WRITTEN STATEMENT OF

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AIR LINE PILOTS ASSOCIATION, INTERNATIONAL (ALPA)

BEFORE THE

AVIATION SUBCOMMITEE OF THE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

APRIL 19, 2023

"FAA Reauthorization: Examining the Current and Future Challenges Facing the Aerospace Workforce"

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On behalf of the Air Line Pilots Association, International (ALPA), I want to thank you for inviting me to testify on the current and future aerospace workforce. My name is Captain Jason Ambrosi and I am a current and qualified international captain on the Boeing 767 at Delta Air Lines, and serve as the president of ALPA. ALPA is the largest airline pilot union in the world, as well as the largest nongovernmental aviation safety organization, with a history of safety advocacy spanning more than 90 years.

Thanks to the leadership of Chair Graves and Ranking Member Cohen and many others on the Committee, the Payroll Support Program and its strong worker protection and retention provisions provided a bridge to guarantee there are a sufficient number of pilots to not only ensure system operability throughout and after the pandemic, but also to accommodate demand-driven growth for air carriers today. In the absence of bold intervention to invest in and preserve pilots and other airline personnel, we likely would not be having this hearing today. Carrier capacity would be extremely limited, and *available* pilot personnel would be a major constraint on passenger and cargo operations.

A decade earlier, this Committee also came together, again in bipartisan fashion, to address another crisis in U.S. aviation: the unacceptably high number of airline passenger fatalities. In fact, in the two decades before Congress intervened to make life-saving changes to the law, more than 1,100 people were killed in Part 121 airline passenger operations. Since the passage of the 2010 Act, the United States has experienced a 99.8 percent reduction in airline passenger fatalities. So, I commend you for not only taking bold action to save tens of thousands of pilot jobs during the pandemic, but also for saving countless lives and establishing a framework for producing more pilots than the airline industry has needed over the past ten years.

Much has been written about the current and future supply of pilots in the United States, with frequently little to no substantiation of information, misleading data, or a failure to account for a multitude of industry dynamics at play. Here are the facts: there are more than enough pilots to meet U.S. airline hiring demand; airline pilot growth has increased each year since the pandemic; and airline decisions to leave communities are market-driven business choices and should not be conflated with pilot supply. Training capacity has been the dominant *pilot*-related constraint on air travel. The displacement of pilots by carriers to ease costs combined with post-pandemic carrier hiring growth has created considerable attrition and a significant training backlog. These are the pilot labor dynamics prevailing today. The good news is that the system is resilient—and is working to correct this current, short-term situation. All while maintaining the United States' enviable position of having the golden standard when it comes to the safety of our aviation system.

Responding to temporary post-COVID industry problems with permanent changes to pilot training and qualification requirements is ill-considered and dangerous. The lifesaving safety improvements ushered in by this Committee through the Airline Safety and Federal Aviation Administration Extension Act of 2010 and attendant minimum first officer qualification rules is the framework by which the U.S. airline industry is safer than at any point in history. Attempts to undermine or otherwise alter or repeal this lifesaving set of requirements, including moving from an experiential-based training and qualification regime to a simulation-based system, threatens the lives of the traveling public and frontline aviation workers – and should be summarily rejected.

Pilot Supply and the Airline Industry

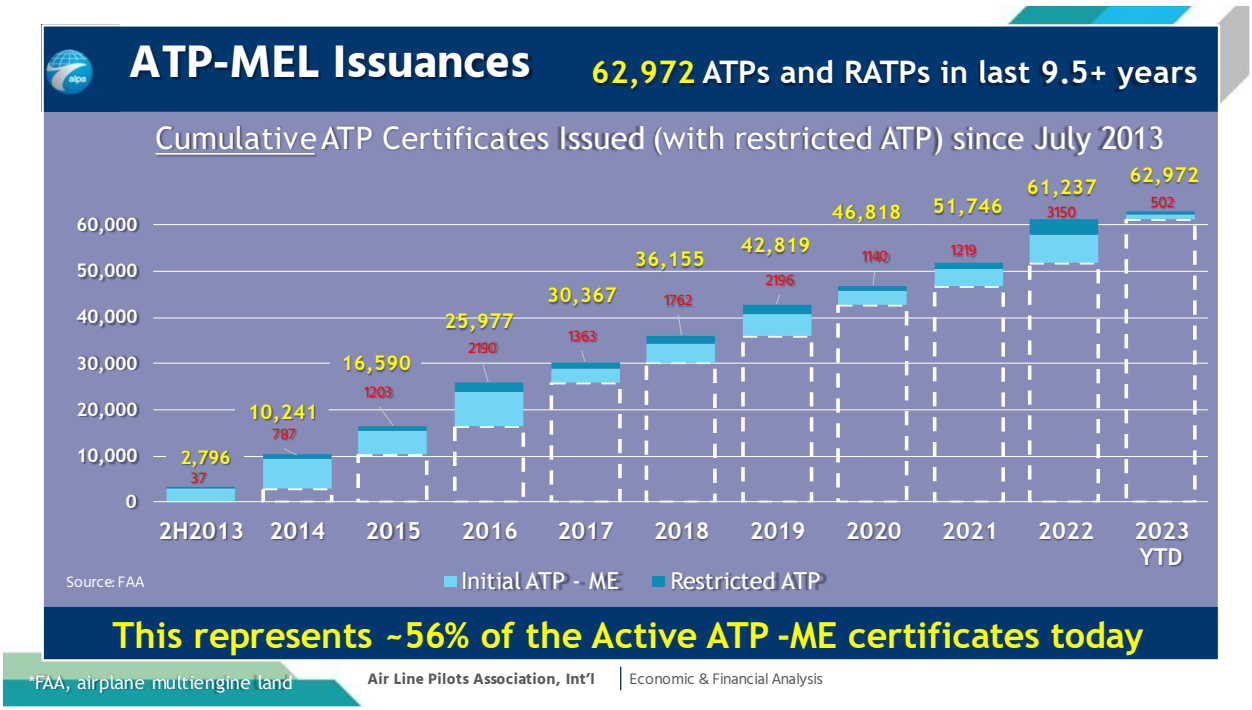
Over the last decade, segments of the industry have speciously suggested there is an issue with pilot supply in the United States. This narrative does not reflect reality. In fact, according to the only publicly available data on pilot head counts at U.S. air carriers, the nation has produ62,972 pilots, while ALPA estimates that airlines have hired approximately 40,000 between 2013 and today. And in a sign of just

