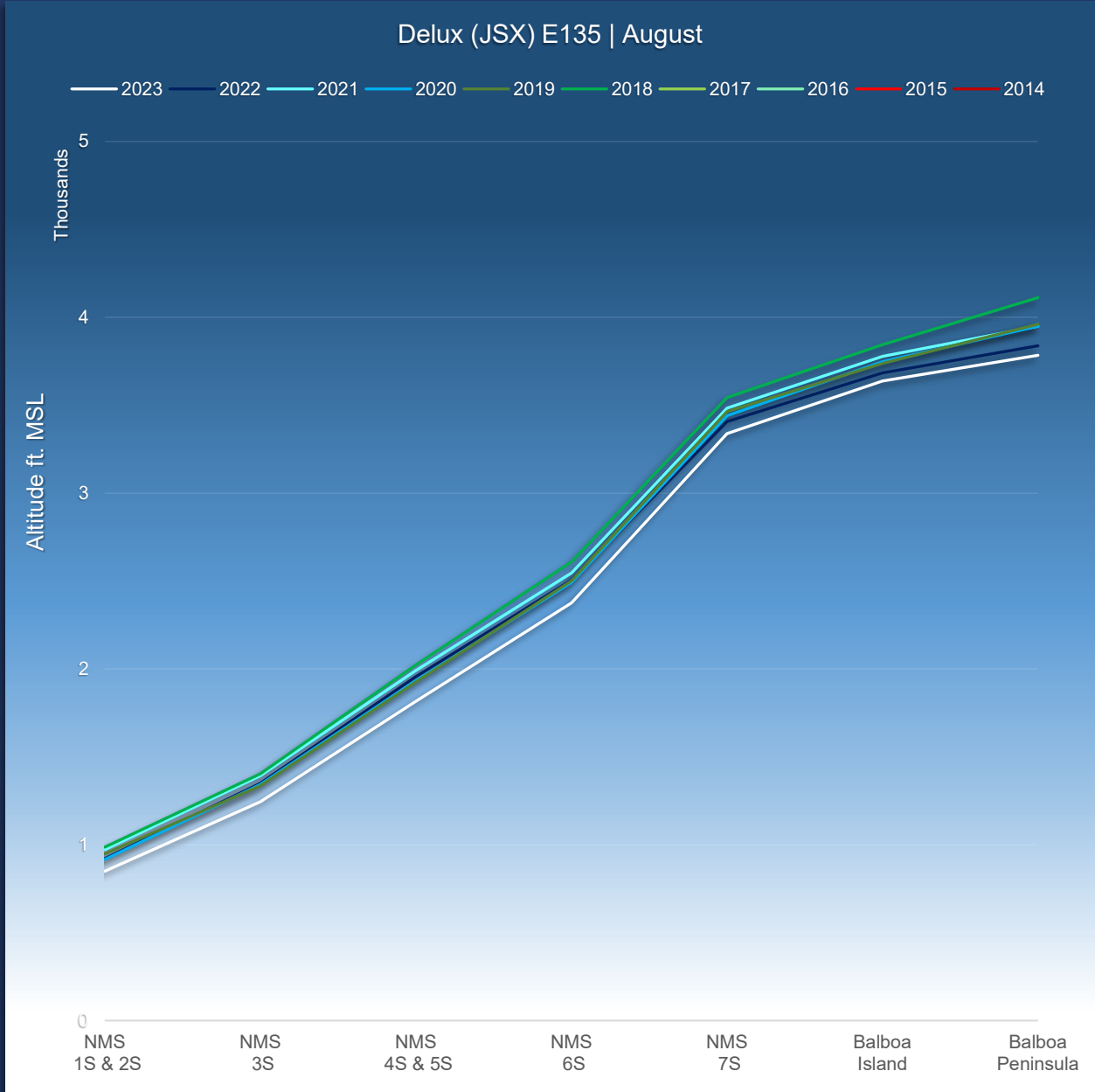
	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	704	1,077	1,579	1,950	2,856	3,314	3,517	16	156,269

