UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

☑ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2022

or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Commission File Number 001-5424



DELTA AIR LINES, INC.

(Exact name of registrant as specified in its charter)

Delaware	**58-0218548**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
Post Office Box 20706 **Atlanta, Georgia**	**30320-6001**
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: (404) 715-2600

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, par value $0.0001 per share	DAL	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☑ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. Yes ☐ No ☑

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports) and (2) has been subject to such filing requirements for the past 90 days. Yes ☑ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☑ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☑ Accelerated filer ☐ Non-accelerated filer ☐

Smaller reporting company ☐ Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☑

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☑

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant as of June 30, 2022 was approximately $18.6 billion.

On January 31, 2023, there were outstanding 641,238,655 shares of the registrant's common stock.

This document is also available on our website at http://ir.delta.com/.

Documents Incorporated By Reference

Part III of this Form 10-K incorporates by reference certain information from the registrant's definitive Proxy Statement for its 2022 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission.

Table of Contents

	Page
Forward-Looking Statements	1
PART I	
ITEM 1. BUSINESS	2
ITEM 1A. RISK FACTORS	16
Risk Factors Relating to Delta	16
Risk Factors Relating to the Airline Industry	23
ITEM 1B. UNRESOLVED STAFF COMMENTS	27
ITEM 2. PROPERTIES	28
Flight Equipment	28
Ground Facilities	29
ITEM 3. LEGAL PROCEEDINGS	30
ITEM 4. MINE SAFETY DISCLOSURES	30
PART II	
ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES	31
ITEM 6. (RESERVED)	32
ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS	33
Financial Highlights	33
Results of Operations	35
Non-Operating Results	40
Income Taxes	41
Refinery Segment	41
Financial Condition and Liquidity	43
Critical Accounting Estimates	47
Supplemental Information	53
Glossary of Defined Terms	56
ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK	57
ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA	58
ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE	103
ITEM 9A. CONTROLS AND PROCEDURES	103
ITEM 9B. OTHER INFORMATION	105
ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS	105
PART III	
ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE	105
ITEM 11. EXECUTIVE COMPENSATION	105
ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS	105

	Page
ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE	105
ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES	105
PART IV	
ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES	106
ITEM 16. FORM 10-K SUMMARY	110
SIGNATURES	111

Unless otherwise indicated or the context otherwise requires, the terms "Delta," "we," "us," and "our" refer to Delta Air Lines, Inc. and its subsidiaries.

FORWARD-LOOKING STATEMENTS

Statements in this Form 10-K (or otherwise made by us or on our behalf) that are not historical facts, including statements about our estimates, expectations, beliefs, intentions, projections or strategies for the future, may be "forward-looking statements" as defined in the Private Securities Litigation Reform Act of 1995. Forward-looking statements involve risks and uncertainties that could cause actual results to differ materially from historical experience or our present expectations. Known material risk factors applicable to Delta are described in "Risk Factors Relating to Delta" and "Risk Factors Relating to the Airline Industry" in "Item 1A. Risk Factors" of this Form 10-K, other than risks that could apply to any issuer or offering. All forward-looking statements speak only as of the date made, and we undertake no obligation to publicly update or revise any forward-looking statements to reflect events or circumstances that may arise after the date of this report.

Part I

ITEM 1. BUSINESS

General

As a global airline based in the United States, we connect customers across our expansive global network with a commitment to industry-leading customer service, safety and innovation. In 2022, demand for air travel accelerated significantly beginning late in the March quarter with continued improvement throughout the remainder of the year. For the full year, we served approximately 177 million customers.

Competitive Advantages and Brand Strength

The competitive advantages that support our trusted consumer brand include our people and culture, operational reliability, global network, customer loyalty and financial foundation. In 2022, we continued to differentiate Delta from the industry by strengthening our competitive advantages.

People and Culture

The Delta people and culture are our strongest competitive advantage. Our employees provide world-class travel experiences for our customers and best-in-class service, delivering customer satisfaction and brand preference. In 2022, we continued investing in our people and hired approximately 25,000 new team members as we continued to rebuild the airline. As a testament to our people-focused culture, *Forbes* recognized Delta as No. 6 on its list of the World's Best Employers for 2022, making it the highest-ranked airline on the list. Glassdoor also recognized Delta as one of the Best Places to Work for the sixth year in a row, ranking No. 18 on the 2022 list of 100 large companies.

With our improved profitability, we returned to normal profit sharing and are planning a $563 million planned payout for eligible employees. Our industry-leading profit sharing program directly aligns our employees' interests with the company's long-term success. The company also maintains a Shared Rewards program to incentivize operational performance, and in 2022 $61 million was earned by employees under this program.

Operational Reliability

We remain committed to industry-leading reliability and are consistently among the industry's best performers. We delivered the best completion factor and on-time arrival and departure rates among our network carrier peers in 2022 based on preliminary data. Since July 1, 2022, we had a system-wide completion factor of 98.6%, with 71.1% of our domestic flights arriving on time. In 2022, we were honored with the Cirium Platinum Award for global operational excellence as North America's most on-time airline, reflecting Delta's on-time performance. In January 2023, the *Wall Street Journal* named us the top airline of 2022 among the nine U.S. airlines in its annual airline scorecard for the second consecutive year, leading the industry in on-time arrivals, completion factor and involuntary denied boardings.

Global Network

We and our alliance partners collectively serve over 130 countries and territories and over 800 destinations around the world. At the end of 2022, we offered more than 4,000 daily flights to more than 275 destinations on six continents.

Our domestic network is centered around core hubs in Atlanta, Minneapolis-St. Paul, Detroit and Salt Lake City. Core hubs have strong local passenger share, a high penetration of customers loyal to Delta, a competitive cost position and strong margins. Core hub positions complement coastal hub positions in Boston, Los Angeles, New York-LaGuardia, New York-JFK and Seattle. Coastal hubs provide a strong presence in large revenue markets and enable growth in premium products and international service.

In 2022, we focused on solidifying our positions in our coastal hubs, securing leading positions in Boston and Los Angeles. We expect to leverage our coastal gateways and strategic relationships with international airline partners to further grow our international service. We increased local market share in our core hubs and plan to focus growth in 2023 in our core hubs as we complete our rebuild.

Internationally, we have significant hubs and market presence in Amsterdam, London-Heathrow, Mexico City, Paris-Charles de Gaulle and Seoul-Incheon. Through innovative alliances with Aeroméxico, LATAM Airlines Group S.A. ("LATAM"), Air France-KLM, China Eastern, Korean Air and Virgin Atlantic, we seek to bring more choice to customers worldwide. In particular, the U.S. Department of Transportation ("DOT") granted final regulatory approval for our joint venture agreement with LATAM in 2022. Our strategic relationships with these international airlines are an important part of our business as they improve our access to markets around the world and enable us to provide customers a more seamless global travel experience across our alliance network. The most significant of these arrangements are commercial joint ventures or cooperation agreements that include joint sales and marketing coordination, co-location of airport facilities and other commercial cooperation arrangements. In some cases, we have reinforced strategic alliances through equity investments where we have opportunity to create deep relationships and maximize commercial cooperation.

Our global network is supported by a fleet of approximately 1,250 aircraft as of December 31, 2022 that are varied in size and capabilities, giving us flexibility to adjust aircraft to the network. We are continuing to refresh our fleet by acquiring new and more fuel-efficient aircraft with increased premium seating and higher cargo capacity to replace older aircraft, and to reduce our fleet complexity with fewer fleet types. In 2022, we took delivery of 69 aircraft, including new A321neos, A220-100s, A220-300s, A330-900s, A350-900s and pre-owned CRJ-900s and Boeing 737-900ERs. Our new aircraft are on average 25% more fuel efficient per seat mile than retiring aircraft. In July 2022, we entered into a purchase agreement with Boeing for 100 Boeing 737-10 aircraft, the largest model in the 737 MAX family, to start delivery in 2025 with the option to purchase an additional thirty 737-10 aircraft.

Customer Loyalty

With operational excellence, best-in-class service and commitment to our customers, we have continued to earn our customers' trust and preference by delivering the "Delta Difference." We are elevating the customer experience in key markets by deploying our newest aircraft and technology investments and by accelerating generational airport investments, including new facilities that opened at New York-LaGuardia, Los Angeles and Seattle in 2022. We believe our continued investment in customer service and experience, operations, product, airports and technology has shaped customer perception of our brand leading to improvements in our domestic net promoter scores and increased customer loyalty compared to pre-pandemic levels. In 2022, various outlets recognized Delta as a trusted consumer brand, including:

- Named the number one airline by corporate travel customers in the annual Business Travel News Airline Survey for the 12th year in a row and the No. 1 U.S. airline by *Condé Nast Traveler* readers.

- Received top honors from The Points Guy's Readers' Choice Awards for the Best U.S. Airline Loyalty Program, Best Airport Lounge Network and Best Airline Co-Branded Credit Card with the SkyMiles® Platinum American Express.

- Delta SkyMiles awarded as Americas' top loyalty program by the Frequent Traveler People's Awards in four of its five award categories.

Our award-winning SkyMiles program is designed to attract lifetime members and to grow customer loyalty by offering our customers a wide variety of benefits when traveling with us and our partners, and personalizing our engagement with them. We aim to increase the value of our program for customers and to deepen customer engagement with Delta through a growing ecosystem of partnerships with premier brands, extending the value of our SkyMiles currency beyond flight and introducing new technology initiatives.

In 2022, the SkyMiles program membership accelerated with a record 8.5 million new SkyMiles Members. We believe there is opportunity to continue this trend and expect the increased value we provide customers to deliver high-margin revenue and more resilient cash flows.

Financial Foundation

In 2022, we made significant progress restoring our financial foundation with strong profitability and positive free cash flow for the year. Our financial results are discussed in more detail in "Item 7. Management's Discussion and Analysis," which includes definitions and reconciliations of non-GAAP financial measures, including free cash flow, under the "Supplemental Information" section.

Restoring the strength of our balance sheet and reducing debt is a key financial priority. During 2022, we repaid approximately $4.5 billion in debt and finance lease obligations and the company remains committed to regaining investment grade metrics. The strength of our balance sheet supports our ability to obtain financing and was instrumental in protecting shareholders during the pandemic.

Over the last decade we have fundamentally transformed our business by investing in our people, our product and our reliability to alter the commodity-like nature of air travel and improve our financial foundation. We have diversified our business by growing high-margin revenue streams that leverage our competitive advantages, including:

- Our partnership with American Express, which provides us a co-brand revenue stream tied to broader consumer spending.

- Our continued focus on our premium products (including Delta One®, First Class, Delta Premium Select and Delta Comfort+®) and customer segmentation, which has reduced our reliance on the most price sensitive customer segment.

- Our complementary portfolio businesses, such as our cargo business, which has grown significantly during the pandemic, and our Maintenance, Repair and Overhaul ("MRO") operation, where we believe we remain well-positioned for growth through contractual agreements with jet engine manufacturers, including three next generation engine platforms.

Our premium yield growth has significantly outpaced main cabin with paid load factors higher in 2022 than in 2019, as demand for premium products continues to grow. In 2022, we also expanded our Delta Premium Select rollout, which will continue in 2023. The sale of premium products is facilitated through various distribution channels, with 63% of tickets sold through direct channels in 2022. These include digital channels, such as delta.com and the Fly Delta app, and our reservations specialists. Indirect distribution channels include online travel agencies and traditional "brick and mortar" agencies. We make fare and product information widely available across those channels in an effort to ensure customers receive the best information and service options, further supporting the growth of premium products.

Innovative Investments in Technology

Our objective is to make technology a strategic differentiator. We continue to invest in technological improvements that enhance the customer experience, support our operations and provide tools for our employees. These investments include innovations to customer facing applications and improvements to infrastructure and technology architecture to unify and improve access to data sources. We believe this digital transformation enhances interactions with our customers and allows our people to deliver more personalized service, further enhancing the customer experience and strengthening our brand.

Through the development of innovative new technologies, we can better serve customers and give our employees the best tools. For our customers, we are making investments in the digital platforms on the ground and in the air. We are evolving the Fly Delta app into a digital travel concierge for our customers to offer convenient services on the day of travel and deliver thoughtful notifications to make their travel journeys more seamless. On the ground, we are investing to create a smoother, less stressful and increasingly contactless travel experience. Onboard the aircraft, we continue to invest in in-flight entertainment and announced fast, free and unlimited Wi-Fi for all customers through a free SkyMiles account on most domestic mainline flights, with full availability on international and regional aircraft expected by the end of 2024. We also introduced Delta Sync to create personalized experiences and further elevate the consumer experience across the travel journey, including partnerships with leading brands. For our employees, we are investing in applications that allow our people to have more meaningful interactions with our customers.

SkyMiles Program

Our SkyMiles program provides its members with the ability to earn miles when traveling on Delta, Delta Connection and our partner airlines. Miles may also be earned by using certain services offered by program partners, such as credit card companies, hotels, car rental agencies and ridesharing companies. To facilitate transactions with participating companies, we sell miles to non-airline businesses, customers and other airlines.

Miles may be used toward award redemptions such as flights and upgrades on Delta, our regional carriers and other participating airlines as well as donations with specific charities and more. In 2022, 10% of revenue miles flown on Delta were from award travel, as program members redeemed miles in the loyalty program for approximately 25 million award tickets. Our most significant and valuable contract to sell miles relates to our co-brand credit card relationship with American Express. In 2022, the Delta American Express co-branded card grew by 1.2 million new cardholders, with remuneration from American Express surpassing $5.5 billion.

Commercial Arrangements with Other Airlines

We have marketing alliances with other airlines to enhance our access to domestic and international markets.

Joint Venture/Cooperation Agreements. We have implemented four separate joint venture or joint cooperation agreements with foreign carriers as described below, each of which has been granted antitrust immunity from the DOT. We have sought to reinforce a number of the agreements through equity investments in those carriers. See Note 4 of the Notes to the Consolidated Financial Statements for additional information about our equity investments.

Each of our joint venture or cooperation arrangements provides for joint commercial cooperation with the relevant partner within the geographic scope of the arrangement, including the sharing of revenues and/or profits and losses generated by the parties on the joint venture routes, as well as joint marketing and sales, coordinated pricing and revenue management, network and schedule planning and other coordinated activities with respect to the parties' operations on joint venture routes. Our implemented commercial joint ventures consist of the following:

- A combined joint venture with Air France, KLM and Virgin Atlantic with respect to transatlantic traffic flows. In addition to the joint venture, we own a non-controlling 49% equity stake in Virgin Atlantic Limited, the parent company of Virgin Atlantic Airways and a 3% ownership stake in the parent company of Air France and KLM.

- A joint cooperation agreement with Aeroméxico with respect to trans-border traffic flows between the U.S. and Mexico. In addition to the joint cooperation agreement, we currently own an approximately 20% equity stake in Grupo Aeroméxico, S.A.B. de C.V., the parent company of Aeroméxico. In March 2022, Grupo Aeroméxico emerged from its voluntary proceedings to reorganize under Chapter 11 of the United States bankruptcy code.

- A joint venture agreement with LATAM with respect to traffic flows between North and South America, allowing our passengers to access more than 300 destinations between the United States/Canada and South America (Brazil, Chile, Colombia, Paraguay, Peru and Uruguay). Upon completion of LATAM's restructuring process in November 2022, we acquired an approximately 10% equity stake in LATAM.

- A joint venture with Korean Air with respect to traffic flows between the United States and certain countries in Asia. In addition to the joint venture, we own just under 15% of the outstanding common stock of Hanjin-KAL, the largest shareholder of Korean Air.

Enhanced Commercial Agreements with China Eastern. We own a 2% equity interest in China Eastern, with whom we have a strategic joint marketing and commercial cooperation arrangement covering traffic flows between China and the U.S., which includes reciprocal codesharing, loyalty program participation, airport lounge access and joint sales cooperation.

SkyTeam. In addition to our marketing alliance agreements with individual foreign airlines, we are a member of the SkyTeam global airline alliance. The other members of SkyTeam are Aerolíneas Argentinas, Aeroméxico, Air Europa, Air France, China Airlines, China Eastern, Czech Airlines, Garuda Indonesia, ITA Airways, Kenya Airways, KLM, Korean Air, Middle East Airlines, Saudia, TAROM, Vietnam Airlines and Xiamen Airlines. Virgin Atlantic is expected to join the SkyTeam alliance in early 2023. Through alliance arrangements with other SkyTeam carriers, we are able to link our network with the route networks of the other member airlines, providing opportunities to increase connecting traffic while offering enhanced customer service through reciprocal codesharing and loyalty program participation, airport lounge access and cargo operations.

Regional Carriers

We have air service agreements with domestic regional air carriers that feed traffic to our route system by serving passengers primarily in small and medium-sized cities in the domestic market. These arrangements enable us to better match capacity with demand in these markets.

Through our regional carrier program, Delta Connection®, we have contractual arrangements with regional carriers to operate aircraft using our "DL" designator code. We currently have contractual arrangements with:

- Endeavor Air, Inc., a wholly owned subsidiary of ours ("Endeavor").
- Republic Airways, Inc.
- SkyWest Airlines, Inc. ("SkyWest Airlines").

Our contractual agreements with regional carriers are primarily capacity purchase arrangements, under which we control the scheduling, pricing, reservations, ticketing and seat inventories for the regional carriers' flights operating under our "DL" designator code. We are entitled to all ticket, cargo, mail, in-flight and ancillary revenues associated with the flights under these capacity purchase arrangements. We pay those airlines an amount, as defined in the applicable agreement, which is based on a determination of their cost of operating those flights and other factors intended to approximate market rates for those services. These capacity purchase agreements are long-term agreements, usually with initial terms of at least ten years, which grant us the option to extend the initial term. Certain of these agreements provide us the right to terminate the entire agreement, or in some cases remove some of the aircraft from the scope of the agreement, for convenience at certain future dates.

SkyWest Airlines operates some flights for us under a revenue proration agreement. This proration agreement establishes a fixed dollar or percentage division of revenues for tickets sold to passengers traveling on connecting flight itineraries.

Cargo

Through our global network, our cargo operations are able to connect the world’s major freight gateways. We generate cargo revenues in domestic and international markets through the use of cargo space on regularly scheduled passenger aircraft. We are a member of SkyTeam Cargo, an international airline cargo alliance with ten other airlines that offer a network spanning six continents, through which we provide global solutions to our customers by connecting our network with those partners.

In 2022, cargo revenues increased year over year as ongoing supply chain challenges, elevated market yields and increased capacity benefited our cargo operations.

Other Complementary Businesses

We have various other businesses arising from our airline operations, including the following:

- In addition to providing maintenance and engineering support for our fleet of approximately 1,250 mainline and regional aircraft, our MRO operation, known as Delta TechOps, serves aviation and airline customers from around the world. With agreements to service multiple next-generation aircraft engines, Delta TechOps is positioned as a leading global service provider for state-of-the-art, more sustainable engines.
- Our vacation wholesale subsidiary, Delta Vacations, provides vacation packages to third-party consumers.

In 2022, the total revenue from our MRO operation and Delta Vacations was approximately $850 million.

Environmental Sustainability

Over the course of 2022, Delta made continued progress on our previously announced plan to invest $1.0 billion through the end of 2030 toward airline carbon neutrality and our climate goals for our airline operations that align with the applicable framework of the Science Based Targets initiative ("SBTi"). These climate goals also are helping inform the evolution of our foundational goals as we pursue a more sustainable airline. In July 2022, SBTi validated our medium-term goal to reduce well-to-wake (lifecycle) scope 1 and 3 jet fuel greenhouse gas emissions by 45% per revenue tonne kilometer by 2035 from a 2019 base year. SBTi also determined that our scope 1 and 2 target ambition is in line with the Paris Agreement's goal of limiting global warming to well below two degrees Celsius above pre-industrial levels. We are awaiting validation of our long-term goal submission, aiming to achieve net zero greenhouse gas emissions across the airline operation and its value chain (scopes 1, 2 and 3) no later than 2050, as outlined by the SBTi Net Zero Standard Criteria.

The global aviation industry is viewed as a hard-to-abate sector, meaning it is innately difficult to decarbonize. Our path toward achievement of these targets and our overall environmental sustainability efforts will focus on two main pillars:

Eliminate our Climate Impact from Flying

- ***Fleet***: Our fleet renewal efforts have the largest impact on reducing emissions and emissions intensity from our airline operation. In 2022, Delta took delivery of 69 aircraft that were, on average, 25% more fuel efficient per seat mile than retiring aircraft, contributing to a fleet-wide fuel efficiency improvement of 4.1% compared to 2019. We also announced a series of new aircraft purchase agreements, which will continue to improve fuel efficiency. We expect our fleet renewal plans to continue to improve fuel efficiency in future periods.

- ***Fuel***: Sustainable aviation fuel ("SAF") is central to reducing the lifecycle emissions from aviation fuel; however, it is not currently available at the scale or cost necessary to meet the industry’s needs. We have established a goal of replacing 10% of our jet fuel consumption with SAF by the end of 2030, which we expect will require at least 400 million gallons of SAF annually. At the end of 2022, Delta had agreements in place with multiple suppliers for an aggregate offtake of 200 million gallons of SAF annually by 2030, subject to third-party investment and timely facility development.

- ***Aircraft operations***: Our Carbon Council is a cross-divisional senior leadership team that is focused on executing and tracking operational initiatives that reduce jet fuel consumption improving our emissions intensity. This work includes those things we can improve on immediately within flight operations as well as collaborating with outside experts such as MIT to evaluate new technologies. Our efforts also supplement industry-wide efforts to support the modernization of the air traffic control system, which would allow for more fuel-efficient and less carbon-intensive flying.

Embed Sustainability in Everything we Do

- ***Travel experience***: We are accelerating our efforts to build a more sustainable travel experience reducing single-use plastics on board. In early 2022, we refreshed our onboard product offerings, which are expected to reduce onboard single-use plastic consumption by approximately 4.9 million pounds per year.

- ***Supply chain***: In 2022, we integrated more than 50% of our top 200 Supply Chain vendors based on spend in EcoVadis’ ESG ratings platform. EcoVadis’ scorecard allows us to measure the impact of our supply chain, encourage vendors to take action to improve their scores and identify potential new vendors with strong sustainability ratings.

- ***Ground operations and facilities***: As of December 2022, 25% of our eligible core and critical ground equipment fleets necessary to service an aircraft at the gate such as baggage tractors, belt loaders, aircraft tow tractors, and other essential ground equipment ("eligible GSE") are electrified. Additionally, we have made investments to update airport facilities, modernizing the customer experience, while also creating more sustainable facilities incorporating technology to reduce our impact on the environment. We continue to work with airports throughout our network to add additional charging infrastructure to support our goal of electrifying 50% of our eligible GSE fleet by 2025.

Achieving these ambitious goals will require significant capital investment from manufacturers and other stakeholders. We are committed to engaging our stakeholders and building coalitions to increase production and consumption of alternative fuels, develop new technologies and help drive down costs. In 2022, we hired the airline industry's only C-Suite level Chief Sustainability Officer to lead the continuing development of our climate strategy and transition plan. We are members of aviation industry-specific and broader coalitions in an effort to achieve our climate goals and to influence climate and sustainability policy development.

Employee Matters

Human Capital and Commitment to Diversity, Equity and Inclusion

We believe that Delta people are our strongest competitive advantage, and the high-quality service that they provide sets us apart from other airlines. As of December 31, 2022, we had approximately 95,000 full-time employee equivalents, of which approximately 93,000 were based in the U.S. In 2022, as we continued to restore our business, we hired approximately 25,000 new full-time employees across our business, including pilots, flight attendants, and customer service agents.

Our principal human capital management objectives are to attract, retain and develop people who understand and are committed to delivering the "Delta Difference" that is core to our brand. To support these objectives, we have put in place programs that seek to:

- Reward our people through highly competitive total compensation designed to share Delta's success with our employees who make it possible and promote teamwork and collaboration across the business.
- Achieve high performance by fostering our people's holistic wellbeing including physical, emotional, social and financial wellbeing.
- Drive employees' professional and community engagement.
- Prepare our employees for key roles and future leadership positions through a variety of training and development programs.
- Enhance our culture through efforts aimed at making our workplace more engaging, equitable and inclusive.

The health and safety of our employees is foundational to achieving these objectives. We have long led the airline industry in employee safety and seek to achieve world-class personal safety performance.

Our commitment to diversity, equity and inclusion is critical to effective human capital management at Delta. As a global airline, we are in the business of bringing people together, and we believe our business should reflect the diversity of our customer base. To achieve this goal, we seek diverse talent internally and externally in an effort to achieve broader representation throughout our organization. We also promote inclusion through education, training and development opportunities as well as by leveraging insights from our ten employee resource groups, which we refer to as business resource groups, totaling membership of more than 30,000 as of December 31, 2022. In 2022, we extended our enhanced inclusion training for the benefit of our new employees and invested in our leadership's equity education and understanding with nearly 70% of officers having participated in a voluntary two-day racial equity workshop by the end of 2022. In addition, we are reviewing and revising systems, practices and policies in support of our commitment to diversity, equity and inclusion and with a focus on achieving equitable outcomes. Two key areas on which we are focused are (1) reinforcement of our diverse talent pipeline by, among other things, requiring hiring candidate slates and interview panels to reflect diversity and creating new pathways to certain roles by removing college degree requirements and introducing a skills-first talent approach, and (2) closing diversity gaps in senior leadership positions by increasing the representation of women, Black and other underrepresented racial and ethnic groups in those roles, including doubling the percentage of Black officers and director-level employees by 2025 as compared to 2020. In 2022, we made meaningful progress towards this goal by increasing the percentage of Black officers and director-level employees to 8.5% from 5.8% in 2020, although much work remains to be done to provide additional internal and external career pathways to senior leadership roles.

We believe that listening, engaging and connecting with employees furthers our human capital management objectives. We have historically done so primarily through our open-door policy, digital communication across all levels of the company, in-person events with senior management and company-wide and division-specific surveys to evaluate employee satisfaction. Members of senior management participate in regular company-wide town hall discussions with our employees and our senior executive leadership team regularly shares memos with all employees regarding our ongoing commitment to our people and our culture. We have also continued to conduct periodic employee surveys to seek feedback on engagement levels in general, our well-being programs, diversity, equity and inclusion efforts and our culture of safety.

Collective Bargaining

As of December 31, 2022, we had approximately 95,000 full-time equivalent employees, approximately 20% of whom were represented by unions.

Domestic airline employees represented by collective bargaining agreements by group

Employee Group	Approximate Number of Employees Represented	Union	Date on which Collective Bargaining Agreement Becomes Amendable
Delta Pilots	15,040	ALPA	December 31, 2019
Delta Flight Superintendents (Dispatchers)	450	PAFCA	November 1, 2024
Endeavor Pilots	1,750	ALPA	January 1, 2029
Endeavor Flight Attendants	1,800	AFA	March 31, 2027

We have been in mediated discussions with the representative of the Delta pilots regarding terms of their amendable collective bargaining agreement under the auspices of the National Mediation Board ("NMB"). In January 2023, a tentative agreement was ratified by ALPA's Delta Master Executive Council ("MEC") and is subject to ratification by Delta's pilots through a vote that is scheduled to close on March 1, 2023.

In addition to the domestic airline employee groups discussed above, approximately 200 refinery employees of our wholly owned subsidiary, Monroe Energy, LLC ("Monroe") are represented by the United Steel Workers under an agreement that expires on February 28, 2026. This agreement is governed by the National Labor Relations Act ("NLRA"), which generally allows either party to engage in self-help upon the expiration of the agreement. Certain of our employees outside the U.S. are represented by unions, work councils or other local representative groups.

Labor unions periodically engage in organizing efforts to represent various groups of our employees, including at our operating subsidiaries, that are not represented for collective bargaining purposes.

Fuel

Our results of operations are significantly impacted by changes in the price and availability of aircraft fuel. We purchase most of our aircraft fuel under contracts that establish the price based on various market indices and therefore do not provide material protection against price increases or assure the availability of our fuel supplies. We also purchase aircraft fuel on the spot market, from offshore sources and under contracts that permit the refiners to set the price. We are currently able to obtain adequate supplies of aircraft fuel, including fuel produced by Monroe or procured through the exchange of gasoline, diesel and other refined petroleum products ("non-jet fuel products") the refinery produces, and crude oil for Monroe's operations.

The following table shows our aircraft fuel consumption and costs:

Fuel consumption and expense by year

Year	Gallons Consumed[(1)] (in millions)	Cost[(1)(2)] (in millions)	Average Price Per Gallon[(1)(2)]	Percentage of Total Operating Expense[(1)(2)]
2022	3,412	$ 11,482	$ 3.36	24 %
2021	2,778	$ 5,633	$ 2.02	20 %
2020	1,935	$ 3,176	$ 1.64	11 %

(1) Includes the operations of our regional carriers operating under capacity purchase agreements.
(2) Includes the impact of fuel hedge activity, refinery segment results and carbon offset costs.

Monroe Energy

Our Monroe subsidiaries operate the Trainer refinery and related logistics assets located near Philadelphia, Pennsylvania. The facilities include pipelines and terminal assets that allow the refinery to supply jet fuel to our airline operations throughout the Northeastern U.S., including our New York hubs at LaGuardia and JFK. These companies are distinct from us, operating under their own management teams and with their own boards. We own Monroe as part of our strategy to mitigate the cost of the refining margin reflected in the price of jet fuel, as well as to maintain sufficiency of supply to our New York operations.

Refinery Operations. The facility is capable of refining approximately 200,000 barrels of crude oil per day and operations returned to pre-pandemic levels throughout 2022. Monroe sources domestic and foreign crude oil supply from a variety of providers.

Strategic Agreements. Monroe has agreements in place to exchange the non-jet fuel products the refinery produces with third parties for jet fuel consumed in our airline operations.

Environmental Sustainability. Delta is evaluating operational pathways for integrating Monroe into Delta's net zero future. Monroe's sustainability ambitions include being one of the most energy efficient refineries in the country with the lowest energy intensity and GHG emissions on an absolute and per barrel basis. For example, Monroe is implementing a plan to replace steam driven turbines that currently power pumps at the facility with more efficient and reliable electric motors, which will reduce the amount of steam required from the facility's natural gas-fired boilers. Monroe is also recovering and utilizing methane, a potent GHG, instead of flaring it to the atmosphere. Finally, in support of Delta's 10% SAF goal, Monroe is evaluating the possibility of producing SAF and other renewable fuels at the Trainer refinery, although additional analyses must be conducted to determine economic and operational viability of various SAF production pathways.

Fuel Hedging Program

Our derivative contracts to hedge the financial risk from changing fuel prices are primarily related to Monroe's inventory. We may utilize different contract and commodity types in this program and frequently test their economic effectiveness against our financial targets. We closely monitor the hedge portfolio and rebalance the portfolio based on market conditions, which may result in locking in gains or losses on hedge contracts prior to their settlement dates.

Competition

The airline industry is highly competitive, marked by significant competition with respect to routes, fares, schedules (both timing and frequency), operational reliability, services, products, customer service and loyalty programs. The industry has evolved through mergers and new entry, both domestically and internationally, and evolution in international alliances. Consolidation in the airline industry, the presence of subsidized government-sponsored international carriers, changes in international alliances and the creation of immunized joint ventures have altered, and will continue to alter, the competitive landscape in the industry, resulting in the formation of airlines and alliances with significant financial resources, extensive global networks and competitive cost structures.

Domestic

Our domestic operations are subject to significant competition from traditional network carriers, including American Airlines and United Airlines, national point-to-point carriers, including Alaska Airlines, JetBlue Airways and Southwest Airlines, and other discount or ultra-low-cost carriers, including Spirit Airlines, Frontier Airlines, Allegiant Air, Breeze Airways and Avelo Airlines, some of which may have lower costs than we do and provide service at low fares to destinations served by Delta. In particular, we face significant competition at our domestic hubs and key airports either directly at those airports or at the hubs of other airlines that are located in close proximity. We also face competition in small- to medium-sized markets from regional jet operations of other carriers.

International

Our international operations are subject to competition from both foreign and domestic carriers, including from point-to-point carriers on certain international routes. Through alliance and other marketing and codesharing agreements with foreign carriers, U.S. carriers have increased their ability to sell international transportation, such as services to and beyond traditional European, Asian and Latin American gateway cities. Similarly, foreign carriers have obtained increased access to interior U.S. passenger traffic beyond traditional U.S. gateway cities through these relationships.

In particular, several joint ventures among U.S. and foreign carriers, including several of our joint ventures as well as those of our competitors, have received grants of antitrust immunity allowing the participating carriers to coordinate networks, schedules, pricing, sales and inventory. In addition, alliances formed by domestic and foreign carriers, including SkyTeam, the Star Alliance (among United Airlines, Lufthansa German Airlines, Air Canada and others) and the oneworld alliance (among American Airlines, British Airways, Qantas and others) have enhanced competition in international markets.

Regulatory Matters

The DOT and the Federal Aviation Administration (the "FAA") exercise regulatory authority over air transportation in the U.S. The DOT has authority to issue certificates of public convenience and necessity required for airlines to provide air transportation. An air carrier that the DOT finds fit, willing, and able to perform the proposed service is given authority to operate domestic and international air transportation (including the carriage of passengers and cargo), as applicable. Since the passage of the Airline Industry Deregulation Act in 1978, airlines have generally been free to launch or terminate service to U.S airports without restriction, except with respect to certain slot-controlled and schedule-facilitated airports, as well as certain constraints related to service to small communities governed by the "Essential Air Services" program.

The DOT has jurisdiction over certain economic and consumer protection matters, such as unfair or deceptive practices and methods of competition, advertising, denied boarding compensation, baggage liability and disabled passenger transportation. The DOT also has authority to review certain joint venture agreements between domestic and international carriers. The DOT engages in regulation of economic matters such as transactions involving allocation of "slots" or similar regulatory mechanisms which limit the rights of carriers to conduct operations at airports where such mechanisms are in place. The FAA has primary responsibility for matters relating to the safety of air carrier flight operations, including airline operating certificates, control of navigable air space, flight personnel, aircraft certification and maintenance and other matters affecting air safety.

Authority to operate international routes and international codesharing arrangements is regulated by the DOT and by the governments of the foreign countries involved. International certificate authorities are also subject to the approval of the U.S. President for conformance with national defense and foreign policy objectives.

The Transportation Security Administration and the U.S. Customs and Border Protection, each a division of the Department of Homeland Security, are responsible for certain civil aviation security matters, including passenger and baggage screening at U.S. airports and international passenger prescreening prior to entry into or departure from the U.S.

Airlines are also subject to various other federal, state, local and foreign laws and regulations. For example, the U.S. Department of Justice has jurisdiction over some airline competition matters. The U.S. Postal Service has authority over certain aspects of the transportation of mail. Labor relations in the airline industry, as discussed below, are generally governed by the Railway Labor Act with oversight by the NMB. Environmental matters are regulated by various federal, state, local and foreign governmental entities. Privacy of passenger and employee data is regulated by domestic and foreign laws and regulations.

Fares and Rates

Airlines set ticket prices in all domestic and most international city-pairs with minimal governmental regulation, and the industry is characterized by significant price competition. Certain international fares and rates are subject to the jurisdiction of the DOT and the governments of the foreign countries involved. Many of our tickets are sold by travel agents, and fares are subject to commissions, overrides and discounts paid to travel agents, brokers and wholesalers.

Route Authority

Our flight operations are authorized by certificates of public convenience and necessity and also by exemptions and limited-entry frequency awards issued by the DOT. The requisite approvals of other governments for international operations are controlled by bilateral agreements (and a multilateral agreement in the case of the U.S. and the European Union ("EU")) with, or permits or approvals issued by, foreign countries. Because international air transportation is governed by bilateral or other agreements between the U.S. and the foreign country or countries involved, changes in U.S. or foreign government aviation policies could result in the alteration or termination of such agreements, diminish the value of our international route authorities or otherwise affect our international operations. Bilateral agreements between the U.S. and various foreign countries that we serve are subject to renegotiation from time to time. The U.S. government has negotiated "Open Skies" agreements with many countries, which allow unrestricted access between the U.S. and these foreign markets.

Certain of our international route authorities are subject to periodic renewal requirements. We request extension of these authorities when and as appropriate. While the DOT usually renews temporary authorities on routes where the authorized carrier is providing a reasonable level of service, there is no assurance this practice will continue in general or with respect to a specific renewal. Dormant route authorities may not be renewed in some cases, especially where another U.S. carrier indicates a willingness to provide service.

Airport Access

Operations at three major domestic airports and certain foreign airports that we serve are regulated by governmental entities through allocations of "slots" or similar regulatory mechanisms. Each slot represents the authorization to land at or take off from the particular airport during a specified time period.

In the U.S., the FAA currently regulates the allocation of slots, slot exemptions, operating authorizations or similar capacity allocation mechanisms at Reagan National in Washington, D.C. and LaGuardia and JFK in the New York City area. Our operations at these airports generally require the allocation of slots or analogous regulatory authorizations. Similarly, our operations at London's Heathrow airport, Tokyo's Haneda airport and other international airports are regulated by local slot coordinators pursuant to the International Air Transport Association's Worldwide Scheduling Guidelines and applicable local law. We currently have sufficient slots or analogous authorizations to operate our existing flights, and we have generally been able to obtain the rights to expand our operations and to change our schedules. There is no assurance, however, that we will be able to do so in the future because, among other reasons, such allocations are subject to changes in governmental policies.

Airline Labor Regulation

In the U.S., airlines and labor unions are governed by the Railway Labor Act. Under the Railway Labor Act, a labor union seeking to represent an unrepresented craft or class of employees is required to file with the NMB an application alleging a representation dispute, along with authorization cards signed by at least 50% of the employees in that craft or class. The NMB then investigates the dispute and, if it finds the labor union has obtained a sufficient number of authorization cards, conducts an election to determine whether to certify the labor union as the collective bargaining representative of that craft or class. A labor union will be certified as the representative of the employees in a craft or class if more than 50% of votes cast are for representation. A certified labor union would then commence negotiations toward a collective bargaining agreement with the employer.

Under the Railway Labor Act, a collective bargaining agreement between an airline and a labor union does not expire, but instead becomes amendable as of a stated date. Either party may request that the NMB appoint a federal mediator to participate in the negotiations for a new or amended agreement. If no agreement is reached in mediation, the NMB may determine, at any time, that an impasse exists and offer binding arbitration. If either party rejects binding arbitration, a 30-day "cooling off" period begins. At the end of this 30-day period, the parties may engage in "self-help," unless the U.S. President appoints a Presidential Emergency Board ("PEB") to investigate and report on the dispute. The appointment of a PEB maintains the "status quo" for an additional 60 days. If the parties do not reach agreement during this period, the parties may then engage in self-help. Self-help includes, among other things, a strike by the union or the imposition of proposed changes to the collective bargaining agreement by the airline. The U.S. Congress and the President have the authority to prevent self-help by enacting legislation that, among other things, imposes a settlement on the parties.

Environmental Regulation

Environmental Compliance Obligations. Our operations are subject to numerous international, federal, state and local laws and regulations governing protection of the environment, including regulation of greenhouse gases and other air emissions, noise reduction, water discharges, aircraft drinking water, storage and use of petroleum products and other regulated substances, and the management and disposal of hazardous waste, substances and materials.