how strong the post-pandemic pilot pipeline has been, there are more than 7,500 net pilots today at the large passenger and cargo carriers than pre-pandemic. Again, there are more than enough airline pilots to meet demand and that is thanks, in large part, to the leadership of this Committee.

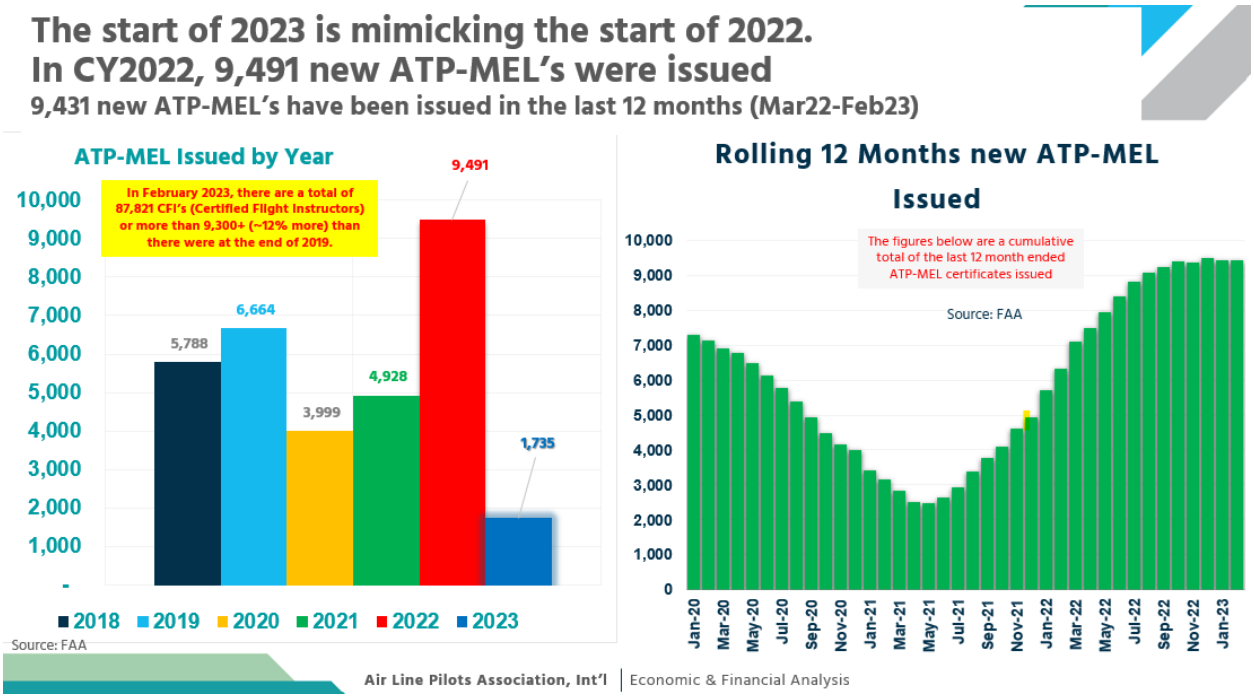
Airline	12/31/2019	12/31/2022	Difference
Delta	13,082	15,040	1,958
United	12,251	13,831	1,580
American	13,800	13,450	-350
Southwest	9,300	9,342	42
FedEx	5,028	5,912	884
JetBlue	3,661	4,314	653
UPS	2,800	3,500	700
Alaska	3,048	3,292	244
Spirit	2,390	3,184	794
Frontier	1,492	1,997	505
Allegiant	947	1,100	153
Hawaiian	869	1,012	143
Sun Country	368	571	203
Total	69,036	76,545	7,509
*Pilot counts from airline annual reports; FedEx data from ALPA member data; 2019 Frontier data from ALPA member data			