COMMUTER AIRCRAFT

Delux (JSX) Embraer 135

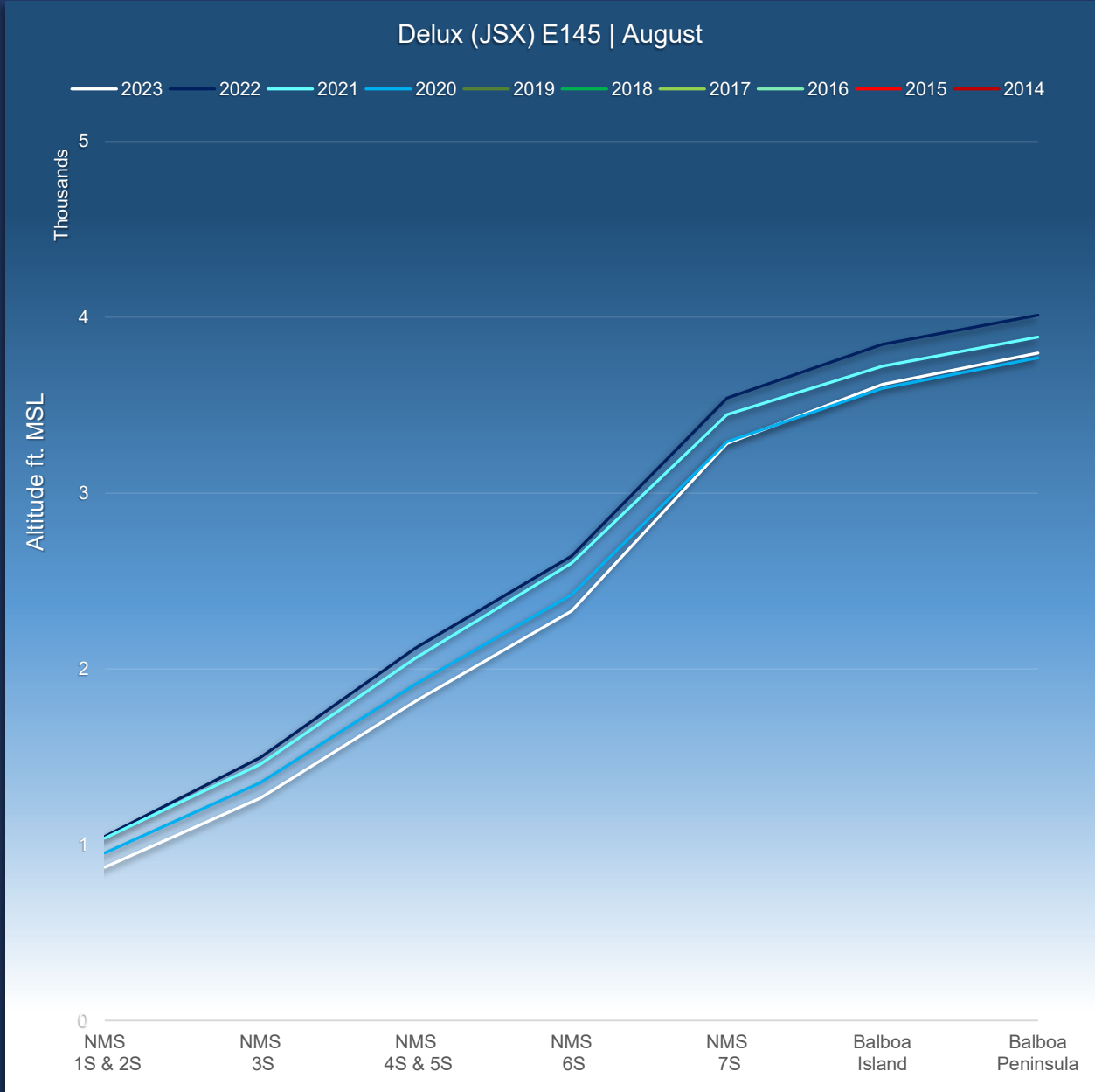
Delux (JSX) Embraer 145

SkyWest Airlines CRJ 7



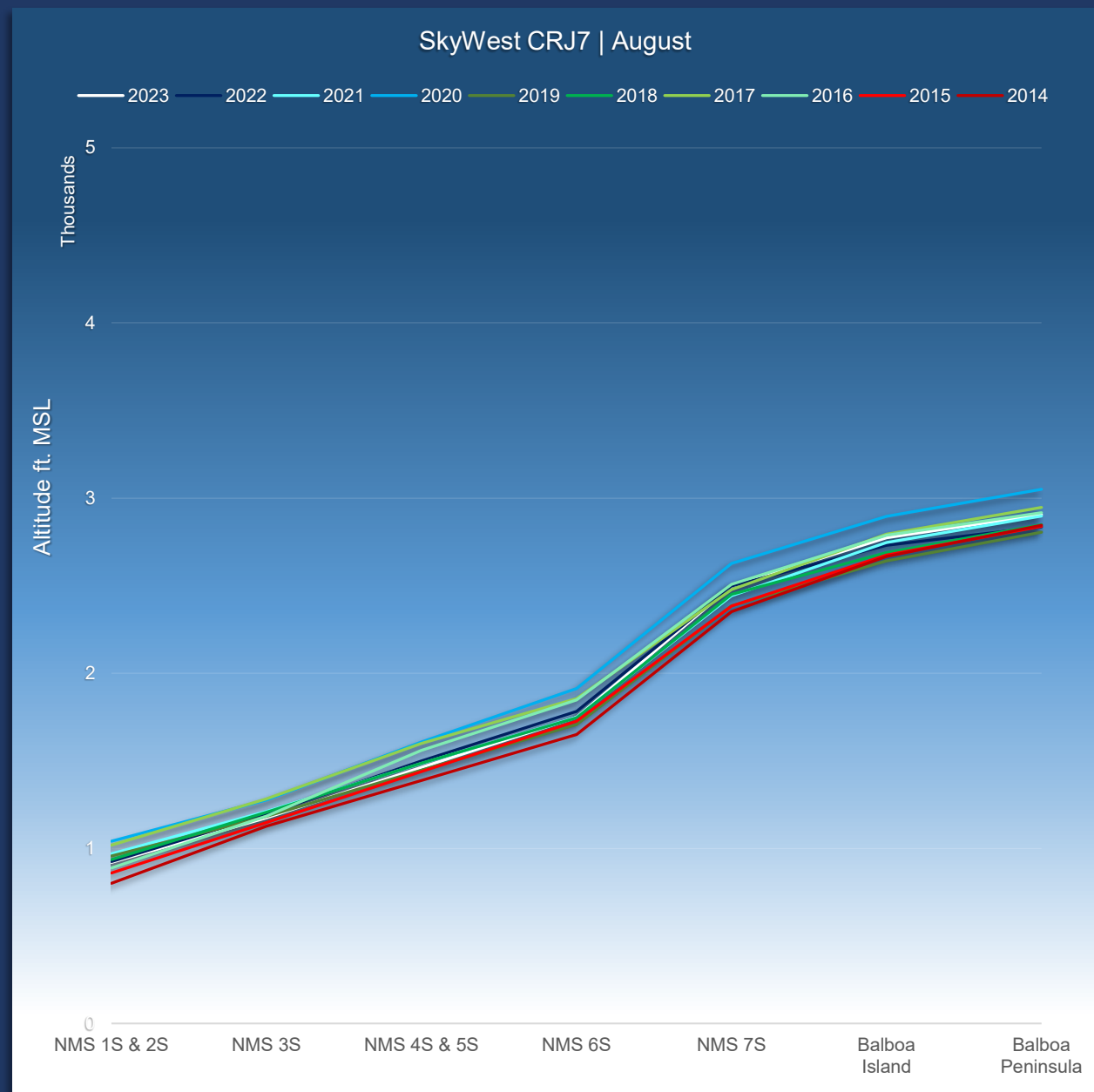
Delux (JSX) Embraer 135

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	850	1,244	1,816	2,376	3,339	3,638	3,784	94	39,182
2022	921	1,350	1,956	2,505	3,407	3,683	3,838	181	37,681
2021	972	1,393	1,991	2,546	3,483	3,778	3,950	180	37,608