We are also subject to certain environmental laws and contractual obligations governing the management and release of regulated substances, which may require the investigation and remediation of affected sites. Soil and/or ground water impacts have been identified at certain of our current or former leaseholds at several domestic airports. To address these impacts, we have a program in place to investigate and, if appropriate, remediate these sites. Although the ultimate outcome of these matters cannot be predicted with certainty, we believe that the resolution of these matters will not have a material adverse effect on our Consolidated Financial Statements.

In 2022 the U.S. Environmental Protection Agency (the "EPA") proposed regulations to define certain per- and polyfluoroalkyl substances ("PFAS") as "hazardous substances" under the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"). Numerous states have adopted regulations governing these substances as well. PFAS are used in a wide variety of consumer and industrial products, including the firefighting foams used to extinguish fuel-based fires at airports and refineries. The EPA's proposed rule, once finalized, could subject airports, airlines, and refineries, among others, to potential liability for cleanup of historical PFAS contamination associated with use of PFAS-containing firefighting foam. The ultimate impact and associated cost to Delta of this rulemaking cannot be predicted at this time.

GHG Emissions. Aviation industry GHG emissions, particularly carbon emissions, and their impact on climate change have become a focus in the international community and within the U.S. In 2016, the International Civil Aviation Organization ("ICAO") formally adopted a global, market-based emissions offset program known as the Carbon Offsetting and Reduction Scheme for International Aviation ("CORSIA"). This program establishes a goal for the aviation industry to achieve carbon-neutral growth in international aviation beginning in 2021. Any growth above the baseline would need to be addressed using either eligible carbon offsets or a lower carbon fuel. The baseline for establishing airlines' obligations under CORSIA was originally set as an average of 2019 and 2020 emissions. However, given the COVID-19 pandemic and resulting unprecedented reduction in international travel, in June 2020 ICAO removed 2020 from the baseline calculation for the first phase of CORSIA, from 2021 to 2023. In 2022, ICAO established a new, more stringent CORSIA baseline of 85% of 2019, which will apply starting in 2024 through 2035.

A pilot phase of the CORSIA program runs from 2021 through 2023, followed by a first phase of the program beginning in 2024 and a second phase beginning in 2027. Countries can voluntarily participate in the pilot and first phase, and the United States agreed to participate in these voluntary phases. Participation in the second phase is mandatory for certain countries, including the United States. The U.S. government has not yet enacted legislation to mandate that U.S. operators participate in CORSIA. Nonetheless, Delta has voluntarily submitted verified emissions reports on its annual international emissions.

Additionally, the EU requires its member states to implement regulations to include aviation in its Emissions Trading Scheme ("ETS"). Under these regulations, any airline with flights originating or landing in the European Economic Area ("EEA") is subject to the ETS and, beginning in 2012, was required to purchase emissions allowances if the airline exceeds the number of free allowances allocated to it under the ETS. The scope of the ETS has been narrowed so that it currently applies only to flights within the EEA through 2023 to align with the pilot phase of CORSIA. In late 2022, the EU agreed on legislative language that would extend the narrow scope of EU ETS through 2026. Extension beyond 2026 would be conditioned on the performance of CORSIA. The EU is expected to finalize this legislation in early 2023. As a result of the United Kingdom's ("UK") withdrawal from the EU, UK flights are no longer part of the EU ETS and are instead regulated under a separate UK ETS scheme. UK ETS is applicable to UK domestic flights and flights from the UK to EEA countries.

In 2017, ICAO also adopted aircraft certification standards to reduce carbon dioxide ("CO_2") emissions from new aircraft. The new aircraft certification standards applied to new fleet types in 2020 and will apply to in-production aircraft starting in 2023 but no later than 2028. These standards will not apply to existing in-service aircraft.

In 2016, the EPA issued a final finding under the Clean Air Act that GHGs threaten the public health and welfare, and further determined that certain classes of aircraft engines cause or contribute to GHGs. The endangerment finding did not establish standards but triggered an obligation for the EPA to regulate GHG emissions from certain aircraft engines. In January 2021, the EPA finalized GHG emission standards for new aircraft engines designed to implement the ICAO standards on the same timeframe contemplated by ICAO. Like the ICAO standards, the final EPA standards would not apply to engines on in-service aircraft. The final standards have been challenged by several states and environmental groups. On November 15, 2021, the EPA announced that it would defend the current standards while simultaneously calling for ambitious new international CO_2 standards at the ICAO negotiations. The outcome of the legal challenge cannot be predicted at this time.

The airline industry may face additional regulation of aircraft emissions in the U.S. and abroad and become subject to further taxes, charges or additional requirements to obtain permits or purchase allowances or emission credits for GHG emissions in various jurisdictions. For example, in 2023, the EU is expected to finalize a sustainable aviation fuel blending mandate for aviation fuel suppliers beginning in 2025. Individual EU member states have been developing their own requirements, including for example, separate SAF mandates in France and Sweden in 2022. In the United States, various exploratory discussions continue around approaches to address climate change, such as carbon pricing, without a clear legislative path forward. Additional regulation could result in taxation, regulatory or permitting requirements from multiple jurisdictions for the same operations and significant costs for us and the airline industry. In addition to direct costs, such regulation could result in increased fuel costs passed through from fuel suppliers affected by any such regulations. Certain airports have also adopted, and others could in the future adopt, GHG emission or climate-related goals and requirements that could impact our operations or require us to make changes or investments in our infrastructure. We are monitoring and evaluating the potential impact of such developments.

Noise. The Airport Noise and Capacity Act of 1990 recognizes the rights of operators of airports with noise problems to implement local noise abatement programs so long as such programs do not interfere unreasonably with interstate or foreign commerce or the national air transportation system. This statute generally provides that local noise restrictions on Stage 3 aircraft first effective after October 1, 1990, require FAA approval. While we have had sufficient scheduling flexibility to accommodate local noise restrictions in the past, our operations could be adversely impacted if locally imposed regulations become more restrictive or widespread. In addition, foreign governments may allow airports to enact similar restrictions, which could adversely impact our international operations or require significant expenditures in order for our aircraft to comply with the restrictions. For example, in 2022, to reduce noise, the Netherlands announced plans to reduce the maximum number of flights authorized annually at Amsterdam's Schiphol Airport. Before implementing the new limitations, the Dutch government must assess alternatives, including noise impact and cost effectiveness. The outcome cannot be determined at this time.

Refinery Matters. Monroe's operation of the Trainer refinery is subject to numerous environmental laws and extensive regulations, including those relating to the discharge of materials into the environment, waste management, pollution prevention measures and greenhouse gas and other air emissions.

Under the Energy Policy Act of 2005, as expanded by the Energy Independence and Security Act of 2007, the Renewable Fuel Standard ("RFS") was created, setting up specific targets of renewable fuel to be used in the U.S. economy by mandating the blending of renewable fuels into gasoline and on-road diesel ("Transportation Fuels"). Renewable Identification Numbers ("RINs") are assigned to renewable fuels produced by or imported into the U.S. that are blended into Transportation Fuels to demonstrate compliance with this obligation. A refinery may meet its obligation under RFS by blending the necessary volumes of renewable fuels with Transportation Fuels, by purchasing RINs in the open market or through a combination of blending and purchasing RINs. Because Monroe is able to blend only a small amount of renewable fuels, it must purchase the majority of its RINs requirement in the secondary market. Market prices for RINs have been volatile, marked by periods of sharp increases and decreases primarily in response to speculation about what the EPA and/or the U.S. Congress will do with respect to compliance obligations. In November 2022, the EPA issued proposed RFS volume requirements for 2023, 2024 and 2025, which are expected to be finalized by June 2023. The EPA's proposed ethanol mandates for 2023, 2024, and 2025 are billions of gallons above the projected ethanol demand for those years, which has resulted in an increase to already high prices for RINs.

Civil Reserve Air Fleet Program

We participate in the Civil Reserve Air Fleet program (the "CRAF Program"), which permits the U.S. military to use the aircraft and crew resources of participating U.S. airlines during airlift emergencies, national emergencies or times of war. We have agreed to make available under the CRAF Program a portion of our international aircraft during the contract period that ends on September 30, 2023. The CRAF Program has only been activated three times since it was created in 1951, most recently in 2021 to support the military's effort to evacuate people from Afghanistan following the withdrawal of U.S. troops from the country.

Information About Our Executive Officers

Edward H. Bastian, Age 65: Chief Executive Officer of Delta since May 2016; President of Delta (September 2007 - May 2016); President of Delta and Chief Executive Officer Northwest Airlines, Inc. (October 2008 - December 2009); President and Chief Financial Officer of Delta (September 2007 - October 2008); Executive Vice President and Chief Financial Officer of Delta (July 2005 - September 2007); Chief Financial Officer of Acuity Brands (June 2005 - July 2005); Senior Vice President - Finance and Controller of Delta (2000 - April 2005); Vice President and Controller of Delta (1998 - 2000).

Glen W. Hauenstein, Age 62: President of Delta since May 2016; Executive Vice President - Chief Revenue Officer of Delta (August 2013 - May 2016); Executive Vice President - Network Planning and Revenue Management of Delta (April 2006 - July 2013); Executive Vice President and Chief of Network and Revenue Management of Delta (August 2005 - April 2006); Vice General Director - Chief Commercial Officer and Chief Operating Officer of Alitalia (2003 - 2005); Senior Vice President- Network of Continental Airlines (2003); Senior Vice President - Scheduling of Continental Airlines (2001 - 2003); Vice President Scheduling of Continental Airlines (1998 - 2001).

Allison C. Ausband, Age 60: Executive Vice President - Chief Customer Experience Officer of Delta since June 2021; Senior Vice President - In-Flight Service of Delta (September 2014 - May 2021); Vice President - Reservation Sales and Customer Care of Delta (January 2010 - September 2014).

Alain Bellemare, Age 61: President - International of Delta since January 2021; Chief Executive Officer of Bombardier (February 2015 - March 2020); President and Chief Executive Officer of United Technologies Corporation Propulsion & Aerospace Systems (June 2011 - February 2015).

Peter W. Carter, Age 59: Executive Vice President - External Affairs of Delta since October 2022; Executive Vice President - Chief Legal Officer of Delta (July 2015 - October 2022); Partner of Dorsey & Whitney LLP (1999 - 2015), including co-chair of Securities Litigation and Enforcement practice group, chair of Policy Committee and chair of trial department.

Daniel C. Janki, Age 54: Executive Vice President - Chief Financial Officer of Delta since July 2021; Senior Vice President of General Electric Company (GE) and Chief Executive Officer of GE Power Portfolio (October 2020 - June 2021); Senior Vice President, Business and Portfolio Transformation of GE (2018 - 2020); Senior Vice President, Treasurer and Global Business Operations of GE (2014 - 2017); Senior Vice President, CEO of GE Energy Management (2012 - 2013).

John E. Laughter, Age 52: Executive Vice President - Chief of Operations of Delta since June 2021; Senior Vice President and Chief of Operations of Delta (October 2020 - June 2021); Senior Vice President - Flight Operations of Delta (March 2020 - October 2020); Senior Vice President - Corporate Safety, Security and Compliance of Delta (August 2013 - March 2020); Senior Vice President - Maintenance Operations of Delta (March 2008 - July 2013); Vice President - Maintenance of Delta (December 2005 - March 2008).

Rahul Samant, Age 56: Executive Vice President - Chief Information Officer of Delta since January 2018; Senior Vice President and Chief Information Officer of Delta (February 2016 - December 2017); Senior Vice President and Chief Digital Officer of American International Group, Inc. (January 2015 - February 2016); Senior Vice President and Global Head, Application Development and Management of American International Group, Inc. (September 2012 - December 2014); Managing Director of Bank of America (1999 - September 2012).

Steven M. Sear, Age 57: Executive Vice President - Global Sales of Delta since February 2016; Senior Vice President - Global Sales of Delta (December 2011 - February 2016); Vice President - Global Sales of Delta (October 2008 - December 2011); Vice President - Sales & Customer Care of Northwest Airlines, Inc. (June 2005 - October 2008).

Joanne D. Smith, Age 64: Executive Vice President and Chief People Officer of Delta since October 2014; Senior Vice President - In-Flight Service of Delta (March 2007 - September 2014); Vice President - Marketing of Delta (November 2005 - February 2007); President of Song (January 2005 - October 2005); Vice President - Marketing and Customer Service of Song (November 2002 - December 2004).

Additional Information

Our company website is located at www.delta.com and our investor relations website is located at ir.delta.com. We make available free of charge on our investor relations website our Annual Report on Form 10-K, our Quarterly Reports on Form 10-Q, our Current Reports on Form 8-K and amendments to those reports as soon as reasonably practicable after these reports are filed with or furnished to the Securities and Exchange Commission ("SEC"). Information on our website, including our investor relations website, is not incorporated into this Form 10-K or our other securities filings and is not a part of those filings.

ITEM 1A. RISK FACTORS

In addition to the other information set forth in this report, you should carefully consider the following material risk factors applicable to Delta. As described below, these risks could materially affect our business, financial condition or results of operations in the future.

Risk Factors Relating to Delta

We have a significant amount of fixed obligations and incurred significant amounts of new debt in a short period in response to the COVID-19 pandemic. Insufficient liquidity may have a material adverse effect on our financial condition and business.

We have a significant amount of existing fixed obligations, including aircraft lease and debt financings, leases of airport property and other facilities, and other material cash obligations. In addition, we have substantial commitments for capital expenditures.

We had approximately $9.4 billion in cash, cash equivalents, short-term investments and aggregate principal amount committed and available to be drawn under our revolving credit facilities ("liquidity") as of December 31, 2022; however, our future liquidity could be negatively affected by the risk factors discussed in this Form 10-K, and in other filings we may make from time to time with the SEC. If our liquidity is materially diminished, we might not be able to timely pay our leases and debts or comply with certain financial covenants in our financing and credit card processing agreements or with other material provisions of our contractual obligations.

Agreements governing our debt, including our credit facilities and our SkyMiles financing agreements, include financial and other covenants. Certain of these covenants impose restrictions on our business, and failure to comply with any of the covenants in these agreements could result in events of default.

Our debt agreements contain various affirmative, negative and financial covenants, including our credit facilities and our SkyMiles financing agreements, each of which contains a minimum liquidity covenant. Certain of our debt agreements also contain collateral coverage ratios, and our SkyMiles financing agreements contain a debt service coverage ratio. A decline in these coverage ratios, including due to factors that are beyond our control, could require us to post additional collateral or trigger an early amortization event. Our SkyMiles financing agreements also restrict our ability to, among other things, change the policies and procedures of the SkyMiles program in a manner that would reasonably be expected to materially impair repayment of our SkyMiles debt.

Complying with certain of the covenants in our debt agreements and other restrictive covenants that may be contained in any future debt agreements could limit our ability to operate our business and to take advantage of business opportunities that are in our long-term interest. The terms of any future indebtedness we may incur could include more restrictive covenants.

While the covenants in our debt agreements are subject to important exceptions and qualifications, if we fail to comply with them and are unable to obtain a waiver or amendment, refinance the indebtedness subject to these covenants or take other mitigating actions, an event of default would result. These arrangements also contain other events of default customary for such financings. If an event of default were to occur, the lenders or noteholders could, among other things, declare outstanding amounts due and payable and where applicable and subject to the terms of relevant collateral agreements, repossess collateral, including aircraft or other valuable assets. In addition, an event of default or acceleration of indebtedness under one agreement could result in an event of default under other of our financing agreements. The acceleration of significant indebtedness could require us to seek to renegotiate, repay or refinance the obligations under our financing arrangements, and there is no assurance that such renegotiation or refinancing efforts would be successful.

We are at risk of losses and adverse publicity stemming from a serious accident involving our aircraft or aircraft of our airline partners.

An aircraft crash or other serious accident involving our aircraft or those of our airline partners could expose Delta to significant liability. Although we believe that our insurance coverage is appropriate, we may be forced to bear substantial losses from an accident in the event that the coverage was not sufficient.

In addition, any accident involving an aircraft that we operate or an aircraft that is operated by an airline that is one of our regional carriers or codeshare, alliance or joint venture partners could create a negative public perception about safety and reliability for aviation authorities and the public, which could harm our reputation, resulting in air travelers being reluctant to fly on our aircraft and therefore harm our business.

Breaches or lapses in the security of the technology systems we use and rely on could compromise the data stored within them and consequently expose us to liability, disruption to our operations and damage to our reputation, any or all of which could have a material adverse effect on our business.

As a regular part of our ordinary business operations, we collect and store sensitive data, including information necessary for our operations, personal information of our passengers and employees and information of our business partners. The secure operation of our networks and systems, and those of our business partners and service providers, on which this type of information is stored, processed and maintained is critical to our business operations and strategy. These networks and systems are subject to an increasing threat of continually evolving cybersecurity risks, which we must manage.

We expect unauthorized parties to continue attempting to gain access to our systems or information, or those of our business partners and service providers, including through fraud or other means of deception, or introduction of malicious code, such as malware and ransomware. If successful, these actions could cause harm to our computer systems or compromise data stored on our computer networks or those of our business partners and service providers, potentially causing us to incur remedial, legal and other costs, which could be material. Hardware or software we or our business partners or service providers develop, acquire or use in connection with our systems may contain defects that could unexpectedly compromise information security.

The methods used to obtain unauthorized access, disable or degrade service or sabotage systems are constantly evolving and may be difficult to anticipate or to detect for long periods of time. As a result of these types of risks and regular attacks on our systems, we regularly review and update procedures and processes to prevent and protect against unauthorized access to our systems and information and inadvertent misuse of data. In addition to continuously assessing risk and reviewing our procedures, processes and technologies, we continue to educate our people about these risks and to monitor, review and update the process and control requirements we expect third parties and vendors to leverage and implement for the protection of information regarding our customers, employees or business partners that is in their care. However, the constantly changing nature of the threats means that we may not be able to prevent all information security breaches or misuse of data. In addition, as cybercriminals become more sophisticated, the cost of proactive defensive measures continues to increase.

We are also subject to evolving global privacy and security regulatory obligations and an increasing customer focus on privacy issues and data security in the United States and abroad, as well as to geopolitical risks associated with international data transfer. The compromise of our or our business partners' or service providers' technology systems resulting in the loss, interruption, disclosure, misappropriation of, or access to, our information or that of our customers, employees or business partners could result in legal claims or proceedings, liability or regulatory penalties under laws protecting the privacy and security of personal information, disruption to our operations and damage to our reputation, any or all of which could adversely affect our business. The costs to remediate breaches and similar system compromises that do occur could be material.

Disruptions of our information technology infrastructure could interfere with our operations, possibly having a material adverse effect on our business.

Disruptions in our information technology capability could result from a technology error or failure impacting our internal systems, whether hosted internally at our data centers or externally at third-party locations, or large scale external interruption in technology infrastructure support on which we depend, such as power, telecommunications or the internet. The operation of our technology systems and the use of related data may also be vulnerable to a variety of other sources of interruption, including natural disasters, terrorist attacks, computer viruses, hackers and other security issues. A significant individual, sustained or repeated failure of our information technology infrastructure, including third-party networks we utilize and on which we depend, could impact our operations and our customer service, result in increased costs and damage our reputation. While we have in place initiatives to prevent disruptions and disaster recovery plans and continue to invest in improvements to these initiatives and plans, we have previously experienced infrastructure disruptions and these measures may not be adequate to prevent a future business disruption and any material adverse financial and reputational consequences to our business as recent outages of large cloud providers whom we rely on has shown.

Failure of the technology we use to perform effectively could have a material adverse effect on our business.

We are dependent on technology initiatives and capabilities to provide customer service and operational effectiveness in order to compete in the current business environment. For example, substantially all of our tickets are issued to our customers as electronic tickets, and a growing number of our customers check in using our website, airport kiosks and our FlyDelta mobile application. We have made and continue to make significant investments in customer facing technology such as delta.com, the FlyDelta mobile application, in-flight wireless internet, check-in kiosks, customer service applications, application of biometric technology, airport information displays and related initiatives, including security for these initiatives. We are also investing in significant upgrades to technology infrastructure and other supporting systems and transitioning to cloud-based technologies. The performance, reliability and security of the technology we use are critical to our ability to serve customers. If this technology does not perform effectively, including as a result of the implementation or integration of new or upgraded technologies or systems, our business and operations would be negatively affected, which could be material.

Our commercial relationships with airlines in other parts of the world and the investments that we have in certain of those carriers may not produce the results or returns we expect.

An important part of our strategy to expand our global network has been to develop and expand strategic relationships with a number of airlines through joint ventures and other forms of cooperation and support, including equity investments. We expect to continue exploring ways to deepen our alliance relationships with other carriers as part of our global business strategy. These relationships and investments involve significant challenges and risks, including that joint ventures or cooperation agreements such as our agreement with Aeroméxico may be subject to ongoing review and renewal requirements and may not generate the expected financial results, or that we may not realize a satisfactory return on our investments. We are dependent on these other carriers for significant aspects of our network in the regions in which they operate.

The COVID-19 pandemic significantly impacted the operations of our airline partners and, similar public health threats that may arise could adversely affect the expansion of strategic relationships in the future. These carriers have incurred significant financial losses as a result of the pandemic, and some were forced to seek protection under applicable bankruptcy laws. For example, following the onset of the pandemic, Grupo Aeroméxico and LATAM filed voluntary proceedings to reorganize under Chapter 11 of the United States bankruptcy code ("bankruptcy process"), from which they successfully emerged in the March 2022 quarter and the December 2022 quarter, respectively, and Virgin Atlantic undertook a voluntary recapitalization process in the UK that was completed in September 2020. During the December 2021 quarter, we announced additional investments in each of these carriers. As discussed further in Note 4 of the Notes to the Consolidated Financial Statements, due to the effects of the COVID-19 pandemic, the carrying value of our equity investments in these three carriers was reduced to zero prior to our additional investments. In the future if any airline partner that may seek to restructure or recapitalize is unable to do so successfully or if our commercial arrangements with any of these partners are not maintained, any investments or other assets associated with those partners could become impaired, and our business and results of operations could be materially adversely affected.

A significant disruption in, or other problems with respect to, the operations or performance of third parties on which we rely, including third-party carriers, could have a material adverse effect on our business and results of operations.

We rely on the operations and performance of third parties in a number of areas that are important to our business, including third-party regional carriers, international alliance partners and ground operation providers at some airports. While we have agreements with certain of these third parties that define expected service performance, we do not have direct control over their operations. To the extent that the operations of a third-party on which we rely is significantly disrupted or if these third parties experience significant performance issues (including failing to satisfy any applicable performance standards) or fail to meet any applicable compliance requirements, our revenue may be reduced, our expenses may be increased and our reputation may be harmed, any or all of which could result in a material adverse effect on our business and results of operations.

Some regional carriers, including our wholly owned subsidiary, Endeavor, are facing a shortage of qualified pilots and experiencing operating constraints as a result. If this shortage becomes more widespread, third-party regional carriers may not be able to comply with their obligations to us, and Endeavor may not be able to perform as expected, which could reduce our expected capacity and affect our revenue, resulting in a material adverse effect on our business and results of operations.

We may never realize the full value of our intangible assets or our long-lived assets, causing us to record impairments that may materially adversely affect our results of operations.

In accordance with applicable accounting standards, we are required to test our goodwill and other indefinite-lived intangible assets for impairment on an annual basis, or more frequently where there is an indication of impairment. In addition, we are required to test certain of our other assets for impairment where there is an indication that an asset may be impaired. During the fiscal year ended December 31, 2020, we recorded significant impairment and related charges resulting from the acceleration of our fleet simplification strategy and the write-down of investments in certain airline partners, stemming from the impact of the COVID-19 pandemic.

We may be required to recognize losses in the future due to, among other factors, extreme fuel price volatility, tight credit markets, government regulatory changes, decline in the fair values of certain tangible or intangible assets, such as aircraft, route authorities, and airport slots, unfavorable trends in forecasted results of operations and cash flows and an uncertain economic environment, as well as other uncertainties. Further impairment charges could have a material adverse effect on our results of operations.

Employee strikes and other labor-related disruptions may have a material adverse effect on our operations.

Our business is labor intensive, utilizing large numbers of pilots, flight attendants, aircraft maintenance technicians, ground support personnel and other personnel. As of December 31, 2022, 20% of our workforce, primarily pilots, was unionized. Relations between air carriers and labor unions in the United States are governed by the Railway Labor Act, which provides that a collective bargaining agreement between an airline and a labor union does not expire, but instead becomes amendable as of a stated date. The Railway Labor Act generally prohibits strikes or other types of self-help actions both before and after a collective bargaining agreement becomes amendable, unless and until the collective bargaining processes required by the Railway Labor Act have been exhausted. The collective bargaining agreement with our pilots became amendable on December 31, 2019. In January 2023, a tentative agreement was ratified by ALPA’s Delta Master Executive Council ("MEC") and is subject to ratification by Delta’s pilots through a vote that is scheduled to close on March 1, 2023. Separately, the NLRA governs Monroe’s relations with the union representing their employees, which generally allows self help after a collective bargaining agreement expires.

If we or our subsidiaries are unable to reach agreement with any of our unionized work groups in future negotiations regarding the terms of their collective bargaining agreements or if additional segments of our workforce become unionized, we may be subject to work interruptions or stoppages, subject to the requirements of the Railway Labor Act or the NLRA, as the case may be. Strikes or labor disputes with our unionized employees may have a material adverse effect on our ability to conduct business. Likewise, if third-party regional carriers with which we have contract carrier agreements are unable to reach agreement with their unionized work groups in current or future negotiations regarding the terms of their collective bargaining agreements, those carriers may be subject to work interruptions or stoppages, subject to the requirements of the Railway Labor Act, which could have a material adverse effect on our operations.

Our results can fluctuate due to seasonality and other factors.

Our results of operations are impacted by a number of factors including seasonality and changing economic and other conditions beyond our control. Demand for air travel is typically higher in the June and September quarters, particularly in our international markets, because there is more vacation travel during these periods than during the remainder of the year. The seasonal shifting of demand causes our financial results to vary on a quarterly basis. Other factors that may affect our results include severe weather conditions and natural disasters (or other environmental events), which could significantly disrupt service and create air traffic control problems. In addition, increases in the frequency, severity or duration of thunderstorms, hurricanes, typhoons, floods or other severe weather events, including from changes in the global climate and rising global temperatures, could result in increases in delays and cancellations, turbulence-related injuries and fuel consumption to avoid such weather, any of which could result in loss of revenue and higher costs. Because of fluctuations in our results from seasonality and other factors, results of operations for a historical period are not necessarily indicative of results of operations for a future period and results of operations for an interim period are not necessarily indicative of results of operations for an entire year.

Our business and results of operations are dependent on the price of aircraft fuel. High fuel costs or cost increases, including in the cost of crude oil, could have a material adverse effect on our results of operations.

Our results of operations are significantly impacted by changes in the price of aircraft fuel. Over the last decade, fuel prices have been highly volatile and at times have increased substantially. From 2020 to 2022, our average annual fuel price per gallon has increased from $1.64 to $3.36 with significant volatility during that period.

We acquire a significant amount of jet fuel from Monroe and through strategic agreements associated with the refinery that Monroe has with third parties. The cost of the fuel we purchase under these arrangements remains subject to volatility in the cost of crude oil and jet fuel. In addition, we have historically purchased a significant amount of aircraft fuel in addition to what we obtain from Monroe. Our aircraft fuel purchase contracts alone do not provide material protection against price increases as these contracts typically establish the price based on industry standard market price indices.

The competitive nature of the airline industry may affect our ability to pass along rapidly increasing fuel costs to our customers. In addition, because passengers often purchase tickets well in advance of their travel, a significant rapid increase in fuel price may result in the fare charged not covering that increase. At times in the past, we often were not able to increase our fares to offset fully the effect of increases in fuel costs, and we may not be able to do so in the future.

Significant extended disruptions in the supply of aircraft fuel, including from Monroe, could have a material adverse effect on our business and results of operations.

Weather-related events, natural disasters, political disruptions or disputes involving oil-producing countries, changes in governmental policy concerning aircraft fuel production, transportation or taxes, changes in refining capacity, environmental concerns and other unpredictable events may impact crude oil and fuel supply and could result in shortages in the future. Shortages in fuel supplies could have negative effects on our business and results of operations.

The disruption or interruption of production at the refinery could have a negative impact on our ability to acquire jet fuel needed for our operations. Disruptions or interruptions of production at the refinery could result from various sources including a major accident or mechanical failure, interruption of supply or delivery of crude oil, work stoppages relating to organized labor issues, or damage from severe weather or other natural or man-made disasters, including acts of terrorism. If the refinery were to experience an interruption in operations, disruptions in fuel supplies could have negative effects on our results of operations and financial condition. In addition, the financial benefits from the operation of the refinery could be materially adversely affected (to the extent not recoverable through insurance) because of lost production and repair costs.

If Monroe's cost of producing non-jet fuel products exceeds the value it receives for those products, the financial benefits we expect to achieve through the ownership of the refinery and our consolidated results of operations could be materially adversely affected.

An environmental or other incident associated with the operation of the Monroe refinery could have a material adverse effect on our consolidated financial results if insurance is unable to cover a significant liability. In addition, such an incident could damage our reputation.

Monroe's refining operations are subject to various hazards unique to refinery operations, including explosions, fires, toxic emissions and natural catastrophes. Monroe could incur substantial losses, including cleanup costs, fines and other sanctions and third-party claims, and its operations could be interrupted, as a result of such an incident. Monroe's insurance coverage does not cover all potential losses, costs or liabilities, and Monroe could suffer losses for uninsurable or uninsured risks or in amounts greater than its insurance coverage. In addition, Monroe's ability to obtain and maintain adequate insurance may be affected by conditions in the insurance market over which it has no control. If Monroe were to incur a significant liability for which it is not fully insured or for which insurance companies do not or are unable to provide coverage, this could have a material adverse effect on our consolidated financial results of operations or consolidated financial position. In addition, because of our ownership of Monroe, the occurrence of an environmental or other incident could result in damage to our reputation, which could have a material adverse effect on our financial results.

The operation of the refinery by Monroe is subject to significant environmental regulation. Failure to comply with environmental regulations or the enactment of additional regulation applicable to Monroe could have a material adverse effect on our consolidated financial results.

Monroe’s operations are subject to extensive environmental, health and safety laws and regulations, including those relating to the discharge of materials into the environment, waste management, pollution prevention measures and greenhouse gas emissions, which are subject to change over time. Monroe could incur fines and other sanctions, cleanup costs and third-party claims as a result of violations of or liabilities under environmental, health and safety requirements, which if significant, could have a material adverse effect on our consolidated financial results. In addition, the enactment of new, more stringent environmental laws and regulations, including any laws or regulations relating to greenhouse gas emissions, could significantly increase the level of expenditures required for Monroe or restrict its operations.

In particular, under the Energy Independence and Security Act of 2007, the EPA has adopted RFS that mandates the blending of renewable fuels into Transportation Fuels. RINs are assigned to renewable fuels produced or imported into the U.S. that are blended into Transportation Fuels to demonstrate compliance with this obligation. A refinery may meet its obligation under RFS by blending the necessary volumes of renewable fuels with Transportation Fuels, by purchasing RINs in the open market or through a combination of blending and purchasing RINs.

Because Monroe is able to blend only a small amount of renewable fuels, it must purchase the majority of its RINs requirement in the secondary market. As a result, Monroe is exposed to the market price of RINs. Market prices for RINs have been volatile, marked by periods of sharp increases and decreases primarily in response to speculation about what the EPA and/or the U.S. Congress will do with respect to compliance obligations. We cannot predict these actions or the future prices of RINs. Monroe’s purchase of RINs at elevated prices in the future could have a material impact on our consolidated results of operations and cash flows.

Existing laws or regulations could change, and the minimum volumes of renewable fuels that must be blended with refined petroleum products may increase. Increases in the volume of renewable fuels that must be blended into Monroe’s products could limit the refinery’s production if sufficient numbers of RINs are not available for purchase or relief from this requirement is not obtained, which could have a material adverse effect on our consolidated financial results.

Significant damage to our reputation and brand, including as a result of significant adverse publicity or inability to achieve certain sustainability goals, could materially adversely affect our business and financial results.

Maintaining our reputation and global brand is critical to our business. We operate in a highly visible and public environment with significant real-time exposure to traditional and social media. Adverse publicity, whether justified or not, can rapidly spread, including through social or digital media. In particular, passengers can use social media to portray interactions with Delta, without context, in a manner that can be quickly and broadly disseminated. To the extent we are unable to respond in a timely and appropriate manner to adverse publicity, our brand and reputation may be damaged.

Our reputation and brand could also be adversely impacted by, among other things, failure to make progress toward and achieve our environmental sustainability and diversity, equity and inclusion goals, as well as public pressure from investors or policy groups to change our policies or negative public perception of the environmental impact of air travel. For example, we have established ambitious goals to reduce our greenhouse gas emissions, with the long-term goal to achieve net zero greenhouse gas emissions across our airline operation and its value chain by no later than 2050, subject to validation of this long-term goal by SBTi (for which we cannot predict if and when the validation will occur). Achieving these ambitious goals will require significant capital investment from manufacturers and other stakeholders, as we are unable to achieve these goals using our existing fleet, current technologies and available fuel sources. We are continuing to develop our climate strategy and transition plan; however, our ability to execute on such a plan is subject to substantial risks and uncertainties, as it is dependent on the actions of governments and third parties and will require, among other things, significant capital investment, including from third parties, research and development from manufacturers and other stakeholders, along with government policies and incentives to reduce the cost, and incent production, of SAF and other technologies that are not presently in existence or available at scale. Significant damage to our reputation and brand could have a material adverse effect on our business and financial results, including as a result of litigation related to any of these matters.

If we lose senior management and other key employees and they are not replaced by individuals with comparable skills, or we otherwise fail to maintain our company culture, our business and results of operations could be materially adversely affected.

We are dependent on the experience and industry knowledge of our officers and other key employees to design and execute our business plans. If we experience a substantial turnover in our leadership and other key employees and we are not able to replace these persons with individuals with comparable skills, or we otherwise fail to maintain our company culture, our performance could be materially adversely impacted. Furthermore, we may be unable to attract and retain additional qualified senior management and other key personnel as needed in the future.

Risk Factors Relating to the Airline Industry

Disease outbreaks, such as the COVID-19 pandemic or similar public health threats that may arise in the future, and measures implemented to combat them have had, and may in the future have, a material adverse effect on our business.

The COVID-19 pandemic, the measures governments and private parties implemented in order to stem its spread, and the general concern about the virus among travelers had a material adverse effect on the demand for worldwide air travel compared to historical levels, and consequently upon our business. Similar disease outbreaks or public health threats that may arise in the future could have similarly adverse effects on our business.

Among other effects of the COVID-19 pandemic that affected air travel and our business, the pandemic led governments both in the United States and abroad to issue travel restriction or advisories, and to implement quarantines and health-related curfews or "shelter in place" orders; led employers to instruct employees to work from home and/or otherwise dissuaded or restricted air travel; caused business conventions, conferences, concerts, sporting events and similar events to be canceled or held with limited or no attendees; and discouraged travelers from air travel to destinations where COVID-19 was particularly virulent or due to possible enhanced COVID-19 related screening measures. These pandemic-related effects negatively impacted air travel in general, which in turn materially adversely affected our revenues, results of operations and financial condition for an extended period of time.

Our operations have been, and could in the future be, negatively affected further if our employees are quarantined or sickened as a result of exposure to a disease outbreak such as COVID-19, or as a result of a similar public health crisis, or if they are subject to additional governmental curfews or "shelter in place" health orders or similar restrictions. Measures restricting the ability of our airport or in-flight employees to come to work negatively impact our service or operations, all of which could negatively affect our business.

We are unable to predict the extent to which disease outbreaks or other public health threats that may arise in the future may change our customers' behavior or travel patterns, which could have a material impact on our business. The degree to which any future disease outbreaks or public health threats may impact our revenues, results of operations and financial condition is uncertain and will depend on future developments.

Terrorist attacks, geopolitical conflict or security events may adversely affect our business, financial condition and results of operations.

Terrorist attacks, geopolitical conflict or security events, or the fear or threat of any of these events, could have a significant adverse effect on our business. Despite significant security measures at airports and airlines, the airline industry remains a high profile target for terrorist groups. We rely on government provided threat intelligence and utilize private sources to constantly monitor for threats from terrorist groups and individuals, including from violent extremists both internationally and domestically, with respect to direct threats against our operations and in ways not directly related to the airline industry. In addition, the impact on our operations of avoiding areas of the world, including airspace, in which there are geopolitical conflicts and the targeting of commercial aircraft by parties to those conflicts can be significant. Security events, primarily from external sources but also from potential insider threats, also pose a significant risk to our passenger and cargo operations. These events could include random acts of violence and could occur in public areas that we cannot control.

Terrorist attacks, geopolitical conflict or security events, or the fear or threat of any of these events, even if not made directly on or involving the airline industry, could have a significant negative impact on us by discouraging passengers from flying, leading to decreased ticket sales and increased refunds. In addition, potential costs from these types of events include increased security costs, impacts from avoiding flight paths over areas in which conflict is occurring or could occur, such as flight redirections or cancellations, reputational harm and other costs. If any or all of these types of events occur, they could have a material adverse effect on our business, financial condition and results of operations.

The global airline industry is highly competitive and, if we cannot successfully compete in the marketplace, our business, financial condition and results of operations will be materially adversely affected.

The airline industry is highly competitive, marked by significant competition with respect to routes, fares, schedules (both timing and frequency), operational reliability, services, products, customer service and loyalty programs. Consolidation in the airline industry, changes in international alliances, the creation of immunized joint ventures and the rise of subsidized government-sponsored international carriers have altered and will continue to alter the competitive landscape in the industry, resulting in the formation of airlines and alliances with increased financial resources, more extensive global networks and competitive cost structures.

Our domestic operations are subject to significant competition from traditional network carriers, including American Airlines and United Airlines, national point-to-point carriers, including Alaska Airlines, JetBlue Airways and Southwest Airlines, and other discount or ultra-low-cost carriers, including Spirit Airlines, Frontier Airlines, Allegiant Air, Breeze Airways and Avelo Airlines, some of which may have lower costs than we do and provide service at low fares to destinations served by Delta. In particular, we face significant competition at our domestic hubs and key airports either directly at those airports or at the hubs of other airlines that are located in close proximity. We also face competition in small- to medium-sized markets from regional jet operations of other carriers. Our ability to compete in the domestic market effectively depends, in part, on our ability to maintain a competitive cost structure. If we cannot maintain our costs at a competitive level, then our business, financial condition and results of operations could be materially adversely affected.

Our international operations are subject to competition from both foreign and domestic carriers, including from point-to-point carriers on certain international routes. Through alliance and other marketing and codesharing agreements with foreign carriers, U.S. carriers have increased their ability to sell international transportation, such as services to and beyond traditional European, Asian and Latin American gateway cities. Similarly, foreign carriers have obtained increased access to interior U.S. passenger traffic beyond traditional U.S. gateway cities through these relationships.