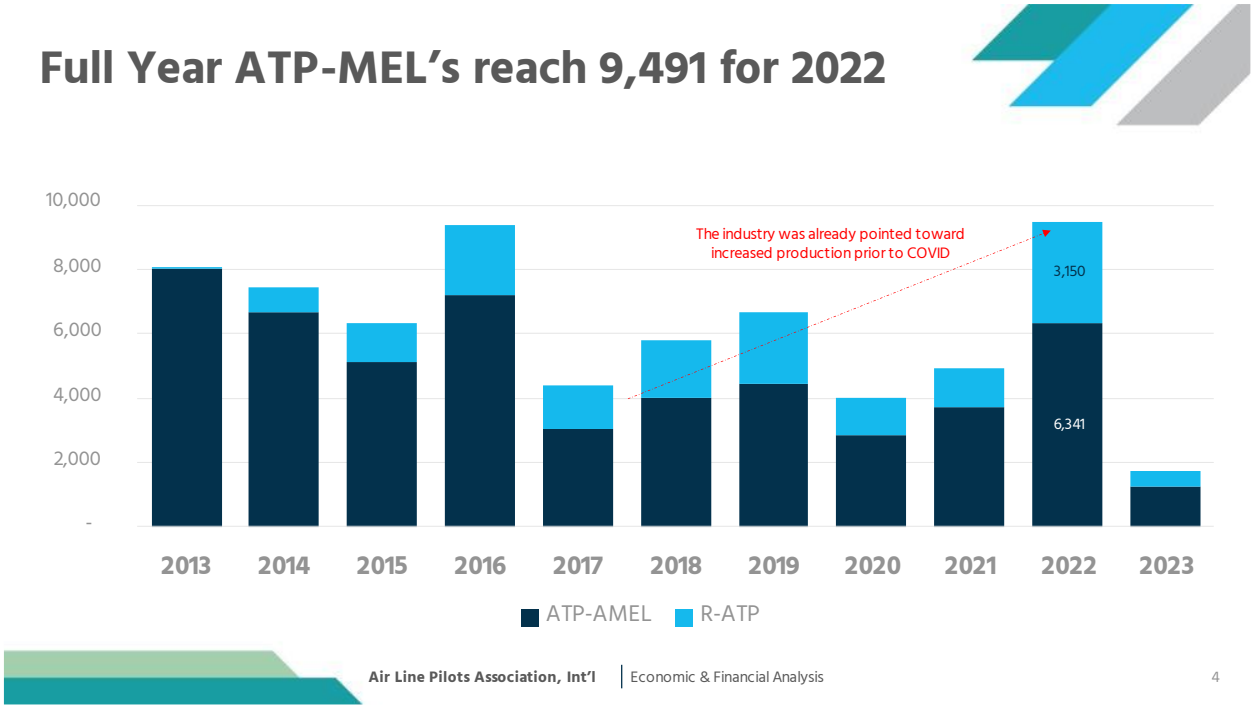
To most accurately quantify the number of pilots who can operate aircraft for FAR Part 121 air carriers (as opposed to all commercial pilots), it is necessary to examine the ATP multiengine rating (ATP-MEL) holders. The ATP-MEL is the required license that pilots flying for Part 121 major, low-cost, regional, and cargo airlines hold[1]. ATP-MEL pilots include both ATP and R-ATP pilots who can operate aircraft for these air carriers. The current production of ATP-MEL certificated pilots has outpaced U.S. airline hiring needs to replace retiring pilots and has also covered the new hiring demand created by flying increases before the pandemic and today. Specifically, over the last nine-and-a-half years for which there is data, the FAA has issued 62,972 certificates, while mainline airline carriers hired for approximately 40,000 pilot positions.

[1] This testimony will use "ATP-MEL" when discussing pilot supply and demand. This term covers ATP and Restricted-ATP certificate holders. ATP-MEL is the data series provided by the FAA for use by airline stakeholders, including Airlines for America (A4A), the Regional Airline Association (RAA), and ALPA. By using ATP-MEL, we ensure the removal of pilots with only single-engine licenses, which represent a fraction of ATP and R-ATP certificate holders. The data presented in this testimony therefore represents the most accurate statistical approximation of the pilot pool that can apply for and fly for FAR Part 121 air carriers.



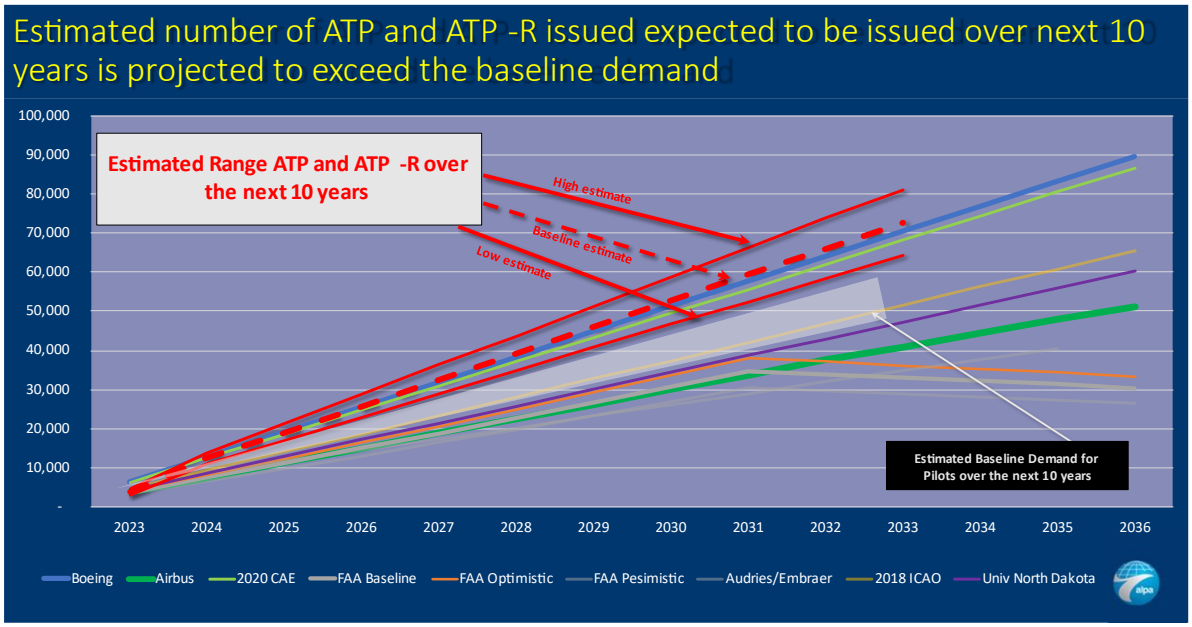
Looking at the certificates issued by year versus cumulatively, there has been an average of more than 6,200 new ATP and R-ATP certificates issued every year since 2014, and that figure has increased since airlines have announced additional hiring needs. For example, from March 2021 to February 2023 the FAA has issued 15,759 new ATP and R-ATP certificates (or an average of 657 per month). This also means that more than half of all active ATP and R-ATP certificate-holders under the age of 65 today received their FAA certification during the last nearly 10 years, signifying a younger cadre of new pilots who will remain in the industry for a long time. These numbers also reflect a demand for pilots to accommodate substantial growth in the airline industry year-over-year.