2020	917	1,343	1,934	2,492	3,440	3,747	3,949	62	37,604
2019	949	1,335	1,925	2,501	3,464	3,738	3,960	242	37,464
2018	986	1,404	2,023	2,610	3,544	3,845	4,111	85	36,336



Delux (JSX) Embraer 145

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	873	1,266	1,817	2,330	3,282	3,619	3,796	48	40,132
2022	1,048	1,496	2,120	2,641	3,541	3,846	4,011	11	38,116
2021	1,038	1,457	2,063	2,602	3,446	3,721	3,887	49	38,356
2020	954	1,353	1,914	2,422	3,292	3,596	3,770	27	38,512



SkyWest Canadair Regional Jet 700

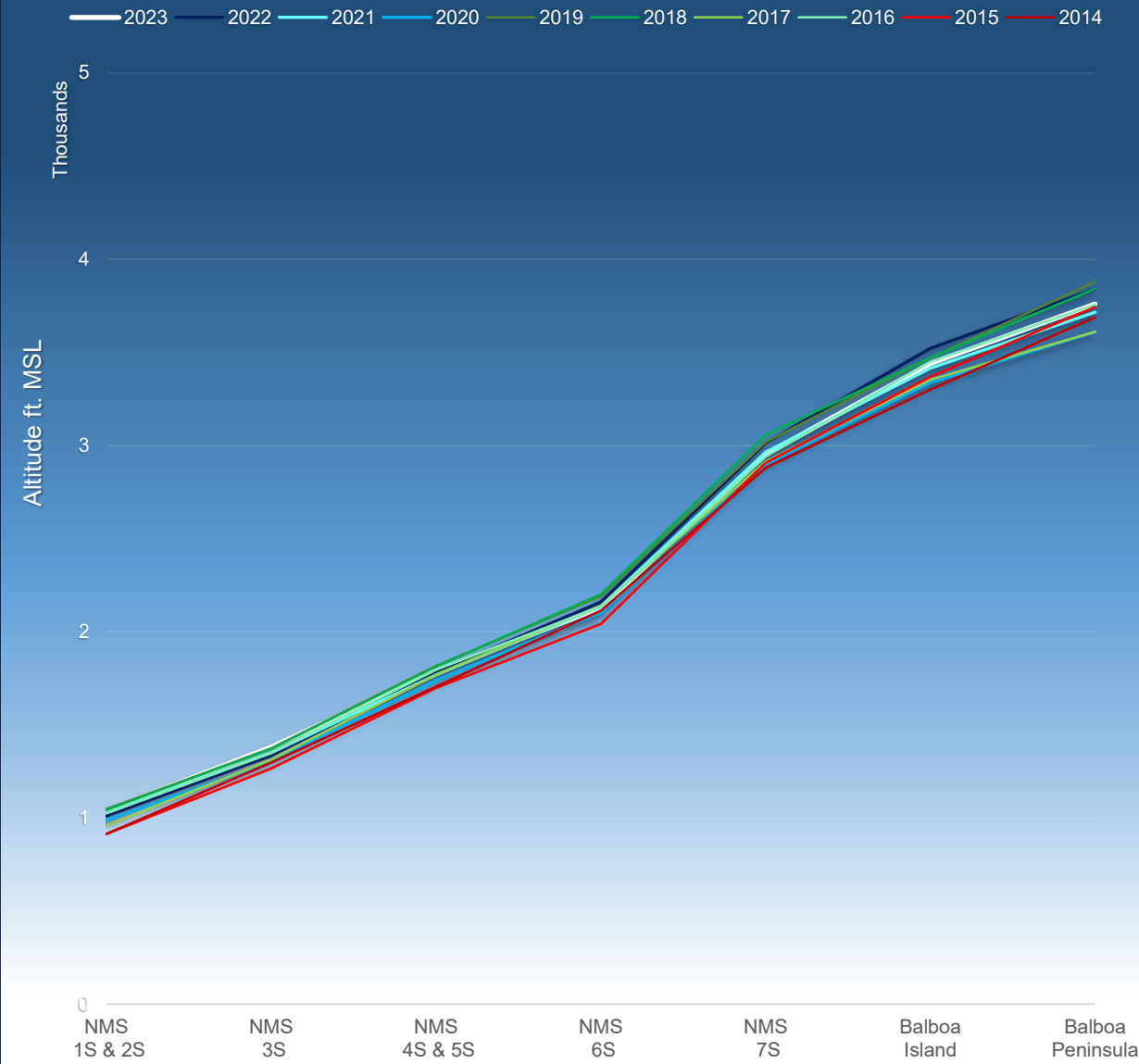
	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	920	1,174	1,463	1,749	2,496	2,774	2,905	29	65,085
2022	925	1,196	1,499	1,782	2,498	2,731	2,836	31	65,925
2021	970	1,211	1,485	1,749	2,443	2,747	2,897	31	66,332
2020	1,041	1,276	1,607	1,913	2,627	2,896	3,051	30	63,106
2019	956	1,182	1,447	1,707	2,385	2,641	2,806	31	66,937
2018	936	1,207	1,486	1,745	2,451	2,689	2,849	32	66,269
2017	1,018	1,282	1,600	1,855	2,477	2,794	2,947	21	64,602
2016	888	1,184	1,560	1,848	2,508	2,788	2,916	49	67,400
2015	859	1,147	1,438	1,726	2,384	2,675	2,838	155	67,111
2014	800	1,127	1,387	1,651	2,352	2,667	2,845	156	68,292