In particular, several joint ventures among U.S. and foreign carriers, including several of our joint ventures as well as those of our competitors, have received grants of antitrust immunity allowing the participating carriers to coordinate networks, schedules, pricing, sales and inventory. In addition, alliances formed by domestic and foreign carriers, including SkyTeam, the Star Alliance (among United Airlines, Lufthansa German Airlines, Air Canada and others) and the oneworld alliance (among American Airlines, British Airways, Qantas and others) have enhanced competition in international markets.

The airline industry also faces competition from surface transportation and technological alternatives such as virtual meetings, teleconferencing or videoconferencing, and the intensity of this competition has likely increased, at least in the near term, as a result of the COVID-19 pandemic. Increased competition in both the domestic and international markets may have a material adverse effect on our business, financial condition and results of operations.

Extended interruptions or disruptions in service at major airports in which we operate or significant problems associated with a type of aircraft or engine we operate could have a material adverse effect on our financial condition and results of operations.

The airline industry is heavily dependent on business models that concentrate operations in major airports in the United States and throughout the world. An interruption or disruption at an airport where we have significant operations, whether resulting from air traffic control delays, failure of computer systems or technology infrastructure, weather events or natural disasters, or performance issues from third-party service providers, if sustained for an extended period of time, could have a material adverse effect on our business, financial condition and results of operations.

Similarly, the airline industry is heavily dependent on a limited number of aircraft and engine manufacturers whose products are subject to extensive regulatory requirements. Any significant problems associated with an aircraft or engine type that we operate, including new aircraft or engine types, such as design defects, mechanical problems, contractual performance by the manufacturers or adverse perception by the public leading to customer avoidance, or adverse actions by the FAA resulting in limitations on use or grounding could have a negative impact on our operations if we are not able to substitute or replace the affected aircraft or engine type. Any of the foregoing could have a material adverse effect on our financial condition and results of operations.

The airline industry is subject to extensive government regulation, which is costly and could materially adversely affect our business.

Airlines are subject to extensive regulatory and legal compliance requirements that result in significant costs and may have material adverse effects on our business. For instance, the FAA from time to time issues directives and other regulations relating to the maintenance and operation of aircraft that necessitate significant expenditures and could carry operational implications. We expect to continue incurring significant expenses to comply with the FAA's regulations. In addition, a directive or other regulation that has a significant operational impact on us could have a material adverse impact on our financial results.

Other laws, regulations, taxes and airport rates and charges have also been imposed from time to time that significantly increase the cost of airline operations, reduce revenues or otherwise impact our business. The industry is heavily taxed. Additional taxes and fees, if implemented, could negatively impact our results of operations.

Airport slot access is subject to government regulation and changes in slot regulations or allocations could impose a significant cost on the airlines operating in airports subject to such regulations or allocations or otherwise adversely affect an airline's business. Certain of our hubs are among the most congested airports in the United States and have been, and could in the future be, the subject of regulatory action that might limit the number of flights and/or increase costs of operations at certain times or throughout the day. Air traffic control inefficiencies can also enhance these pressures.

In addition, inefficiencies in the U.S. air traffic control system, which is regulated by the FAA, can result in delays and disruptions of air traffic, especially during peak travel periods in certain congested markets. Failure to implement measures to improve the air traffic control system could lead to increased delays and inefficiencies in flight operations as demand for U.S. air travel increases, having a material adverse effect on our operations. Failure to update the air traffic control system in a timely manner, and the substantial funding requirements of an updated system that may be imposed on air carriers, may have an adverse impact on our financial condition and results of operations.

As an international carrier, we are subject to a wide variety of U.S. and foreign laws that affect trade, including tariff and trade policies, export and import requirements, taxes, monetary policies and other restrictions and charges. In particular, the imposition of significant tariffs with respect to aircraft that we are not able to mitigate could substantially increase our costs, which in turn could have a material adverse effect on our financial results.

In addition, some of our operations are in high-risk legal compliance environments. Failure to comply with trade sanctions and restrictions, the Foreign Corrupt Practices Act (the "FCPA") and similar anti-bribery laws in non-U.S. jurisdictions, as well as other applicable laws or regulations could result in litigation, assessment of damages, imposition of penalties or other consequences, any or all of which could harm our reputation and have an adverse effect on our financial results. In certain circumstances, we also may be subject to consequences of the failure of our airline partners to comply with laws and regulations, including U.S. laws to which they may be subject such as the FCPA.

We and other U.S. carriers are subject to U.S. and foreign laws regarding privacy of passenger and employee data that are not consistent in all countries in which we operate and which are continuously evolving, requiring ongoing monitoring and updates to our privacy and information security programs. Although we dedicate significant resources to manage compliance with global privacy and information security obligations, this challenging regulatory environment may pose material risks to our business, including increased operational burdens and costs, regulatory enforcement, and legal claims or proceedings.

The airline industry is subject to many forms of environmental regulation, including but not limited to increased regulation to reduce emissions and other risks associated with climate change. The cost of compliance with more stringent environmental regulations, failure to comply with existing or future regulations or failure to otherwise manage the risks of climate change effectively could have a material adverse effect on our business.

Many aspects of our operations are subject to evolving and increasingly stringent federal, state, local and international laws governing the protection of the environment. Compliance with existing and future environmental laws and regulations could require capital investment and increase operational costs, and violations can lead to significant fines and penalties and reputational harm.

For example, in 2022 the EPA proposed regulations to define certain per- and polyfluoroalkyl substances ("PFAS") as "hazardous substances" under CERCLA. Numerous states have adopted regulations governing these substances as well. PFAS are used in a wide variety of consumer and industrial products, including the firefighting foams used to extinguish fuel-based fires at airports and refineries. EPA's proposed rule, once finalized, could subject airports, airlines, and refineries, among others, to potential liability for cleanup of historical PFAS contamination associated with use of PFAS-containing firefighting foam. The ultimate impact and associated cost to Delta of this rulemaking cannot be predicted at this time.

Future regulatory action concerning climate change, aircraft emissions and noise emissions could have a significant effect on the airline industry. In order to address aircraft carbon dioxide emissions, the International Civil Aviation Organization, a United Nations specialized agency, formally adopted a global, market-based emission offset program known as CORSIA. This program establishes a goal for the aviation industry to achieve carbon-neutral growth in international aviation beginning in 2021 through the use of carbon offsets and/or lower carbon aviation fuel. The baseline for establishing airlines' obligations under CORSIA was originally set as an average of 2019 and 2020 emissions. However, given the COVID-19 pandemic and resulting unprecedented reduction in international travel, in June 2020 ICAO removed 2020 from the baseline calculation for the first phase of CORSIA, from 2021 to 2023. In 2022, ICAO established a new, more stringent CORSIA baseline of 85% of 2019, which will apply starting in 2024 through 2035. Certain CORSIA program details remain to be developed and could potentially be affected by political developments in participating countries or the results of the pilot phase of the program, and thus the impact of CORSIA cannot be predicted at this time. However, CORSIA is expected to increase operating costs for airlines that operate internationally.

In addition to CORSIA, we may face a patchwork of regulation of aircraft emissions in the U.S. and abroad and could become subject to further taxes, charges or additional requirements to obtain permits or purchase allowances or emission credits for greenhouse gas emissions in various jurisdictions. For example, in 2021 the European Commission proposed legislation that would expand the reach of the EU ETS to include flights into and out of the European Economic Area beginning in 2027 under certain circumstances, increase the stringency of the program, and establish a sustainable aviation fuel blending mandate for aviation fuel suppliers, among other requirements. In 2022, the EU reached a deal on proposed legislation that would exclude extra-EU flights from the scope of EU ETS until 2027, however that deal has not yet been approved. The EU is expected to finalize a SAF mandate on fuel suppliers in 2023 and individual EU member states have been developing their own requirements, including for example, separate SAF mandates in France and Sweden in 2022. In the United States various exploratory discussions continue around approaches to address climate change, such as carbon pricing, without a clear legislative path forward. Additional regulation could result in taxation, regulatory or permitting requirements from multiple jurisdictions for the same operations and significant costs for the airline industry, including Delta. In addition to direct costs, such regulation could result in increased fuel costs passed through from fuel suppliers affected by any such regulations. While the specific nature of future actions is hard to predict, new laws or regulations related to environmental matters adopted in the U.S. or other countries could impose significant additional costs on or otherwise adversely affect our operations. Certain airports have also adopted, and others could in the future adopt, greenhouse gas emission or climate-related goals and requirements that could impact our operations or require us to make changes or investments in our infrastructure.

In addition to risks from potential changes to environmental regulation and policy, the transition to lower-carbon technologies, such as SAF, or changes in consumer preferences resulting from a negative perception of the environmental impact of air travel could materially adversely affect our business and financial results. For example, lower-carbon technologies such as SAF and direct air capture technologies are currently not available at scale and may take decades to develop, and the cost to transition to them could be prohibitively expensive without appropriate government policies and incentives in place. As more businesses have publicly announced environmental sustainability goals, the cost of carbon offsets has also increased significantly and will likely continue to do so.

Because of the global nature of our business, unfavorable economic or political conditions in the markets in which we operate or volatility in currency exchange rates could have a material adverse effect on our business, financial condition and results of operations.

As a result of the discretionary nature of air travel, the airline industry has been cyclical and particularly sensitive to changes in economic conditions. Because we operate globally, our business is subject to economic and political conditions throughout the world. During periods of unfavorable or volatile economic conditions in the economy in the U.S. or abroad, including as a result of the COVID-19 pandemic and the worldwide response to it, demand for air travel can be significantly impacted as business and leisure travelers choose not to travel, seek alternative forms of transportation for short trips or conduct business using technological alternatives. If unfavorable economic conditions occur, particularly for an extended period, our business, financial condition and results of operations may be adversely affected. In addition, significant or volatile changes in exchange rates between the U.S. dollar and other currencies, and the imposition of exchange controls or other currency restrictions, may have a material adverse effect on our liquidity, financial conditions and results of operations.

Our international operations are an important part of our route network. Political disruptions and instability around the world can negatively impact the demand and network availability for air travel. Additionally, any deterioration in global trade relations, such as increased tariffs or other trade barriers, could result in a decrease in the demand for international air travel.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Flight Equipment

Our operating aircraft fleet, purchase commitments and options at December 31, 2022 are summarized in the following table.

Mainline aircraft information by fleet type

	Current Fleet[1]					Commitments	
Fleet Type	Owned	Finance Lease	Operating Lease	Total	Average Age (Years)	Purchase	Options
A220-100	41	4	—	45	3.0	—	—
A220-300	14	—	—	14	1.5	60	26
A319-100	57	—	—	57	20.9	—	—
A320-200	61	—	—	61	27.3	—	—
A321-200	69	22	36	127	4.0	—	—
A321-200neo	21	—	—	21	0.3	134	70
A330-200	11	—	—	11	17.8	—	—
A330-300	28	—	3	31	14.0	—	—
A330-900neo	12	3	5	20	1.6	18	—
A350-900	17	—	11	28	4.1	16	—
B-717-200	10	51	4	65	21.5	—	—
B-737-800	73	4	—	77	21.3	—	—
B-737-900ER	112	2	49	163	7.0	—	—
B-737-10	—	—	—	—	—	100	30
B-757-200	100	—	—	100	25.4	—	—
B-757-300	16	—	—	16	19.9	—	—
B-767-300ER	45	—	—	45	26.8	—	—
B-767-400ER	21	—	—	21	22.0	—	—
Total	708	86	108	902	14.4	328	126

(1) Includes both active and temporarily parked aircraft. Excludes certain aircraft we own or lease that are operated by regional carriers on our behalf shown in the table below.

The following table summarizes the aircraft operated by regional carriers on our behalf at December 31, 2022.

Regional aircraft information by fleet type and carrier

	Fleet Type[1]					
Carrier	CRJ-200	CRJ-700	CRJ-900	Embraer 170	Embraer 175	Total
Endeavor Air, Inc. [2]	26	18	123	—	—	167
SkyWest Airlines, Inc.	—	6	38	—	84	128
Republic Airways, Inc.	—	—	—	11	46	57
Total	26	24	161	11	130	352

(1) Includes both active and temporarily parked aircraft. We own 231 and have operating leases for three of these regional aircraft. The remainder are owned or leased by SkyWest Airlines, Inc. or Republic Airways, Inc.

(2) Endeavor Air, Inc. is a wholly owned subsidiary of Delta.

Aircraft Purchase Commitments

As part of a multi-year effort, we have been investing in new aircraft to provide an improved customer experience, greater fuel efficiency that results in reduced carbon emissions, better operating economics and more premium products. Our contractual purchase commitments for additional aircraft as of December 31, 2022 are detailed in the following table:

Aircraft purchase commitments by fleet type

	Delivery in Calendar Years Ending				
Aircraft Purchase Commitments[1]	**2023**	**2024**	**2025**	**After 2025**	**Total**
A220-300	9	15	12	24	60
A321-200neo	28	36	25	45	134
A330-900neo	6	9	3	—	18
A350-900	—	7	6	3	16
B-737-10	—	—	20	80	100
Total	43	67	66	152	328

(1) The timing of these commitments is based on our contractual agreements with the aircraft manufacturers and may be subject to change based on modifications to those agreements or changes in delivery schedules.

Ground Facilities

Airline Operations

We lease most of the land and buildings that we occupy. Our largest aircraft maintenance base, various equipment maintenance, cargo, flight kitchen and training facilities and most of our principal offices are located at or near the Atlanta airport on land leased from the City of Atlanta. We lease ticket counters, gate areas, operating facilities and other terminal space in most of the airports that we serve. At most airports, we have entered into use agreements which provide for the non-exclusive use of runways, taxiways and other improvements and facilities; landing fees under these agreements normally are based on the number of landings and weight of aircraft. These leases and use agreements generally run for periods of less than one year to 30 years or more, and often contain provisions for periodic adjustments of lease rates, landing fees and other charges applicable under that type of agreement. We also lease aircraft maintenance, equipment maintenance and air cargo facilities at several airports. Our facility leases generally require us to pay the cost of providing, operating and maintaining such facilities, including, in some cases, amounts necessary to pay debt service on special facility bonds issued to finance their construction. We also lease computer facilities, marketing offices, reservations offices and other off-airport facilities in certain locations for varying terms.

We own our Atlanta reservations center, other real property in Atlanta and reservations centers in Minot, North Dakota and Chisholm, Minnesota.

Refinery Operations

Our Monroe subsidiaries own and operate the Trainer refinery and related assets in Pennsylvania. The facilities include pipelines and terminal assets that allow the refinery to supply jet fuel to our airline operations throughout the Northeastern U.S., including our New York hubs at LaGuardia and JFK.

ITEM 3. LEGAL PROCEEDINGS

Capacity Antitrust Litigation

In July 2015, a number of purported class action antitrust lawsuits were filed alleging that Delta, American, United and Southwest had conspired to restrain capacity. The lawsuits were filed in the wake of media reports that the U.S. Department of Justice had served civil investigative demands upon these carriers seeking documents and information relating to this subject. The lawsuits have been consolidated into a single Multi-District Litigation proceeding in the U.S. District Court for the District of Columbia. Our summary judgment motion has been fully briefed and pending since May 2021. We believe the claims in these cases are without merit and have vigorously defended these lawsuits.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

Part II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Market Information

Our common stock is listed on the New York Stock Exchange ("NYSE") under the trading symbol DAL.

Holders

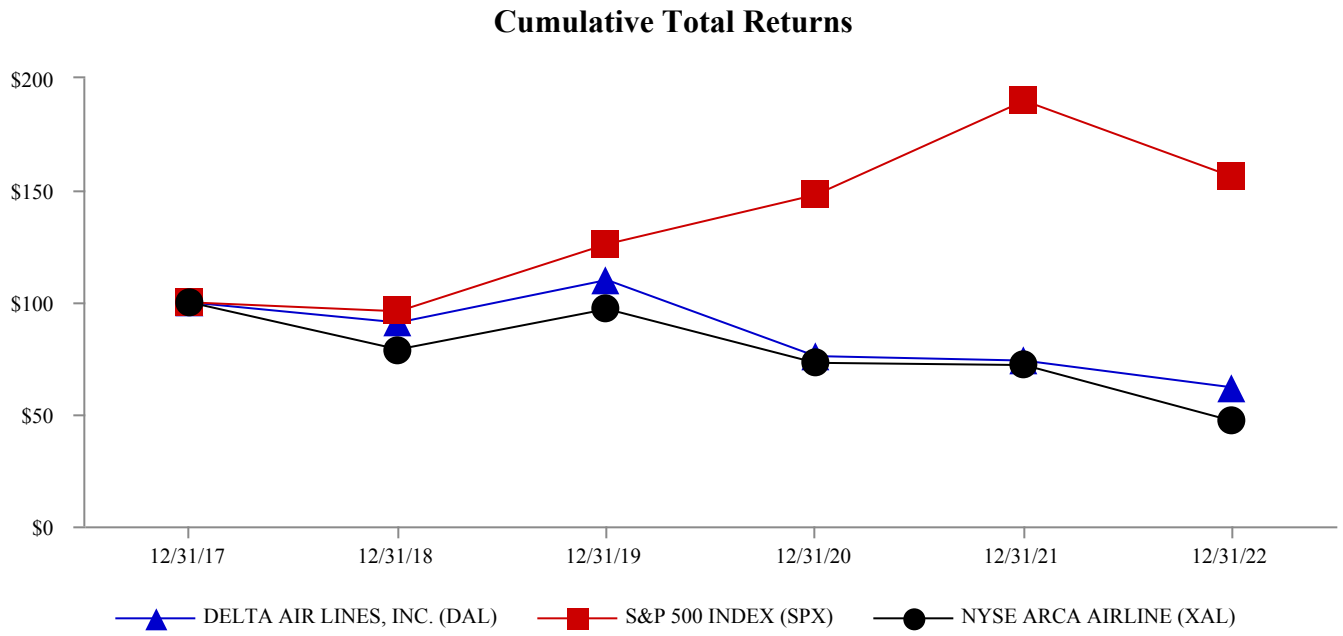
As of January 31, 2023, there were approximately 2,200 holders of record of our common stock.

Dividends

While we have paid cash dividends to holders of our common stock on a quarterly basis, we suspended dividends in March 2020 due to the impact of the COVID-19 pandemic. The Coronavirus Aid, Relief, and Economic Security Act of 2020 (the "CARES Act") and payroll support program extensions restricted the payment of dividends through September 2022. Future dividend payments will be dependent upon our results of operations, financial condition, cash requirements, future prospects and other factors deemed relevant by the Board of Directors.

Stock Performance Graph

The following graph compares the cumulative total returns during the period from December 31, 2017 to December 31, 2022 of our common stock to the Standard & Poor's 500 Stock Index and the NYSE ARCA Airline Index. The comparison assumes $100 was invested on December 31, 2017 in each of our common stock and the indices and assumes that all dividends were reinvested.



Issuer Purchases of Equity Securities

The following table presents information with respect to purchases of common stock we made during the December 2022 quarter. The table reflects shares withheld from employees to satisfy certain tax obligations due in connection with grants of stock under the Delta Air Lines, Inc. Performance Compensation Plan (the "Plan"). The Plan provides for the withholding of shares to satisfy tax obligations but it does not specify a maximum number of shares that can be withheld for this purpose. The shares of common stock withheld to satisfy tax withholding obligations may be deemed to be "issuer purchases" of shares that are required to be disclosed pursuant to this Item.

Shares purchased / withheld from employee awards during the December 2022 quarter

Period	Total Number of Shares Purchased	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value (in millions) of Shares That May Yet Be Purchased Under the Plan or Programs
October 2022	1,045	$ 28.62	1,045	$ —
November 2022	1,356	$ 34.54	1,356	$ —
December 2022	1,777	$ 34.74	1,777	$ —
Total	4,178		4,178	

ITEM 6. (RESERVED)

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

During 2022, our recovery from the impact of the COVID-19 pandemic continued and is continuing into 2023. Given the drastic and unprecedented impact of the pandemic on our operating results in 2020 and 2021, we believe that a comparison of our results in 2022 to both 2021 and 2019 in this overview section allows for a better understanding of the full impact of the COVID-19 pandemic and the progress of our recovery.

This section of Form 10-K, however, does not address certain items regarding the year ended December 31, 2020. Discussion and analysis of 2020 and year-to-year comparisons between 2021 and 2020 not included in this Form 10-K can be found in "Item 7. Management's Discussion and Analysis" of our Annual Report on Form 10-K for the year ended December 31, 2021. The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our audited Consolidated Financial Statements and the related notes and other financial information as well as the material risk factors included elsewhere in this Annual Report on Form 10-K.

The table below shows certain key financial measures for the years ended December 31, 2022, 2021 and 2019:

	Year Ended December 31,			2022 vs 2021 % Increase (Decrease)	2022 vs 2019 % Increase (Decrease)
(in millions)	2022	2021	2019		
Total operating revenue	$ 50,582	$ 29,899	$ 47,007	69 %	8 %
Total operating expense	46,921	28,013	40,389	67 %	16 %
Operating income	3,661	1,886	6,618	94 %	(45)%
Available seat miles ("ASM" or "capacity")	233,226	194,474	275,379	20 %	(15)%

2022 Financial Overview

Our 2022 operating income was $3.7 billion, an improvement of $1.8 billion compared to 2021, while operating income, adjusted (a non-GAAP financial measure) which excludes restructuring charges and other items was $3.6 billion, an increase of $6.1 billion compared to 2021. The increases in operating income and operating income, adjusted were primarily due to the continued recovery in the demand for air travel during 2022, which resulted in a 69% increase in operating revenue on a 20% increase in system capacity. Operating income in 2021 included a benefit of $4.5 billion from the recognition of payroll support program ("PSP") grants, driving the smaller year-over-year increase than operating income, adjusted, which excluded the grants benefit in 2021.

Our 2022 operating income decreased $3.0 billion compared to 2019 primarily due to an increase in operating costs, including a 35% increase in fuel cost, and lower passenger revenue due to system capacity that was 15% lower as we continued to restore our operations from the effects of the COVID-19 pandemic. Operating income, adjusted (a non-GAAP financial measure) decreased $3.1 billion compared to 2019.

Revenue. Compared to 2021, our 2022 operating revenue increased $20.7 billion, or 69%, primarily due to continued recovery in travel demand from the COVID-19 pandemic and higher refinery sales to third parties. Improvement in premium products revenue resulted from both a shift in the mix of seats on our aircraft following the retirement of certain fleets in 2020 and delivery of new aircraft since that time, as well as incremental increase in demand, particularly from leisure customers.

Compared to 2019, our operating revenue increased $3.6 billion, or 8%, due primarily to higher refinery sales to third parties, partially offset by the revenue impact from 15% lower capacity. We are planning for our 2023 system capacity to fully recover to or exceed 2019 capacity levels.

Operating Expense. Total operating expense increased $18.9 billion, or 67%, compared to 2021, primarily resulting from higher fuel costs, due to both an increase in fuel price and increased consumption as capacity was restored, as well as higher salaries and related costs, higher volume-related expenses associated with the increase in capacity and demand and an increase in expenses related to refinery sales to third parties, reflected in ancillary business and refinery expense. The increase also resulted from $4.5 billion of PSP grants recognized during 2021, which reduced expenses in that year. Total operating expense, adjusted (a non-GAAP financial measure) which excludes expenses related to refinery sales to third parties, contra-expense from the recognition of PSP grants in 2021 and other items, increased $12.8 billion, or 44%, compared to 2021.

Our total operating cost per available seat mile ("CASM") increased 40% to 20.12 cents compared to 2021, primarily due to the higher costs discussed above. Non-fuel unit costs ("CASM-Ex", a non-GAAP financial measure), which excludes fuel, expenses related to refinery sales to third parties, contra-expense from the recognition of PSP grants in 2021 and other items, increased 6% to 12.87 cents.

Total operating expense increased $6.5 billion, or 16%, compared to 2019, primarily resulting from higher fuel costs and an increase in expenses related to refinery sales to third parties. Total operating expense, adjusted (a non-GAAP financial measure) increased $2.0 billion, or 5% compared to 2019.

Our CASM increased 37% compared to 2019, primarily due to the higher costs discussed above and a 15% decrease in capacity. CASM-Ex (a non-GAAP financial measure) increased 18% compared to 2019.

During 2023, we expect non-fuel unit costs to decrease compared to 2022 as we restore our network to pre-pandemic levels, better utilizing our assets. We expect to reduce our investments in rebuilding the network as we progress through the year while improving our operational efficiency and managing inflationary pressures including labor cost increases.

Non-Operating Results. Total non-operating expense was $1.7 billion in 2022, $259 million higher than 2021 primarily due to higher mark-to-market losses on certain of our equity investments, partially offset by reduced losses on our equity method investments, lower interest expense as a result of our debt reduction initiatives and lower losses on extinguishment of debt.

Total non-operating expense was $1.3 billion higher than 2019, primarily due to higher mark-to-market losses on certain of our equity investments and higher interest expense as a result of our increased debt balances due to the financing arrangements entered into during 2020.

Cash Flow. During 2022, operating activities provided cash flows of $6.4 billion, primarily on improving ticket sales, and incurred approximately $6.9 billion of net investing cash outflows, primarily for $6.4 billion of capital expenditures. After adjusting for strategic investments and certain other activities, these results generated $244 million of free cash flow (a non-GAAP financial measure) in 2022.

Also, during 2022 we had cash outflows of approximately $4.5 billion related to repayments of our debt and finance leases, including approximately $2.3 billion for early repayments and the remainder from scheduled maturities. Our cash, cash equivalents, short-term investments and aggregate principal amount committed and available to be drawn under our revolving credit facilities ("liquidity") at December 31, 2022 was $9.4 billion.

The non-GAAP financial measures operating income, adjusted, operating expense, adjusted, CASM-Ex and free cash flow used above are defined and reconciled in "Supplemental Information" below.

Results of Operations

Operating Revenue

(in millions) [1]	Year Ended December 31, 2022	Year Ended December 31, 2021	Increase (Decrease)	% Increase (Decrease)
Ticket - Main cabin	$ 20,396	$ 11,393	$ 9,003	79 %
Ticket - Premium products	15,230	7,946	7,284	92 %
Loyalty travel awards	2,898	1,786	1,112	62 %
Travel-related services	1,694	1,394	300	22 %
Total passenger revenue	$ 40,218	$ 22,519	$ 17,699	79 %
Cargo	1,050	1,032	18	2 %
Other	9,314	6,348	2,966	47 %
Total operating revenue	$ 50,582	$ 29,899	$ 20,683	69 %
TRASM (cents)	21.69 ¢	15.37 ¢	6.32 ¢	41 %
Third-party refinery sales [2]	(2.13)	(1.66)	(0.47)	28 %
TRASM, adjusted (cents)	19.55 ¢	13.71 ¢	5.84 ¢	43 %

[1] Total amounts in the table above may not calculate exactly due to rounding.
[2] For additional information on adjustments to TRASM, see "Supplemental Information" below.

Operating Revenue

Our operating revenue increased $20.7 billion, or 69%, compared to the year ended December 31, 2021 due primarily to increased demand in 2022 as a result of the continued recovery from the COVID-19 pandemic and higher third-party refinery sales. The increase in operating revenue, on a 20% increase in system capacity, generated a 41% increase in total revenue per available seat mile ("TRASM") and a 43% increase in TRASM, adjusted (a non-GAAP financial measure) compared to 2021.

See "Refinery Segment" below for additional details on the refinery's operations, including third-party refinery sales recorded in other revenue, during each period.

Passenger Revenue by Geographic Region

(in millions)	Year Ended December 31, 2022	Increase (Decrease) vs. Year Ended December 31, 2021: Passenger Revenue	RPMs (Traffic)	ASMs (Capacity)	Passenger Mile Yield	PRASM	Load Factor
Domestic	$ 30,197	64 %	27 %	10 %	29 %	48 %	11 pts
Atlantic	6,093	243 %	194 %	110 %	17 %	63 %	23 pts
Latin America	2,889	54 %	24 %	(5)%	25 %	62 %	19 pts
Pacific	1,039	159 %	211 %	8 %	(17)%	139 %	44 pts
Total passenger revenue	$ 40,218	79 %	45 %	20 %	23 %	49 %	15 pts

Domestic

Domestic passenger unit revenue ("PRASM") for the year ended December 31, 2022 increased 48% compared to the year ended December 31, 2021 as a result of stronger demand and higher levels of traffic due to the ongoing recovery from the COVID-19 pandemic throughout 2022.

Domestic revenue in 2022 was above 2021 levels and near pre-pandemic levels, even though capacity was not fully restored, as consumers continue to return to travel. We believe spending patterns for services are returning to historical levels compared to spending on goods. We also experienced higher growth in premium product revenue (including Delta One, First Class, Delta Premium Select and Delta Comfort+) compared to main cabin with the delivery of new aircraft that include more premium seat capacity and an increase in premium product yield compared to main cabin, as we see more consumers choosing these premium offerings. In 2023, we expect domestic capacity to be restored to pre-pandemic levels through growth in our core hubs in Atlanta, Minneapolis-St. Paul, Detroit and Salt Lake City.

International

International passenger revenue for the year ended December 31, 2022 increased 147% with capacity up 47% compared to the year ended December 31, 2021, with the Atlantic region experiencing the most significant improvement, as travel to many European destinations resumed or increased.

In November 2021, travel restrictions on most fully vaccinated foreign visitors to the United States were lifted. This action made travel to the U.S. by many foreign nationals possible for the first time in 18 months. Further, in June 2022, the United States lifted its testing requirement for international travel. Both of these changes have had a positive impact on international demand. Most countries in our network have removed or eased travel restrictions, resulting in revenue improvement across all international regions.

The Atlantic region showed strong demand improvement during 2022 as western European countries removed or eased travel restrictions in the first half of 2022. Revenue in this region was near pre-pandemic levels as travelers continue to show increased desire for transatlantic travel. This has been led by demand for leisure destinations such as Italy, Spain and Greece and improving business demand.

Latin America region revenue was also near pre-pandemic levels during 2022, due to continued strong demand for leisure destinations in Mexico, the Caribbean and Central America. Also, in 2022, final regulatory approval was granted for our trans-American joint venture agreement with LATAM. This agreement combines our highly complementary route networks between North and South America, with the goal of providing customers with a seamless travel experience and industry-leading connectivity. Beginning in the December 2022 quarter, we and LATAM began adding capacity on certain Latin America routes and introduced one new route between Los Angeles and São Paulo, Brazil.

The Pacific region continues to be the most impacted by travel restrictions, although we experienced demand improvement during 2022 following South Korea and Australia reopening to international travelers and the recent easing of travel restrictions to Japan. Throughout 2022, China still maintained international testing requirements and travel restrictions, which continued to restrain demand in the Pacific region.

We expect the increasing revenue trends in all international regions to continue into 2023 as demand for international locations continues to be strong and countries continue to reopen and remove or ease remaining travel restrictions. For example, in January 2023 China ended most of its pandemic-related travel restrictions and we expect to increase capacity based on demand during 2023.

Ticket Validity Flexibility

In order to provide our customers more flexibility and time to plan their travel, travel credit holders as of January 2022 and customers who purchased a ticket in 2022 are able to rebook their ticket through December 31, 2023 for travel throughout 2024.

Delta has eliminated change fees for tickets originating in the United States, Canada, Europe and Africa (excluding Basic Economy tickets). A change fee waiver continues to apply for travel originating in Asia and the Pacific. Starting in 2022, Basic Economy tickets may be cancelled for a charge to receive a partial ticket credit.

We estimate the value of ticket breakage and recognize revenue at the scheduled flight date. Our ticket breakage estimates are primarily based on historical experience, ticket contract terms and customers' travel behavior. Given the impact of the COVID-19 pandemic on customer behavior and changes made in ticket validity terms, as well as the elimination of change fees for most tickets, our estimates of revenue that will be recognized from the air traffic liability for unused tickets may vary in future periods.

See Note 2 of the Notes to the Consolidated Financial Statements for additional information about passenger ticket sales.

Other Revenue

(in millions)	Year Ended December 31, 2022	2021	Increase (Decrease)	% Increase (Decrease)
Refinery	$ 4,977	$ 3,229	$ 1,748	54 %
Loyalty program	2,597	1,770	827	47 %
Ancillary businesses	846	793	53	7 %
Miscellaneous	894	556	338	61 %
Total other revenue	$ 9,314	$ 6,348	$ 2,966	47 %

Refinery. This represents refinery sales to third parties. These sales increased $1.7 billion compared to 2021. The increase in third-party refinery sales resulted from higher pricing and production during 2022 compared to 2021. See "Refinery Segment" below for additional details on the refinery's operations, including third-party refinery sales recorded in other revenue, during each period.

Loyalty Program. This relates to brand usage by third parties and other performance obligations embedded in miles sold, including redemption of miles for non-travel awards. These revenues are mainly driven by customer spend on American Express cards and new cardholder acquisitions. On continued strength in co-brand card spend and card acquisitions, revenues from our relationship with American Express increased in 2022 compared to 2021.

Ancillary Businesses. This includes aircraft maintenance services we provide to third parties and our vacation wholesale operations.

Miscellaneous. This is primarily composed of lounge access, including access provided to certain American Express cardholders, and codeshare revenues. Compared to 2021, these transactions have increased due to the ongoing recovery of our business that continued to materialize in 2022. Our network of Delta Sky Club lounges was fully reopened by the end of July 2021 after some lounges temporarily closed at the onset of the pandemic in 2020.

Operating Expense

(in millions)	Year Ended December 31, 2022	2021	Increase (Decrease)	% Increase (Decrease)
Salaries and related costs	$ 11,902	$ 9,728	$ 2,174	22 %
Aircraft fuel and related taxes	11,482	5,633	5,849	104 %
Ancillary businesses and refinery	5,756	3,957	1,799	45 %
Contracted services	3,345	2,420	925	38 %
Landing fees and other rents	2,181	2,019	162	8 %
Depreciation and amortization	2,107	1,998	109	5 %
Regional carrier expense	2,051	1,736	315	18 %
Aircraft maintenance materials and outside repairs	1,982	1,401	581	41 %
Passenger commissions and other selling expenses	1,891	953	938	98 %
Passenger service	1,453	756	697	92 %
Profit sharing	563	108	455	421 %
Aircraft rent	508	430	78	18 %
Restructuring charges	(124)	(19)	(105)	553 %
Government grant recognition	—	(4,512)	4,512	(100)%
Other	1,824	1,405	419	30 %
Total operating expense	$ 46,921	$ 28,013	$ 18,908	67 %

During 2021, travel demand began to recover from the low levels experienced during the height of the COVID-19 pandemic. This recovery in demand continued to accelerate during 2022. As a result, operating expenses increased in conjunction with the increases in demand and capacity discussed above. The continued restoration of our operations was the primary driver for the increases in most operating expense line items, particularly contracted services, aircraft maintenance materials and outside repairs, passenger commissions and other selling expenses and passenger service. Other year-over-year fluctuations are discussed below.

Salaries and Related Costs. We hired approximately 25,000 employees during 2022 principally in flight operations, in-flight service, reservations and customer care, TechOps and airport customer service, in order to support our operations as demand and capacity returned. These hiring actions and a 4% base pay increase effective May 1, 2022 for eligible employees resulted in the increase in salaries and related costs in 2022 compared to 2021. The increase also results from the ending of the voluntary unpaid leave of absence program we offered in response to the COVID-19 pandemic during 2021. During 2022, we no longer offered these leaves of absence as the program terminated in September 2021. In early 2023, we announced a 5% base pay increase for eligible employees effective April 1, 2023.

Delta and ALPA reached an Agreement in Principle on a new collective bargaining agreement in December 2022. In January 2023, a tentative agreement was ratified by ALPA's Delta Master Executive Council ("MEC") and is subject to ratification by Delta's pilots through a vote that is scheduled to close on March 1, 2023. In addition to various work rule changes and an 18% pay rate increase in 2023, the tentative agreement includes a provision for a one-time payment of approximately $700 million upon pilot ratification. As voting on the tentative agreement has not closed and there is significant uncertainty about the outcome of this process, we have not accrued for this one-time payment as of December 31, 2022.

Aircraft Fuel and Related Taxes. Fuel expense increased $5.8 billion compared to 2021 primarily due to a 78% increase in the market price of jet fuel and a 23% increase in consumption as capacity was restored.

Additionally, during 2022, we purchased and retired $116 million of carbon offsets which relate to a portion of our airline segment's 2021 and March 2022 quarter carbon emissions. During 2021, we purchased and retired $95 million of carbon offsets, which related to a portion of our airline segment's 2020 and 2021 carbon emissions. In the table below, these costs are shown in the carbon offset costs line item. As we continue to work on accelerating our long-term, net-zero greenhouse gas emissions goal, our vision of the path forward will require multiple initiatives, centered on a long-term strategy of decarbonization; we therefore expect substantially all of our investment going forward will be focused on solutions other than carbon offsets.

Fuel expense and average price per gallon

	Year Ended December 31,			Average Price Per Gallon		
				Year Ended December 31,		
(in millions, except per gallon data)	2022	2021	Increase (Decrease)	2022	2021	Increase (Decrease)
Fuel purchase cost [1]	$ 12,114	$ 5,527	$ 6,587	$ 3.55	$ 1.99	$ 1.56
Carbon offset costs	116	95	21	0.03	0.03	—
Fuel hedge impact	29	9	20	0.01	—	0.01
Refinery segment impact	(777)	2	(779)	(0.23)	—	(0.23)
Total fuel expense	$ 11,482	$ 5,633	$ 5,849	$ 3.36	$ 2.02	$ 1.34

[1] Market price for jet fuel at airport locations, including related taxes and transportation costs.

Ancillary Businesses and Refinery. Ancillary businesses and refinery includes expenses associated with refinery sales to third parties, aircraft maintenance services we provide to third parties and our vacation wholesale operations. Increased expenses were primarily related to refinery sales to third parties, which increased $1.7 billion compared to 2021. The increase compared to 2021 was driven by higher pricing and production during 2022. The cost of aircraft maintenance services we provide to third parties increased compared to 2021 due to the increase in flights and aircraft operated during 2022.

Regional Carrier Expense. Regional carrier expense increased compared to 2021 due to an increase in contract carrier rates and wages, while capacity was constrained due to a shortage of regional jet pilots.

Restructuring Charges. During 2020, we recorded restructuring charges of $8.2 billion for items such as fleet impairments and voluntary early retirement and separation programs following strategic business decisions in response to the COVID-19 pandemic. In the years ended December 31, 2022 and 2021, we recognized $124 million and $19 million, respectively, of adjustments to certain of those restructuring charges, representing changes in our estimates or the outcome of contract negotiations. See Note 15 of the Notes to the Consolidated Financial Statements for additional information about the restructuring charges recorded in 2020.

Profit Sharing. Profit sharing increased by $455 million during 2022 due to higher profit during the year. Our profit sharing program pays 10% to all eligible employees for the first $2.5 billion of annual profit, as defined by the terms of the program, and 20% of annual profit above $2.5 billion. For the year ended December 31, 2021, we recorded a special profit sharing expense of $108 million, based on the adjusted pre-tax profit earned during the second half of the year, to recognize the extraordinary efforts of our employees through the pandemic.