As we examine various data to use in the discussion about pilot availability, it's important to frame the context under which forecasts for pilot demand or independent reports about pilot supply are created and published. For example, Boeing releases an annual forecast on the global commercial market that includes pilot demand. This forecast, based on fixed growth assumptions, is useful for the manufacturer's purpose of selling aircraft, but has limited predictive value for the U.S. airlines and the pilot profession, which are

subject to cyclical dynamics, including recessions, fuel prices, and pandemics. Building aircraft is a time- and resource-intensive process that requires long lead-time horizons to match forecasted future demand for aircraft with a manufacturer's ability to design and build planes. That said, Boeing's latest forecast through 2041 predicts demand for the entirety of *North America* for the next 20 years to be 6,400 pilots a year, which is far below historic and current ATP production for the *United States.*

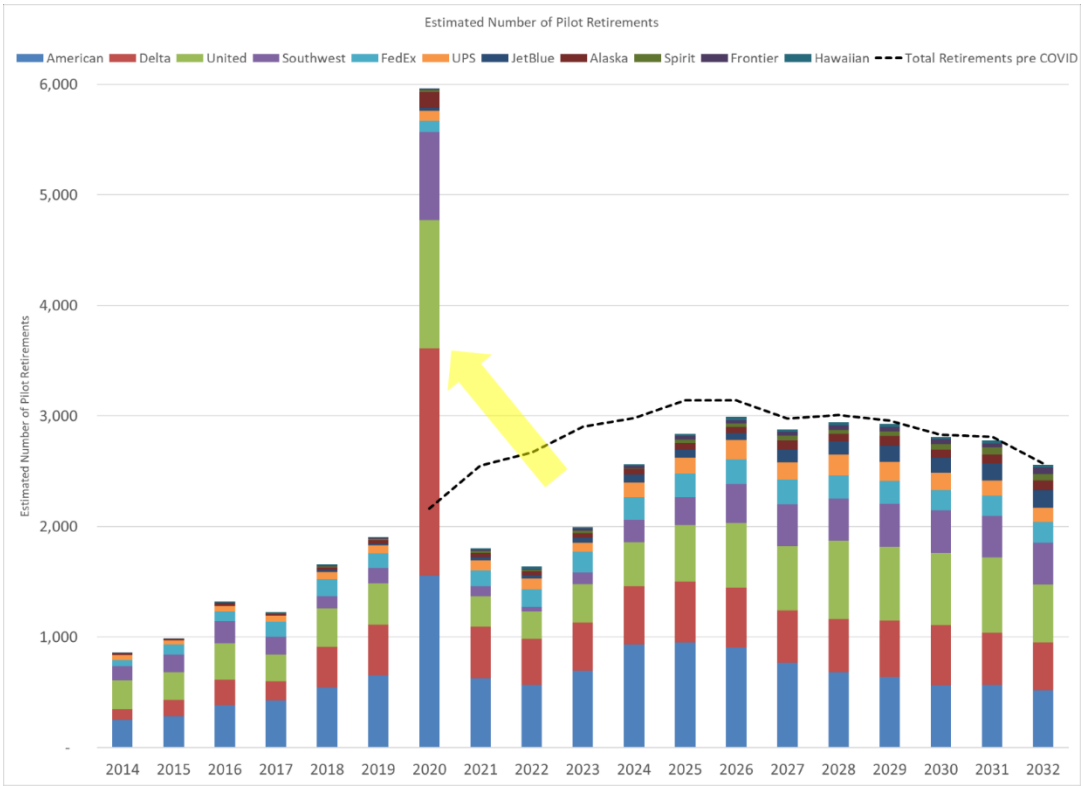


Source: EFA Research

Oliver Wyman, a management consulting firm, has produced popular reports on both the global pilot and North American pilot pipeline following the pandemic. The firm's analysis, however, comingles North American supply with U.S. domestic pilot supply, and fails to provide any substantiating information for its sweeping conclusions about the U.S. market.

Misinformation regarding pilot supply is often related to the little-understood effect of pilot retirements. During the pandemic, airlines offered various "early out" retirement-inducement programs primarily to pilots between the ages of 62 and 65 to help reduce costs for airlines and enable younger pilots to remain in their jobs rather than face furlough.