CARGO AIRCRAFT

FedEx Airbus 300-600

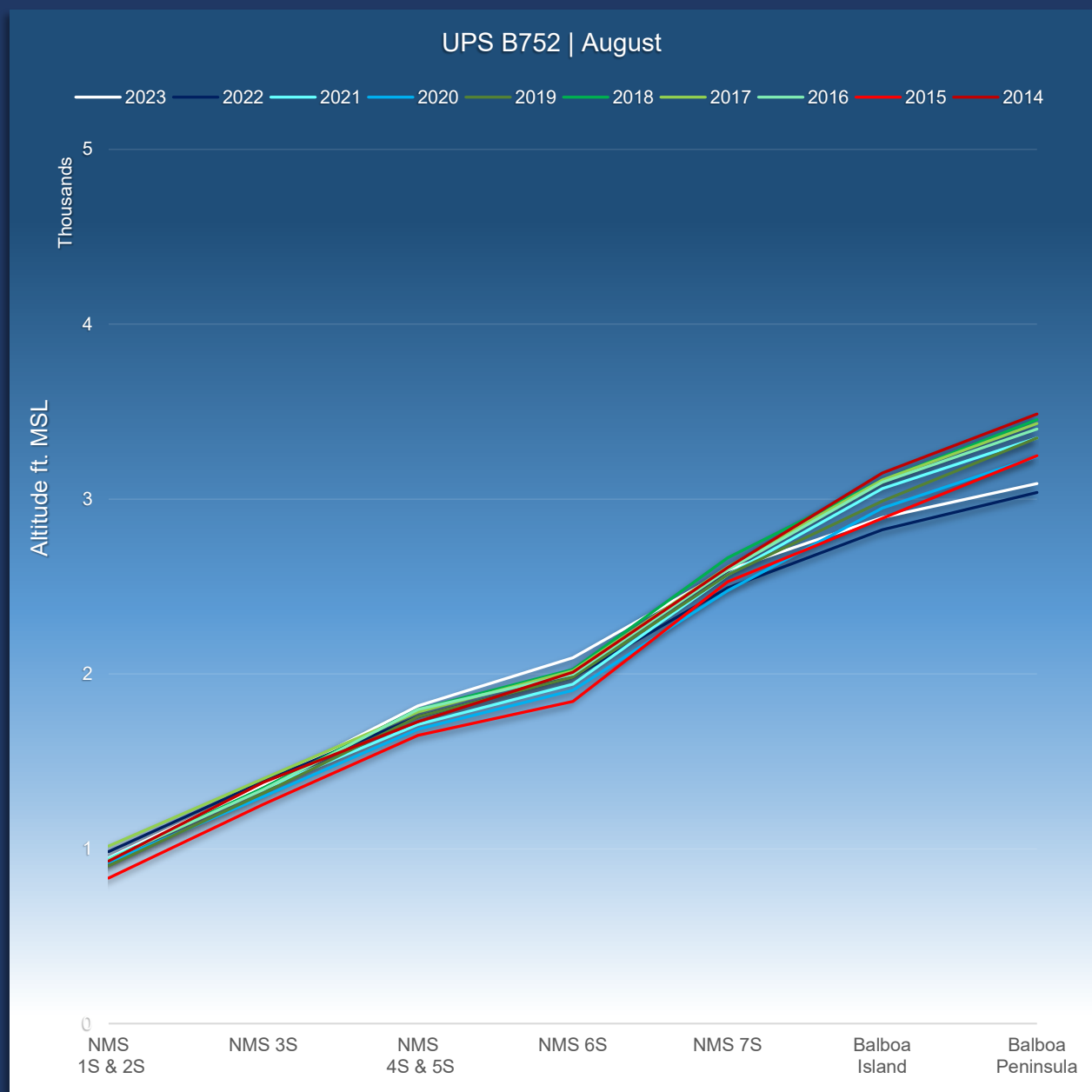
UPS Boeing 757-200

FedEx A306 | August



FedEx Airbus 300-600

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	1,038	1,381	1,788	2,128	2,953	3,440	3,759	23	296,247
2022	1,011	1,336	1,783	2,159	3,013	3,521	3,840	23	295,685
2021	1,027	1,349	1,768	2,136	2,965	3,414	3,716	22	303,296
2020	986	1,304	1,738	2,102	2,900	3,338	3,610	21	301,087
2019	1,047	1,374	1,815	2,191	3,018	3,471	3,879	22	288,239
2018	1,042	1,372	1,812	2,200	3,057	3,471	3,841	22	297,790
2017	958	1,313	1,769	2,139	2,913	3,352	3,611	23	297,721
2016	1,026	1,350	1,795	2,136	2,941	3,450	3,756	22	302,282
2015	913	1,265	1,698	2,041	2,907	3,368	3,744	21	298,418
2014	913	1,297	1,705	2,113	2,880	3,300	3,688	21	303,571



UPS Boeing 757-200

	Noise Monitoring Station (NMS)					Balboa Island	Balboa Peninsula	# of Ops	GTOW (lbs.)
	1S & 2S	3S	4S & 5S	6S	7S				
2023	948	1,365	1,817	2,093	2,594	2,894	3,089	18	192,139
2022	983	1,384	1,755	1,981	2,492	2,825	3,038	19	191,942
2021	945	1,341	1,711	1,941	2,566	3,060	3,350	18	193,711
2020	922	1,299	1,683	1,907	2,476	2,949	3,243	17	196,369
2019	903	1,317	1,756	1,981	2,566	2,988	3,349	17	190,565
2018	936	1,348	1,797	2,026	2,663	3,108	3,455	18	193,833
2017	1,016	1,401	1,782	2,017	2,611	3,110	3,432	19	193,963
2016	938	1,339	1,797	1,998	2,596	3,096	3,400	21	191,424
2015	832	1,254	1,649	1,842	2,527	2,889	3,248	17	198,035
2014	930	1,379	1,726	2,010	2,608	3,149	3,486	16	193,018