Government Grant Recognition. During the year ended December 31, 2021, we received a total of $6.4 billion under PSP agreements with the U.S. Department of the Treasury, which we were required to use exclusively for the payment of employee wages, salaries and benefits. The support payments included grants totaling $4.5 billion that were recognized as contra-expense in 2021 over the period that the funds were used.

Non-Operating Results

(in millions)	Year Ended December 31, 2022	2021	Favorable (Unfavorable)
Interest expense, net	$ (1,029)	$ (1,279)	$ 250
Impairments and equity method results	(20)	(337)	317
Gain/(loss) on investments, net	(783)	56	(839)
Loss on extinguishment of debt	(100)	(319)	219
Pension and related benefit	292	451	(159)
Miscellaneous, net	(107)	(60)	(47)
Total non-operating expense, net	$ (1,747)	$ (1,488)	$ (259)

Interest expense, net. Interest expense, net includes interest expense and interest income. This decreased as compared to 2021 as a result of our debt reduction initiatives during 2021 and 2022. See Note 6 of the Notes to the Consolidated Financial Statements for additional information on our debt reduction initiatives. We are reducing the total amount of interest expense by pre-paying our debt in addition to periodic amortization payments and scheduled maturities. During 2021, we made payments of approximately $5.8 billion related to our debt and finance leases, which included approximately $3.8 billion for early repayments. We have continued to pay down our debt during 2022 with $4.5 billion of payments on debt and finance lease obligations, including early repayment activities of $1.5 billion of certain notes through a cash tender offer in the September 2022 quarter and $778 million in principal for the early repurchase of various secured and unsecured notes through repurchases on the open market. We will continue to seek opportunities to pre-pay our debt, in addition to periodic amortization payments and scheduled maturities, during 2023 and beyond.

Impairments and equity method results. Equity method results in 2022 consist of our share of Aeroméxico's net results and in 2021 reflected our share of Virgin Atlantic's net results. See Note 4 of the Notes to the Consolidated Financial Statements for additional information on our equity investments.

Gain/(loss) on investments, net. See Note 4 of the Notes to the Consolidated Financial Statements for additional information on our equity investments measured at fair value on a recurring basis.

Loss on extinguishment of debt. Loss on extinguishment of debt reflects the losses incurred in the early repayment of debt referenced above. See Note 6 of the Notes to the Consolidated Financial Statements for additional information on the early repayment of debt.

Pension and related benefit. Pension and related benefit reflects the net periodic benefit/(cost) of our pension and other postretirement and postemployment benefit plans. Based on our funded status as of December 31, 2021, we modified the strategic asset allocation mix in 2022 to reduce the investment risk of the portfolio. Based on the portfolio's risk profile, we lowered the weighted average expected long-term rate of return on our defined benefit pension plan assets for 2022 net periodic benefit cost to 7.00%. See Note 9 of the Notes to the Consolidated Financial Statements for additional information on our employee benefit plans.

Miscellaneous, net. Miscellaneous, net primarily includes charitable contributions and foreign exchange gains/(losses).

Income Taxes

Our effective tax rate for 2022 was 31%. We expect our annual effective tax rate to be between 23% and 26% for 2023. Our effective tax rate in 2022 was impacted by mark-to-market adjustments on our equity investments which are considered capital assets for tax purposes. As of December 31, 2022, we had approximately $5.4 billion of U.S. federal pre-tax net operating loss carryforwards, of which $1.5 billion was generated prior to 2018 and will not begin to expire until 2029. Under current tax law, the remaining net operating loss carryforwards do not expire.

The Inflation Reduction Act ("IRA") was enacted into law on August 16, 2022. Included in the IRA was a provision to implement a 15% corporate alternative minimum tax on corporations whose average annual adjusted financial statement income during the most recently-completed three-year period exceeds $1.0 billion. This provision is effective for tax years beginning after December 31, 2022. We are in the process of evaluating the provisions of the IRA, but we do not currently believe the IRA will have a material impact on our reported results, cash flows or financial position.

For more information about our income taxes, see Note 11 of the Notes to the Consolidated Financial Statements.

Refinery Segment

The refinery operated by our wholly owned subsidiary Monroe primarily produces gasoline, diesel and jet fuel. Monroe has agreements in place to exchange the non-jet fuel products the refinery produces with third parties for jet fuel consumed in our airline operations. The jet fuel produced and procured through exchanging gasoline and diesel fuel produced by the refinery provided approximately 200,000 barrels per day, or approximately 75% of our pre-COVID-19 pandemic consumption, for use in our airline operations.

Refinery segment financial information

(in millions, except per gallon data)	Year Ended December 31, 2022	2021	% Increase (Decrease) [1]
Exchange products	$ 3,475	$ 2,293	52 %
Sales of refined products	278	40	595 %
Sales to airline segment	1,976	492	302 %
Third-party refinery sales	4,977	3,229	54 %
Operating revenue	$ 10,706	$ 6,054	77 %
Operating income (loss)	$ 777	$ (2)	NM
Refinery segment impact on average price per fuel gallon	$ (0.23)	$ —	NM

[1] Certain variances are labeled as not meaningful ("NM").

Refinery revenues increased from $6.1 billion in 2021 to $10.7 billion in 2022, primarily driven by the increase in third-party refinery sales and sales to the airline segment. The increase in third-party refinery sales resulted from higher pricing and production during 2022 compared to 2021. The refinery recorded an operating loss of $2 million in 2021 compared to operating income of $777 million in 2022 mainly due to the increased production and pricing, partially offset by higher Renewable Identification Numbers ("RINs") compliance costs discussed below.

A refinery is subject to annual Environmental Protection Agency ("EPA") requirements to blend renewable fuels into the gasoline and on-road diesel fuel it produces. Alternatively, a refinery may purchase RINs from third parties in the secondary market. The Monroe refinery purchases the majority of its RINs in the secondary market. Monroe incurred $576 million in RINs compliance costs during 2022, compared to $422 million incurred in 2021. Observable RINs prices increased through the first half of 2022 and remained at these higher rates through the second half of the year.

At December 31, 2022, we had a net fair value obligation related to RINs of $226 million. Our obligation as of December 31, 2022 was calculated using the U.S. EPA Renewable Fuel Standard ("RFS") volume requirements, which were finalized in the June 2022 quarter. During the December 2022 quarter, we retired our 2020 RINs assets to settle our 2020 obligations prior to the compliance deadline. We expect to settle our 2021 and 2022 obligations in the first half of 2023.

For more information regarding the refinery's results, see Note 14 of the Notes to the Consolidated Financial Statements.

Operating Statistics

	Year Ended December 31,		
Consolidated [1]	**2022**	**2021**	**2019**
Revenue passenger miles (in millions)	195,480	134,692	237,680
Available seat miles (in millions)	233,226	194,474	275,379
Passenger mile yield	20.57 ¢	16.72 ¢	17.79 ¢
Passenger revenue per available seat mile ("PRASM")	17.24 ¢	11.58 ¢	15.35 ¢
Total revenue per available seat mile ("TRASM")	21.69 ¢	15.37 ¢	17.07 ¢
TRASM, adjusted [2]	19.55 ¢	13.71 ¢	16.97 ¢
Cost per available seat mile ("CASM")	20.12 ¢	14.40 ¢	14.67 ¢
CASM-Ex [2]	12.87 ¢	12.12 ¢	10.88 ¢
Passenger load factor	84 %	69 %	86 %
Fuel gallons consumed (in millions)	3,412	2,778	4,214
Average price per fuel gallon [3]	$ 3.36	$ 2.02	$ 2.02
Average price per fuel gallon, adjusted [2][3]	$ 3.36	$ 2.02	$ 2.01
Approximate full-time equivalent employees, end of period	95,000	83,000	91,000

(1) Includes the operations of our regional carriers under capacity purchase agreements. Full-time equivalent employees exclude employees of regional carriers that we do not own.

(2) Non-GAAP financial measures are defined and reconciled to TRASM, CASM and average fuel price per gallon, respectively, in "Supplemental Information" below.

(3) Includes the impact of refinery segment results, carbon offset costs and fuel hedge activity.

Financial Condition and Liquidity

As of December 31, 2022, we had $9.4 billion in cash, cash equivalents, short-term investments and aggregate principal amount committed and available to be drawn under our revolving credit facilities ("liquidity"). We expect to meet our liquidity needs for the next twelve months with cash and cash equivalents, short-term investments, restricted cash equivalents and cash flows from operations. We expect to meet our long-term liquidity needs with cash flows from operations and financing arrangements.

Sources and Uses of Liquidity

Operating Activities

Operating activities in 2022 provided $6.4 billion of cash flow compared to $3.3 billion in 2021. Operating activities in 2021 included $4.5 billion in funds received from payroll support program grants. We expect to continue generating positive cash flows from operations during 2023.

Our operating cash flow is impacted by the following factors:

Seasonality of Advance Ticket Sales. We sell tickets for air travel in advance of the customer's travel date. When we receive a cash payment at the time of sale, we record the cash received on advance sales as deferred revenue in air traffic liability. The air traffic liability typically increases during the winter and spring months as advanced ticket sales grow prior to the summer peak travel season and decreases during the summer and fall months.

Beginning with the COVID-19 pandemic in the March 2020 quarter through 2021, reduced demand for air travel resulted in a lower level of advance bookings and the associated cash received than we had historically experienced, which had been impacting the typical seasonal trend of air traffic liability. However, demand improved during 2022 as consumers regained confidence to travel and increased ticket purchases for travel further in advance. As a result, air traffic liability began returning to the usual seasonal trend in 2022.

Fuel. Fuel expense represented approximately 24% of our total operating expense during 2022. The market price for jet fuel is volatile, which can impact the comparability of our periodic cash flows from operations. The average fuel price per gallon increased substantially in 2022. While prices have recently moderated, we expect elevated jet fuel prices in comparison to historical levels to continue during the beginning of 2023 due to current market conditions, further exacerbated by geopolitical events. As capacity and demand increased throughout the year, fuel consumption was higher in 2022 than 2021 as well. We expect that fuel consumption will continue to increase throughout 2023 as we return to pre-pandemic levels of capacity, partially offset by increases in the fuel efficiency of our fleet.

We expect our commitment to environmental sustainability to depend on increased use of SAF, which is not presently available at scale or at prices competitive to jet fuel. While we do not expect a material adverse effect on our Consolidated Financial Statements in the near-term from the use of SAF, we are unable to predict the financial impact of increased use of SAF on our Consolidated Financial Statements over the longer term as government policies and incentives for, and sufficient third-party investment in, SAF are necessary to make its use in larger quantities commercially and economically feasible.

Employee Benefit Obligations. We sponsor defined benefit pension plans for eligible employees and retirees. These plans are closed to new entrants and are frozen for future benefit accruals. Our funding obligations for these plans are governed by the Employee Retirement Income Security Act ("ERISA") and any applicable legislation. We had no minimum funding requirements in 2021 or 2022, and have no such requirements in 2023. However, we voluntarily contributed $1.5 billion to these plans during 2021. At this level of funding, investment returns are expected to satisfy future benefit payments, which we believe would eliminate further material voluntary or required cash contributions to the plans under the terms of ERISA. Further, based on this level of funding, we have modified, and continue to evaluate, the asset allocation mix to reduce the investment risk of the portfolio. Estimates of future funding requirements are based on various assumptions and could vary materially from actual funding requirements. Assumptions include, among other things, the actual and projected market performance of assets, statutory requirements and demographic data for participants.

In addition, we have employee benefit obligations relating primarily to projected future benefit payments from our unfunded postretirement and postemployment plans. See Note 9 of the Notes to the Consolidated Financial Statements for more information on our employee benefit obligations.

Voluntary Separation Programs. In 2020, we recorded a $3.4 billion charge associated with voluntary early retirement and separation programs and other employee benefit charges. Approximately $440 million, $575 million and $720 million was disbursed in cash payments to participants in the voluntary programs during 2022, 2021 and 2020 respectively. We anticipate that a total of approximately $300 million in cash payments will be made to participants in the voluntary separation programs in 2023 and the remaining payments in 2024 and beyond.

Profit Sharing. Our broad-based employee profit sharing program provides that, for each year in which we have an annual pre-tax profit, as defined by the terms of the program, we will pay a specified portion of that profit to employees. In determining the amount of profit sharing, the program defines profit as pre-tax profit adjusted for profit sharing and certain other items.

We pay profit sharing annually in February. To recognize the extraordinary efforts of our employees through the pandemic, we made a special profit-sharing payment of $108 million to eligible employees in February 2022, based on the adjusted pre-tax profit earned during the second half of 2021. During the year ended December 31, 2022, we recorded $563 million in profit sharing expense based on 2022 pre-tax profit, which we will pay to employees in February 2023.

Contract Carrier Obligations. We have certain estimated minimum fixed obligations under capacity purchase agreements with third-party regional carriers. These minimum amounts are based on the required minimum levels of flying by the regional carriers under the respective agreements and assumptions regarding the costs associated with such minimum levels of flying. As of December 31, 2022 the total of these minimum amounts was $10.6 billion and are approximately $1.6 billion on an annual basis over the next five years. See Note 10 of the Notes to the Consolidated Financial Statements for more information on our contract carrier obligations.

Operating Lease Obligations. As described further in Note 7 of the Notes to the Consolidated Financial Statements, as of December 31, 2022 we had a total of $9.8 billion of minimum operating lease obligations. These minimum lease payments range from approximately $800 million to $1.0 billion on an annual basis over the next five years.

New York-JFK Airport Expansion. We are enhancing and expanding our facilities at Terminal 4 of JFK to strengthen our competitive position and offer a premium travel experience for customers in New York City. Terminal 4 is operated by JFK International Air Terminal LLC ("IAT"), a private party, under its lease with the Port Authority of New York and New Jersey ("Port Authority"). We have a long-term agreement with IAT to sublease space in Terminal 4 through 2043 ("Sublease").

In 2021, the Port Authority approved plans to renovate and expand Terminal 4 in order to facilitate Delta's relocation from Terminal 2 and consolidation of its operations into Terminal 4. The project will add 10 new gates and other complementary facilities, including an additional Delta Sky Club and a new Delta One lounge. The project is estimated to cost approximately $1.6 billion and will be funded primarily with bonds issued in 2022 by the New York Transportation Development Corporation ("NYTDC") for which our landlord, IAT, is the obligor. The majority of project costs are being used to expand or modify Delta's leased premises. Construction started in late 2021 and Delta's portion of the project is estimated to be complete by early 2024.

In 2022, we amended our Sublease to provide for the expansion project, including the adjustment of our subleased space and rentals. We have recognized a right-of-use ("ROU") asset and lease liability representing the fixed component of the lease payments for this facility and as the majority of the project either expands or modifies Delta’s leased premises, our lease liability will increase upon completion. As of December 31, 2022, our lease liability related to this Sublease was $2.3 billion. See Note 7 of the Notes to the Consolidated Financial Statements for more information on our ROU assets and lease liabilities.

Other Obligations. We have certain purchase obligations under which we are required to make minimum payments for goods and services, including, but not limited to, aviation-related, maintenance, insurance, marketing, technology, sponsorships and other third-party services and products. As of December 31, 2022, we had approximately $8.6 billion of such obligations, which range from approximately $350 million to $900 million on an annual basis over the next five years.

Investing Activities

Short-Term Investments. In 2022 we redeemed a net of $100 million in short-term investments. See Note 1 and Note 3 of the Notes to the Consolidated Financial Statements for further information on these investments.

Capital Expenditures. Our capital expenditures (i.e., property and equipment additions in our Consolidated Statements of Cash Flows ("cash flows statement")) were $6.4 billion and $3.2 billion in 2022 and 2021, respectively. Our capital expenditures are primarily related to the purchases of aircraft, airport construction projects, fleet modifications and technology enhancements.

We have committed to future aircraft purchases and have obtained, but are under no obligation to use, long-term financing commitments for a substantial portion of the purchase price of the aircraft. Excluding the New York-LaGuardia airport project discussed below, our expected 2023 capital spend of approximately $5.5 billion, which may vary depending on financing decisions, will be primarily for aircraft, including deliveries and advance deposit payments, as well as fleet modifications and technology enhancements. As described in Part I, Item 1. "Business - Environmental Sustainability," aircraft fleet renewal is an important component of our environmental sustainability strategy and the path to achievement of our ambitious climate goals, which will continue to require extensive capital investment in future periods. See Note 10 of the Notes to the Consolidated Financial Statements for additional information regarding our aircraft purchase commitments, which totaled approximately $19.0 billion as of December 31, 2022.

New York-LaGuardia Redevelopment. As part of the terminal redevelopment project at LaGuardia Airport, we are partnering with the Port Authority to replace Terminals C and D with a new state-of-the-art terminal facility consisting of 37 gates across four concourses connected to a central headhouse. The terminal will feature a new, larger Delta Sky Club, wider concourses, more gate seating and nearly double the amount of concessions space than the existing terminals. The facility will also offer direct access between the parking garage and terminal and improved roadways and drop-off/pick-up areas. Construction is underway and is being phased to limit passenger inconvenience. Due to an acceleration effort that commenced in 2020, completion is expected by 2025.

In 2019, we opened Concourse G, the first of four new concourses, housing seven of the 37 new gates. In 2022, we achieved a significant milestone by opening the headhouse (including the Delta Sky Club), the terminal roadways and Concourse E - the second of four new concourses to be built. Additionally, we opened four of 12 planned new gates on Concourse F.

In connection with the redevelopment, during 2017, we entered into an amended and restated terminal lease with the Port Authority with a term through 2050. Pursuant to the lease agreement, as amended to date, we will (1) fund (through debt issuance and existing cash) and undertake the design, management and construction of the terminal and certain off-premises supporting facilities, (2) receive a Port Authority contribution of approximately $500 million to facilitate construction of the terminal and other supporting infrastructure, (3) be responsible for all operations and maintenance during the term of the lease and (4) have preferential rights to all gates in the terminal subject to Port Authority requirements with respect to accommodation of designated carriers.

The project is expected to cost $4.3 billion. We currently expect our net project cost to be approximately $3.8 billion and we bear the risks of project construction, including any potential cost over-runs. We entered into loan agreements to fund a portion of the construction, which are recorded on our Consolidated Balance Sheets ("balance sheets") as debt with the proceeds reflected as restricted cash. Using funding primarily provided by these arrangements, we spent approximately $650 million, $950 million and $600 million during 2022, 2021 and 2020, respectively, bringing the total amount spent on the project to date to approximately $3.2 billion. We expect to spend approximately $500 million during 2023.

Los Angeles International Airport ("LAX") Construction. As part of the terminal redevelopment project at LAX, we are modernizing, upgrading, and providing post-security connection to Terminals 2 and 3. We announced this project and executed a modified lease agreement during 2016 with the City of Los Angeles (the "City"), which owns and operates LAX. This project includes a new centralized ticketing and arrival hall, a new security checkpoint, core infrastructure to support the City's planned airport people mover, ramp improvements and a post-security connector to the north side of the Tom Bradley International Terminal.

The project is expected to cost approximately $2.4 billion. A substantial majority of the project costs are being funded through the Regional Airports Improvement Corporation ("RAIC"), a California public benefit corporation, using a revolving credit facility provided by a group of lenders. The credit facility was executed in 2017 and we have guaranteed the obligations of the RAIC under the credit facility. The revolving credit facility agreement was most recently amended in January 2023, decreasing the revolver capacity from $800 million to $700 million. Loans made under the credit facility are being repaid with the proceeds from the City's purchase of completed project assets. Under the lease agreement and subsequent project component approvals by the City's Board of Airport Commissioners, the City has appropriated to date approximately $1.8 billion to purchase completed project assets, representing the maximum allowable reimbursement by the City. Costs incurred in excess of the $1.8 billion maximum will not be reimbursed by the City. We currently expect our net project costs to be approximately $600 million, of which approximately $350 million has been reflected as investing activities in our cash flows statement since the project started in 2017.

Given reduced passenger volumes resulting from the COVID-19 pandemic, we accelerated the construction schedule for this project in 2020. Additionally, we enhanced the project's scope to include a more customer-friendly design of Terminal 3, an expanded Delta Sky Club and baggage system upgrades designed to increase the terminals' operational efficiency going forward. In 2022, we opened a new consolidated headhouse for both terminals, which includes ticketing, security, baggage claim and a new Delta Sky Club lounge and have a total of 11 of 14 planned new gates now open in Terminal 3. Construction is expected to be completed in 2023.

Equity Investments. To support our international presence, during 2022 we invested an aggregate amount of $757 million in Grupo Aeroméxico and LATAM as each carrier emerged from restructuring processes. Upon completion of their respective processes, we received a 20% equity stake in Grupo Aeroméxico and a 10% equity stake in LATAM. See Note 4 of the Notes to the Consolidated Financial Statements for additional information on our equity investments

Financing Activities

Debt and Finance Leases. In 2022, we had cash outflows of approximately $4.5 billion related to repayments of our debt and finance leases, including approximately $2.3 billion for the early repayment of certain notes through a cash tender offer and other various secured and unsecured notes. We will continue to seek opportunities to pre-pay our debt, in addition to periodic amortization payments and scheduled maturities, during 2023 and beyond. See Note 6 of the Notes to the Consolidated Financial Statements for additional information on recent repayment activity.

The principal amount of our debt and finance leases was $23.2 billion at December 31, 2022.

Future Debt Obligations. As described further in Note 6 of the Notes to the Consolidated Financial Statements, as of December 31, 2022, scheduled maturities of our debt in 2023 and 2024 were $2.1 billion and $2.8 billion, respectively, with maturities from 2025 through 2027 ranging between $2.5 billion and $2.9 billion annually. As of December 31, 2022, scheduled maturities after 2027 aggregate to $8.4 billion. In addition, we are obligated to make periodic interest payments at fixed and variable rates, depending on the terms of the applicable debt agreements. Based on applicable interest rates and scheduled debt maturities as of December 31, 2022, these interest obligations total approximately $4.6 billion and range from approximately $350 million to $1.0 billion on an annual basis over the next five years. In addition to payment of scheduled debt maturities, we expect to continue paying down our debt in 2023, and therefore reduce our future interest obligations.

Finance Lease Obligations. As described further in Note 7 of the Notes to the Consolidated Financial Statements, as of December 31, 2022 we had a total of $1.8 billion of minimum finance lease obligations. These minimum lease payments range from approximately $200 million to $400 million on an annual basis over the next five years.

Undrawn Lines of Credit. As of December 31, 2022 we had approximately $2.9 billion undrawn and available under our revolving credit facilities. In addition, we had $400 million of outstanding letters of credit as of December 31, 2022 that did not affect the availability under our revolvers.

Covenants. We were in compliance with the covenants in our debt agreements at December 31, 2022. See Note 6 of the Notes to the Consolidated Financial Statements for more information on the covenants in our debt agreements.

Critical Accounting Estimates

Our critical accounting estimates are those estimates made in accordance with generally accepted accounting principles in the U.S. ("GAAP") that involve a significant level of estimation uncertainty and have had or are reasonably likely to have a material impact on our consolidated results of operations or financial condition. Accordingly, the actual results may differ materially from these estimates. For a discussion of our significant accounting policies, see Note 1 of the Notes to the Consolidated Financial Statements, unless otherwise noted below.

Loyalty Program

Our SkyMiles loyalty program generates customer loyalty by rewarding customers with incentives to travel on Delta. This program allows customers to earn mileage credits ("miles") by flying on Delta, Delta Connection carriers and other airlines that participate in the loyalty program. When traveling, customers earn miles primarily based on the passenger's loyalty program status, fare class and ticket price. Customers can also earn miles through participating companies such as credit card companies, hotels, car rental agencies and ridesharing companies. Miles are redeemable by customers in future periods for air travel on Delta and other participating airlines, access to our Sky Club and other program awards. To facilitate transactions with participating companies, we sell miles to non-airline businesses, customers and other airlines.

The loyalty program includes two types of transactions that are considered revenue arrangements with multiple performance obligations (1) passenger ticket sales earning miles and (2) sale of miles to participating companies.

Passenger Ticket Sales Earning Miles. Passenger ticket sales earning miles provide customers with (1) miles earned and (2) air transportation, which are each considered performance obligations. We value each performance obligation on a standalone basis. To value the miles earned, we consider the quantitative value a passenger receives by redeeming miles for a ticket rather than paying cash, which is referred to as equivalent ticket value ("ETV"). Our estimate of ETV is adjusted for miles that are not likely to be redeemed ("mileage breakage"). We use statistical models to estimate mileage breakage based on historical redemption patterns. A change in assumptions regarding the redemption activity for miles or the estimated fair value of miles expected to be redeemed could have a material impact on our revenue in the year in which the change occurs and in future years. We recognize mileage breakage proportionally during the period in which the remaining miles are actually redeemed.

At December 31, 2022, the aggregate deferred revenue balance associated with the SkyMiles program was $7.9 billion. A hypothetical 10% change in the number of outstanding miles estimated to be redeemed would result in an impact of less than 1% of total operating revenue recognized for the year ended December 31, 2022.

We defer revenue for the miles when earned and recognize loyalty travel awards in passenger revenue as the miles are redeemed and transportation is provided. We record the air transportation portion of the passenger ticket sales in air traffic liability and recognize passenger revenue when we provide transportation or if the ticket goes unused. A hypothetical 10% increase in our estimate of the ETV of a mile would have decreased total operating revenue by less than 1% for the year ended December 31, 2022, as a result of an increase in the amount of revenue deferred associated with the miles earned.

Sale of Miles to Participating Companies. Customers earn miles based on their spending with participating companies such as credit card companies, hotels, car rental agencies and ridesharing companies with which we have marketing agreements to sell miles. Our contracts to sell miles under these marketing agreements have multiple performance obligations. Payments are typically due to us monthly based on the volume of miles sold during the period, and the initial terms of our marketing contracts are from three to eleven years. During the years ended December 31, 2022, 2021 and 2020, total cash sales from marketing agreements related to our loyalty program were $5.7 billion, $4.1 billion and $2.9 billion, respectively, which are allocated to travel and other performance obligations, as discussed below.

Our most significant contract to sell miles relates to our co-brand credit card relationship with American Express. Our agreements with American Express provide for joint marketing, grant certain benefits to Delta-American Express co-branded credit card holders ("cardholders") and American Express Membership Rewards program participants, and allow American Express to market its services or products using our customer database. Cardholders earn miles for making purchases using co-branded cards, and certain cardholders may also check their first bag for free, are granted discounted access to Delta Sky Club lounges and receive priority boarding and other benefits while traveling on Delta. Additionally, participants in the American Express Membership Rewards program may exchange their points for miles under the loyalty program. We sell miles at agreed-upon rates to American Express which are then provided to their customers under the co-brand credit card program and the Membership Rewards program.

We account for marketing agreements, including those with American Express, by allocating the consideration to the individual products and services delivered. We allocate the value based on the relative selling prices of those products and services, which generally consist of award travel, priority boarding, baggage fee waivers, lounge access and the use of our brand. We determine our best estimate of the selling prices by using a discounted cash flow analysis using multiple inputs and assumptions, including (1) the expected number of miles awarded and number of miles redeemed, (2) ETV for the award travel obligation adjusted for mileage breakage, (3) published rates on our website for baggage fees, discounted access to Delta Sky Club lounges and other benefits while traveling on Delta, (4) brand value (using estimated royalties generated from the use of our brand) and (5) volume discounts provided to certain partners.

We defer the amount allocated to award travel as part of loyalty program deferred revenue and recognize loyalty travel awards in passenger revenue as the miles are redeemed and transportation is provided. Revenue allocated to services performed in conjunction with a passenger's flight, such as baggage fee waivers, is recognized as travel-related services in passenger revenue when the related service is performed. Revenue allocated to access Delta Sky Club lounges is recognized as miscellaneous in other revenue as access is provided. Revenue allocated to the remaining performance obligations, primarily brand value, is recorded as loyalty program in other revenue as miles are delivered.

The timing of mile redemptions can vary widely; however, the majority of new miles have historically been redeemed within two years of being earned. The loyalty program deferred revenue classified as a current liability represents our estimate of revenue expected to be recognized in the next twelve months based on projected redemptions, while the balance classified as a noncurrent liability represents our estimate of revenue expected to be recognized beyond twelve months.

For additional information on our significant accounting policies related to the loyalty program, see Note 2 of the Notes to the Consolidated Financial Statements.

Passenger Ticket Sales

We defer sales of passenger tickets to be flown by us or that we sell on behalf of other airlines in our air traffic liability. Passenger revenue is recognized when we provide transportation or when the ticket expires unused ("ticket breakage"). For tickets that we sell on behalf of other airlines, we reduce the air traffic liability when consideration is remitted to those airlines. The air traffic liability primarily includes sales of passenger tickets with scheduled departure dates in the future and credits which can be applied as payment toward the cost of a ticket ("travel credits"). Travel credits are typically issued as a result of ticket cancellations prior to their expiration dates. We periodically evaluate the estimated air traffic liability and may record adjustments in our Consolidated Statement of Operations ("income statement"). These adjustments relate primarily to ticket breakage, refunds, exchanges, transactions with other airlines and other items for which final settlement occurs in periods subsequent to the sale of the related tickets at amounts other than the original sales price.

During the COVID-19 pandemic, we experienced significant ticket cancellations, particularly in the early months of 2020. Delta has eliminated change fees for tickets originating in the United States, Canada, Europe and Africa (excluding Basic Economy tickets). In order to provide our customers more flexibility and time to plan their travel, travel credit holders as of January 2022 and customers who purchased a ticket in 2022 are able to rebook their ticket through December 31, 2023 for travel throughout 2024.

We estimate the value of ticket breakage and recognize revenue at the scheduled flight date. Our ticket breakage estimates are primarily based on historical experience, ticket contract terms and customers' travel behavior. Given the impact of the COVID-19 pandemic on customer behavior and changes made in ticket validity terms, as well as the elimination of change fees for most tickets, our estimates of revenue that will be recognized from the air traffic liability for unused tickets may vary in future periods. At December 31, 2022, the aggregate air traffic liability balance was $8.3 billion. A hypothetical 10% change in the amount of travel credits estimated to expire unused would result in an impact of less than 1% of total operating revenue for the year ended December 31, 2022.

For additional information on our significant accounting policies related to passenger ticket sales, see Note 2 of the Notes to the Consolidated Financial Statements.

Long-Lived Assets

Our long-lived lived assets, including flight equipment, which consists of aircraft and associated engines and parts, operating ROU assets and other long-lived assets, which have a recorded value of approximately $40.1 billion at December 31, 2022, are recorded in property and equipment, net and operating lease right-of-use assets on our balance sheets. This value is based on various factors, including the assets' acquisition costs, estimated useful lives, salvage values, discounted lease payments and lease terms. We review flight equipment, ROU assets and other long-lived assets used in operations for impairment losses when events and circumstances indicate the assets may be impaired. Factors which could be indicators of impairment include, but are not limited to (1) a decision to permanently remove flight equipment or other long-lived assets from operations, (2) significant changes in the estimated useful life, (3) significant changes in projected cash flows, (4) permanent and significant declines in fleet fair values and (5) changes to the regulatory environment. For long-lived assets held for sale, we discontinue depreciation and record impairment losses when the carrying amount of these assets is greater than the fair value less the cost to sell.

To determine whether impairments exist for aircraft used in operations, we group assets at the fleet type level or at the contract level for aircraft operated by third-party regional carriers (i.e., the lowest level for which there are identifiable cash flows) and then estimate future cash flows based on projections of capacity, passenger mile yield, fuel and labor costs and other relevant factors. If an asset group is impaired, the impairment loss recognized is the amount by which the asset group's carrying amount exceeds its estimated fair value. We estimate aircraft fair values using published sources, appraisals and bids received from third parties, as available.

As a result of the COVID-19 pandemic and our response, we made decisions to remove certain aircraft from active service and to early retire certain fleet types. We evaluated our fleet for impairment, determining that only certain fleet types were impaired, as the future cash flows from the operation of these fleet types through the respective retirement dates were lower than the carrying value. This resulted in impairment and other related charges of $4.4 billion during 2020, recorded in restructuring charges in our income statement. These charges were calculated using Level 3 fair value inputs based primarily upon recent market transactions and third-party bids, which were corroborated with published pricing guides and our assessment of existing market conditions based on industry knowledge. The effects of the COVID-19 pandemic created additional estimation uncertainty as there was a limited market for aircraft and limited data on how the COVID-19 pandemic affected the fair value of aircraft.

Due to the recovery in demand that we experienced throughout 2021 and 2022, we decided not to retire any additional aircraft and returned to service a majority of the aircraft that were temporarily parked in 2020. We recorded no further impairments during 2021 or 2022.

Following the impairment charges, the aggregate net book value of these aircraft as of December 31, 2022 and December 31, 2021 was approximately $220 million and $340 million, respectively, with the reduction in 2022 primarily due to aircraft sales. See Note 15 of the Notes to the Consolidated Financial Statements for additional details regarding these impairments and related charges.

Goodwill and Indefinite-Lived Intangible Assets

We apply a fair value-based impairment test to the carrying value of goodwill and indefinite-lived intangible assets on an annual basis (as of October 1) and, if certain events or circumstances indicate that an impairment loss may have been incurred, on an interim basis. We assess the value of our goodwill and indefinite-lived assets under either a qualitative or quantitative approach. Under a qualitative approach, we consider various market factors, including certain of the key assumptions listed below. We analyze these factors to determine if events and circumstances have affected the fair value of goodwill and indefinite-lived intangible assets. If we determine that it is more likely than not that the asset may be impaired, we use the quantitative approach to assess the asset's fair value and the amount of the impairment. Under a quantitative approach, we calculate the fair value of the asset incorporating the key assumptions listed below into our calculation.

When we evaluate goodwill for impairment using a quantitative approach, we estimate the fair value of the reporting unit by considering both comparable public company multiples (a market approach) and projected discounted future cash flows (an income approach). When we perform a quantitative impairment assessment of our indefinite-lived intangible assets, fair value is estimated based on (1) recent market transactions, where available, (2) the royalty method for the Delta tradename (which assumes hypothetical royalties generated from using our tradename) or (3) projected discounted future cash flows (an income approach).

Key Assumptions. The key assumptions in our impairment tests include (1) forecasted revenues, expenses and cash flows, including the duration and extent of impact to our business and our alliance partners from the COVID-19 pandemic, (2) current discount rates, (3) observable market transactions and (4) anticipated changes to the regulatory environment (e.g., changes in slot access and/or availability, additional Open Skies agreements or changes to antitrust approvals). These assumptions are consistent with those that hypothetical market participants would use. Because we are required to make estimates and assumptions when evaluating goodwill and indefinite-lived intangible assets for impairment, actual transaction amounts may differ materially from these estimates. In addition, when performing a qualitative valuation, we consider the amount by which the intangible assets' fair values exceeded their respective carrying values in the most recent fair value measurements calculated using a quantitative approach.

Changes in certain events and circumstances could result in impairment or a change from indefinite-lived to definite-lived. Factors which could cause impairment include, but are not limited to (1) negative trends in our market capitalization, (2) reduced profitability resulting from lower passenger mile yields or higher input costs (primarily related to fuel and employees), (3) lower passenger demand as a result of weakened U.S. and global economies, global pandemics or other factors, (4) interruption to our operations due to a prolonged employee strike, terrorist attack or other reasons, (5) changes to the regulatory environment (e.g., changes in slot access and/or availability, additional Open Skies agreements or changes to antitrust approvals), (6) competitive changes by other airlines and (7) strategic changes to our operations leading to diminished utilization of the intangible assets.

Goodwill. Our goodwill balance, which is related to the airline segment, was $9.8 billion at December 31, 2022.

Identifiable Intangible Assets. Our identifiable intangible assets, which are related to the airline segment, had a net carrying amount of $6.0 billion at December 31, 2022, of which $5.9 billion related to indefinite-lived intangible assets. Indefinite-lived assets are not amortized and consist of routes, slots, the Delta tradename and assets related to alliances and collaborative arrangements. Definite-lived assets consist primarily of marketing and maintenance service agreements.

In the September 2022 quarter, final regulatory approval was granted for our trans-American joint venture agreement with LATAM. This agreement combines our highly complementary route networks between North and South America, with the goal of providing customers with a seamless travel experience and industry-leading connectivity. Approval was granted for a 10-year period with a subsequent reassessment and extension process. This agreement supports our strategic partnership with LATAM and the value of our $1.2 billion alliance-related indefinite-lived intangible asset. We believe the LATAM joint venture agreement will generate growth opportunities, building upon Delta's and LATAM's global footprint.

We have classified our LATAM alliance intangible asset as indefinite-lived as we expect to indefinitely receive the economic benefits from the relationship, similar to other joint venture arrangements between U.S. and foreign carriers that have been cleared by competition authorities in relevant foreign jurisdictions and granted antitrust immunity from the U.S. Department of Transportation ("DOT"). Antitrust immunity grants are generally subject to reporting requirements and periodic reassessment processes administered by the DOT. We have determined that there are currently no material legal, regulatory, contractual, competitive, economic or other factors that limit the useful life of our LATAM alliance-related intangible asset.

In 2022, we performed qualitative assessments of our goodwill and indefinite-lived intangible assets, including applicable factors noted in "Key Assumptions" above, and determined that there was no indication that the assets were impaired. Our qualitative assessments include analyses and weighting of all relevant factors which impact the fair value of our indefinite-lived intangible assets.

For additional information on our goodwill and indefinite-lived intangible assets' significant accounting policies and the related fair values and book values, see Note 5 of the Notes to the Consolidated Financial Statements.

Defined Benefit Pension Plans

We sponsor defined benefit pension plans for eligible employees and retirees. These plans are closed to new entrants and frozen for future benefit accruals. As of December 31, 2022, the unfunded benefit obligation for these plans recorded on our balance sheets was $90 million. We had no minimum funding requirements in 2021 or 2022, and have no such requirements in 2023. However, we voluntarily contributed $1.5 billion to these plans during 2021. The most critical assumptions impacting our defined benefit pension plan obligations, plan assets and net periodic benefit cost are the discount rate, the expected long-term rate of return on plan assets and life expectancy of plan participants.

Weighted Average Discount Rate. We determine our weighted average discount rate on our measurement date primarily by reference to annualized rates earned on high-quality fixed income investments and yield-to-maturity analyses specific to our estimated future benefit payments. We used a weighted average discount rate to value the obligations of 5.62% and 2.97% at December 31, 2022 and 2021, respectively.

Expected Long-Term Rate of Return. Our expected long-term rate of return on plan assets is based primarily on plan-specific investment studies using historical market return and volatility data. Modest excess return expectations versus some public market indices are incorporated into the return projections based on the actively managed structure of the investment programs and their records of achieving such returns historically. We also expect to receive a premium for investing in less liquid private markets. We review our rate of return on plan assets assumptions annually.

The investment strategy for our defined benefit pension plan assets is to earn a long-term return that meets or exceeds our annualized return target while taking an acceptable level of risk and maintaining sufficient liquidity to pay current benefits and other cash obligations of the plan. Based on our funded status as of December 31, 2021, we modified the strategic asset allocation mix in 2022 to reduce the investment risk of the portfolio. Based on the portfolio's risk profile, we lowered the weighted average expected long-term rate of return on our defined benefit pension plan assets for 2022 net periodic benefit cost to 7.00%.