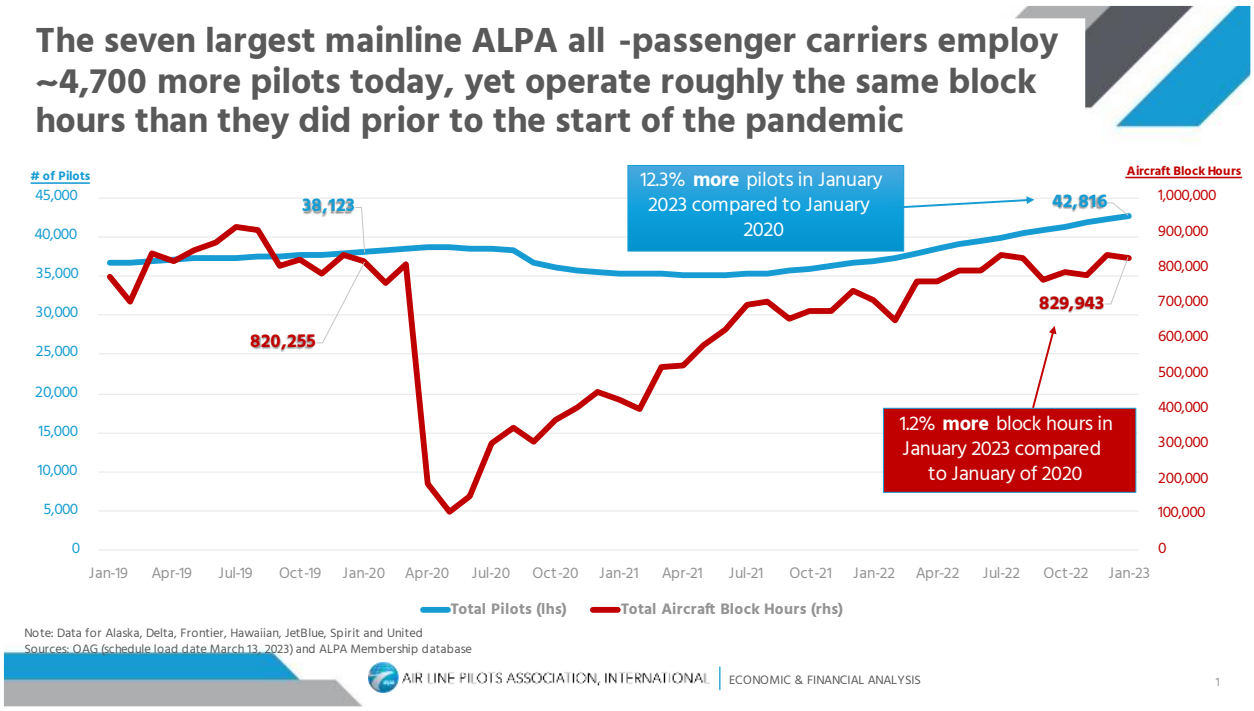
While the prudence of this decision may be questionable in hindsight, these "early outs" had minimal effect on supply. Rather, they simply accelerated retirements that were already planned to take place in the following years for pilots subject to the statutory retirement age of 65. As a result, 2020 saw a higher-than-expected number of retirements as pilots in the oldest age bracket—approximately 62–65 years of age—retired early. Consequently, this will reduce the number of retirements expected in the next few years. Specifically, retirements for 2024–2025 will be below pre-pandemic forecasts, with retirements stabilizing and returning to the pre-pandemic, forecasted levels by 2025.



Dispensing with concerns related to the supply of pilots, ALPA understands that both the available pilot labor market and the provision of flying has been complicated, owing to the difficulties of returning from the pandemic. Most notably, there has been a significant training backlog as a result of the airlines' decisions during the pandemic to park planes, bump pilots off larger aircraft to smaller aircraft fleets and types, furlough during the lapse of the first PSP, and place pilots on inactive status. Given that piloting are a seniority-structured profession, this resulted in a massive, across-the-board reallocation of pilots. Such decisions may have seemed reasonable to carriers as the industry, manufacturers, and analysts predicted an approximately three- to five-year recovery lag. However, because demand returned significantly quicker than airlines predicted, some have consequently had to reverse these decisions and effectively retrain nearly every pilot, often back to the equipment they flew prior to the pandemic, while accommodating *new* pilot hiring due to growth. This massive training event is costly (e.g., mainline retraining cost per pilot is approximately $22,000 to $55,000), time-intensive, and set against a fixed training footprint of limited personnel and simulators that was never designed to respond to a one-off event like a global pandemic.

This training backlog has affected flying capacity as carriers have *more* pilots today than in 2019, but pilot utilization—as measured in block hours—is down. For example, ALPA's seven largest mainline passenger airlines have *more* pilots than in 2019 but are flying substantially fewer block hours as airlines struggle with pilot training throughput. The CEOs of American, Delta, and Southwest agree and have publicly declared to investors that the constraint on their flying is pilot training, not supply.[2]

[2] Delta Air Lined, Inc. Earnings Call, Q4 2021, American Airlines Group Inc. Earnings Call Q4 2021, Southwest Airlines Co. Earnings Call Q1 2022.



Many of the regional carriers have complained about the "pilot shortage," but what they really face is pilot *attrition.* The regional airline industry is necessarily fragile by its structure. Mainline carriers use their regional "feed partners" to operate their regional flying in small markets set by contract. These contracts require the regional airline to cover labor expenses, aircraft maintenance, and aircraft ownership costs, while the major airline effectively controls and limits regionals' economic capability, including ticket pricing and schedules. This arbitrage strategy has historically resulted in low pilot regional pay, poor work rules, single-digit operating margins, fewer regional carriers, and pilot-retention problems.

For decades, pilots entered these low-paying positions at a specific regional airline with a "flow" program to a major carrier partner. However, flow programs have diminished in size and scope, guaranteeing very few mainline positions, while the ULCC carriers increasingly provide an avenue for pilots to move to higher-paying jobs more quickly, achieve greater career progression, or bypass the regional system entirely. Currently, regional airlines are experiencing *captain* attrition, not inadequate numbers of first officers or overall pilot supply. Given the pay differential between regionals and their ULCC and mainline counterparts, captains have been leaving regional carriers as ULCCs and mainlines increased hiring the last two years. Mainline carriers in particular have been seeking first-mover advantages to build out their networks as demand for flying and, specifically, international flying opportunities increase. This post-pandemic growth has created a temporary hiring binge by mainline carriers. By the admission of the largest regional carrier to its investors, with a new, higher-paying contract, they expect to "manage attrition"[3] for captains while their first officer "pilot classes [are] filled."[4] This should be the case for many regional carriers who have followed suit in terms of improving pilot contracts.

[3] SkyWest Earnings Call, Q1 2022
[4] SkyWest Earnings Call, Q3 2021

Since deregulation in 1978, airlines have made their business decisions based on expected consumer demand, geography of growth, route profitability, network planning and allocated flights, frequency of service, and aircraft purchases accordingly. With the cessation of the Payroll Support Program's requirement for continuation of air services for certain markets served prior to the pandemic, airlines began making substantial changes to meet pandemic-market demand, with leisure travel largely replacing small community business travel and many carriers ending or reducing service to markets *they* deemed no longer economically advantageous. While it is convenient for some airlines to blame pilot availability for their profit-based business decisions to abandon smaller communities, the facts simply don't back up the contention.