Altitude Trend Results

	NMS 1 & 2	NMS 3S	NMS 4S & 5S	NMS 6S	NMS 7S	Balboa Island	Balboa Peninsula
Commercial Aircraft							
Alaska Airlines Boeing 737-700				High			
Alaska Airlines Boeing 737-800						Low	Low
Alaska Airlines Airbus A320							
Allegiant Air Airbus A319						Low	
Allegiant Air Airbus A320							
American Airlines Airbus A319					High	High	High
American Airlines Airbus A320				High	High	High	High
American Airlines Airbus A321							
American Airlines Boeing 737-800				High	High	High	High
Breeze Airways Embraer 195							
Delta Air Lines Airbus A319							
Delta Air Lines Boeing 737-800							
Delta Air Lines Boeing 757-200							

	NMS 1 & 2	NMS 3S	NMS 4S & 5S	NMS 6S	NMS 7S	Balboa Island	Balboa Peninsula
Commercial Aircraft							
Frontier Airlines Airbus A320				Low	Low	Low	Low
Horizon Air Embraer 175						Low	Low
SkyWest Airlines Embraer 175							
Southwest Airlines Boeing 737-700							
Southwest Airlines Boeing 737-800							
Spirit Airlines Airbus A320			Low	Low	Low	Low	Low
United Airlines Airbus A319			High	High	High	High	High
United Airlines Airbus A320			High	High	High	High	High
United Airlines Boeing 737-700					High	High	
United Airlines Boeing 737-800			High	High	High	High	High
WestJet Boeing 737-700							

Aircraft Speed

FAA Orange County Communities Virtual Public Information Workshop #1 - [53:00 - 56:50]

[FAA 14 CFR 91.117 Aircraft Speed](#)

FAA 14 CFR § 91.117 Aircraft speed

- a) Unless otherwise authorized by the Administrator, no person may operate an aircraft below 10,000 ft. MSL at an indicated airspeed of more than 250 knots (288 m.p.h.)

- a) Unless otherwise authorized or required by ATC, no person may operate an aircraft at or below 2,500 feet above the surface within 4 nautical miles of the primary airport of a Class C or Class D airspace area at an indicated airspeed of more than 200 knots (230 mph.). This paragraph (b) does not apply to any operations within a Class B airspace area. Such operations shall comply with paragraph (a) of this section.

Aircraft Speed

Thomas Gordon - FAA, Strategic Manager, SoCal TRACON

- <10,000 ft. aircraft are required <250 kts of indicated air speed
- Pilots are mostly in compliance
- Public websites are displaying “ground” speed not “indicated” air speed

Trey Turner – Technical Pilot, Southwest Airlines

- Air speed restrictions are covered by automation in the different departure profiles utilized by SWA
- He also agreed that “ground” speeds listed on public websites are different than “indicated” air speeds

Aircraft Speed

Heidi Williams – Director, Air Traffic Services & Infrastructure, NBAA

- Pilots are consistently being reminded to be vigilant to FAA regulations
- Pilots are generally concerned with being compliant when following ATC instructions and speed restrictions
- No pilot wants to incur a certificate action

Tamara Swann - FAA, Acting Regional Administrator, Western Pacific Region

- Worked in FAA Flight Standards District Office (FSDO)
- FSDO responsible to investigate non-compliance
- FAA cannot act against pilots based on the “ground” speed listed on public flight tracking & noise monitoring websites
- Reason: “Ground” speed is different than the “indicated” air speed

For more information:

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