The impact of a 0.50% change in weighted average discount rate and 1.00% change in expected long-term rate of return on assets are shown in the table below:

Benefit plan effects of change in assumptions used

Change in Assumption	Effect on 2023 Pension Benefit Cost	Effect on Accrued Pension Liability at December 31, 2022
0.50% decrease in weighted average discount rate	$ (5) million	$ 743 million
0.50% increase in weighted average discount rate	$ — million	$ (685) million
1.00% decrease in expected long-term rate of return on assets	$ 152 million	$ —
1.00% increase in expected long-term rate of return on assets	$ (152) million	$ —

Life Expectancy. Changes in life expectancy may significantly impact our benefit obligations and future net periodic benefit cost. We use the Society of Actuaries ("SOA") published mortality data and other publicly available information to develop our best estimate of life expectancy. The SOA publishes updated mortality tables for U.S. plans and updated improvement scales. Each year we consider updates by the SOA in setting our mortality assumptions for purposes of measuring pension and other postretirement and postemployment benefit obligations.

Funding. Our funding obligations for qualified defined benefit plans are governed by the Employee Retirement Income Security Act and any applicable legislation. Under the Pension Protection Act of 2006, we elected alternative funding rules so that the unfunded liability for a frozen defined benefit plan may be amortized over a fixed 17-year period and is calculated using an 8.85% discount rate until the 17-year period expires for all frozen defined benefit plans by the end of 2024. Upon expiration, under legislation passed in 2021, any required funding would be amortized over a rolling 15-year period and calculated using a discount rate of no less than 4.75% through 2030.

While this recent legislation makes our funding obligations for these plans more predictable, factors outside our control continue to have an impact on the funding requirements. Estimates of future funding requirements are based on various assumptions and can vary materially from actual funding requirements. Assumptions include, among other things, the actual and projected market performance of assets, statutory requirements and demographic data for participants.

Investments Valued at Net Asset Value ("NAV") Per Share. On an annual basis we assess the potential for adjustments to the fair value of all investments. These investments valued using NAV as a practical expedient are typically valued on a monthly or quarterly basis by third-party administrators, valuation agents or fund managers with an annual audit performed by an independent third-party, but certain of these investments have a lag in the availability of data. We solicit valuation updates from the investment fund managers and use their information and corroborating data from public markets to determine any needed fair value adjustments.

For additional information on our significant accounting policies related to defined benefit pension plans, see Note 9 of the Notes to the Consolidated Financial Statements.

Income Tax Valuation Allowance

We periodically assess whether it is more likely than not that we will generate sufficient taxable income to realize our deferred income tax assets. We establish valuation allowances if it is more likely than not that we will be unable to realize our deferred income tax assets. In making this determination, we consider available positive and negative evidence and make certain assumptions. We consider, among other things, projected future taxable income, scheduled reversals of deferred tax liabilities, the overall business environment, our historical financial results and tax planning strategies. In evaluating the likelihood of utilizing our net deferred income tax assets, the significant factors that we consider include (1) our recent history of significant profitability, (2) growth in the U.S. and global economies, (3) forecast of airline revenue trends, (4) estimate of future fuel prices and (5) future impact of taxable temporary differences.

At December 31, 2022 our net deferred tax asset balance was $301 million, including a $1.2 billion valuation allowance primarily related to certain net realized and unrealized capital losses and certain state net operating losses. Although we have cumulative losses since the onset of the pandemic, we have a history of significant earnings prior to the onset of the COVID-19 pandemic. During 2022, we returned to profitability, as our business continued to recover from the impact of the pandemic. We are expecting to generate sufficient taxable income to utilize our federal net operating loss carryforwards before any expire. However, the generation of future taxable income is dependent on many factors, including those which are out of our control, such as the demand for air travel and overall health of the economy. As such, there are no guarantees that a valuation allowance will not be required against some or all of our deferred tax assets in future periods.

Our federal net operating loss carryforwards generated before 2018 do not begin to expire until 2029. Under current tax law, federal net operating losses generated after 2017 do not expire. Therefore, we have not recorded a valuation allowance on our deferred tax assets other than the certain net realized and unrealized capital losses and certain state net operating losses that have short expiration periods.

For additional information on our significant accounting policies related to income taxes, see Note 11 of the Notes to the Consolidated Financial Statements.

Recent Accounting Standards

Standards Effective in Future Years

Fair Value of Equity Investments. In June 2022, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2022-03, "Fair Value Measurement (Topic 820): Fair Value Measurement of Equity Securities Subject to Contractual Sale Restrictions." Under this standard, a contractual restriction on the sale of an equity security is not considered in measuring the security's fair value. The standard also requires certain disclosures for equity securities that are subject to contractual restrictions. The ASU becomes effective January 1, 2024. Upon adoption, we do not believe it will have a material impact on the valuation of our equity investments; however, we may be required to include additional disclosures to the extent we have material equity investments subject to contractual sale restrictions.

Supplier Finance Program Obligations. In September 2022, the FASB issued ASU No. 2022-04, "Liabilities—Supplier Finance Programs (Subtopic 405-50)." This standard requires disclosure of the key terms of outstanding supplier finance programs and a rollforward of the related obligations. The new standard does not affect the recognition, measurement or financial statement presentation of supplier finance program obligations. The ASU becomes effective January 1, 2023, except for the rollforward requirement, which becomes effective January 1, 2024. Upon adoption, we may be required to include additional disclosures to the extent we have material supplier finance program obligations.

Supplemental Information

We sometimes use information ("non-GAAP financial measures") that is derived from the Consolidated Financial Statements, but that is not presented in accordance with GAAP. Under the U.S. Securities and Exchange Commission rules, non-GAAP financial measures may be considered in addition to results prepared in accordance with GAAP, but should not be considered a substitute for or superior to GAAP results.

Included below are reconciliations of non-GAAP measures used within this Form 10-K to the most directly comparable GAAP financial measures. These reconciliations include certain adjustments to GAAP measures, which are directly related to the impact of COVID-19 and our response. Reconciliations below may not calculate exactly due to rounding. These adjustments are made to provide comparability between the reported periods, if applicable, as indicated below:

- *Restructuring charges.* During 2020, we recorded restructuring charges of $8.2 billion for items such as fleet impairments and voluntary early retirement and separation programs following strategic business decisions in response to the COVID-19 pandemic. In the years ended December 31, 2022 and 2021, we recognized $124 million and $19 million, respectively, of adjustments to certain of those restructuring charges, representing changes in our estimates or the outcome of contract negotiations.

- *Government grant recognition.* We recognized $4.5 billion of the grant proceeds from the payroll support program extensions as a contra-expense during 2021. We recognized the grant proceeds as contra-expense based on the periods that the funds were intended to compensate and fully used all proceeds from the payroll support program extensions during that year.

- *Special profit-sharing payment.* This adjustment is exclusive to 2021. To recognize the extraordinary efforts of our employees through the pandemic, we made a special profit-sharing payment to eligible employees in February 2022, based on the adjusted pre-tax profit earned during the second half of 2021. This adjustment allows investors to better understand and analyze our recurring cost performance and provides a more meaningful comparison of our core operating costs to the airline industry.

We also regularly adjust certain GAAP measures for the following items, if applicable, for the reasons indicated below:

- *MTM adjustments and settlements on hedges.* Mark-to-market (″MTM") adjustments are defined as fair value changes recorded in periods other than the settlement period. Such fair value changes are not necessarily indicative of the actual settlement value of the underlying hedge in the contract settlement period, and therefore we remove this impact to allow investors to better understand and analyze our core performance. Settlements represent cash received or paid on hedge contracts settled during the applicable period.

- *Delta Private Jets adjustment*. Because we combined Delta Private Jets with Wheels Up in January 2020, we have excluded the impact of Delta Private Jets from 2019 results for comparability.

- *Third-party refinery sales.* Refinery sales to third parties, and related expenses, are not related to our airline segment. Excluding these sales therefore provides a more meaningful comparison of our airline operations to the rest of the airline industry.

- *Aircraft fuel and related taxes.* The volatility in fuel prices impacts the comparability of year-over-year financial performance. The adjustment for aircraft fuel and related taxes allows investors to better understand and analyze our non-fuel costs and year-over-year financial performance.

- *Profit sharing.* We adjust for profit sharing because this adjustment allows investors to better understand and analyze our recurring cost performance and provides a more meaningful comparison of our core operating costs to the airline industry.

Operating income, adjusted reconciliation

(in millions)	Year Ended December 31, 2022	2021	2019
Operating income	$ 3,661	$ 1,886	$ 6,618
Adjusted for:			
Restructuring charges	(124)	(19)	—
Government grant recognition	—	(4,512)	—
MTM adjustments and settlements on hedges	29	9	14
Special profit sharing payment	—	108	—
Delta Private Jets adjustment	—	—	3
Operating income/(loss), adjusted	$ 3,566	$ (2,527)	$ 6,636

Operating expense, adjusted reconciliation

(in millions)	Year Ended December 31, 2022	2021	2019
Operating expense	$ 46,921	$ 28,013	$ 40,389
Adjusted for:			
Restructuring charges	124	19	—
Government grant recognition	—	4,512	—
MTM adjustments and settlements on hedges	(29)	(9)	(14)
Special profit sharing payment	—	(108)	—
Third-party refinery sales	(4,977)	(3,229)	(97)
Delta Private Jets adjustment	—	—	(196)
Operating expense, adjusted	$ 42,039	$ 29,197	$ 40,082

Fuel expense, adjusted and Average fuel price per gallon, adjusted reconciliations

(in millions, except per gallon data)	Year Ended December 31, 2022	2021	2019	Average Price Per Gallon, Year Ended December 31, 2022	2021	2019
Total fuel expense	$ 11,482	$ 5,633	$ 8,519	$ 3.36	$ 2.02	$ 2.02
Adjusted for:						
MTM adjustments and settlements on hedges	(29)	(9)	(14)	(0.01)	—	—
Delta Private Jets adjustment	—	—	(28)	—	—	(0.01)
Total fuel expense, adjusted	$ 11,453	$ 5,625	$ 8,477	$ 3.36	$ 2.02	$ 2.01

TRASM, adjusted reconciliation

(in cents)	Year Ended December 31, 2022	2021	2019
TRASM	21.69 ¢	15.37 ¢	17.07 ¢
Adjusted for:			
Third-party refinery sales	(2.13)	(1.66)	(0.04)
Delta Private Jets adjustment	—	—	(0.07)
TRASM, adjusted	19.55 ¢	13.71 ¢	16.97 ¢

CASM-Ex reconciliation

(in cents)	Year Ended December 31, 2022	2021	2019
CASM	20.12 ¢	14.40 ¢	14.67 ¢
Adjusted for:			
Restructuring charges	0.05	0.01	—
Government grant recognition	—	2.32	—
Aircraft fuel and related taxes	(4.92)	(2.90)	(3.10)
Third-party refinery sales	(2.13)	(1.66)	(0.04)
Special profit sharing payment	—	(0.06)	—
Profit sharing	(0.24)	—	(0.60)
Delta Private Jets adjustment	—	—	(0.06)
CASM-Ex	12.87 ¢	12.12 ¢	10.88 ¢

Free Cash Flow

The following table shows a reconciliation of net cash provided by operating activities (a GAAP measure) to free cash flow (a non-GAAP financial measure). We present free cash flow because management believes this metric is helpful to investors to evaluate the company's ability to generate cash that is available for use for debt service or general corporate initiatives. Adjustments include:

- *Net redemptions of short-term investments.* Net redemptions of short-term investments represent the net purchase and sale activity of investments and marketable securities in the period, including gains and losses. We adjust for this activity to provide investors a better understanding of the company's free cash flow generated by our operations.

- *Strategic investments and related.* Cash flows related to our investments in and related transactions with other airlines are included in our GAAP investing activities. We adjust for this activity because it provides a more meaningful comparison to our airline industry peers.

- *Net cash flows related to certain airport construction projects and other.* Cash flows related to certain airport construction projects are included in our GAAP operating activities and capital expenditures. We have adjusted for these items because management believes investors should be informed that a portion of these capital expenditures from airport construction projects are either reimbursed by a third-party or funded with restricted cash specific to these projects.

- *Financed aircraft acquisitions.* This adjustment reflects aircraft deliveries that are leased as capital expenditures. The adjustment is based on their original contractual purchase price or an estimate of the aircraft's fair value and provides a more meaningful view of our investing activities.

Free cash flow reconciliation

(in millions)	Year Ended December 31, 2022
Net cash provided by operating activities	$ 6,363
Net cash used in investing activities	(6,924)
Adjusted for:	
Net redemptions of short-term investments	(100)
Strategic investments and related	701
Net cash flows related to certain airport construction projects and other	409
Financed aircraft acquisitions	(206)
Free cash flow	$ 244

Glossary of Defined Terms

ASM - Available Seat Mile. A measure of capacity. ASMs equal the total number of seats available for transporting passengers during a reporting period multiplied by the total number of miles flown during that period.

CASM - (Total Operating) Cost per Available Seat Mile. The amount of operating cost incurred per ASM during a reporting period. CASM is also referred to as "unit cost."

CASM-Ex - The amount of operating cost incurred per ASM during a reporting period, adjusted for the items shown above in "Supplemental Information."

Free Cash Flow - A measure of net cash from operating and investing activities, adjusted for items shown above in "Supplemental Information." Represents the cash available for use for debt service or general corporate initiatives.

Liquidity - Includes our cash and cash-like assets, including cash equivalents, short-term investments and aggregate principal amount committed and available to be drawn under our revolving credit facilities.

Load Factor - A measure of utilized available seating capacity calculated by dividing RPMs by ASMs for a reporting period.

Passenger Mile Yield or Yield - The amount of passenger revenue earned per RPM during a reporting period.

PRASM - Passenger Revenue per ASM. The amount of passenger revenue earned per ASM during a reporting period. PRASM is also referred to as "passenger unit revenue."

RPM - Revenue Passenger Mile. One revenue-paying passenger transported one mile is one RPM. RPMs equal the number of revenue passengers during a reporting period multiplied by the number of miles flown by those passengers during that period. RPMs are also referred to as "traffic."

TRASM - Total Revenue per ASM. The amount of total revenue earned per ASM during a reporting period.

TRASM, adjusted - The amount of total revenue earned per ASM during a reporting period, adjusted for the item shown above in "Supplemental Information."

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We have market risk exposure related to fuel prices, interest rates and foreign currency exchange rates. Market risk is the potential negative impact of adverse changes in these prices or rates on our Consolidated Financial Statements. In an effort to manage our exposure to these risks, we may enter into derivative contracts and may adjust our derivative portfolio as market conditions change. See Note 3 of the Notes to the Consolidated Financial Statements for further information on our derivative contracts. We expect adjustments to the fair value of financial instruments to result in ongoing volatility in earnings and stockholders' equity.

The following sensitivity analyses do not consider the effects of a change in demand for air travel, the economy as a whole or actions we may take to seek to mitigate our exposure to a particular risk. For these and other reasons, the actual results of changes in these prices or rates may differ materially from the following hypothetical results.

Fuel Price Risk

Changes in fuel prices materially impact our results of operations. A one cent increase in the cost of jet fuel would result in approximately $40 million of additional annual fuel expense based on annual pre-COVID-19 pandemic consumption of approximately four billion gallons of jet fuel. As a result of the reduced capacity from the COVID-19 pandemic, our jet fuel consumption during 2022 of 3.4 billion gallons was lower than our historical and expected future consumption. Our derivative contracts to hedge the financial risk from changing fuel prices are primarily related to Monroe’s inventory.

Interest Rate Risk

Our exposure to market risk from adverse changes in interest rates is primarily associated with our debt and lease obligations. Market risk associated with our fixed-rate debt relates to the potential reduction in fair value from an increase in interest rates. Market risk associated with our variable-rate debt and variable-rate leases relates to the potential negative impact to future earnings from an increase in interest rates.

At December 31, 2022, we had $17.9 billion of fixed-rate debt, $3.6 billion of variable-rate debt and $713 million of variable-rate leases. The rates used in our variable-rate debt are based on LIBOR, or another index rate, which in certain cases is subject to a floor. An increase of 100 basis points in average annual interest rates would have decreased the estimated fair value of our fixed-rate debt by $725 million at December 31, 2022 and would have increased the annual interest expense on our variable-rate debt and variable-rate leases by $43 million.

In March 2021, the administrator of LIBOR announced that the publication of certain LIBOR settings ceased after December 2021 and publication of the remainder of the LIBOR settings will cease after June 2023. At December 31, 2022, we had no exposure to the discontinued LIBOR settings and had approximately $1.4 billion of LIBOR-based debt and finance leases maturing after June 2023, all of which include mechanisms for replacing the applicable reference rate, which we do not expect to be materially different from LIBOR.

Foreign Currency Exchange Risk

We are subject to foreign currency exchange rate risk because we have revenue, expense and equity investments denominated in foreign currencies. To manage exchange rate risk, we execute both our international revenue and expense transactions in the same foreign currency to the extent practicable. From time to time, we may also enter into foreign currency option and forward contracts.

At December 31, 2022 we had no open foreign currency options or forward contracts.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

	Page
Report of Independent Registered Public Accounting Firm (PCAOB ID: 42)	59
Consolidated Balance Sheets - December 31, 2022 and 2021	62
Consolidated Statements of Operations for the years ended December 31, 2022, 2021 and 2020	63
Consolidated Statements of Comprehensive Income/(Loss) for the years ended December 31, 2022, 2021 and 2020	64
Consolidated Statements of Cash Flows for the years ended December 31, 2022, 2021 and 2020	65
Consolidated Statements of Stockholders' Equity for the years ended December 31, 2022, 2021 and 2020	66
Notes to the Consolidated Financial Statements	67
Note 1 - Summary of Significant Accounting Policies	67
Note 2 - Revenue Recognition	71
Note 3 - Fair Value Measurements	75
Note 4 - Investments	76
Note 5 - Goodwill and Intangible Assets	78
Note 6 - Debt	80
Note 7 - Leases	82
Note 8 - Airport Redevelopment	84
Note 9 - Employee Benefit Plans	86
Note 10 - Commitments and Contingencies	91
Note 11 - Income Taxes	94
Note 12 - Equity and Equity Compensation	96
Note 13 - Accumulated Other Comprehensive Loss	98
Note 14 - Segments	99
Note 15 - Government Grants and Restructuring	101
Note 16 - Earnings/(Loss) Per Share	102

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of
Delta Air Lines, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Delta Air Lines, Inc. (the Company) as of December 31, 2022 and 2021, and the related consolidated statements of operations, comprehensive income/(loss), cash flows, and stockholders' equity for each of the three years in the period ended December 31, 2022, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 10, 2023 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company’s financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatements of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that (1) relate to accounts or disclosures that are material to the financial statements and (2) involved especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Employee Benefit Plans - NAV Asset Valuation

Description of the Matter	At December 31, 2022, the fair value of the Company's benefit plan assets measured at fair value on a recurring basis totaled $15.6 billion, of which $12.3 billion do not have a readily determinable fair value and are measured at net asset value per share ("NAV assets") as a practical expedient. Management determines the fair value of NAV assets by applying the methodologies described in Note 9 to the consolidated financial statements. Auditing the Company's NAV assets required significant judgment in estimating the fair value of the NAV assets, primarily resulting from the lag in the availability of data provided by the investment fund managers and the use of corroborating data from public markets to estimate fair value.
How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's accounting for the fair value measurement of its NAV assets, including controls over management's assessment of the significant inputs and estimates affecting the fair value measurement. To test the fair value of plan assets measured at NAV, our audit procedures included, among others, evaluating the valuation methodologies used by the Company and comparing significant inputs and underlying data used in the Company's valuations to information available from third-party sources and market data. Additionally, we performed sensitivity analyses to evaluate the changes to the Company's net periodic benefit that would result from changes in the fair value measurement, and compared the Company's asset performance results to applicable third-party benchmarks and assessed management's historical accuracy of estimating fair value by performing retrospective review procedures comparing the Company's estimates of fair value as of the prior year end to the fair value NAV in the investment's audited financial statements made available during the current year.

Loyalty Program - Mileage Breakage

Description of the Matter	At December 31, 2022 the Company's aggregate current and noncurrent loyalty program deferred revenue balance was $7.9 billion. For the year ended December 31, 2022, the Company recognized $2.9 billion of revenue classified as loyalty travel awards within passenger revenue and $2.6 billion of revenue classified as loyalty program revenue within other revenue in the consolidated statement of operations. As disclosed in Note 2 to the consolidated financial statements, the Company defers revenue for mileage credits earned and recognizes loyalty travel awards in passenger revenue as the miles are redeemed and services are provided. In accounting for its loyalty program deferred revenue, the Company estimates the amount of mileage credits outstanding that are not expected to be redeemed ("mileage breakage"). The Company recognizes mileage breakage proportionally during the period in which the remaining mileage credits are actually redeemed. Under the Company's loyalty program, mileage credits do not expire. Therefore, the Company uses statistical models to estimate mileage breakage based on historical redemption patterns. Auditing the Company's accounting for its loyalty program required significant estimation in determining the mileage breakage estimate for mileage credits. In particular, there is complexity and subjectivity in estimating mileage breakage based on expectations of future redemption patterns due to the absence of historical expirations as the Company's mileage credits do not expire.
How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's accounting for its loyalty program, including controls over management's review of the estimation of the mileage breakage and the completeness and accuracy of the data underlying the mileage breakage estimate. To test the estimate of breakage of mileage credits, our audit procedures included, among others, involving an actuarial specialist to assist in assessing the method used by the Company to develop the mileage breakage estimate and to independently develop a range of mileage breakage estimates and compare to the Company's estimate. Additionally, we tested the completeness and accuracy of the underlying mileage data used in the Company's statistical models.

Realizability of Deferred Tax Assets

Description of the Matter	At December 31, 2022, the Company had gross deferred tax assets of $8.2 billion with a related valuation allowance of $1.2 billion, and gross deferred tax liabilities of $7.9 billion. As discussed in Notes 1 and 11 to the consolidated financial statements, the Company records a valuation allowance based on the assessment of the realizability of the Company's deferred tax assets. Deferred tax assets are reduced by a valuation allowance if, based on the weight of all available evidence, in management's judgment it is more likely than not that some portion, or all, of the deferred tax assets will not be realized. Auditing management's assessment of recoverability of deferred tax assets involved subjective estimation and complex auditor judgment in weighing the positive and negative evidence to determine whether a valuation allowance for deferred tax assets is needed.
How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls that address the risks of material misstatement relating to the realizability of deferred tax assets. This included controls over management's scheduling of the future reversal of existing taxable temporary differences, identification and use of available tax planning strategies and estimates of future taxable income. To test the realizability of the Company's deferred tax assets, our audit procedures included, among others, evaluating the assumptions used to develop the scheduling of the future reversal of existing taxable temporary differences, evaluating tax planning strategies and evaluating the assumptions used to develop projections of future taxable income. We compared the projections of future taxable income with the actual results of prior periods and evaluated management's consideration of current industry and economic trends. We also compared the projections of future taxable income with other forecasted financial information prepared by the Company. In addition, we involved our tax specialists to evaluate the application of tax law in the performance of these procedures.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2006.

Atlanta, Georgia
February 10, 2023

DELTA AIR LINES, INC.
Consolidated Balance Sheets

(in millions, except share data)	December 31, 2022	December 31, 2021
ASSETS		
Current Assets:		
Cash and cash equivalents	$ 3,266	$ 7,933
Short-term investments	3,268	3,386
Accounts receivable, net of an allowance for uncollectible accounts of $23 and $50	3,176	2,404
Fuel, expendable parts and supplies inventories, net of an allowance for obsolescence of $136 and $176	1,424	1,098
Prepaid expenses and other	1,877	1,119
Total current assets	13,011	15,940
Noncurrent Assets:		
Property and equipment, net of accumulated depreciation and amortization of $20,370 and $18,671	33,109	28,749
Operating lease right-of-use assets	7,036	7,237
Goodwill	9,753	9,753
Identifiable intangibles, net of accumulated amortization of $902 and $893	5,992	6,001
Equity investments	2,128	1,712
Deferred income taxes, net	325	1,294
Other noncurrent assets	934	1,773
Total noncurrent assets	59,277	56,519
Total assets	$ 72,288	$ 72,459
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities:		
Current maturities of debt and finance leases	$ 2,359	$ 1,782
Current maturities of operating leases	714	703
Air traffic liability	8,160	6,228
Accounts payable	5,106	4,240
Accrued salaries and related benefits	3,288	2,457
Loyalty program deferred revenue	3,434	2,710
Fuel card obligation	1,100	1,100
Other accrued liabilities	1,779	1,746
Total current liabilities	25,940	20,966
Noncurrent Liabilities:		
Debt and finance leases	20,671	25,138
Noncurrent air traffic liability	100	130
Pension, postretirement and related benefits	3,707	6,035
Loyalty program deferred revenue	4,448	4,849
Noncurrent operating leases	6,866	7,056
Other noncurrent liabilities	3,974	4,398
Total noncurrent liabilities	39,766	47,606
Commitments and Contingencies		
Stockholders' Equity:		
Common stock at $0.0001 par value; 1,500,000,000 shares authorized, 651,800,786 and 649,720,387 shares issued	—	—
Additional paid-in capital	11,526	11,447
Retained earnings/(accumulated deficit)	1,170	(148)
Accumulated other comprehensive loss	(5,801)	(7,130)
Treasury stock, at cost, 10,535,033 and 9,752,872	(313)	(282)
Total stockholders' equity	6,582	3,887
Total liabilities and stockholders' equity	$ 72,288	$ 72,459

The accompanying notes are an integral part of these Consolidated Financial Statements.

DELTA AIR LINES, INC.
Consolidated Statements of Operations

(in millions, except per share data)	Year Ended December 31, 2022	2021	2020
Operating Revenue:			
Passenger	$ 40,218	$ 22,519	$ 12,883
Cargo	1,050	1,032	608
Other	9,314	6,348	3,604
Total operating revenue	50,582	29,899	17,095
Operating Expense:			
Salaries and related costs	11,902	9,728	9,001
Aircraft fuel and related taxes	11,482	5,633	3,176
Ancillary businesses and refinery	5,756	3,957	1,785
Contracted services	3,345	2,420	1,953
Landing fees and other rents	2,181	2,019	1,833
Depreciation and amortization	2,107	1,998	2,312
Regional carrier expense	2,051	1,736	1,584
Aircraft maintenance materials and outside repairs	1,982	1,401	822
Passenger commissions and other selling expenses	1,891	953	643
Passenger service	1,453	756	551
Profit sharing	563	108	—
Aircraft rent	508	430	399
Restructuring charges	(124)	(19)	8,219
Government grant recognition	—	(4,512)	(3,946)
Other	1,824	1,405	1,232
Total operating expense	46,921	28,013	29,564
Operating Income/(Loss)	3,661	1,886	(12,469)
Non-Operating Expense:			
Interest expense, net	(1,029)	(1,279)	(929)
Impairments and equity method results	(20)	(337)	(2,432)
Gain/(loss) on investments, net	(783)	56	(105)
Loss on extinguishment of debt	(100)	(319)	(8)
Pension and related benefit	292	451	219
Miscellaneous, net	(107)	(60)	137
Total non-operating expense, net	(1,747)	(1,488)	(3,118)
Income/(Loss) Before Income Taxes	1,914	398	(15,587)
Income Tax (Provision)/Benefit	(596)	(118)	3,202
Net Income/(Loss)	$ 1,318	$ 280	$ (12,385)
Basic Earnings/(Loss) Per Share	$ 2.07	$ 0.44	$ (19.49)
Diluted Earnings/(Loss) Per Share	$ 2.06	$ 0.44	$ (19.49)
Cash Dividends Declared Per Share	$ —	$ —	$ 0.40

The accompanying notes are an integral part of these Consolidated Financial Statements.

DELTA AIR LINES, INC.
Consolidated Statements of Comprehensive Income/(Loss)

(in millions)	Year Ended December 31, 2022	2021	2020
Net Income/(Loss)	$ 1,318	$ 280	$ (12,385)
Other comprehensive income/(loss):			
Net change in pension and other benefits	1,329	1,908	(983)
Net change in other	—	—	(66)
Total Other Comprehensive Income/(Loss)	1,329	1,908	(1,049)
Comprehensive Income/(Loss)	$ 2,647	$ 2,188	$ (13,434)

The accompanying notes are an integral part of these Consolidated Financial Statements.

DELTA AIR LINES, INC.
Consolidated Statements of Cash Flows

(in millions)	Year Ended December 31, 2022	2021	2020
Cash Flows From Operating Activities:			
Net income/(loss)	$ 1,318	$ 280	$ (12,385)
Adjustments to reconcile net income to net cash provided by operating activities:			
Restructuring charges	(46)	5	4,111
Depreciation and amortization	2,107	1,998	2,312
Deferred income taxes	591	115	(3,110)
(Gain)/loss on fair value investments	874	(38)	88
Pension, postretirement and postemployment payments (greater)/less than expense	(453)	(2,038)	898
Impairments and equity method results	20	337	2,432
Changes in certain assets and liabilities:			
Receivables	(728)	(981)	1,168
Fuel inventory	(158)	(318)	354
Prepaids and other current assets	(867)	(58)	—
Air traffic liability	1,902	1,814	(572)
Loyalty program deferred revenue	324	376	455
Profit sharing	455	108	(1,650)
Other payables, deferred revenue and accrued liabilities	1,226	1,986	240
Noncurrent liabilities	(348)	(399)	1,185
Other, net	146	77	681
Net cash provided by/(used in) operating activities	6,363	3,264	(3,793)
Cash Flows From Investing Activities:			
Property and equipment additions:			
Flight equipment, including advance payments	(4,495)	(1,596)	(896)
Ground property and equipment, including technology	(1,871)	(1,651)	(1,003)
Proceeds from sale-leaseback transactions	—	—	465
Purchase of equity investments	(870)	—	(2,099)
Purchase of short-term investments	(2,704)	(12,655)	(13,400)
Redemption of short-term investments	2,804	15,036	7,608
Other, net	212	(32)	87
Net cash used in investing activities	(6,924)	(898)	(9,238)
Cash Flows From Financing Activities:			
Proceeds from short-term obligations	—	—	3,261
Proceeds from long-term obligations	—	1,902	22,790
Proceeds from sale-leaseback transactions	—	—	2,306
Payments on debt and finance lease obligations	(4,475)	(5,834)	(8,559)
Repurchase of common stock	—	—	(344)
Cash dividends	—	—	(260)
Fuel card obligation	—	—	364
Other, net	(60)	80	(202)
Net cash (used in)/provided by financing activities	(4,535)	(3,852)	19,356
Net (Decrease)/Increase in Cash, Cash Equivalents and Restricted Cash	(5,096)	(1,486)	6,325
Cash, cash equivalents and restricted cash at beginning of period	8,569	10,055	3,730
Cash, cash equivalents and restricted cash at end of period	$ 3,473	$ 8,569	$ 10,055
Supplemental Disclosure of Cash Paid for Interest	$ 1,261	$ 1,524	$ 761
Non-Cash Transactions:			
Right-of-use assets acquired under operating leases	$ 531	$ 2,113	$ 1,077
Flight and ground equipment acquired under finance leases	91	1,049	381
Equity investments and other financings	330	—	280
Operating leases converted to finance leases	342	42	—

The accompanying notes are an integral part of these Consolidated Financial Statements.

DELTA AIR LINES, INC.
Consolidated Statements of Stockholders' Equity

(in millions, except per share data)	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Retained Earnings / (Accumulated Deficit)	Accumulated Other Comprehensive Loss	Treasury Stock Shares	Treasury Stock Amount	Total
Balance at January 1, 2020	652	$ —	$ 11,129	$ 12,454	$ (7,989)	9	$ (236)	$15,358
Net loss	—	—	—	(12,385)	—	—	—	(12,385)
Dividends declared	—	—	—	(257)	—	—	—	(257)
Other comprehensive loss	—	—	—	—	(1,049)	—	—	(1,049)
Common stock issued for employee equity awards and other[(1)]	1	—	120	—	—	—	(23)	97
Stock purchased and retired	(6)	—	(104)	(240)	—	—	—	(344)
Government grant warrant issuance	—	—	114	—	—	—	—	114
Balance at December 31, 2020	647	—	11,259	(428)	(9,038)	9	(259)	1,534
Net income	—	—	—	280	—	—	—	280
Other comprehensive income	—	—	—	—	1,908	—	—	1,908
Common stock issued for employee equity awards[(1)]	3	—	102	—	—	1	(23)	79
Government grant warrant issuance	—	—	86	—	—	—	—	86
Balance at December 31, 2021	650	—	11,447	(148)	(7,130)	10	(282)	3,887
Net income	—	—	—	1,318	—	—	—	1,318
Other comprehensive income	—	—	—	—	1,329	—	—	1,329
Common stock issued for employee equity awards[(1)]	2	—	79	—	—	1	(31)	48
Balance at December 31, 2022	652	$ —	$ 11,526	$ 1,170	$ (5,801)	11	$ (313)	$ 6,582

(1) Treasury shares were withheld for payment of taxes, at a weighted average price per share of $40.52, $38.87 and $52.17 in 2022, 2021 and 2020, respectively.

The accompanying notes are an integral part of these Consolidated Financial Statements.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation

Delta Air Lines, Inc., a Delaware corporation, provides scheduled air transportation for passengers and cargo throughout the United States ("U.S.") and around the world. Our Consolidated Financial Statements include the accounts of Delta Air Lines, Inc. and our consolidated subsidiaries and have been prepared in accordance with generally accepted accounting principles in the U.S. ("GAAP"). We are the primary beneficiary of, and have a controlling financial interest in, certain immaterial entities in which we have voting rights of 50% or less, which we consolidate in our financial results.

We have marketing alliances with other airlines to enhance our access to domestic and international markets. These arrangements may include codesharing, reciprocal loyalty program benefits, shared or reciprocal access to passenger lounges, joint promotions, common use of airport gates and ticket counters, ticket office co-location and other marketing agreements. We have received antitrust immunity for certain marketing arrangements, which enables us to offer a more integrated route network and develop common sales, marketing and discount programs for customers. Some of our marketing arrangements provide for the sharing of revenues and expenses. Revenues and expenses associated with collaborative arrangements are presented on a gross basis in the applicable line items on our Consolidated Statements of Operations ("income statement").

We have reclassified certain prior period amounts to conform to the current period presentation. Unless otherwise noted, all amounts disclosed are stated before consideration of income taxes.

Use of Estimates

We are required to make estimates and assumptions when preparing our Consolidated Financial Statements in accordance with GAAP. These estimates and assumptions affect the amounts reported in our Consolidated Financial Statements and the accompanying notes. Actual results could differ materially from those estimates.

Recent Accounting Standards

Standards Effective in Future Years

Fair Value of Equity Investments. In June 2022, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2022-03, "Fair Value Measurement (Topic 820): Fair Value Measurement of Equity Securities Subject to Contractual Sale Restrictions." Under this standard, a contractual restriction on the sale of an equity security is not considered in measuring the security's fair value. The standard also requires certain disclosures for equity securities that are subject to contractual restrictions. The ASU becomes effective January 1, 2024. Upon adoption, we do not believe it will have a material impact on the valuation of our equity investments; however, we may be required to include additional disclosures to the extent we have material equity investments subject to contractual sale restrictions.

Supplier Finance Program Obligations. In September 2022, the FASB issued ASU No. 2022-04, "Liabilities—Supplier Finance Programs (Subtopic 405-50)." This standard requires disclosure of the key terms of outstanding supplier finance programs and a rollforward of the related obligations. The new standard does not affect the recognition, measurement or financial statement presentation of supplier finance program obligations. The ASU becomes effective January 1, 2023, except for the rollforward requirement, which becomes effective January 1, 2024. Upon adoption, we may be required to include additional disclosures to the extent we have material supplier finance program obligations.

Significant Accounting Policies

Our significant accounting policies are disclosed below or included within the topic-specific notes included herein.

Cash and Cash Equivalents and Short-Term Investments

Short-term, highly liquid investments with maturities of three months or less when purchased are classified as cash and cash equivalents. Investments with maturities of greater than three months, but not in excess of one year, when purchased are classified as short-term investments and are stated at fair value. Investments with maturities beyond one year when purchased may be classified as short-term investments if they are expected to be available to support our short-term liquidity needs. Our short-term investments in debt securities purchased prior to October 1, 2022 are classified as fair value investments under the fair value option and unrealized gains and losses are recorded in non-operating expense. As we return to our pre-pandemic investment strategy for these assets, our short-term investments in debt securities purchased after October 1, 2022 are classified as available-for-sale investments and are stated at fair value with unrealized gains and losses recorded in accumulated other comprehensive income/(loss) ("AOCI"). Realized gains and losses on these investments are recorded in non-operating expense.

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the Consolidated Balance Sheets ("balance sheets") that sum to the total of the same such amounts shown within the Consolidated Statements of Cash Flows ("cash flows statement").

Reconciliation of cash, cash equivalents and restricted cash

	December 31,		
(in millions)	**2022**	**2021**	**2020**
Current assets:			
Cash and cash equivalents	$ 3,266	$ 7,933	$ 8,307
Restricted cash included in prepaid expenses and other	138	163	192
Noncurrent assets:			
Restricted cash included in other noncurrent assets	69	473	1,556
Total cash, cash equivalents and restricted cash	$ 3,473	$ 8,569	$ 10,055

Inventories

Fuel. As part of our strategy to mitigate the cost of the refining margin reflected in the price of jet fuel, our wholly owned subsidiary, Monroe Energy, LLC ("Monroe"), operates the Trainer oil refinery. Refined products (finished goods) and feedstock and blendstock inventories (work-in-process) are both carried at the lower of cost and net realizable value. We use jet fuel in our airline operations that is produced by the refinery and procured through the exchange with third parties of gasoline, diesel and other refined products ("non-jet fuel products") the refinery produces. Cost is determined using the first-in, first-out method. Costs include the raw material consumed plus direct manufacturing costs (such as labor, utilities and supplies) as incurred and an applicable portion of manufacturing overhead.

We expense the cost of carbon offsets upon retirement within aircraft fuel and related taxes on our income statement as these costs are related to our carbon emissions generated by our airline segment. The purchase of carbon offsets is included in operating activities on our cash flows statement. During 2022, we purchased and retired $116 million of carbon offsets which relate to a portion of our airline segment's 2021 and March 2022 quarter carbon emissions. During 2021, we purchased and retired $95 million of carbon offsets, which related to a portion of our airline segment's 2020 and 2021 carbon emissions.

Expendables Parts and Supplies. Inventories of expendable parts related to flight equipment, which cannot be economically repaired, reconditioned or reused after removal from the aircraft, are carried at moving average cost and charged to aircraft maintenance materials and outside repairs as consumed. An allowance for obsolescence is provided over the remaining useful life of the related fleet. We also provide allowances for parts identified as excess or obsolete to reduce the carrying costs to the lower of cost or net realizable value. These parts are estimated to have residual value of 5% of the original cost.