Simultaneously, for nearly a decade, airlines have shifted to "higher gauge" aircraft with more seats and away from fuel-inefficient regional aircraft. According to Wall Street analysts, by retiring smaller regional jets in favor of larger and newer aircraft, carriers will "see operating cost efficiency and market share gains"[5] by improving unit costs, matching consumer demand with supply, and improving aircraft features.[6] Fifty-seat aircraft, which historically operate to smaller markets, are fuel inefficient, cannot accommodate high-end, first-class seating, are expensive to maintain, and consequently are being phased out by the industry.[7] Put simply, airlines are in the business of making money and, right now, the profit is in leisure markets and in-demand cities through the use of larger aircraft. As a result, they are phasing out 50-seat regional jets in favor of narrowbody aircraft and reducing frequencies in favor of larger aircraft with high load factors and greater profitability. Such decisions, which are not made by pilots, are increasingly depriving small and rural markets of connectivity, business opportunities, and growth.

As carriers rationalize their networks and increase the gauge of their aircraft, we must not let market demand sacrifice small and rural air service markets. We believe air service to small and rural communities is a national responsibility and that safe, efficient, and reliable air service to these communities is a critical component of our national air transportation system. We call on Congress to increase its support for the Essential Air Service (EAS) program, and to incentivize greater carrier participation and increased service. The goal of the EAS program was to ensure that air connectivity for smaller and rural airports remained. Congress has, at times, either through the FAA authorization process or annual appropriations bills, impaired the program by limiting funding, restricting eligibility criteria, and eliminating program expansion.

Airlines have cancelled their EAS contracts and thus eliminated air service to smaller and rural communities. Remedying the market failure of the deregulated airline industry's provision of air service to rural and small markets will require consideration for changing the subsidy and enplanement cap, allowing air carriers to renegotiate EAS contracts to account for unforeseen operating costs, revising the DOT's calculation for driving distance, allowing communities that lost EAS service to regain or reestablish eligibility, and revise the DOT's process for carrier selection. ALPA looks forward to working with the Committee to balance these reforms with careful financial stewardship to help ensure the irrevocable benefits of community air service remain a federal priority.

Pipeline Development

While the current supply of pilots is robust enough to meet demand, ALPA is fully committed to inspiring, developing, and supporting the next generation of pilots. Each year, ALPA connects with thousands of students—from elementary to university aged—to inspire young people from all

[5] "En-gauging the Growth Engine." Morgan Stanley Research. June 30, 2021.
[6] "United Next—not just an aircraft order." Deutsche Bank Research. June 29, 2021.
[7] "The 50-Seat-Jet Era Will End Soon at Republic Airways Holdings Inc." The Motley Fool. May 22, 2014.

backgrounds to see themselves as pilots. ALPA is also working to create an accessible, inclusive airline pilot workforce for all who are interested and for those who for too long have not been adequately represented in the pilot profession. Women and people of color, in particular, face significant barriers to becoming aviators—and that must change.

Congress can and must do more to reduce the cost of flight training. Specifically, the FAA reauthorization provides an opportunity to amend the Higher Education Access Act of 1965 to ensure flight education and training qualify for federally subsidized student loans for four-year, two-year, and appropriately accredited Part 141 programs. There is no reason for unequal loan treatment between a traditional college student and a student seeking to be a professional airline pilot, who must shoulder prohibitively costly private loans for training. More wholistically, reforming educational opportunities should include increasing participation for underrepresented or nontraditional, low-income, and rural populations as well as providing grants to build flight training and education degree programs at minority-serving institutions, including historically Black colleges and universities. To ensure prospective student success and long-term career attachment, qualifying programs should be structured and accredited training programs, and cost control should be a consideration given that higher education institutions' too frequently capture the cost of federal subsidy increases.

This Committee should consider augmenting and growing the Workforce Development Grant Program originally authorized by the FAA Reauthorization Act of 2018. The program authorized support for educational and development projects for pilots and maintenance technical workers. We believe Congress must authorize and ultimately appropriate more resources for the program to have a greater impact. Additionally, we are supportive of adding new workforce eligibilities, including an aviation manufacturing program mirroring the existing programs.

Similarly, more must be done to increase female participation in aviation professions. ALPA was proud to not only fight for the Women in Aviation Advisory Board (WIAAB) as part of the last FAA bill, but also to serve on the Board. The findings in the WIAAB's report confirmed that women and men experience their careers in aviation differently—at all seniority levels—with barriers being largely systemic and no one entity or sector responsible for them or their resolution. The Board's report calls for unions, industry associations, government agencies, and Congress to share the responsibility of making changes to the industry in five areas: culture, recruitment, retention, advancement, and data. For these identified measures, we believe it is important to make the WIAAB permanent so it can focus on increasing and supporting female pilots and other aviation personnel.

We would also draw attention to the Report's many recommendations regarding scheduling, family leave, and accommodations for mothers, including the Nursing Mothers' Accommodations (#40) recommendation. It is long overdue that federal law stop discriminating against pilots and flight attendants regarding pumping by ending their exclusion from the Fair Labor Standards Act's (FLSA) provisions on break time and reasonable accommodations for nursing mothers when aboard aircraft. Congress passed the PUMP Act last year in order to remedy deficiencies in FLSA, but unfortunately industry lobbying killed provisions related to flight and cabin crew protections. Congress must end this gross inequity if it wishes to truly increase and support female growth and retention in the industry.

Protecting and Promoting the Rights of Workers

Any discussion of workforce development must consider the preservation of the core rights of workers. This includes both preserving the rights airline employees enjoy under state and local laws, as well as holding the Department of Transportation to account for its failure to exercise its authority to protect U.S. airline employees from domestic and foreign efforts to undermine their rights and working conditions.