Accounting for Refinery Related Buy/Sell Agreements

To the extent that we receive jet fuel for non-jet fuel products exchanged under buy/sell agreements, we account for these transactions as nonmonetary exchanges. We have recorded these nonmonetary exchanges at the carrying amount of the non-jet fuel products transferred within aircraft fuel and related taxes on the income statement.

Derivatives

Changes in fuel prices, interest rates and foreign currency exchange rates impact our results of operations. In an effort to manage our exposure to these risks, we may enter into derivative contracts and adjust our derivative portfolio as market conditions change. Our derivative contracts are recognized at fair value on our balance sheets and had net balances of $47 million and $17 million at December 31, 2022 and 2021, respectively.

Long-Lived Assets

Our long-lived lived assets, including flight equipment, which consists of aircraft and associated engines and parts, operating lease right-of-use ("ROU") assets and other long-lived assets, are recorded in property and equipment, net and operating lease right-of-use assets on our balance sheets. See Note 7, "Leases," for further information regarding our leases. The following table summarizes our property and equipment:

Property and equipment by classification

		December 31,	
(in millions, except for estimated useful life)	**Estimated Useful Life**	**2022**	**2021**
Flight equipment	25-34 years	$ 38,091	$ 33,368
Ground property and equipment	3-40 years	8,996	7,758
Information technology-related assets	3-15 years	3,375	3,389
Flight and ground equipment under finance leases	Shorter of lease term or estimated useful life	1,950	2,052
Advance payments for equipment		1,067	853
Less: accumulated depreciation and amortization[(1)]		(20,370)	(18,671)
Total property and equipment, net		$ 33,109	$ 28,749

(1) Includes accumulated amortization for flight and ground equipment under finance leases in the amount of $463 million and $456 million at December 31, 2022 and 2021, respectively.

We record property and equipment at cost and depreciate or amortize these assets on a straight-line basis to their estimated residual values over their estimated useful lives. The estimated useful life for leasehold improvements is the shorter of lease term or estimated useful life. Depreciation and amortization expense related to our property and equipment was $2.1 billion, $2.0 billion and $2.3 billion for the years ended December 31, 2022, 2021 and 2020, respectively. Residual values for owned aircraft, engines, spare parts and simulators are generally 5% to 10% of cost.

We capitalize certain internal and external costs incurred to develop and implement software and amortize those costs over an estimated useful life of three to fifteen years. Included in the depreciation and amortization expense discussed above, we recorded $307 million, $301 million and $304 million for amortization of capitalized software for the years ended December 31, 2022, 2021 and 2020, respectively. The net book value of these assets, which are included in information technology-related assets above, totaled $891 million and $876 million at December 31, 2022 and 2021, respectively.

Our tangible assets consist primarily of flight equipment, which is mobile across geographic markets. Accordingly, assets are not allocated to specific geographic regions.

We review flight equipment, ROU assets and other long-lived assets used in operations for impairment losses when events and circumstances indicate the assets may be impaired. Factors which could be indicators of impairment include, but are not limited to (1) a decision to permanently remove flight equipment or other long-lived assets from operations, (2) significant changes in the estimated useful life, (3) significant changes in projected cash flows, (4) permanent and significant declines in fleet fair values and (5) changes to the regulatory environment. For long-lived assets held for sale, we discontinue depreciation and record impairment losses when the carrying amount of these assets is greater than the fair value less the cost to sell.

To determine whether impairments exist for aircraft used in operations, we group assets at the fleet type level or at the contract level for aircraft operated by third-party regional carriers (i.e., the lowest level for which there are identifiable cash flows) and then estimate future cash flows based on projections of capacity, passenger mile yield, fuel and labor costs and other relevant factors. If an asset group is impaired, the impairment loss recognized is the amount by which the asset group's carrying amount exceeds its estimated fair value. We estimate aircraft fair values using published sources, appraisals and bids received from third parties, as available. Due to the impacts of the COVID-19 pandemic, during 2020 we removed a significant portion of our mainline and regional aircraft from active service and evaluated our fleet for impairment, determining that only certain fleet types were impaired, as the future cash flows from the operation of these fleet types through the respective retirement dates were lower than the carrying value.

Due to the recovery in demand that we experienced throughout 2021 and 2022, we decided not to retire any additional aircraft and returned to service a majority of the aircraft that were temporarily parked in 2020. We recorded no further impairments during 2021 or 2022. See Note 15, "Government Grants and Restructuring," for additional details regarding these impairments and related charges.

Income Taxes

We account for deferred income taxes under the liability method. We recognize deferred tax assets and liabilities based on the tax effects of temporary differences between the financial statement and tax basis of assets and liabilities, as measured by current enacted tax rates. Deferred tax assets and liabilities are net by jurisdiction and are recorded as noncurrent on the balance sheet.

We have elected to recognize earnings of foreign affiliates that are determined to be global intangible low tax income in the period it arises and do not recognize deferred taxes for basis differences that may reverse in future years.

A valuation allowance is recorded to reduce deferred tax assets when necessary. We periodically assess whether it is more likely than not that we will generate sufficient taxable income to realize our deferred income tax assets. We establish valuation allowances if it is more likely than not that we will be unable to realize our deferred income tax assets. In making this determination, we consider available positive and negative evidence and make certain assumptions. We consider, among other things, projected future taxable income, scheduled reversals of deferred tax liabilities, the overall business environment, our historical financial results and tax planning strategies. See Note 11, "Income Taxes," for further information on our deferred income taxes.

Fuel Card Obligation

We have a purchasing card with American Express for the purpose of buying jet fuel and crude oil. The card carried a maximum credit limit of $1.1 billion as of December 31, 2022 and must be paid monthly. At both December 31, 2022 and 2021, we had $1.1 billion outstanding on this purchasing card and the activity was classified as a financing activity in our cash flows statement.

Retirement of Repurchased Shares

We immediately retire shares repurchased pursuant to any share repurchase program. We allocate the share purchase price in excess of par value between additional paid-in capital and retained earnings.

Manufacturers' Credits

We periodically receive credits in connection with the acquisition of aircraft and engines. These credits are deferred until the aircraft and engines are delivered, and then applied as a reduction to the cost of the related equipment.

Maintenance Costs

We record maintenance costs related to our mainline and regional fleets in aircraft maintenance materials and outside repairs and regional carrier expense, respectively. Maintenance costs are expensed as incurred, except for costs incurred under power-by-the-hour contracts, which are expensed based on actual hours flown. Power-by-the-hour contracts transfer certain risk to third-party service providers and fix the amount we pay per flight hour or per flight cycle to the service provider in exchange for maintenance and repairs under a predefined maintenance program. Modifications that enhance the operating performance or extend the useful lives of airframes or engines are capitalized and amortized over the remaining estimated useful life of the asset or the remaining lease term, whichever is shorter.

Advertising Costs

We expense advertising costs in passenger commissions and other selling expenses in the year the advertising first takes place. Advertising expense was $302 million, $198 million and $119 million for the years ended December 31, 2022, 2021 and 2020, respectively.

Commissions and Merchant Fees

Passenger sales commissions and merchant fees are recognized in passenger commissions and other selling expenses when the related revenue is recognized.

NOTE 2. REVENUE RECOGNITION

Passenger Revenue

Passenger revenue is composed of passenger ticket sales, loyalty travel awards and travel-related services performed in conjunction with a passenger's flight.

Passenger revenue by category

	Year Ended December 31,		
(in millions)	**2022**	**2021**	**2020**
Ticket	$ 35,626	$ 19,339	$ 10,970
Loyalty travel awards	2,898	1,786	935
Travel-related services	1,694	1,394	978
Total passenger revenue	$ 40,218	$ 22,519	$ 12,883

Ticket

Passenger Tickets. We defer sales of passenger tickets to be flown by us or that we sell on behalf of other airlines in our air traffic liability. Passenger revenue is recognized when we provide transportation or when the ticket expires unused ("ticket breakage"). For tickets that we sell on behalf of other airlines, we reduce the air traffic liability when consideration is remitted to those airlines. The air traffic liability primarily includes sales of passenger tickets with scheduled departure dates in the future and credits which can be applied as payment toward the cost of a ticket ("travel credits"). Travel credits are typically issued as a result of ticket cancellations prior to their expiration dates. We periodically evaluate the estimated air traffic liability and may record adjustments in our income statement. These adjustments relate primarily to ticket breakage, refunds, exchanges, transactions with other airlines and other items for which final settlement occurs in periods subsequent to the sale of the related tickets at amounts other than the original sales price.

We recognized approximately $4.2 billion, $2.2 billion and $3.1 billion in passenger revenue during the years ended December 31, 2022, 2021 and 2020, respectively, that had been recorded in our air traffic liability balance at the beginning of those periods.

The air traffic liability typically increases during the winter and spring months as advanced ticket sales grow prior to the summer peak travel season and decreases during the summer and fall months. Beginning with the COVID-19 pandemic in the March 2020 quarter through 2021, reduced demand for air travel resulted in a lower level of advance bookings and the associated cash received than we had historically experienced, which had been impacting the typical seasonal trend of air traffic liability. However, demand improved during 2022 as consumers regained confidence to travel and increased ticket purchases for travel further in advance.

Ticket Breakage. We estimate the value of ticket breakage and recognize revenue at the scheduled flight date. Our ticket breakage estimates are primarily based on historical experience, ticket contract terms and customers' travel behavior. Given the impact of the COVID-19 pandemic on customer behavior and changes made in ticket validity terms, as well as the elimination of change fees for most tickets as discussed below, our estimates of revenue that will be recognized from the air traffic liability for unused tickets may vary in future periods.

Extension to Ticket Validity. In order to provide our customers more flexibility and time to plan their travel, travel credit holders as of January 2022 and customers who purchased a ticket in 2022 are able to rebook their ticket through December 31, 2023 for travel throughout 2024.

Regional Carriers. Our regional carriers include both third-party regional carriers with which we have contract carrier agreements ("contract carriers") and Endeavor Air, Inc., our wholly owned subsidiary. Our contract carrier agreements are primarily structured as capacity purchase agreements where we purchase all or a portion of the contract carrier's capacity and are responsible for selling the seat inventory we purchase. We record revenue related to our capacity purchase agreements in passenger revenue and the related expenses in regional carrier expense.

Loyalty Travel Awards

Loyalty travel awards revenue is related to the redemption of miles for travel. We recognize loyalty travel awards revenue in passenger revenue as miles are redeemed and transportation is provided. See below for discussion of our loyalty program accounting policies.

Travel-Related Services

Travel-related services are primarily composed of services performed in conjunction with a passenger’s flight, including baggage fees, on-board sales and administrative fees. We recognize revenue for these services when the related transportation service is provided.

Delta has eliminated change fees for tickets originating in the United States, Canada, Europe and Africa (excluding Basic Economy tickets). A change fee waiver continues to apply for travel originating in Asia and the Pacific. Starting in 2022, Basic Economy tickets may be cancelled for a charge to receive a partial ticket credit.

Loyalty Program

Our SkyMiles loyalty program generates customer loyalty by rewarding customers with incentives to travel on Delta. This program allows customers to earn mileage credits ("miles") by flying on Delta, Delta Connection carriers and other airlines that participate in the loyalty program. When traveling, customers earn miles primarily based on the passenger's loyalty program status, fare class and ticket price. Customers can also earn miles through participating companies such as credit card companies, hotels, car rental agencies and ridesharing companies. Miles are redeemable by customers in future periods for air travel on Delta and other participating airlines, access to our Sky Club and other program awards. To facilitate transactions with participating companies, we sell miles to non-airline businesses, customers and other airlines.

The loyalty program includes two types of transactions that are considered revenue arrangements with multiple performance obligations (1) passenger ticket sales earning miles and (2) sale of miles to participating companies.

Passenger Ticket Sales Earning Miles. Passenger ticket sales earning miles provide customers with (1) miles earned and (2) air transportation, which are each considered performance obligations. We value each performance obligation on a standalone basis. To value the miles earned, we consider the quantitative value a passenger receives by redeeming miles for a ticket rather than paying cash, which is referred to as equivalent ticket value ("ETV"). Our estimate of ETV is adjusted for miles that are not likely to be redeemed ("mileage breakage"). We use statistical models to estimate mileage breakage based on historical redemption patterns. A change in assumptions regarding the redemption activity for miles or the estimated fair value of miles expected to be redeemed could have a material impact on our revenue in the year in which the change occurs and in future years. We recognize mileage breakage proportionally during the period in which the remaining miles are actually redeemed.

We defer revenue for the miles when earned and recognize loyalty travel awards in passenger revenue as the miles are redeemed and transportation is provided. We record the air transportation portion of the passenger ticket sales in air traffic liability and recognize passenger revenue when we provide transportation or if the ticket goes unused.

Sale of Miles to Participating Companies. Customers earn miles based on their spending with participating companies such as credit card companies, hotels, car rental agencies and ridesharing companies with which we have marketing agreements to sell miles. Our contracts to sell miles under these marketing agreements have multiple performance obligations. Payments are typically due to us monthly based on the volume of miles sold during the period, and the initial terms of our marketing contracts are from three to eleven years. During the years ended December 31, 2022, 2021 and 2020, total cash sales from marketing agreements related to our loyalty program were $5.7 billion, $4.1 billion and $2.9 billion, respectively, which are allocated to travel and other performance obligations, as discussed below.

Our most significant contract to sell miles relates to our co-brand credit card relationship with American Express. Our agreements with American Express provide for joint marketing, grant certain benefits to Delta-American Express co-branded credit card holders ("cardholders") and American Express Membership Rewards program participants, and allow American Express to market its services or products using our customer database. Cardholders earn miles for making purchases using co-branded cards, and certain cardholders may also check their first bag for free, are granted discounted access to Delta Sky Club lounges and receive priority boarding and other benefits while traveling on Delta. Additionally, participants in the American Express Membership Rewards program may exchange their points for miles under the loyalty program. We sell miles at agreed-upon rates to American Express which are then provided to their customers under the co-brand credit card program and the Membership Rewards program.

We account for marketing agreements, including those with American Express, by allocating the consideration to the individual products and services delivered. We allocate the value based on the relative selling prices of those products and services, which generally consist of award travel, priority boarding, baggage fee waivers, lounge access and the use of our brand. We determine our best estimate of the selling prices by using a discounted cash flow analysis using multiple inputs and assumptions, including (1) the expected number of miles awarded and number of miles redeemed, (2) ETV for the award travel obligation adjusted for mileage breakage, (3) published rates on our website for baggage fees, discounted access to Delta Sky Club lounges and other benefits while traveling on Delta, (4) brand value (using estimated royalties generated from the use of our brand) and (5) volume discounts provided to certain partners.

We defer the amount allocated to award travel as part of loyalty program deferred revenue and recognize loyalty travel awards in passenger revenue as the miles are redeemed and transportation is provided. Revenue allocated to services performed in conjunction with a passenger's flight, such as baggage fee waivers, is recognized as travel-related services in passenger revenue when the related service is performed. Revenue allocated to access Delta Sky Club lounges is recognized as miscellaneous in other revenue as access is provided. Revenue allocated to the remaining performance obligations, primarily brand value, is recorded as loyalty program in other revenue as miles are delivered.

Current Activity of the Loyalty Program. Miles are combined in one homogeneous pool and are not separately identifiable. Therefore, the revenue is comprised of miles that were part of the loyalty program deferred revenue balance at the beginning of the period as well as miles that were issued during the period.

The table below presents the activity of the current and noncurrent loyalty program deferred revenue, and includes miles earned through travel and miles sold to participating companies, which are primarily through marketing agreements.

Loyalty program activity

(in millions)	2022	2021	2020
Balance at January 1	$ 7,559	$ 7,182	$ 6,728
Miles earned	3,419	2,238	1,437
Travel miles redeemed	(2,898)	(1,786)	(935)
Non-travel miles redeemed	(198)	(75)	(48)
Balance at December 31	$ 7,882	$ 7,559	$ 7,182

The timing of mile redemptions can vary widely; however, the majority of new miles have historically been redeemed within two years of being earned. The loyalty program deferred revenue classified as a current liability represents our estimate of revenue expected to be recognized in the next twelve months based on projected redemptions, while the balance classified as a noncurrent liability represents our estimate of revenue expected to be recognized beyond twelve months.

Cargo Revenue

Cargo revenue is recognized when we provide the transportation.

Other Revenue

(in millions)	Year Ended December 31, 2022	2021	2020
Refinery	$ 4,977	$ 3,229	$ 1,150
Loyalty program	2,597	1,770	1,458
Ancillary businesses	846	793	648
Miscellaneous	894	556	348
Total other revenue	$ 9,314	$ 6,348	$ 3,604

Refinery. This represents refinery sales to third parties. See Note 14, "Segments," for more information on revenue recognition within our refinery segment.

Loyalty Program. This relates to brand usage by third parties and other performance obligations embedded in miles sold, including redemption of miles for non-travel awards. These revenues are included within the total cash sales from marketing agreements, discussed above.

Ancillary Businesses. This includes aircraft maintenance services we provide to third parties and our vacation wholesale operations.

Miscellaneous. This is primarily composed of lounge access, including access provided to certain American Express cardholders, and codeshare revenues.

Revenue by Geographic Region

Operating revenue for the airline segment is recognized in a specific geographic region based on the origin, flight path and destination of each flight segment. A significant portion of the refinery segment's revenues typically consists of fuel sales to support the airline, which is eliminated in the Consolidated Financial Statements. The remaining operating revenue for the refinery segment is included in the domestic region. Our passenger and operating revenue by geographic region is summarized in the following table:

Revenue by geographic region

(in millions)	Passenger Revenue Year Ended December 31, 2022	2021	2020	Operating Revenue Year Ended December 31, 2022	2021	2020
Domestic	$ 30,197	$ 18,468	$ 10,041	$ 38,478	$ 24,320	$ 13,339
Atlantic	6,093	1,777	1,171	7,429	2,537	1,649
Latin America	2,889	1,873	1,113	3,334	2,284	1,321
Pacific	1,039	401	558	1,341	758	786
Total	$ 40,218	$ 22,519	$ 12,883	$ 50,582	$ 29,899	$ 17,095

Accounts Receivable

Accounts receivable primarily consist of amounts due from credit card companies from the sale of passenger tickets, ancillary businesses, refinery sales and other companies for the purchase of miles under the loyalty program. We provide an allowance for uncollectible accounts using an expected credit loss model which represents our estimate of expected credit losses over the lifetime of the asset. In 2020, due to the COVID-19 pandemic, we recorded reserves on certain receivables, which are discussed further in Note 15, "Government Grants and Restructuring".

Passenger Taxes and Fees

We are required to charge certain taxes and fees on our passenger tickets, including U.S. federal transportation taxes, federal security charges, airport passenger facility charges and foreign arrival and departure taxes. These taxes and fees are assessments on the customer for which we act as a collection agent. Because we are not entitled to retain these taxes and fees, we do not include such amounts in passenger revenue. We record a liability when the amounts are collected and reduce the liability when payments are made to the applicable government agency or operating carrier (i.e., for codeshare-related fees).

NOTE 3. FAIR VALUE MEASUREMENTS

Fair value is defined as an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. Fair value is a market-based measurement that is determined based on assumptions that market participants would use in pricing an asset or liability. Each fair value measurement is classified into one of the following levels based on the information used in the valuation:

- *Level 1*. Observable inputs such as quoted prices in active markets.
- *Level 2*. Inputs, other than quoted prices in active markets, that are observable either directly or indirectly.
- *Level 3*. Unobservable inputs in which there is little or no market data, which require the reporting entity to develop its own assumptions.

Assets and liabilities measured at fair value are based on the valuation techniques identified in the tables below. The valuation techniques are as follows:

(a) *Market Approach*. Prices and other relevant information generated by observable transactions involving identical or comparable assets or liabilities.

(b) *Income Approach.* Techniques to convert future amounts to a single present value amount based on market expectations (including present value techniques and option-pricing models).

Assets (Liabilities) Measured at Fair Value on a Recurring Basis [1]

(in millions)	December 31, 2022 Total	Level 1	Level 2	Level 3	Valuation Technique
Cash equivalents	$ 2,021	$ 2,021	$ —	$ —	(a)
Restricted cash equivalents	206	206	—	—	(a)
Short-term investments					
U.S. Government securities	1,587	122	1,465	—	(a)
Corporate obligations	1,614	—	1,614	—	(a)
Other fixed income securities	67	—	67	—	(a)
Long-term investments	1,450	1,305	38	107	(a)(b)
Hedge derivatives, net					
Fuel hedge contracts	(47)	—	(47)	—	(a)(b)

(in millions)	December 31, 2021 Total	Level 1	Level 2	Level 3	Valuation Technique
Cash equivalents	$ 5,450	$ 5,450	$ —	$ —	(a)
Restricted cash equivalents	635	635	—	—	(a)
Short-term investments					
U.S. Government securities	3,386	1,376	2,010	—	(a)
Long-term investments	1,459	1,326	36	97	(a)(b)
Hedge derivatives, net					
Fuel hedge contracts	(18)	—	(18)	—	(a)(b)

[1] See Note 9, "Employee Benefit Plans," for fair value of benefit plan assets.

Cash Equivalents and Restricted Cash Equivalents. Cash equivalents generally consist of money market funds. Restricted cash equivalents are recorded in prepaid expenses and other and other noncurrent assets on our balance sheets and generally consist of money market funds, time deposits, commercial paper and negotiable certificates of deposit, which primarily relate to certain self-insurance obligations and airport commitments as well as proceeds from debt issued to finance, among other things, a portion of the construction costs for our new terminal facilities at New York's LaGuardia Airport. The fair value of these cash equivalents is based on a market approach using prices generated by market transactions involving identical or comparable assets.

Short-Term Investments. The fair values of our short-term investments are based on a market approach using industry standard valuation techniques that incorporate observable inputs such as quoted market prices, interest rates, benchmark curves, credit ratings of the security and other observable information.

As of December 31, 2022, the estimated fair value of our short-term investments was $3.3 billion. Of these investments, $2.8 billion are expected to mature in one year or less, with the remainder maturing by the first half of 2024.

Long-Term Investments. Our long-term investments measured at fair value primarily consist of equity investments, which are valued based on market prices or other observable transactions and inputs, and are recorded in equity investments on our balance sheet. Our equity investments in private companies are classified as Level 3 in the fair value hierarchy as their equity is not traded on a public exchange and our valuations incorporate certain unobservable inputs, including non-public equity issuances. Fair value measurement using unobservable inputs is inherently uncertain, and a change in significant inputs could result in different fair values. During the year ended December 31, 2022 there were no material gains or losses related to investments classified as Level 3 as a result of fair value adjustments. See Note 4, "Investments," for further information on our long-term investments.

Hedge Derivatives. A portion of our derivative contracts may be negotiated over-the-counter with counterparties without going through a public exchange. Accordingly, our fair value assessments give consideration to the risk of counterparty default (as well as our own credit risk). Such contracts would be classified as Level 2 within the fair value hierarchy. The remainder of our hedge contracts may be comprised of futures contracts, which are traded on a public exchange. These contracts would be classified within Level 1 of the fair value hierarchy.

- *Fuel Hedge Contracts.* Our derivative contracts to hedge the financial risk from changing fuel prices are primarily related to Monroe’s inventory. Our fuel hedge portfolio may consist of a combination of options, swaps or futures. Option and swap contracts are valued under income approaches using option pricing models and discounted cash flow models, respectively, based on data either readily observable in public markets, derived from public markets or provided by counterparties who regularly trade in public markets. Futures contracts and options on futures contracts are traded on a public exchange and valued based on quoted market prices. We recognized losses of $394 million, $146 million and gains of $85 million on our fuel hedge contracts in aircraft fuel and related taxes on our income statement for the years ended December 31, 2022, 2021 and 2020, respectively. The losses recognized during 2022 were composed of $365 million of settlements on contracts and $29 million of mark-to-market adjustments. Expense from the settlement of closed contracts is offset by higher operating profits at Monroe from higher pricing. See Note 14, "Segments," for further information on our Monroe refinery segment.

NOTE 4. INVESTMENTS

We have developed strategic relationships with a number of airlines and airline services companies through joint ventures and other forms of cooperation and support, including equity investments. Our equity investments reinforce our commitment to these relationships and generally enhance our ability to offer input to the investee on strategic issues and direction, in some cases through representation on the board of directors.

Changes in the valuation of investments accounted for at fair value are recorded in gain/(loss) on investments, net in our income statement within non-operating expense and are driven by changes in stock prices, other valuation techniques for investments in companies without publicly-traded shares and foreign currency fluctuations.

Our share of our equity method investees' financial results is recorded in impairments and equity method results in our income statement under non-operating expense, except as noted below for Unifi Aviation. If an investment accounted for under the equity method experiences a loss in value that is determined to be other than temporary, we will reduce our carrying value of the investment to fair value and record the loss in impairments and equity method results in our income statement.

Equity investments ownership interest and carrying value

	Accounting Treatment	Ownership Interest		Carrying Value	
(in millions)		December 31, 2022	December 31, 2021	December 31, 2022	December 31, 2021
Air France-KLM	Fair Value	3 %	6 %	$ 97	$ 165
China Eastern	Fair Value	2 %	2 %	189	177
CLEAR	Fair Value	5 %	6 %	227	260
Grupo Aeroméxico	Equity Method	20 %	51 %	412	—
Hanjin-KAL	Fair Value[(1)]	15 %	13 %	296	455
LATAM	Fair Value	10 %	20 %	403	—
Unifi Aviation	Equity Method[(2)]	49 %	49 %	165	159
Wheels Up	Fair Value[(3)]	21 %	21 %	54	241
Other investments	Various			285	255
Equity investments				$ 2,128	$ 1,712

(1) At December 31, 2022, we held 14.8% of the outstanding shares (including common and preferred), and 14.9% of the common shares, of Hanjin KAL.
(2) Results are included in contracted services in our income statement as this entity is integral to the operations of our business by providing services at many of our airport locations.
(3) We elected to account for our investment under the fair value option.

Grupo Aeroméxico. In the March 2022 quarter, Grupo Aeroméxico ("Aeroméxico") emerged from its voluntary proceedings to reorganize under Chapter 11 of the United States bankruptcy code ("bankruptcy process"). At the conclusion of the bankruptcy process, Aeroméxico's previously outstanding capital stock was consolidated and exchanged for less than 0.01% of new capital stock, which effectively eliminated our historical 51% ownership stake. Upon emergence, Delta received a 20% equity stake in the newly restructured Aeroméxico in exchange for (1) our receivables under Aeroméxico's debtor-in-possession financing, (2) $100 million (recorded as an investing outflow on our cash flows statement), and (3) our agreement to provide expanded commercial services to Aeroméxico in future periods.

LATAM. In the December 2022 quarter, LATAM Airlines Group S.A. ("LATAM") emerged from its voluntary proceedings to reorganize under the bankruptcy process. Upon emergence, Delta received full repayment of our outstanding debtor-in-possession financing. We purchased LATAM's New Convertible Notes for $657 million and subsequently converted the Notes to common stock, representing a 10% equity stake in the newly restructured LATAM.

Other Investments

This category includes various investments that are accounted for at fair value or under the equity method, depending on our ownership interest and the level of influence conveyed by our investment. Included in this category is our investment in Virgin Atlantic.

Virgin Atlantic. The carrying value of our investment in Virgin Atlantic remains zero as of December 31, 2022. We maintain our 49% equity interest and continue to track our share of Virgin Atlantic's losses under the equity method of accounting. These previously unrecognized losses are only recorded to the extent we make additional investments in Virgin Atlantic (i.e., additional shareholder support). As of December 31, 2022, we have approximately $300 million of unrecognized equity method losses related to our 49% interest in Virgin Atlantic.

We also have an investment in JFK IAT Member LLC which is accounted for under the equity method and is discussed further in Note 8, "Airport Redevelopment."

NOTE 5. GOODWILL AND INTANGIBLE ASSETS

Goodwill and Indefinite-Lived Intangible Assets

Our goodwill and identifiable intangible assets relate to the airline segment. We apply a fair value-based impairment test to the carrying value of goodwill and indefinite-lived intangible assets on an annual basis (as of October 1) and, if certain events or circumstances indicate that an impairment loss may have been incurred, on an interim basis. We assess the value of our goodwill and indefinite-lived assets under either a qualitative or quantitative approach. Under a qualitative approach, we consider various market factors, including certain of the key assumptions listed below. We analyze these factors to determine if events and circumstances have affected the fair value of goodwill and indefinite-lived intangible assets. If we determine that it is more likely than not that the asset may be impaired, we use the quantitative approach to assess the asset's fair value and the amount of the impairment. Under a quantitative approach, we calculate the fair value of the asset incorporating the key assumptions listed below into our calculation.

We value goodwill and indefinite-lived intangible assets primarily using market and income approach valuation techniques. These measurements include the following key assumptions (1) forecasted revenues, expenses and cash flows, including the duration and extent of impact to our business and our alliance partners from the COVID-19 pandemic, (2) current discount rates, (3) observable market transactions and (4) anticipated changes to the regulatory environment (e.g., changes in slot access and/or availability, additional Open Skies agreements or changes to antitrust approvals). These assumptions are consistent with those that hypothetical market participants would use. Because we are required to make estimates and assumptions when evaluating goodwill and indefinite-lived intangible assets for impairment, actual transaction amounts may differ materially from these estimates. We recognize an impairment charge if the asset's carrying value exceeds its estimated fair value.

Changes in certain events and circumstances could result in impairment or a change from indefinite-lived to definite-lived. Factors which could cause impairment include, but are not limited to (1) negative trends in our market capitalization, (2) reduced profitability resulting from lower passenger mile yields or higher input costs (primarily related to fuel and employees), (3) lower passenger demand as a result of weakened U.S. and global economies, global pandemics or other factors, (4) interruption to our operations due to a prolonged employee strike, terrorist attack or other reasons, (5) changes to the regulatory environment (e.g., changes in slot access and/or availability, additional Open Skies agreements or changes to antitrust approvals), (6) competitive changes by other airlines and (7) strategic changes to our operations leading to diminished utilization of the intangible assets.

Identifiable Intangible Assets. Indefinite-lived assets are not amortized and consist of routes, slots, the Delta tradename and assets related to alliances and collaborative arrangements. Definite-lived intangible assets consist primarily of marketing and maintenance service agreements and are amortized on a straight-line basis or under the undiscounted cash flows method over the estimated economic life of the respective agreements. Costs incurred to renew or extend the term of an intangible asset are expensed as incurred.

As a result of the significant impact the COVID-19 pandemic had on our market capitalization, profitability and overall travel demand, we performed a quantitative valuation of our goodwill and indefinite-lived intangible assets during the December 2020 quarter. These quantitative impairment tests of goodwill and intangibles concluded that there was no indication of impairment as the fair value exceeded our carrying value. In the December 2022 quarter we performed qualitative assessments of goodwill and indefinite-lived intangible assets, including applicable factors noted above, and determined that there was no indication that the assets were impaired. Our qualitative assessments include analyses and weighting of all relevant factors that impact the fair value of our goodwill and indefinite-lived intangible assets.

Goodwill and indefinite-lived intangible assets by category

(in millions)	Carrying Value at December 31, 2022	Carrying Value at December 31, 2021	Excess Fair Value at 2020 Testing Date
Goodwill	$ 9,753	$ 9,753	>100%
International routes and slots	2,583	2,583	10% to 30%
Airline alliances	1,863	1,863	20% to >100%
Delta tradename	850	850	>100%
Domestic slots	622	622	60% to >100%
Total	$ 15,671	$ 15,671	

International Routes and Slots. This primarily relates to Pacific route authorities and slots at capacity-constrained airports in Asia, and slots at London-Heathrow airport.

Airline Alliances. This primarily relates to our commercial agreements with LATAM and our SkyTeam partners.

In the September 2022 quarter, final regulatory approval was granted for our trans-American joint venture agreement with LATAM. This agreement combines our highly complementary route networks between North and South America, with the goal of providing customers with a seamless travel experience and industry-leading connectivity. Approval was granted for a 10-year period with a subsequent reassessment and extension process. This agreement supports our strategic partnership with LATAM and the value of our $1.2 billion alliance-related indefinite-lived intangible asset. We believe the LATAM joint venture agreement will generate growth opportunities, building upon Delta's and LATAM's global footprint.

We have classified our LATAM alliance intangible asset as indefinite-lived as we expect to indefinitely receive the economic benefits from the relationship, similar to other joint venture arrangements between U.S. and foreign carriers that have been cleared by competition authorities in relevant foreign jurisdictions and granted antitrust immunity from the U.S. Department of Transportation ("DOT"). Antitrust immunity grants are generally subject to reporting requirements and periodic reassessment processes administered by the DOT. We have determined that there are currently no material legal, regulatory, contractual, competitive, economic or other factors that limit the useful life of our LATAM alliance-related intangible asset.

Domestic Slots. This primarily relates to our slots at New York-LaGuardia and Washington-Reagan National airports.

Definite-Lived Intangible Assets

Definite-lived intangible assets by category

	December 31, 2022		December 31, 2021	
(in millions)	Gross Carrying Value	Accumulated Amortization	Gross Carrying Value	Accumulated Amortization
Marketing agreements	$ 730	$ (704)	$ 730	$ (700)
Maintenance contracts	192	(145)	193	(140)
Other	54	(53)	53	(53)
Total	$ 976	$ (902)	$ 976	$ (893)

Amortization expense was $9 million, $10 million and $10 million for the years ended December 31, 2022, 2021 and 2020, respectively. Based on our definite-lived intangible assets at December 31, 2022, we estimate that we will incur approximately $8 million of amortization expense annually from 2023 through 2027.

NOTE 6. DEBT

The following table summarizes our debt as of the dates indicated below:

Summary of outstanding debt by category

(in millions)	Maturity Dates	Interest Rate(s) Per Annum at December 31, 2022	December 31, 2022	December 31, 2021
Unsecured Payroll Support Program Loans	2030 to 2031	1.00%	$ 3,496	$ 3,496
Unsecured notes	2023 to 2029	2.90% to 7.38%	2,997	4,354
Financing arrangements secured by SkyMiles assets:				
SkyMiles Notes[1]	2023 to 2028	4.50% and 4.75%	5,144	6,000
SkyMiles Term Loan[1][2]	2023 to 2027	7.99%	2,820	2,820
Financing arrangements secured by aircraft:				
Certificates[1]	2023 to 2028	2.00% to 8.00%	1,802	1,932
Notes[1][2]	2023 to 2033	2.08% to 6.85%	813	1,139
NYTDC Special Facilities Revenue Bonds[1]	2023 to 2045	4.00% to 5.00%	2,838	2,894
Financing arrangements secured by slots, gates and/or routes:				
2020 Senior Secured Notes	2025	7.00%	1,542	2,589
2018 Revolving Credit Facility[2]	2024 to 2025	Undrawn	—	—
Other financings[1][2]	2023 to 2030	2.51% to 5.00%	67	68
Other revolving credit facilities[2]	2023 to 2025	Undrawn	—	—
Total secured and unsecured debt			21,519	25,292
Unamortized (discount)/premium and debt issuance cost, net and other			(138)	(208)
Total debt			21,381	25,084
Less: current maturities			(2,055)	(1,502)
Total long-term debt			$ 19,326	$ 23,582

(1) Due in installments.
(2) Certain financings are comprised of variable rate debt. All variable rates are equal to LIBOR (generally subject to a floor) or another index rate plus a specified margin.

Early Settlement of Outstanding Notes

In 2022, we completed a cash tender offer for an aggregate purchase price of $1.5 billion, excluding accrued and unpaid interest, of certain of our outstanding debt securities. As a result of the tender offer, we repurchased the following notes:

Notes Repurchased in Tender Offer

(in millions)	Location in debt table	Principal Repurchased	Amount Paid
4.500% Senior Secured Notes due 2025	SkyMiles Notes	$ 856	$ 850
7.000% Senior Secured Notes due 2025	2020 Senior Secured Notes	478	498
7.375% Notes due 2026	Unsecured Notes	84	87
3.800% Notes due 2023	Unsecured Notes	65	65
Total Notes Repurchased		$ 1,483	$ 1,500

During 2022, in addition to the cash tender offer, we also repurchased $778 million of various secured and unsecured notes on the open market. Collectively, these payments resulted in a $100 million loss on extinguishment of debt, which is recorded in non-operating expense in our income statement.

Availability Under Revolving Facilities

As of December 31, 2022, we had approximately $2.9 billion undrawn and available under our revolving credit facilities. In addition, we had $400 million of outstanding letters of credit as of December 31, 2022 that did not affect the availability under our revolvers.

Fair Value of Debt

Market risk associated with our fixed- and variable-rate debt relates to the potential reduction in fair value and negative impact to future earnings, respectively, from an increase in interest rates. The fair value of debt, shown below, is principally based on reported market values, recently completed market transactions and estimates based on interest rates, maturities, credit risk and underlying collateral. Debt is primarily classified as Level 2 within the fair value hierarchy.

Fair value of outstanding debt

(in millions)	December 31, 2022	December 31, 2021
Net carrying amount	$ 21,381	$ 25,084
Fair value	$ 20,700	$ 26,900

Covenants

Our debt agreements contain various affirmative, negative and financial covenants. For example, our credit facilities and our SkyMiles financing agreements, contain, among other things, a minimum liquidity covenant. The minimum liquidity covenant requires us to maintain at least $2.0 billion of liquidity (defined as cash, cash equivalents, short-term investments and aggregate principal amount committed and available to be drawn under our revolving credit facilities). Certain of our debt agreements also include collateral coverage ratios and limit our ability to (1) incur liens under certain circumstances, (2) dispose of collateral and (3) engage in mergers and consolidations or transfer all or substantially all of our assets. Our SkyMiles financing agreements include a debt service coverage ratio and also restrict our ability to, among other things, (1) modify the terms of the SkyMiles program, or otherwise change the policies and procedures of the SkyMiles program, in a manner that would reasonably be expected to materially impair repayment of the SkyMiles Debt, (2) sell pre-paid miles in excess of $550 million in the aggregate and (3) terminate or materially modify the intercompany arrangements governing the relationship between Delta and SkyMiles IP Ltd. with respect to the SkyMiles program.

Each of these restrictions, however, is subject to certain exceptions and qualifications that are set forth in these debt agreements. We were in compliance with the covenants in our debt agreements at December 31, 2022.

Future Maturities

The following table summarizes scheduled maturities of our debt for the years succeeding December 31, 2022:

Future debt maturities

(in millions)	Total Debt	Amortization of Debt (Discount)/Premium and Debt Issuance Cost, net and other	
2023	$ 2,058	$ (54)	
2024	2,809	(54)	
2025	2,882	(36)	
2026	2,838	(8)	
2027	2,493	(1)	
Thereafter	8,439	15	
Total	$ 21,519	$ (138)	$ 21,381

NOTE 7. LEASES

We lease property and equipment under finance and operating leases. For leases with terms greater than 12 months, we record the related asset and obligation at the present value of lease payments over the term. Many of our leases include rental escalation clauses, renewal options and/or termination options that are factored into our determination of lease payments when appropriate. We do not separate lease and nonlease components of contracts, except for regional aircraft and information technology ("IT") assets as discussed below.

We use the rate implicit in the lease to discount lease payments to present value, when readily determinable. As the rate implicit in the lease is rarely readily determinable, we use our incremental borrowing rate, which is based on the estimated interest rate for collateralized borrowing over a similar term of the lease at commencement date.

Some of our aircraft lease agreements include provisions for residual value guarantees. These guarantees represent an immaterial portion of our lease liability.

Aircraft

As of December 31, 2022, including aircraft operated by our regional carriers, we leased 221 aircraft, of which 105 were under finance leases and 116 were operating leases. Our aircraft leases had remaining lease terms of one month to 13 years.

In addition, we have regional aircraft leases that are embedded within our capacity purchase agreements and included in the ROU asset and lease liability. We allocated the consideration in each capacity purchase agreement to the lease and nonlease components based on their relative standalone value. Lease components of these agreements consist of 115 aircraft as of December 31, 2022 and nonlease components primarily consist of flight operations, in-flight and maintenance services. We determined our best estimate of the standalone value of the individual components by considering observable information including rates paid by our wholly owned subsidiary, Endeavor Air, Inc., and rates published by independent valuation firms. See Note 10, "Commitments and Contingencies," for additional information about our capacity purchase agreements.

Airport Facilities

Our facility leases are primarily for space at approximately 300 airports around the world that we serve. These leases reflect our use of airport terminals, office space, cargo warehouses and maintenance facilities. We generally lease space from government agencies that control the use of the airport, and as a result, these leases are classified as operating leases. The remaining lease terms vary from one month to 29 years. At the majority of the U.S. airports, the lease rates depend on airport operating costs or use of the facilities and are reset at least annually. Because of the variable nature of the rates, these leases are not recorded on our balance sheet as a ROU asset and lease liability.

Some airport facilities have fixed payment schedules, the most significant of which are New York-LaGuardia and New York-JFK. For those airport leases, we have recorded a ROU asset and lease liability representing the fixed component of the lease payments. See Note 8, "Airport Redevelopment," for more information on our significant airport redevelopment projects.

Other Ground Property and Equipment

We lease certain IT assets (including servers, mainframes, etc.), ground support equipment (including tugs, tractors, fuel trucks and de-icers), and various other equipment. The remaining lease terms range from one month to seven years. Certain leased assets are embedded within various ground and IT service agreements. For ground service contracts, we have elected to include both the lease and nonlease components in the lease asset and lease liability balances on our balance sheet. For IT service contracts, we have elected to separate the lease and nonlease components and only the lease components are included in the lease asset and lease liability balances on our balance sheet. The amounts of these lease and nonlease components are not significant.

Sale-Leaseback Transactions

In 2020, we entered into $2.8 billion of sale-leaseback transactions for 85 aircraft. Of these transactions, 74 did not qualify as a sale as they are finance leases or have an option to repurchase at a stated price. The assets associated with these transactions remain on our balance sheet within property and equipment, net and we recorded the related liabilities under the lease. These liabilities are classified within other accrued or other noncurrent liabilities on our balance sheet. The cash proceeds were treated as financing inflows on the cash flows statement.

The other 11 transactions qualified as sales, generating an immaterial loss, and the associated assets were removed from our balance sheet within property and equipment, net and recorded within ROU assets. The liabilities are recorded within current maturities of operating leases and noncurrent operating leases on our balance sheet. The cash proceeds were treated as investing cash inflows on the cash flows statement.

Lease Position

The table below presents the lease-related assets and liabilities recorded on the balance sheet.

Lease asset and liability balance sheet position by category

		December 31,	
(in millions)	**Classification on the Balance Sheet**	**2022**	**2021**
Assets			
Operating lease assets	Operating lease right-of-use assets	$ 7,036	$ 7,237
Finance lease assets	Property and equipment, net	1,487	1,596
Total lease assets		$ 8,523	$ 8,833
Liabilities			
Current			
Operating	Current maturities of operating leases	$ 714	$ 703
Finance	Current maturities of debt and finance leases	304	280
Noncurrent			
Operating	Noncurrent operating leases	6,866	7,056
Finance	Debt and finance leases	1,345	1,556
Total lease liabilities		$ 9,229	$ 9,595
Weighted-average remaining lease term			
Operating leases		13 years	13 years
Finance leases		5 years	6 years
Weighted-average discount rate			
Operating leases		4.30 %	3.81 %
Finance leases		3.05 %	3.36 %

Lease Costs

The table below presents certain information related to the lease costs for finance and operating leases.

Lease cost by category

	Year Ended December 31,		
(in millions)	**2022**	**2021**	**2020**
Finance lease cost			
Amortization of leased assets	$ 120	$ 131	$ 131
Interest of lease liabilities	45	55	32
Operating lease cost[(1)]	949	863	1,019
Short-term lease cost[(1)]	281	245	264
Variable lease cost[(1)]	1,859	1,599	1,406
Total lease cost	$ 3,254	$ 2,893	$ 2,852

(1) Expenses are primarily classified within aircraft rent, landing fees and other rents and regional carrier expense on our income statement.

Other Information

The table below presents supplemental cash flow information related to leases.

Supplemental lease-related cash flow information

	Year Ended December 31,		
(in millions)	**2022**	**2021**	**2020**
Cash paid for amounts included in the measurement of lease liabilities			
Operating cash flows for operating leases	$ 809	$ 999	$ 1,053
Operating cash flows for finance leases	49	46	32
Financing cash flows for finance leases	363	336	255

Undiscounted Cash Flows

The table below reconciles the undiscounted cash flows for each of the first five years and total of the remaining years to the finance lease liabilities and operating lease liabilities recorded on the balance sheet.

Future lease cash flows and reconciliation to the balance sheet

(in millions)	**Operating Leases**	**Finance Leases**
2023	$ 976	$ 343
2024	946	375
2025	923	237
2026	836	174
2027	805	192
Thereafter	5,323	470
Total minimum lease payments	9,809	1,791
Less: amount of lease payments representing interest	(2,229)	(142)
Present value of future minimum lease payments	7,580	1,649
Less: current obligations under leases	(714)	(304)
Long-term lease obligations	$ 6,866	$ 1,345

As of December 31, 2022, we had additional leases that had not yet commenced of $242 million. These leases will commence in 2023 to 2024 with lease terms of 7 to 10 years.

NOTE 8. AIRPORT REDEVELOPMENT

New York-JFK Airport

We are enhancing and expanding our facilities at Terminal 4 of JFK to strengthen our competitive position and offer a premium travel experience for customers in New York City. Terminal 4 is operated by JFK International Air Terminal LLC ("IAT"), a private party, under its lease with the Port Authority of New York and New Jersey ("Port Authority"). We have a long-term agreement with IAT to sublease space in Terminal 4 through 2043 ("Sublease").

In 2021, the Port Authority approved plans to renovate and expand Terminal 4 in order to facilitate Delta's relocation from Terminal 2 and consolidation of its operations into Terminal 4. The project will add 10 new gates and other complementary facilities, including an additional Delta Sky Club and a new Delta One lounge. The project is estimated to cost approximately $1.6 billion and will be funded primarily with bonds issued in 2022 by the New York Transportation Development Corporation ("NYTDC") for which our landlord, IAT, is the obligor. The majority of project costs are being used to expand or modify Delta's leased premises. Construction started in late 2021 and Delta's portion of the project is estimated to be complete by early 2024. Based on our assessment of the project, we concluded that we do not control the underlying assets being constructed, and therefore, we do not have the project asset or related obligation recorded on our balance sheet.

In 2022, we amended our Sublease to provide for the expansion project, including the adjustment of our subleased space and rentals. We have recognized a ROU asset and lease liability representing the fixed component of the lease payments for this facility and as the majority of the project either expands or modifies Delta's leased premises, our lease liability will increase upon completion. As of December 31, 2022, our lease liability related to this Sublease was $2.3 billion. See Note 7, "Leases" for more information on our ROU assets and lease liabilities.

Equity Investment. We have an equity method investment in JFK IAT Member LLC, which owns IAT. The Sublease requires us to pay certain fixed management fees. We determined the investment is a variable interest entity and assessed whether we have a controlling financial interest in IAT. Our rights under the Sublease, with respect to management of Terminal 4, are consistent with rights granted to an anchor tenant under a standard airport lease. Accordingly, we do not consolidate this entity in our Consolidated Financial Statements. See Note 4, "Investments" for additional information on our equity investments.

Los Angeles International Airport ("LAX")

As part of the terminal redevelopment project at LAX, we are modernizing, upgrading, and providing post-security connection to Terminals 2 and 3. We announced this project and executed a modified lease agreement during 2016 with the City of Los Angeles (the "City"), which owns and operates LAX. This project includes a new centralized ticketing and arrival hall, a new security checkpoint, core infrastructure to support the City's planned airport people mover, ramp improvements and a post-security connector to the north side of the Tom Bradley International Terminal.

The project is expected to cost approximately $2.4 billion. A substantial majority of the project costs are being funded through the Regional Airports Improvement Corporation ("RAIC"), a California public benefit corporation, using a revolving credit facility provided by a group of lenders. The credit facility was executed in 2017 and we have guaranteed the obligations of the RAIC under the credit facility. The revolving credit facility agreement was most recently amended in January 2023, decreasing the revolver capacity from $800 million to $700 million. Loans made under the credit facility are being repaid with the proceeds from the City's purchase of completed project assets. Under the lease agreement and subsequent project component approvals by the City's Board of Airport Commissioners, the City has appropriated to date approximately $1.8 billion to purchase completed project assets, representing the maximum allowable reimbursement by the City. Costs incurred in excess of the $1.8 billion maximum will not be reimbursed by the City. We currently expect our net project costs to be approximately $600 million, of which approximately $350 million has been reflected as investing activities in our cash flows statement since the project started in 2017. Based on our assessment of the project, we concluded that we do not control the underlying assets being constructed, and therefore, we do not have the project asset or related obligation recorded on our balance sheet.

Given reduced passenger volumes resulting from the COVID-19 pandemic, we accelerated the construction schedule for this project in 2020. Additionally, we enhanced the project's scope to include a more customer-friendly design of Terminal 3, an expanded Delta Sky Club and baggage system upgrades designed to increase the terminals' operational efficiency going forward. In 2022, we opened a new consolidated headhouse for both terminals, which includes ticketing, security, baggage claim and a new Delta Sky Club lounge and have a total of 11 of 14 planned new gates now open in Terminal 3. Construction is expected to be completed in 2023.

Due to the variable nature of lease payments in our agreement with the City, we have not recognized a ROU asset and lease liability on our balance sheet. See Note 7, "Leases" for more information on our ROU assets and lease liabilities.

New York-LaGuardia Airport

As part of the terminal redevelopment project at LaGuardia Airport, we are partnering with the Port Authority to replace Terminals C and D with a new state-of-the-art terminal facility consisting of 37 gates across four concourses connected to a central headhouse. The terminal will feature a new, larger Delta Sky Club, wider concourses, more gate seating and nearly double the amount of concessions space than the existing terminals. The facility will also offer direct access between the parking garage and terminal and improved roadways and drop-off/pick-up areas. Construction is underway and is being phased to limit passenger inconvenience. Due to an acceleration effort that commenced in 2020, completion is expected by 2025.

In 2019, we opened Concourse G, the first of four new concourses, housing seven of the 37 new gates. In 2022, we achieved a significant milestone by opening the headhouse (including the Delta Sky Club), the terminal roadways and Concourse E - the second of four new concourses to be built. Additionally, we opened four of 12 planned new gates on Concourse F.

In connection with the redevelopment, during 2017, we entered into an amended and restated terminal lease with the Port Authority with a term through 2050. Pursuant to the lease agreement, as amended to date, we will (1) fund (through debt issuance and existing cash) and undertake the design, management and construction of the terminal and certain off-premises supporting facilities, (2) receive a Port Authority contribution of approximately $500 million to facilitate construction of the terminal and other supporting infrastructure, (3) be responsible for all operations and maintenance during the term of the lease and (4) have preferential rights to all gates in the terminal subject to Port Authority requirements with respect to accommodation of designated carriers.

The project is expected to cost $4.3 billion. We currently expect our net project cost to be approximately $3.8 billion and we bear the risks of project construction, including any potential cost over-runs. We entered into loan agreements to fund a portion of the construction, which are recorded on our balance sheet as debt with the proceeds reflected as restricted cash. Using funding primarily provided by these arrangements, we spent approximately $650 million, $950 million and $600 million during 2022, 2021, and 2020 respectively, bringing the total amount spent on the project to date to approximately $3.2 billion. Based on our assessment of the project, we concluded that we do not control the underlying assets being constructed. Costs incurred by Delta are accounted for as leasehold improvements recorded in property and equipment, net on our balance sheets. See Note 6, "Debt," for additional information on the debt (NYTDC Special Facilities Revenue Bonds) related to this redevelopment project.

NOTE 9. EMPLOYEE BENEFIT PLANS

We sponsor defined benefit and defined contribution pension plans, healthcare plans and disability and survivorship plans for eligible employees and retirees and their eligible family members.

Defined Benefit Pension Plans. We sponsor defined benefit pension plans for eligible employees and retirees. These plans are closed to new entrants and frozen for future benefit accruals. Our funding obligations for qualified defined benefit plans are governed by the Employee Retirement Income Security Act and any applicable legislation. Under the Pension Protection Act of 2006, we elected alternative funding rules so that the unfunded liability for a frozen defined benefit plan may be amortized over a fixed 17-year period and is calculated using an 8.85% discount rate until the 17-year period expires for all frozen defined benefit plans by the end of 2024. Upon expiration, under legislation passed in 2021, any required funding would be amortized over a rolling 15-year period and calculated using a discount rate of no less than 4.75% through 2030. We have no minimum funding requirements for these plans in 2023 and do not plan to make voluntary contributions during 2023.

Defined Contribution Pension Plans. We sponsor several defined contribution plans. These plans generally cover different employee groups and employer contributions vary by plan. The costs associated with our defined contribution pension plans were approximately $1.0 billion, $875 million and $805 million for the years ended December 31, 2022, 2021 and 2020, respectively.

Postretirement Healthcare Plans. We sponsor healthcare plans that provide benefits to eligible retirees and their dependents who are under age 65. We have generally eliminated company-paid post age 65 healthcare coverage, except for (1) subsidies available to a limited group of retirees and their dependents, (2) a group of retirees who retired prior to 1987 and (3) retiree medical accounts which provide a fixed dollar amount to eligible employees who retired under the 2012 voluntary workforce reduction programs or under the 2020 voluntary early retirement and separation programs ("voluntary programs"). Benefits under these plans are funded from current assets and employee contributions.

During 2020, we remeasured our postretirement healthcare obligation to account for the retiree medical accounts provided to eligible participants in our voluntary programs. As a result, we recorded a $1.3 billion special termination benefit charge and increased our postretirement healthcare obligation by $1.3 billion. See Note 15, "Government Grants and Restructuring," for more information on these voluntary programs

Postemployment Plans. We provide certain other welfare benefits to eligible former or inactive employees after employment but before retirement, primarily as part of the disability and survivorship plans. Substantially all employees are eligible for benefits under these plans in the event of death and/or disability.

Benefit Obligations, Fair Value of Plan Assets and Funded Status

	Pension Benefits		Other Postretirement and Postemployment Benefits	
	December 31,		December 31,	
(in millions)	2022	2021	2022	2021
Benefit obligation at beginning of period	$ 21,073	$ 22,626	$ 4,605	$ 4,766
Service cost	—	—	70	86
Interest cost	611	582	128	117
Actuarial (gain)/loss	(4,599)	(851)	(710)	23
Benefits paid, including lump sums and annuities	(1,274)	(1,284)	(447)	(405)
Participant contributions	—	—	18	18
Benefit obligation at end of period[1]	$ 15,811	$ 21,073	$ 3,664	$ 4,605
Fair value of plan assets at beginning of period	$ 19,502	$ 16,541	$ 357	$ 496
Actual gain/(loss) on plan assets	(2,517)	2,732	(73)	57
Employer contributions	10	1,513	216	192
Participant contributions	—	—	18	18
Benefits paid, including lump sums and annuities	(1,274)	(1,284)	(447)	(406)
Fair value of plan assets at end of period	$ 15,721	$ 19,502	$ 71	$ 357
Funded status at end of period	$ (90)	$ (1,571)	$ (3,593)	$ (4,248)

[1] At the end of each year presented, our accumulated benefit obligations for our pension plans are equal to the benefit obligations shown above.

During 2022, net actuarial gains decreased our benefit obligation primarily due to the increase in discount rates. These gains and losses are recorded in AOCI and reflected in the table below. Amounts are generally amortized from AOCI over the expected future lifetime of plan participants.

Balance Sheet Position

	Pension Benefits		Other Postretirement and Postemployment Benefits	
	December 31,		December 31,	
(in millions)	2022	2021	2022	2021
Prepaid pension assets	$ 27	$ —	$ —	$ —
Current liabilities	(9)	(9)	(369)	(203)
Noncurrent liabilities	(108)	(1,562)	(3,224)	(4,045)
Funded status at end of period	$ (90)	$ (1,571)	$ (3,593)	$ (4,248)
Net actuarial loss	$ (6,444)	$ (7,462)	$ (155)	$ (831)
Prior service credit	—	—	18	23
Total accumulated other comprehensive loss, pre-tax	$ (6,444)	$ (7,462)	$ (137)	$ (808)

Certain pension plans have benefit obligations in excess of plan assets. These plans have aggregate projected benefit obligations of $4.0 billion and aggregate fair value of plan assets of $3.9 billion at December 31, 2022.

Net Periodic (Benefit) Cost

(in millions)	Pension Benefits Year Ended December 31, 2022	2021	2020	Other Postretirement and Postemployment Benefits Year Ended December 31, 2022	2021	2020
Service cost	$ —	$ —	$ —	$ 70	$ 86	$ 96
Interest cost	611	582	700	128	117	120
Expected return on plan assets	(1,319)	(1,522)	(1,373)	(17)	(34)	(44)
Amortization of prior service credit	—	—	—	(5)	(6)	(9)
Recognized net actuarial loss	255	354	300	56	55	44
Settlements	—	2	38	—	—	—
Special termination benefits	—	—	—	—	—	1,260
Net periodic (benefit) cost	$ (453)	$ (584)	$ (335)	$ 232	$ 218	$ 1,467

Service cost is recorded in salaries and related costs in the income statement. Special termination benefits are recorded in restructuring charges, while all other components are recorded within pension and related benefit under non-operating expense.

Assumptions

We used the following actuarial assumptions to determine our benefit obligations and our net periodic benefit cost for the periods presented:

Benefit Obligations[1]	December 31, 2022	2021
Weighted average discount rate	5.62 %	2.97 %

Net Periodic (Benefit) Cost[1]	Year Ended December 31, 2022	2021	2020
Weighted average discount rate	2.96 %	2.61 %	3.39 %
Weighted average expected long-term rate of return on plan assets	7.00 %	8.98 %	8.97 %
Assumed healthcare cost trend rate for the next year[2]	6.50 %	6.25 %	6.25 %

(1) Future employee compensation levels do not impact our frozen defined benefit pension plans or other postretirement plans and impact only a small portion of our other postemployment obligation.

(2) Healthcare cost trend rate is assumed to decline gradually to 5.00% by 2031 and remain unchanged thereafter.

Expected Long-Term Rate of Return. Our expected long-term rate of return on plan assets is based primarily on plan-specific investment studies using historical market return and volatility data. Modest excess return expectations versus some public market indices are incorporated into the return projections based on the actively managed structure of the investment programs and their records of achieving such returns historically. We also expect to receive a premium for investing in less liquid private markets. We review our rate of return on plan assets assumptions annually. Our annual investment performance for one particular year does not, by itself, significantly influence our evaluation. The investment strategy for our defined benefit pension plan assets is to earn a long-term return that meets or exceeds our annualized return target while taking an acceptable level of risk and maintaining sufficient liquidity to pay current benefits and other cash obligations of the plan. This is achieved by investing in a globally diversified mix of public and private equity, fixed income, real assets, hedge funds and other assets and instruments. Our weighted average expected long-term rate of return on assets for net periodic benefit cost for the year ended December 31, 2022 was 7.00%.

Life Expectancy. Changes in life expectancy may significantly impact our benefit obligations and future net periodic benefit cost. We use the Society of Actuaries ("SOA") published mortality data and other publicly available information to develop our best estimate of life expectancy. The SOA publishes updated mortality tables for U.S. plans and updated improvement scales. Each year we consider updates by the SOA in setting our mortality assumptions for purposes of measuring pension and other postretirement and postemployment benefit obligations.

Benefit Payments

Benefit payments in the table below are based on the same assumptions used to measure the related benefit obligations. Actual benefit payments may vary significantly from these estimates. Benefits earned under our pension plans are expected to be paid from funded benefit plan trusts, while our other postretirement and postemployment benefits are funded from current assets.

The following table summarizes the benefit payments that are expected to be paid in the years ending December 31:

Expected future benefit payments

(in millions)	Pension Benefits	Other Postretirement and Postemployment Benefits
2023	$ 1,280	$ 450
2024	1,270	440
2025	1,270	430
2026	1,260	430
2027	1,250	430
2028-2032	6,030	1,930

Plan Assets

We have adopted and implemented investment policies for our defined benefit pension plans that incorporate strategic asset allocation mixes intended to best meet the plans' long-term obligations, while maintaining an appropriate level of risk and liquidity. These asset portfolios employ a diversified mix of investments, which are reviewed periodically. Active management strategies are utilized where feasible in an effort to realize investment returns in excess of market indices. Derivatives in the plans are primarily used to manage risk and gain asset class exposure while still maintaining liquidity. As part of these strategies, the plans are required to hold cash collateral associated with certain derivatives. Our investment strategies target a mix of 20-40% growth-seeking assets, 25-35% income-generating assets and 35-45% risk-diversifying assets. Risk diversifying assets include hedged mandates implementing long-short, market neutral and relative value strategies that invest primarily in publicly-traded equity, fixed income, foreign currency and commodity securities and are used to improve the impact of active management on the plans.

Benefit Plan Assets Measured at Fair Value on a Recurring Basis

Benefit plan assets relate to our defined benefit pension plans and certain of our postemployment benefit plans. These investments are presented net of the related benefit obligation in either other noncurrent assets or pension, postretirement and related benefits on the balance sheets depending on the funded status of each plan. See Note 3, "Fair Value Measurements," for a description of the levels within the fair value hierarchy and associated valuation techniques used to measure fair value. The following table shows our benefit plan assets by asset class.

Benefit plan assets measured at fair value on a recurring basis

	December 31, 2022			December 31, 2021			Valuation
(in millions)	Level 1	Level 2	Total	Level 1	Level 2	Total	Technique
Fixed income and fixed income-related instruments	$ 77	$ 1,366	$ 1,443	$ 69	$ 979	$ 1,048	(a)(b)
Cash equivalents	629	265	894	2,390	2,097	4,487	(a)
Equities and equity-related instruments	420	25	445	1,034	161	1,195	(a)
Delta common stock	343	—	343	407	—	407	(a)
Real assets	17	170	187	—	256	256	(a)
Benefit plan assets	$ 1,486	$ 1,826	$ 3,312	$ 3,900	$ 3,493	$ 7,393	
Investments measured at net asset value ("NAV")[1]			12,329			12,653	
Total benefit plan assets			$15,641			$20,046	

[1] Investments that were measured at NAV per share (or its equivalent) as a practical expedient have not been classified in the fair value hierarchy.

Fixed Income and Fixed Income-Related Instruments. These investments include corporate bonds, government bonds, collateralized mortgage obligations and other asset-backed securities, and are generally valued at the bid price or the average of the bid and ask price. Prices are based on pricing models, quoted prices of securities with similar characteristics or broker quotes. Fixed income-related instruments include investments in securities traded on exchanges, including listed futures and options, which are valued at the last reported sale prices on the last business day of the year, or if not available, the last reported bid prices. Over-the-counter securities are valued at the bid prices or the average of the bid and ask prices on the last business day of the year from published sources or, if not available, from other sources considered reliable, generally broker quotes.

Cash Equivalents. These investments primarily consist of high-quality, short-term obligations that are a part of institutional money market mutual funds that are valued using current market quotations or an appropriate substitute that reflects current market conditions.

Equities and Equity-Related Instruments. These investments include common stock and equity-related instruments. Common stock is valued at the closing price reported on the active market on which the individual securities are traded. Equity-related instruments include investments in securities traded on exchanges, including listed futures and options, which are valued at the last reported sale prices on the last business day of the year or, if not available, the last reported bid prices. Over-the-counter securities are valued at the bid prices or the average of the bid and ask prices on the last business day of the year from published sources or, if not available, from other sources considered reliable, generally broker quotes.

Delta Common Stock. The Delta common stock investment is managed by an independent fiduciary.

Real Assets. These investments include commodities such as precious metals and precious metals-related instruments, some of which are valued at the closing price reported on the active market on which the individual instruments are traded, while others are priced based on pricing models, quoted prices of securities with similar characteristics or broker quotes.

The following table summarizes investments measured at fair value based on NAV per share as a practical expedient:

Benefit plan investment assets measured at NAV

	December 31, 2022			December 31, 2021		
(in millions)	Fair Value	Redemption Frequency	Redemption Notice Period	Fair Value	Redemption Frequency	Redemption Notice Period
Hedge funds and hedge fund-related strategies	$ 6,730	(1)	2-180 Days	$ 7,563	(1)	2-180 Days
Commingled funds, private equity and private equity-related instruments [4]	2,266	(1) (2)	2-45 Days	2,228	(1) (2)	3-45 Days
Fixed income and fixed income-related instruments [4]	1,003	(1)	1-180 Days	877	(1)	65-90 Days
Real assets [4]	819	(2)	N/A	773	(2)	N/A
Other	1,511	(3)	2-10 Days	1,212	(3)	2-10 Days
Total investments measured at NAV	$12,329			$12,653		

(1) Various. Includes funds with monthly or more frequent, quarterly and/or custom redemption frequencies as well as funds with a redemption window following the anniversary of the initial investment.
(2) Includes private funds that are closed-ended structures in which the plans' investments are generally not eligible for redemption.
(3) Includes funds with monthly or more frequent redemptions
(4) Unfunded commitments were $1.2 billion for commingled funds, private equity and private equity-related instruments, $364 million for fixed income and fixed income-related instruments and $507 million for real assets at December 31, 2022.

On an annual basis we assess the potential for adjustments to the fair value of all investments. This primarily applies to private equity, private equity-related strategies and real assets. Due to a lag in the availability of data for certain of these investments, we solicit valuation updates from the investment fund managers and use their information and corroborating data from public markets to determine any needed fair value adjustments.

Hedge Funds and Hedge Fund-Related Strategies. These investments are primarily made through shares of limited partnerships or similar structures for which a liquid secondary market does not exist.

Commingled Funds, Private Equity and Private Equity-Related Instruments. These investments include commingled funds invested in common stock, as well as private equity and private equity-related instruments. Commingled funds are valued based on quoted market prices of the underlying assets owned by the fund. Private equity and private equity-related instruments are typically valued quarterly by the fund managers using valuation models where one or more of the significant inputs into the model cannot be observed and which require the development of assumptions.

Fixed Income and Fixed Income-Related Instruments. These investments include commingled funds invested in debt obligations. Commingled funds are valued based on quoted market prices of the underlying assets owned by the fund. Private fixed income instruments are typically valued monthly or quarterly by the fund managers or third-party valuation agents using valuation models where one or more of significant inputs into the model cannot be observed and which require the development of assumptions.

Real Assets. These investments include real estate, energy transition, timberland, agriculture and infrastructure. The valuation of real assets requires significant judgment due to the absence of quoted market prices as well as the inherent lack of liquidity and the long-term nature of these assets. Real assets are typically valued quarterly by the fund managers using valuation models where one or more of the significant inputs into the model cannot be observed and which require the development of assumptions.

Other. Primarily includes globally-diversified, risk-managed commingled funds consisting mainly of equity, fixed income and commodity exposures.

Other

We also sponsor defined benefit pension plans for eligible employees in certain foreign countries. These plans did not have a material impact on our Consolidated Financial Statements in any period presented.

Profit Sharing Program

Our broad-based employee profit sharing program provides that, for each year in which we have an annual pre-tax profit, as defined by the terms of the program, we will pay a specified portion of that profit to employees. In determining the amount of profit sharing, the program defines profit as pre-tax profit adjusted for profit sharing and certain other items.

For the year ended December 31, 2022, we recorded profit sharing expense of $563 million. For the year ended December 31, 2021, we recorded a special profit sharing expense of $108 million, based on the adjusted pre-tax profit earned during the second half of the year, to recognize the extraordinary efforts of our employees through the pandemic. We recorded no profit sharing expense for the year ended December 31, 2020.

NOTE 10. COMMITMENTS AND CONTINGENCIES

Aircraft Purchase Commitments

Our future aircraft purchase commitments totaled approximately $19.0 billion at December 31, 2022:

Aircraft purchase commitments[(1)]

(in millions)		Total
2023	$	2,610
2024		4,440
2025		4,330
2026		3,800
2027		2,570
Thereafter		1,210
Total	$	18,960

(1) The timing of these commitments is based on our contractual agreements with the aircraft manufacturers and may be subject to change based on modifications to those agreements or changes in delivery schedules.

Our future aircraft purchase commitments included the following aircraft at December 31, 2022:

Aircraft purchase commitments by fleet type

Fleet Type	Purchase Commitments
A220-300	60
A321-200neo	134
A330-900neo	18
A350-900	16
B-737-10	100
Total	328

Aircraft Orders

During 2022, we entered into a purchase agreement with Boeing for 100 Boeing 737-10s, the largest model in the 737 MAX family, to start delivery in 2025 with the option to purchase an additional thirty 737-10s. Additionally during 2022, we agreed to acquire four B-737-900ERs, one A330-900 and exercised purchase rights for 24 A220-300s. Deliveries of the pre-owned B-737-900ERs occurred during 2022, delivery of the new A330-900 is expected to occur in 2024, and deliveries of the new A220-300s are expected to start in 2026.

Contract Carrier Agreements

We have contract carrier agreements with regional carriers expiring through 2034. These agreements are structured as either capacity purchase or revenue proration agreements.

Capacity Purchase Agreements. Our regional carriers primarily operate for us under capacity purchase agreements. Under these agreements, the regional carriers operate some or all of their aircraft using our flight designator codes, and we control the scheduling, pricing, reservations, ticketing and seat inventories of those aircraft and retain the revenues associated with those flights. We pay those airlines an amount, as defined in the applicable agreement, which is based on a determination of their cost of operating those flights and other factors intended to approximate market rates for those services.

The following table shows our minimum obligations under our existing capacity purchase agreements with third-party regional carriers, excluding contract carrier payments accounted for as leases of aircraft, which are described in Note 7, "Leases." The obligations set forth in the table contemplate minimum levels of flying by the regional carriers under the respective agreements and also reflect assumptions regarding certain costs associated with the minimum levels of flying such as the cost of fuel, labor, maintenance, insurance, catering, property tax and landing fees. Accordingly, our actual payments under these agreements could differ materially from the minimum fixed obligations set forth in the table below.

Contract carrier minimum obligations

(in millions)	Amount
2023	$ 1,590
2024	1,560
2025	1,610
2026	1,590
2027	1,560
Thereafter	2,690
Total	$ 10,600

Revenue Proration Agreement. As of December 31, 2022, a portion of our contract carrier arrangement with SkyWest Airlines, Inc. was structured as a revenue proration agreement. This revenue proration agreement establishes a fixed dollar or percentage division of revenues for tickets sold to passengers traveling on connecting flight itineraries.

Legal Contingencies

We are involved in various legal proceedings related to employment practices, environmental issues, antitrust matters and other matters concerning our business. We record liabilities for losses from legal proceedings when we determine that it is probable that the outcome in a legal proceeding will be unfavorable and the amount of loss can be reasonably estimated. Although the outcome of the legal proceedings in which we are involved cannot be predicted with certainty, we believe that the resolution of current matters will not have a material adverse effect on our Consolidated Financial Statements.

Credit Card Processing Agreements

Our VISA/MasterCard and American Express credit card processing agreements provide that no cash reserve ("Reserve") is required, and no withholding of payment related to receivables collected will occur, except in certain circumstances, including when we do not maintain a required level of liquidity as outlined in the merchant processing agreements. In circumstances in which the credit card processor can establish a Reserve or withhold payments, the amount of the Reserve or payments that may be withheld would be equal to the potential liability of the credit card processor for tickets purchased with VISA/MasterCard or American Express credit cards, as applicable, that had not yet been used for travel. We did not have a Reserve or an amount withheld as of December 31, 2022 or 2021.

Other Contingencies

General Indemnifications

We are the lessee under many commercial real estate leases. It is common in these transactions for us, as the lessee, to agree to indemnify the lessor and the lessor's related parties for tort, environmental and other liabilities that arise out of or relate to our use or occupancy of the leased premises. This type of indemnity would typically make us responsible to indemnified parties for liabilities arising out of the conduct of, among others, contractors, licensees and invitees at, or in connection with, the use or occupancy of the leased premises. This indemnity often extends to related liabilities arising from the negligence of the indemnified parties, but usually excludes any liabilities caused by either their sole or gross negligence or their willful misconduct.

Our aircraft and other equipment lease and financing agreements typically contain provisions requiring us, as the lessee or obligor, to indemnify the other parties to those agreements, including certain of those parties' related persons, against virtually any liabilities that might arise from the use or operation of the aircraft or other equipment.

We believe that our insurance would cover most of our exposure to liabilities and related indemnities associated with the commercial real estate leases and aircraft and other equipment lease and financing agreements described above. While our insurance does not typically cover environmental liabilities, we have insurance policies in place as required by applicable environmental laws.

Some of our aircraft and other financing transactions include provisions that require us to make payments to preserve an expected economic return to the lenders if that economic return is diminished due to specified changes in law or regulations. In some of these financing transactions, we also bear the risk of changes in tax laws that would subject payments to non-U.S. lenders to withholding taxes.

We cannot reasonably estimate our potential future payments under the indemnities and related provisions described above because we cannot predict (1) when and under what circumstances these provisions may be triggered and (2) the amount that would be payable if the provisions were triggered because the amounts would be based on facts and circumstances existing at such time.

Employees Under Collective Bargaining Agreements

As of December 31, 2022, we had approximately 95,000 full-time equivalent employees, approximately 20% of whom were represented by unions.

Domestic airline employees represented by collective bargaining agreements by group

Employee Group	Approximate Number of Employees Represented	Union	Date on which Collective Bargaining Agreement Becomes Amendable
Delta Pilots	15,040	ALPA	December 31, 2019
Delta Flight Superintendents (Dispatchers)	450	PAFCA	November 1, 2024
Endeavor Pilots	1,750	ALPA	January 1, 2029
Endeavor Flight Attendants	1,800	AFA	March 31, 2027

Delta and ALPA reached an Agreement in Principle on a new collective bargaining agreement in December 2022. In January 2023, a tentative agreement was ratified by ALPA's Delta Master Executive Council ("MEC") and is subject to ratification by Delta's pilots through a vote that is scheduled to close on March 1, 2023. In addition to various work rule changes and an 18% pay rate increase in 2023, the tentative agreement includes a provision for a one-time payment of approximately $700 million upon pilot ratification. As voting on the tentative agreement has not closed and there is significant uncertainty about the outcome of this process, we have not accrued for this one-time payment as of December 31, 2022.

In addition to the domestic airline employee groups discussed above, approximately 200 refinery employees of our wholly owned subsidiary Monroe are represented by the United Steel Workers under an agreement that expires on February 28, 2026. This agreement is governed by the National Labor Relations Act, which generally allows either party to engage in self-help upon the expiration of the agreement. Certain of our employees outside the U.S. are represented by unions, work councils or other local representative groups.

Other

We have certain contracts for goods and services that require us to pay a penalty, acquire inventory specific to us or purchase contract-specific equipment, as defined by each respective contract, if we terminate the contract without cause prior to its expiration date. Because these obligations are contingent on our termination of the contract without cause prior to its expiration date, no obligation would exist unless such a termination occurs.

NOTE 11. INCOME TAXES

Income Tax Provision

Components of income tax (provision) benefit

	Year Ended December 31,		
(in millions)	2022	2021	2020
Current tax (provision) benefit:			
Federal	$ —	$ —	$ 94
State and local	(1)	(1)	3
International	(4)	(3)	(5)
Deferred tax (provision) benefit:			
Federal	(525)	(130)	2,766
State and local	(66)	16	344
Income tax (provision) benefit	$ (596)	$ (118)	$ 3,202

The following table presents the principal reasons for the difference between the effective tax rate and the U.S. federal statutory income tax rate:

Reconciliation of statutory federal income tax rate to the effective income tax rate

	Year Ended December 31,		
	2022	2021	2020
U.S. federal statutory income tax rate	21.0 %	21.0 %	21.0 %
State taxes, net of federal benefit	3.0	(4.4)	1.9
Permanent differences	1.0	4.9	(0.6)
Valuation allowance	7.3	9.1	(2.6)
Other	(1.1)	(0.8)	0.8
Effective income tax rate	31.2 %	29.8 %	20.5 %

Deferred Taxes

Deferred income taxes reflect the net tax effect of temporary differences between the carrying amounts of assets and liabilities for financial reporting and income tax purposes.

Significant components of deferred income tax assets and liabilities

	December 31,	
(in millions)	2022	2021
Deferred tax assets:		
Net operating loss carryforwards	$ 1,395	$ 1,301
Capital loss carryforward	50	480
Pension, postretirement and other benefits	1,467	2,089
Investments	1,106	314
Deferred revenue	2,334	2,288
Lease liabilities	2,376	2,452
Other	682	494
Valuation allowance	(1,176)	(833)
Total deferred tax assets	$ 8,234	$ 8,585
Deferred tax liabilities:		
Depreciation	$ 5,110	$ 4,463
Operating lease assets	1,624	1,676
Intangible assets	1,121	1,097
Other	78	55
Total deferred tax liabilities	$ 7,933	$ 7,291
Net deferred tax assets[(1)]	$ 301	$ 1,294

(1) At December 31, 2022, the net deferred tax assets of $301 million included $325 million of net state deferred tax assets, which are recorded in deferred income taxes, net, and $24 million of net federal deferred tax liabilities, which are recorded in other noncurrent liabilities. At December 31, 2021, the net deferred tax assets of $1.3 billion were recorded in deferred income taxes, net.

Valuation Allowance

We periodically assess whether it is more likely than not that we will generate sufficient taxable income to realize our deferred income tax assets. We establish valuation allowances if it is more likely than not that we will be unable to realize our deferred income tax assets. In making this determination, we consider available positive and negative evidence and make certain assumptions. We consider, among other things, projected future taxable income, scheduled reversals of deferred tax liabilities, the overall business environment, our historical financial results and tax planning strategies.