The long-term growth and prospects for the pilot profession and other aviation personnel is based on stability and dignity. This Committee should look to the FAA reauthorization to advance, rather than diminish, these core tenets.

ALPA opposes changes to the Airline Deregulation Act (ADA), in particular its scope of preemption of state law. In 1978 Congress limited ADA preemption so as not to foreclose state and local regulation of traditional areas of state concern regarding labor and employee issues as applied to aviation workers. By expressly tailoring preemption of state law only to circumstances where the states directly regulate customer-centric prices, routes, and airline service, Congress balanced the industry's need for uniformity in its relation to the traveling public while respecting the states' traditional ability to protect and support its citizens. Our members, like workers throughout the economy, avail themselves of the benefits provided by state and local governments to care for sick spouses, children, and to address medical concerns outside the protections provided by their collective bargaining agreements. These long-established protections should not be arbitrarily foreclosed.

As this Committee recently observed in the railroad industry, transportation workers care significantly about matters unrelated to pay, and the flexibility to provide and care for oneself and family is necessary for a stable industry. Attempts to expand the intent and statutory framework of ADA preemption to swallow up and preclude these important state law rights will negate this significant progress. In challenging state and local laws, the airlines have unsuccessfully litigated a series of cases which attempted to block labor, paid sick leave, meal and rest, and related laws, including recent denial of petitions of certiorari before the Supreme Court. The establishment of labor standards falls within the traditional police power of the State—a settled principle that applies with equal force to airlines—and the connection between the ADA and labor policy is extremely attenuated, as recognized by the courts. Any attempt to amend or otherwise undermine the accepted status of the ADA's preemption provisions, contrary to the courts' interpretation, in the pending FAA reauthorization or any other legislation will needlessly undermine long-existing rights of workers and will be strongly opposed by the American labor movement.

It is also long past time that Congress direct the Department of Transportation to consider all of the public interest factors related to the protection of U.S. airline workers in its statute. In 1980, Congress required the Department of Transportation to consider the effect its economic regulations have on U.S. aviation workers, including in airline licensing cases. Specifically, that the Department "encourag[e] fair wages and working conditions" for U.S. airline employees (49 U.S.C § 40101(a)(5). However, since deregulation, the DOT has believed that Congress did not want employee matters to play a consequential role in DOT decision making, irrespective of the responsibility Congress gave to it to take these interests into account in the statute.

In recent decisions, the DOT has essentially disregarded Congress' interest regarding the protection of U.S. workers. In 2016, the DOT all but ignored the statutory public interest to grant a foreign air carrier permit to an airline –Norwegian Air International – that engaged in forum shopping to undermine labor standards. In July of 2022, the DOT granted a U.S. airline operating certificate to Waltzing Matilda Aviation LLC without imposing any safeguards to prevent the airline from basing all of its employees abroad under foreign labor laws. By ignoring the public interest, this arrangement would open up the door for would-be investors to set up "nominal" U.S. carriers with otherwise no material ties to the U.S., U.S. employees, or U.S. labor law to operate airlines point-to-point in the U.S. Finally, the Department proactively removed an employee protective clause in the Delta Air Lines-LATAM Joint Venture that

would have ensured U.S. employees a fair share of new flying rather than inequitably benefiting the foreign partner.

The Fair and Open Skies Act seeks to remedy some of these failures by (1) *restoring* and *requiring* the multifactor public interest test for foreign air carrier permits (49 USC 41302), (2) adding a new criterion regarding the undermining of labor standards, and (3) including labor standards language in the negotiating objectives for State and DOT to consider in bilateral negotiations to help prevent the U.S. from entering agreements without considering potential harm to workers and mitigations. We hope this provision will be included in the Committee's FAA reauthorization legislation.

Pilot Training and Aviation Safety

We have not experienced a major, catastrophic accident since February 2009. However, the absence of a fatal accident does not mean we have eliminated all risk. The incidents that have occurred over the last several months demonstrate that there is pressure on the system resulting in risk that we must mitigate. Recently, the FAA Call to Action in response to these recent incidents involving crew incapacitations, runway incursions, and near misses focused on these system pressures and methods to mitigate them.

Accordingly, we must not introduce added risk to our aviation system by reducing qualification and experience requirements. Now is the time to refocus our efforts and make our aviation system even safer.

In the years following the passage of the Aviation Safety and FAA Reauthorization Act of 2010, the airline industry ushered in sweeping changes to pilot qualifications and training and aviation safety that have profoundly improved airline operations and directly contribute to the U.S. aviation safety record. Previously, first officers were required to only possess a commercial certificate, which can be obtained in as few as 200 to 250 hours of total accumulated aircraft flight time. In the context of an FAR 121 operation using a multi-pilot flight deck, the commercial license as established decades ago did not keep pace with the changes to and increased complexity of aircraft and FAR 121 airline operations. Recognizing that the regulatory minimums were outmoded and no longer reflected the increased complexity and duties delineated between "pilot flying and pilot monitoring" of multiple flight deck crew operations, Congress required that each flightdeck crewmember for an FAR 121 air carrier hold an airline transport pilot certificate. Despite Congress's recognition of the critical importance for each pilot on the flight deck to possess an Airline Transport Pilot certificate and the experience commensurate with the responsibility of transporting passengers in FAR 121 operations, this vital requirement has been under attack since this was passed into law in 2010 after a series of fatal accidents.

Simulator Use in Pilot Training Leading to Becoming a Professional ATP Certificated Pilot

Simulators are very useful tools for certain components of pilot training, but have express limits, including for pilots learning to fly. Specifically, these devices are unable to fully replicate flying an airplane in the dynamic airspace system with changing weather conditions, traffic density, communicating with ATC, listening to ATC communications with other aircraft to maintain situational awareness of their location, and continuously monitoring the system status of the aircraft.