At December 31, 2022 our net deferred tax asset balance was $301 million, including a $1.2 billion valuation allowance primarily related to certain net realized and unrealized capital losses and certain state net operating losses. Although we have cumulative losses since the onset of the pandemic, we have a history of significant earnings prior to the onset of the COVID-19 pandemic. During 2022, we returned to profitability, as our business continued to recover from the impact of the pandemic. We are expecting to generate sufficient taxable income to utilize our federal net operating loss carryforwards before any expire. However, the generation of future taxable income is dependent on many factors, including those which are out of our control, such as the demand for air travel and overall health of the economy. As such, there are no guarantees that a valuation allowance will not be required against some or all of our deferred tax assets in future periods.

As of December 31, 2022, we had approximately $5.4 billion of U.S. federal pre-tax net operating loss carryforwards, of which $1.5 billion was generated prior to 2018 and will not begin to expire until 2029. Under current tax law, the remaining net operating loss carryforwards do not expire. Therefore, we have not recorded a valuation allowance on our deferred tax assets other than the certain net realized and unrealized capital losses and certain state net operating losses that have short expiration periods.

The following table presents the balance of our valuation allowance on our deferred income tax assets and the associated activity:

Valuation allowance activity

(in millions)	2022	2021
Balance at January 1	$ 833	$ 460
Tax provision	155	26
Equity investment activity	188	347
Balance at December 31	$ 1,176	$ 833

Other

The amount of, and changes to, our uncertain tax positions were not material in any of the years presented. We are currently under audit by the IRS for the 2022, 2021 and 2020 tax years.

NOTE 12. EQUITY AND EQUITY COMPENSATION

Equity

We are authorized to issue 2.0 billion shares of capital stock, of which up to 1.5 billion may be shares of common stock, par value $0.0001 per share, and up to 500 million may be shares of preferred stock.

Preferred Stock. We may issue preferred stock in one or more series. The Board of Directors is authorized (1) to fix the descriptions, powers (including voting powers), preferences, rights, qualifications, limitations and restrictions with respect to any series of preferred stock and (2) to specify the number of shares of any series of preferred stock. We have not issued any preferred stock.

Treasury Stock. We generally withhold shares of Delta common stock to cover employees' portion of required tax withholdings when employee equity awards are issued or vest. These shares are valued at cost, which equals the market price of the common stock on the date of issuance or vesting. The weighted average cost per share held in treasury was $29.73 and $28.87 as of December 31, 2022 and 2021, respectively.

Warrants. During 2020 and 2021, in connection with the Coronavirus Aid, Relief, and Economic Security Act of 2020 (the "CARES Act") payroll support program and extensions, we issued warrants to the U.S Department of the Treasury to acquire more than 11.1 million shares of Delta common stock. The conditions and number of warrants outstanding have remained unchanged since December 31, 2021 and key terms under each program are as follows:

Summary of payroll support program warrants

(in millions)	Number of Warrants	Exercise Price	Expiration Year
Payroll Support Program (PSP1)	6.8	$ 24.37	2025
Payroll Support Program Extension (PSP2)	2.4	39.73	2026
Payroll Support Program 3 (PSP3)	1.9	47.80	2026
Total	11.1		

Equity Compensation

Our broad-based equity and cash compensation plan provides for grants of restricted stock, restricted stock units, stock options, performance awards, including cash incentive awards and other equity-based awards (the "Plan"). Shares of common stock issued under the Plan may be made available from authorized, but unissued, common stock or common stock we acquire. If any shares of our common stock are covered by an award that expires, is canceled, forfeited or otherwise terminates without delivery of shares (including shares surrendered or withheld for payment of taxes related to an award), such shares will again be available for issuance under the Plan except for (1) any shares tendered in payment of an option, (2) shares withheld to satisfy any tax withholding obligation with respect to the exercise of an option or stock appreciation right ("SAR") or (3) shares covered by a stock-settled SAR or other awards that were not issued upon the settlement of the award. The Plan authorizes the issuance of up to 163 million shares of common stock. As of December 31, 2022, there were 17 million shares available for future grants.

We make long-term incentive awards annually to eligible employees under the Plan. Generally, awards vest over time, subject to the employee's continued employment. Equity compensation expense, including awards payable in common stock or cash, is recognized in salaries and related costs over the employee's requisite service period (generally, the vesting period of the award) and totaled $150 million, $149 million and $119 million for the years ended December 31, 2022, 2021 and 2020, respectively. We record expense on a straight-line basis for awards with installment vesting. As of December 31, 2022, unrecognized costs related to unvested shares and stock options totaled $83 million. We expect substantially all unvested awards to vest and recognize forfeitures as they occur.

Restricted Stock. Restricted stock is common stock that may not be sold or otherwise transferred for a period of time and is subject to forfeiture in certain circumstances. The fair value of restricted stock awards is based on the closing price of the common stock on the grant date. As of December 31, 2022, there were 3.1 million unvested restricted stock awards. Restricted stock activity under the Plan for the years ended December 31, 2022, 2021 and 2020 is as follows:

Restricted Stock Award Activity

	2022		2021		2020	
(in millions, except weighted avg grant price)	Restricted Stock Awards	Weighted-Average Grant Price	Restricted Stock Awards	Weighted-Average Grant Price	Restricted Stock Awards	Weighted-Average Grant Price
Outstanding at January 1	2.9	$ 45.66	2.2	$ 54.06	2.6	$ 51.28
Granted	1.9	42.45	2.3	39.93	1.4	56.84
Vested	(1.6)	46.31	(1.4)	51.15	(1.6)	51.95
Forfeited	(0.1)	45.51	(0.2)	44.01	(0.2)	56.11
Outstanding at December 31	3.1	$ 43.43	2.9	$ 45.66	2.2	$ 54.06

Stock Options. Stock options are granted with an exercise price equal to the closing price of Delta common stock on the grant date and generally have a 10-year term. We determine the fair value of stock options at the grant date using an option pricing model. As of December 31, 2022, there were 6.2 million outstanding stock option awards with a weighted average exercise price of $50.40 of which 5.1 million were exercisable. Stock option activity under the Plan for the years ended December 31, 2022, 2021 and 2020 is as follows:

Stock Option Activity

	2022		2021		2020	
(in millions, except weighted avg grant price)	Stock Options	Weighted-Average Exercise Price	Stock Options	Weighted-Average Exercise Price	Stock Options	Weighted-Average Exercise Price
Outstanding at January 1	6.2	$ 50.41	5.4	$ 52.37	3.9	$ 49.57
Granted	—	—	1.0	39.78	1.6	58.89
Exercised	—	—	—	—	(0.1)	44.05
Forfeited	—	52.87	(0.2)	49.61	—	—
Outstanding at December 31	6.2	$ 50.40	6.2	$ 50.41	5.4	$ 52.37

Performance Awards. Performance awards are dollar-denominated long-term incentive opportunities which, for grants prior to 2021, are payable in Delta stock to executive officers on the payment date and in cash to all other participants. Beginning with the 2021 grants, performance awards are payable in cash to all participants. Potential performance award payments range from 0%-200% of a target level and are contingent upon our achieving certain financial and operational goals over a three-year performance period. Based on the closing stock price at each respective year end and contingent on achieving the specified performance conditions, the maximum shares that could be issued were 0.7 million, 1.5 million and 2.2 million for the years ended December 31, 2022, 2021 and 2020, respectively.

Performance-Based Restricted Stock Units. Performance-based restricted stock units are long-term incentive opportunities that were granted in 2022 and provide executive officers with the right to receive shares of Delta stock based on our achievement of certain performance conditions at the end of a three-year period. Potential payouts range from 0%-300% of a target level. Based on the closing stock price at year end and contingent on achieving the specified performance conditions, the maximum shares that could be issued were 1.3 million for the year ended December 31, 2022.

NOTE 13. ACCUMULATED OTHER COMPREHENSIVE LOSS

Components of accumulated other comprehensive loss

(in millions)	Pension and Other Benefits Liabilities[2]	Other	Tax Effect	Total
Balance at January 1, 2020	$ (9,563)	$ 25	$ 1,549	$ (7,989)
Changes in value	(1,652)	16	384	(1,252)
Reclassifications into earnings[1]	372	—	(169)	203
Balance at December 31, 2020	(10,843)	41	1,764	(9,038)
Changes in value	2,077	—	(484)	1,593
Reclassifications into earnings[1]	411	—	(96)	315
Balance at December 31, 2021	(8,355)	41	1,184	(7,130)
Changes in value	1,419	—	(330)	1,089
Reclassifications into earnings[1]	312	—	(72)	240
Balance at December 31, 2022	$ (6,624)	$ 41	$ 782	$ (5,801)

(1) Amounts reclassified from AOCI for pension and other benefits liabilities are recorded in pension and related benefit in non-operating expense in the income statement.

(2) Includes approximately $755 million of deferred income tax expense as a result of tax law changes and prior valuation allowance releases through continuing operations, that will not be recognized in net income until pension and other benefit obligations are fully extinguished.

NOTE 14. SEGMENTS

Operating segments are defined as components of an enterprise about which separate financial information is available that is evaluated regularly by the chief operating decision maker and is used in resource allocation and performance assessments. Our chief operating decision maker is considered to be our executive leadership team. Our executive leadership team regularly reviews discrete information for our two operating segments, which are determined by the products and services provided: our airline segment and our refinery segment.

Airline Segment

Our airline segment is managed as a single business unit that provides scheduled air transportation for passengers and cargo throughout the U.S. and around the world and includes our loyalty program, as well as other ancillary airline services. This allows us to benefit from an integrated revenue pricing and route network. Our flight equipment forms one fleet, which is deployed through a single route scheduling system. When making resource allocation decisions, our chief operating decision maker evaluates flight profitability data, which considers fleet type and route economics, but gives no weight to the financial impact of the resource allocation decision on a geographic region or mainline/regional carrier basis. Our objective in making resource allocation decisions is to optimize our consolidated financial results.

Refinery Segment

Our Monroe subsidiary operates the Trainer oil refinery and related assets located near Philadelphia, Pennsylvania, as part of our strategy to mitigate the cost of the refining margin reflected in the price of jet fuel. Monroe's operations include pipelines and terminal assets that allow the refinery to supply jet fuel to our airline operations throughout the Northeastern U.S., including our New York hubs at LaGuardia and JFK.

Our refinery segment operates for the benefit of the airline segment by providing jet fuel to the airline segment from its own production and through jet fuel obtained through agreements with third parties. The refinery's production consists of jet fuel, as well as non-jet fuel products. We use several counterparties to exchange the non-jet fuel products produced by the refinery for jet fuel consumed in our airline operations. The gross fair value of the products exchanged under these agreements during the years ended December 31, 2022, 2021 and 2020 was $3.5 billion, $2.3 billion and $1.5 billion, respectively.

Segment Reporting

Segment results are prepared based on our internal accounting methods described below, with reconciliations to consolidated amounts in accordance with GAAP. Our segments are not designed to measure operating income or loss directly related to the products and services included in each segment on a stand-alone basis.

Financial information by segment

(in millions)	Airline	Refinery	Intersegment Sales/Other	Consolidated
Year Ended December 31, 2022				
Operating revenue:	$ 45,605	$ 10,706		$ 50,582
Sales to airline segment			$ (1,976) [1]	
Exchanged products			(3,475) [2]	
Sales of refined products			(278)	
Operating income[3]	2,884	777		3,661
Interest expense, net	1,029	12	(12)	1,029
Depreciation and amortization	2,107	93	(93) [3]	2,107
Restructuring charges	(124)	—		(124)
Total assets, end of period	69,355	3,039	(106)	72,288
Net fair value obligations, end of period	—	(226)		(226)
Capital expenditures	6,217	149		6,366
Year Ended December 31, 2021				
Operating revenue:	$ 26,670	$ 6,054		$ 29,899
Sales to airline segment			$ (492) [1]	
Exchanged products			(2,293) [2]	
Sales of refined products			(40)	
Operating income (loss)[3]	1,888	(2)		1,886
Interest expense, net	1,279	7	(7)	1,279
Depreciation and amortization	1,998	95	(95) [3]	1,998
Restructuring charges	(19)	—		(19)
Total assets, end of period	70,417	2,099	(57)	72,459
Net fair value obligations, end of period	—	(497)		(497)
Capital expenditures	3,188	59		3,247
Year Ended December 31, 2020				
Operating revenue:	$ 15,945	$ 3,143		$ 17,095
Sales to airline segment			$ (214) [1]	
Exchanged products			(1,472) [2]	
Sales of refined products			(307)	
Operating loss[3]	(12,253)	(216)		(12,469)
Interest expense, net	929	1	(1)	929
Depreciation and amortization	2,312	99	(99) [3]	2,312
Restructuring charges	8,219	—		8,219
Total assets, end of period	70,548	1,448	—	71,996
Net fair value obligations, end of period	—	(156)		(156)
Capital expenditures	1,879	20		1,899

[1] Represents transfers, valued on a market price basis, from the refinery to the airline segment for use in airline operations. We determine market price by reference to the market index for the primary delivery location, which is New York Harbor, for jet fuel from the refinery.
[2] Represents value of products delivered under our exchange agreements, as discussed above, determined on a market price basis.
[3] Refinery segment operating results, including depreciation and amortization, are included within aircraft fuel and related taxes in our income statement.

Renewable Fuel Compliance Costs

A refinery is subject to annual Environmental Protection Agency ("EPA") requirements to blend renewable fuels into the gasoline and on-road diesel fuel it produces. Alternatively, a refinery may purchase Renewable Identification Numbers ("RINs") from third parties in the secondary market. The Monroe refinery purchases the majority of its RINs in the secondary market. Renewable fuel compliance costs are accrued each period as the RINs obligation is generated. Purchased RINs are carried at the lower of cost and net realizable value and are recorded in prepaid expenses and other. The RINs obligation is recorded in accounts payable at cost for those purchased or under fixed price purchase agreements, with any remaining net obligation recorded at fair value. The RINs asset and obligation are retired when used to satisfy EPA requirements.

The net fair value obligations presented in the financial information by segment table above are based on quoted market prices and other observable information and are therefore classified as Level 2 in the fair value hierarchy. Our obligation as of December 31, 2022 was calculated using the U.S. EPA Renewable Fuel Standard ("RFS") volume requirements, which were finalized in the June 2022 quarter. During the December 2022 quarter, we retired our 2020 RINs assets to settle our 2020 obligations prior to the compliance deadline. We expect to settle our 2021 and 2022 obligations in the first half of 2023.

NOTE 15. GOVERNMENT GRANTS AND RESTRUCTURING

Government Grant Recognition. Under the initial payroll support program under the CARES Act and the payroll support program ("PSP") extensions we received support payments which included $4.5 billion and $3.9 billion of grants during the years ended December 31, 2021 and 2020, respectively. These grants were recognized in government grant recognition in our income statement over the periods that the funds were intended to compensate. PSP1 grants were recognized during 2020 and grants received from PSP2 and PSP3 were recognized during 2021. See Note 6, "Debt," and Note 12, "Equity and Equity Compensation," for additional information on other aspects of the payroll support program.

Restructuring Charges. As a result of the unprecedented, widespread impact of the COVID-19 pandemic, demand for travel declined at a rapid pace in the March 2020 quarter and remained depressed throughout 2020, which had a materially adverse impact on our results of operations and financial position. During 2020, we implemented enhanced measures focusing on the safety of our customers and employees, while at the same time seeking to mitigate the impact on our financial position and operations and to position our business for recovery through actions including fleet retirements, offering voluntary retirement and separation programs and other decisions. These actions resulted in significant restructuring charges during the year ended December 31, 2020. Subsequent to these charges, we recorded adjustments to certain of these restructuring charges during the years ended December 31, 2022 and 2021, representing changes in our estimates or the outcome of contract negotiations. These charges and adjustments are summarized as follows:

Restructuring charges by category

	Year Ended December 31,		
(in millions)	**2022**	**2021**	**2020**
Fleet retirements	$ (48)	$ 40	$ 4,409
Voluntary programs and other employee benefit charges	(79)	(17)	3,409
Receivables and other	3	(42)	401
Total restructuring charges	$ (124)	$ (19)	$ 8,219

Fleet Retirements. As a result of the COVID-19 pandemic and our response, we made decisions to remove certain aircraft from active service and to early retire certain fleet types. These actions resulted in $4.4 billion of impairment and other related charges that were recorded in restructuring charges in our income statement for the year ended December 31, 2020.

These charges were calculated using Level 3 fair value inputs based primarily upon recent market transactions and third-party bids, which were corroborated with published pricing guides and our assessment of existing market conditions based on industry knowledge. Following the impairment charges, the aggregate net book value of these aircraft as of December 31, 2022 and December 31, 2021 was approximately $220 million and $340 million, respectively, with the reduction in 2022 primarily due to aircraft sales.

Voluntary Programs and Other Employee Benefit Charges. In response to the COVID-19 pandemic, we announced the voluntary programs, which primarily applied to eligible U.S. merit, ground and flight attendant and pilot employees. During 2020, 18,000 employees elected to participate and were eligible for separation payments, continued healthcare benefits and certain participants received retiree medical accounts. We recorded $3.4 billion in restructuring charges in our income statement associated with these programs and other employee benefit charges during 2020, including $1.3 billion of special termination benefits (see Note 9, "Employee Benefit Plans"). The remainder of the restructuring charge primarily relates to separation payments and healthcare benefits. Approximately $440 million, $575 million and $720 million was disbursed in cash payments to participants in the voluntary programs during 2022, 2021 and 2020, respectively. An additional $250 million of cash payments were disbursed during 2020 related to unused vacation and other benefits, which were accrued prior to the voluntary programs charge. Other than the special termination benefits that are recorded in pension, postretirement and related benefits, the remaining accruals as of December 31, 2022 related to separation payments under the voluntary programs are recorded in other accrued liabilities on our balance sheet.

Receivables and Other. Based on our assessment of collectability, during the year ended December 31, 2020, we recorded approximately $100 million of reserves against outstanding receivables from LATAM, Grupo Aeroméxico, GOL, Virgin Atlantic and others. Following LATAM's and Grupo Aeroméxico's emergence from their respective bankruptcy processes and general improvement overall in the airline industry, these reserves were $7 million as of December 31, 2022.

NOTE 16. EARNINGS/(LOSS) PER SHARE

We calculate basic earnings/(loss) per share and diluted (loss) per share by dividing net income/(loss) by the weighted average number of common shares outstanding, excluding restricted shares. We calculate diluted earnings per share by dividing net income by the weighted average number of common shares outstanding plus the dilutive effect of outstanding share-based instruments, including stock options, restricted stock awards and warrants. Antidilutive common stock equivalents excluded from the diluted earnings/(loss) per share calculation are not material. The following table shows our computation:

Basic and diluted earnings/(loss) per share

	Year Ended December 31,		
(in millions, except per share data)	**2022**	**2021**	**2020**
Net income/(loss)	$ 1,318	$ 280	$ (12,385)
Basic weighted average shares outstanding	638	636	636
Dilutive effect of share-based instruments	3	5	—
Diluted weighted average shares outstanding	641	641	636
Basic earnings/(loss) per share	$ 2.07	$ 0.44	$ (19.49)
Diluted earnings/(loss) per share	$ 2.06	$ 0.44	$ (19.49)

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

Our management, including our Chief Executive Officer and Chief Financial Officer, performed an evaluation of our disclosure controls and procedures, which have been designed to permit us to record, process, summarize and report, within time periods specified by the SEC's rules and forms, information required to be disclosed. Our management, including our Chief Executive Officer and Chief Financial Officer, concluded that the controls and procedures were effective as of December 31, 2022 to ensure that material information was accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

Changes in Internal Control

During the three months ended December 31, 2022, we did not make any changes in our internal control over financial reporting that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management's Annual Report on Internal Control Over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Securities Exchange Act of 1934. Our internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies may deteriorate.

Management conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2022 using the criteria issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in the 2013 Internal Control-Integrated Framework. Based on that evaluation, management believes that our internal control over financial reporting was effective as of December 31, 2022.

The effectiveness of our internal control over financial reporting as of December 31, 2022 has been audited by Ernst & Young LLP, an independent registered public accounting firm, which also audited our Consolidated Financial Statements for the year ended December 31, 2022. Ernst & Young LLP's report on our internal control over financial reporting is set forth below.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors and Stockholders of
Delta Air Lines, Inc.

Opinion on Internal Control over Financial Reporting

We have audited Delta Air Lines, Inc.'s internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Delta Air Lines, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the 2022 consolidated financial statements of the Company and our report dated February 10, 2023 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Annual Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitation of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Atlanta, Georgia
February 10, 2023

/s/ Ernst & Young LLP

ITEM 9B. OTHER INFORMATION

None.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not Applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information required by this item is set forth under the headings "Governance - Board Matters" and "Proposal 1 - Election of Directors" in our Proxy Statement to be filed with the Commission related to our 2023 Annual Meeting of Stockholders ("Proxy Statement"), and is incorporated by reference. Certain information regarding Delta's executive officers is contained in Part I of this Form 10-K under the heading "Information About Our Executive Officers."

ITEM 11. EXECUTIVE COMPENSATION

Information required by this item is set forth under the headings "Executive Compensation" and "Director Compensation" in our Proxy Statement and is incorporated by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Securities Authorized for Issuance Under Equity Compensation Plans

The following table provides information about the number of shares of common stock that may be issued under Delta's equity compensation plans as of December 31, 2022.

Equity compensation plan information

Plan Category	(a) No. of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights[1]	(b) Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights[2]	(c) No. of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (a))[3]
Equity compensation plans approved by securities holders	8,162,240	$ 38.22	17,435,304
Equity compensation plans not approved by securities holders	—	—	—
Total	8,162,240	$ 38.22	17,435,304

(1) Includes a maximum of 1,971,835 shares of common stock that may be issued upon the achievement of certain performance conditions under outstanding performance share awards as of December 31, 2022.

(2) Includes performance share awards, which do not have exercise prices. The weighted average exercise price of outstanding options at December 31, 2022 was $50.40.

(3) Reflects shares remaining available for issuance under Delta's Performance Compensation Plan. If any shares of our common stock are covered by an award under the Plan that expires, is canceled, forfeited or otherwise terminates without delivery of shares (including shares surrendered or withheld for payment of taxes related to an award), then such shares will again be available for issuance under the Plan except for (1) any shares tendered in payment of an option, (2) shares withheld to satisfy any tax withholding obligation with respect to the exercise of an option or stock appreciation right ("SAR") or (3) shares covered by a stock-settled SAR or other awards that were not issued upon the settlement of the award. Because 3,107,633 shares of restricted stock remained unvested and subject to forfeiture as of December 31, 2022, these shares could again be available for issuance.

Other information required by this item is set forth under the heading "Share Ownership - Beneficial Ownership of Securities" in our Proxy Statement and is incorporated by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Information required by this item is set forth under the headings "Governance - Board Matters" and "Proposal 1 - Election of Directors" in our Proxy Statement and is incorporated by reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

Information required by this item is set forth under the heading "Proposal 4 - Ratification of the Appointment of Independent Auditors" in our Proxy Statement and is incorporated by reference.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) (1). The following is an index of the financial statements required by this item that are included in this Form 10-K:

Report of Independent Registered Public Accounting Firm

Consolidated Balance Sheets—December 31, 2022 and 2021

Consolidated Statements of Operations for the years ended December 31, 2022, 2021 and 2020

Consolidated Statements of Comprehensive Income/(Loss) for the years ended December 31, 2022, 2021 and 2020

Consolidated Statements of Cash Flows for the years ended December 31, 2022, 2021 and 2020

Consolidated Statements of Stockholders' Equity for the years ended December 31, 2022, 2021 and 2020

Notes to the Consolidated Financial Statements

(2). Financial Statement Schedules. Financial statement schedules are not included herein as the required information is not applicable or is not present in amounts sufficient to require submission of the schedule, or because the information required is included in the Consolidated Financial Statements and accompanying notes included in this Form 10-K.

(3). Exhibit List.

The exhibits required by this item are listed below. The management contracts and compensatory plans or arrangements required to be filed as an exhibit to this Form 10-K are listed as Exhibits 10.12 through 10.21.

Note to Exhibits: Any representations and warranties of a party set forth in any agreement (including all exhibits and schedules thereto) filed with this Annual Report on Form 10-K have been made solely for the benefit of the other party to the agreement. Some of those representations and warranties were made only as of the date of the agreement or such other date as specified in the agreement, may be subject to a contractual standard of materiality different from what may be viewed as material to stockholders, or may have been used for the purpose of allocating risk between the parties rather than establishing matters as facts. Such agreements are included with this filing only to provide investors with information regarding the terms of the agreements, and not to provide investors with any other factual or disclosure information regarding the registrant or its business.

3.1(a)	Delta's Amended and Restated Certificate of Incorporation (Filed as Exhibit 3.1 to Delta's Current Report on Form 8-K as filed on April 30, 2007).*
3.1 (b)	Amendment to Amended and Restated Certificate of Incorporation (Filed as Exhibit 3.1 to Delta's Current Report on Form 8-K as filed on June 27, 2014).*
3.2	Delta's Bylaws (Filed as Exhibit 3.1 to Delta's Current Report on Form 8-K as filed on December 9, 2022).*
4.1	Description of Registrant's Securities (Filed as Exhibit 4.1 to Delta's Annual Report on Form 10-K for the year ended December 31, 2020).*

Delta is not filing any instruments evidencing any indebtedness because the total amount of securities authorized under any single such instrument does not exceed 10% of the total assets of Delta and its subsidiaries on a consolidated basis. Copies of such instruments will be furnished to the Securities and Exchange Commission upon request.

10.1(a)	Credit Agreement, dated as of April 19, 2018, among Delta Air Lines, Inc., as borrower, the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent (Filed as Exhibit 10.1 to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2018).*
10.1(b)	Amendment No. 1 to Credit Agreement, dated as of June 29, 2020, among Delta Air Lines, Inc., the lenders party thereto, and JPMorgan Chase Bank, N.A., as administrative agent (Filed as Exhibit 10.5 to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2020).*

10.1(c) Amendment No. 2 to Credit Agreement, dated as of November 17, 2021, among Delta Air Lines, Inc., JPMorgan Chase Bank, N.A., as administrative agent and collateral agent, and the lenders party thereto (Filed as Exhibit 10.1(c) to Delta's Annual Report on Form 10-K for the year ended December 31, 2021).*

10.1(d) Amendment No. 3 to Credit Agreement, dated as of November 18, 2022, among Delta Air Lines, Inc., JPMorgan Chase Bank, N.A., as administrative agent and collateral agent, and the lenders party thereto (Filed as Exhibit 10.1 to Delta's Current Report on Form 8-K as filed on November 21, 2022).*

10.2(a) 364-Day Term Loan Credit Agreement, dated as of March 17, 2020, among Delta Air Lines, Inc., the lenders party thereto, and JPMorgan Chase Bank, N.A., as administrative agent (Filed as Exhibit 10.1 to Delta's Quarterly Report on Form 10-Q for the quarter ended March 31, 2020).*

10.2(b) Amendment No. 1 to 364-Day Term Loan Credit Agreement, dated as of April 3, 2020, among Delta Air Lines, Inc., the lenders party thereto, and JPMorgan Chase Bank, N.A., as administrative agent (Filed as Exhibit 10.4(a) to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2020).*

10.2(c) Amendment No. 2 to 364-Day Term Loan Credit Agreement, dated as of June 29, 2020, among Delta Air Lines, Inc., the lenders party thereto, and JPMorgan Chase Bank, N.A., as administrative agent (Filed as Exhibit 10.4(b) to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2020).*

10.3(a) Payroll Support Program Agreement, dated as of April 20, 2020, between Delta Air Lines, Inc. and the United States Department of the Treasury (Filed as Exhibit 10.1 to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2020).*

10.3(b) Warrant Agreement, dated as of April 20, 2020, between Delta Air Lines, Inc. and the United States Department of the Treasury (Filed as Exhibit 10.2 to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2020).*

10.3(c) Form of Warrant to Purchase Common Stock (Filed as Exhibit 10.4(b) to Delta's Annual Report on Form 10-K for the year ended December 31, 2020).*

10.4(a) Payroll Support Program Extension Agreement, dated as of January 15, 2021, between Delta Air Lines, Inc. and the United States Department of the Treasury (Filed as Exhibit 10.7 to Delta's Annual Report on Form 10-K for the year ended December 31, 2020).*

10.4(b) Warrant Agreement, dated as of January 15, 2021, between Delta Air Lines, Inc. and the United States Department of the Treasury (Filed as Exhibit 10.8(a) to Delta's Annual Report on Form 10-K for the year ended December 31, 2020).*

10.4(c) Form of Warrant to Purchase Common Stock (Filed as Exhibit 10.8(b) to Delta's Annual Report on Form 10-K for the year ended December 31, 2020).*

10.5(a) Payroll Support Program 3 Agreement, dated as of April 23, 2021, between Delta Air Lines, Inc. and the United States Department of the Treasury (Filed as Exhibit 10.1 to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2021).*

10.5(b) Warrant Agreement, dated as of April 23, 2021, between Delta Air Lines, Inc. and the United States Department of the Treasury (including Form of Warrant to Purchase Common Stock) (Filed as Exhibit 10.2 to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2021).*

10.6(a) Term Loan Credit and Guaranty Agreement, dated as of September 23, 2020, among Delta, SkyMiles IP Ltd., the guarantors party thereto, Barclays Bank PLC, as administrative agent, U.S. Bank National Association, as collateral administrator, and the lenders party thereto (Filed as Exhibit 10.1 to Delta's Current Report on Form 8-K filed with the Securities and Exchange Commission on September 25, 2020).*

10.6(b) First Amendment to Term Loan Credit and Guaranty dated as of December 4, 2022 among SkyMiles IP Ltd., Delta Air Lines, Inc. and Barclays Bank PLC, as administrative agent.

10.7(a) Anchor Tenant Agreement dated as of December 9, 2010 between JFK International Air Terminal LLC and Delta Air Lines, Inc. (Filed as Exhibit 10.4 to Delta's Annual Report on Form 10-K for the year ended December 31, 2010).*

10.7(b) Sixth Supplement to Anchor Tenant Agreement dated as of April 8, 2022 between JFK International Air Terminal LLC and Delta Air Lines, Inc. (Filed as Exhibit 10.1 to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2022).*

10.8 Amended and Restated Agreement of Lease by and between The Port Authority of New York and New Jersey and Delta Air Lines, Inc., dated as of September 13, 2017 (Filed as Exhibit 10.1 to Delta's Quarterly Report on Form 10-Q for the quarter ended September 30, 2017).*

10.9(a) Airbus A330-900neo Aircraft and A350-900 Aircraft Purchase Agreement dated as of November 24, 2014 between Airbus S.A.S and Delta Air Lines, Inc. (Filed as Exhibit 10.9 to Delta's Annual Report on Form 10-K for the year ended December 31, 2014).*/**

10.9(b) Amendment No. 3, dated May 10, 2017, to Airbus A330-900 Aircraft and A350-900 Aircraft Purchase Agreement dated as of November 24, 2014 between Airbus S.A.S. and Delta Air Lines, Inc. ("Amendment No. 3") (Filed as Exhibit 10.2(a) to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2017).*/**

10.9(c) Letter Agreements, dated May 10, 2017, relating to Amendment No. 3 (Filed as Exhibit 10.2(b) to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2017).*/**

10.9(d) Amendment No. 8, dated as of October 30, 2018, to Airbus A330-900 Aircraft and A350-900 Aircraft Purchase Agreement dated as of November 24, 2014 between Airbus S.A.S. and Delta Air Lines, Inc. ("Amendment No. 8") (Filed as Exhibit 10.7(d) to Delta's Annual Report on Form 10-K for the year ended December 31, 2018).*/**

10.9(e) Letter Agreements, dated as of October 30, 2018, relating to Amendment No. 8 (Filed as Exhibit 10.7(e) to Delta's Annual Report on Form 10-K for the year ended December 31, 2018).*/**

10.9(f) Amendment No 11, dated as of July 30, 2020 to Airbus A330-900 Aircraft and A350-900 Aircraft Purchase Agreement, dated as of November 24, 2014 between Delta and Airbus S.A.S. (Filed as Exhibit 10.1(a) to Delta's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020).*/**

10.9(g) Amended and Restated Letter Agreement No. 1, dated as of July 30, 2020, relating to Airbus A330-900 Aircraft and A350-900 Aircraft Purchase Agreement dated as of November 24, 2014 (Filed as Exhibit 10.1(b) to Delta's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020).*/**

10.9(h) Amended and Restated Letter Agreement No. 4, dated as of July 30, 2020, relating to Airbus A330-900 Aircraft and A350-900 Aircraft Purchase Agreement dated as of November 24, 2014 (Filed as Exhibit 10.1(c) to Delta's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020).*/**

10.10(a) Airbus A321neo Aircraft Purchase Agreement dated as of December 15, 2017 between Airbus S.A.S. and Delta Air Lines, Inc. (Filed as Exhibit 10.10 to Delta's Annual Report on Form 10-K for the year ended December 31, 2017).*/**

10.10(b) Amendment No. 2, dated as of July 30, 2020 to Airbus A321neo Aircraft Purchase Agreement, dated as of December 15, 2017 between Delta and Airbus S.A.S. (Filed as Exhibit 10.2(a) to Delta's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020).*/**

10.10(c) Amended and Restated Letter Agreement No. 3, dated as of July 30, 2020, relating to Airbus A321neo Aircraft Purchase Agreement, dated as of December 15, 2017 between Delta and Airbus S.A.S. (Filed as Exhibit 10.2(b) to Delta's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020).*/**

10.10(d) Amendment No. 3, dated April 22, 2021, to Airbus A321neo Aircraft Purchase Agreement, dated as of December 15, 2017, between Airbus S.A.S. and Delta Air Lines, Inc. ("Amendment No. 3") (Filed as Exhibit 10.3(a) to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2021).*/**

10.10(e)	Amended and Restated Letter Agreements related to Amendment No. 3, dated April 22, 2021 (Filed as Exhibit 10.3(b) to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2021).*/**
10.10(f)	Amendment No. 4, dated August 20, 2021, to Airbus A321neo Aircraft Purchase Agreement, dated as of December 15, 2017, between Airbus S.A.S. and Delta Air Lines, Inc. ("Amendment No. 4") (Filed as Exhibit 10.1 to Delta's Quarterly Report on Form 10-Q for the quarter ended September 30, 2021).*/**
10.10(g)	Amended and Restated Letter Agreements No. 3 related to Amendment No. 4, dated August 20, 2021 (Filed as Exhibit 10.2 to Delta's Quarterly Report on Form 10-Q for the quarter ended September 30, 2021).*/**
10.11	Purchase Agreement Number PA-04696, dated July 18, 2022, between The Boeing Company and Delta Air Lines, Inc. relating to Boeing Model 737-10 Aircraft (Filed as Exhibit 10.1 to Delta's Quarterly Report on Form 10-Q for the quarter ended September 30, 2022).*/**
10.12	Delta Air Lines, Inc. Performance Compensation Plan (Filed as Exhibit 10.2 to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2016).*
10.13(a)	Delta Air Lines, Inc. Officer and Director Severance Plan, as amended and restated as of June 1, 2016 (Filed as Exhibit 10.3 to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2016).*
10.13(b)	Amendment to Delta Air Lines, Inc. Officer and Director Severance Plan, as amended and restated as of June 1, 2016 (Filed as Exhibit 10.15(b) to Delta's Annual Report on Form 10-K for the year ended December 31, 2020).*
10.14	Description of Certain Benefits of Members of the Board of Directors and Executive Officers (Filed as Exhibit 10.14 to Delta's Annual Report on Form 10-K for the year ended December 31, 2021).*
10.15(a)	Delta Air Lines, Inc. 2020 Long-Term Incentive Program (Filed as Exhibit 10.14 to Delta’s Annual Report on Form 10-K for the year ended December 31, 2019).*
10.15(b)	Model Award Agreement for the Delta Air Lines, Inc. 2020 Long-Term Incentive Program (Filed as Exhibit 10.2 to Delta’s Quarterly Report on Form 10-Q for the quarter ended March 31, 2020).*
10.16	Delta Air Lines, Inc. Management Incentive Plan (Filed as Exhibit 10.21 to Delta’s Annual Report on Form 10-K for the year ended December 31, 2020).*
10.17	Model Award Agreement for the Delta Air Lines, Inc. 2021 Long-Term Incentive Program (Filed as Exhibit 10.1 to Delta's Quarterly Report on Form 10-Q for the quarter ended March 31, 2021).*
10.18	Model Award Agreement for the Delta Air Lines, Inc. 2022 Long-Term Incentive Program (Filed as Exhibit 10.1 to Delta's Quarterly Report on Form 10-Q for the quarter ended March 31, 2022).*
10.19	Delta Air Lines, Inc. Restoration Long Term Disability Plan (Filed as Exhibit 10.24 to Delta's Annual Report on Form 10-K for the year ended December 31, 2011).*
10.20	Offer letter, dated as of May 14, 2021, between Delta Air Lines, Inc. and Dan Janki (including addendum) (Filed as Exhibit 10.4 to Delta's Quarterly Report on Form 10-Q for the quarter ended June 30, 2021).*
10.21	Terms of 2022 Restricted Stock Awards for Non-Employee Directors (Filed as Exhibit 10.2 to Delta’s Quarterly Report on Form 10-Q for the quarter ended June 30, 2022).*
21.1	Subsidiaries of the Registrant.
23.1	Consent of Ernst & Young LLP.
31.1	Rule 13a-14(a)/15d-14(a) Certification of Chief Executive Officer.
31.2	Rule 13a-14(a)/15d-14(a) Certification of Chief Financial Officer.

32	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act 2002.
101.INS	XBRL Instance Document - The instance document does not appear in the interactive data file because its XBRL tags are embedded within the inline XBRL document.
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Labels Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document
104	The cover page from this Annual Report on Form 10-K for the year ended December 31, 2022 formatted in Inline XBRL (included in Exhibit 101)

_____

* Incorporated by reference.

** Portions of this exhibit have been omitted as confidential information.

ITEM 16. FORM 10-K SUMMARY

Not applicable.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on the 10th day of February, 2023.

DELTA AIR LINES, INC.

By: /s/ Edward H. Bastian
Edward H. Bastian
Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below on the 10th day of February, 2023 by the following persons on behalf of the registrant and in the capacities indicated.

Signature	Title
/s/ Edward H. Bastian Edward H. Bastian	Chief Executive Officer and Director (Principal Executive Officer)
/s/ Daniel C. Janki Daniel C. Janki	Executive Vice President and Chief Financial Officer (Principal Financial Officer)
/s/ William C. Carroll William C. Carroll	Senior Vice President - Controller (Principal Accounting Officer)
/s/ Francis S. Blake Francis S. Blake	Chairman of the Board
/s/ Greg Creed Greg Creed	Director
/s/ David G. DeWalt David G. DeWalt	Director
/s/ William H. Easter III William H. Easter III	Director
/s/ Leslie D. Hale Leslie D. Hale	Director
/s/ Christopher A. Hazleton Christopher A. Hazleton	Director
/s/ Michael P. Huerta Michael P. Huerta	Director
/s/ Jeanne P. Jackson Jeanne P. Jackson	Director
/s/ George N. Mattson George N. Mattson	Director
/s/ Sergio A.L. Rial Sergio A.L. Rial	Director
/s/ David S. Taylor David S. Taylor	Director
/s/ Kathy N. Waller Kathy N. Waller	Director