In order to maintain the safety of our skies, we should never remove real-world experience – and certainly not with the current post-COVID stressors on the system. Appling more simulator training toward the issuance of pilot certificates (i.e., Private, Commercial, ATP), is unwise and likely to increase risk in the system. High fidelity simulators are great training devices, but the technology has not yet progressed to the point of making these devices useful in building flight experience and replicating a dynamically changing environment necessary to build judgement and decision making. Performing to operations in canned scenarios in an artificial environment cannot replace experiential learning through flying a real

airplane in the NAS. The simulator airspace and air traffic control environment is artificial and cannot fully simulate the complexity, variability, and communications every pilot experiences in the NAS. Therefore, extensive experience in the unstructured actual real-world complex airspace environment, managing expected and unexpected ATC clearances, weather, traffic, and maintenance issues, is essential to developing the skills pilots need.

There are essential skills that pilots acquire with experience, such as those that develop a pilot's judgment to make quick, safe decisions under pressure and preventing situations from escalating. While attempts are made in training to recreate experience that builds these skills, this real life experience cannot be equaled with training in a simulator.

By contrast, simulators are well suited for introducing procedures to pilots in a controlled training environment, particularly flying instrument procedures (e.g. instrument arrivals and approaches to airports). But as a pilot is learning to fly instrument procedures, putting them into practice in actual flight with all the associated pressures and demands is completely different. In the simulator, if a pilot does something wrong or gets confused, the flight can be stopped. As pilots build experience toward qualifying for the ATP by flying in real world conditions, they are forced to resolve and safely continue flight when encountering problems. This builds resilience, judgement, decision making and ensures the pilot is capable before they have the responsibility of transporting hundreds of passengers or large quantities of cargo.

Similarly, simulators have limitations for learning how to control the aircraft through coordinated use of the flight control systems. Maintaining coordinated flight ensures safe control of the aircraft, and is a critical skill pilots develop as they obtain their required training and experience for certificates. Failure to maintain coordinated flight can cause loss of control accidents which have been a leading cause of fatalities.

Overreliance on simulators as pilots are learning to fly and become professional ATP certificated pilots would be a detriment for pilot skill, judgement, and decision-making development, and ultimately flight safety. Simulator credit should not be increased and should not replace experience operating a real airplane in the airspace system. The current requirements to gain experience in an actual airplane, which limit the number of hours in a simulator toward a pilot certificate, are critical for developing requisite pilot skills.

It is important to note that the term simulator is often used generically to describe a wide range of flight training devices and requires further clarification to delineate the capabilities of the device are and how closely it can replicate flying an airplane. Some training devices only resemble a generic aircraft but not a specific aircraft like a Cessna 172 or a Boeing 737. Some devices may be operated from a laptop (e.g. Microsoft Flight Simulator) while others are a replica of an actual flight deck sitting on top of 6 hydraulic or electric legs that cause the unit to move similar to the aircraft's movements. It is important to know exactly what device is being proposed for what use.

Aviation Training Devices (ATD) provides a platform and design for both procedural and operation tasks without motion. In contrast, most air carrier flight simulation is conducted using Full Flight Simulators (FFS) and Flight Training Devices (FTD). The latter two devices are collectively referred to as Flight Simulator Training Devices (FSTD). FFSs move around to mimic the motion of an airplane climbing, descending, and turning in order to help replicate the sensations a pilot feels in an airplane. FTDs are more advanced than ATDs but, like ATDs, they do not have motion capability, and some don't have a visual system to provide a simulated view out the flight deck window. FFSs are currently only required to

be used by air carriers during the final evaluation stage of air carrier flight training, and a small number of specific tasks during air carrier training leading up to evaluations.8

Very few flight schools have invested in a multi-million dollar FFS due to the cost to operate FFSs, particularly when an ATD is allowed by regulations to be used for the simulator time that can be applied toward pilot certificates. Thus, the advanced FFS that most closely resemble flight are not heavily utilized at most flight schools.

The current FAA regulations allow for up to 100 hours9 of the total time required to qualify for an ATP to be obtained in a FFS, FTD, or an ATD through a Letter of Authorization (LOA).1011 Due to the option for LOA approval of ATDs, if more simulator time were granted toward the ATP or other certificates, much lower fidelity devices than FFSs will be used. Even if the highest fidelity FFSs were required to be used without exception, safety would be sacrificed due to FFSs still not fully replicating flight in an airplane, which is essential when pilots are still training to become professional ATP certificated pilots. Once pilots are ATP certificated, simulators are well suited for helping to ensure their skills are retained, and to exercise essential skills that are rarely encountered when flying a real airplane (e.g. engine failure).

The International Civil Aviation Organization (ICAO) also currently sets the limit at 100 hours12 of simulator time that can be applied toward an ATP. If the U.S. were to allow additional simulator credits, the FAA would have to file a difference and be out of compliance with the global standard at ICAO. In addition, the FAA has established a joint industry-government committee specifically to discuss, prioritize, and provide recommendations to the FAA concerning pilot training. This committee, the Air Carrier Training Aviation Rulemaking Committee (ACT ARC)13 is the appropriate venue to consider any proposals to increase simulator time allowed to be applied toward the ATP. Again, at a time of dynamic changes in the aviation system, including constant industry-wide hiring and integration of new entrants, we should not be considering adding additional risk by lowering training and experience requirements.

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[8] See Part 60 Table B1B in Attachment 1 of Appendix 2 and the March 30, 2016 14 CFR Part 60, Flight Simulation Training Device Qualification Standards for Extended Envelope and Adverse Weather Event Training Tasks; Final Rule, Federal Register page 18206.

[9] 61.159(a)(6) "Not more than 100 hours of the total aeronautical experience requirements of paragraph (a) of this section or § 61.160 may be obtained in a full flight simulator or flight training device provided the device represents an airplane and the aeronautical experience was accomplished as part of an approved training course in parts 121, 135, 141, or 142 of this chapter."

[10] 2016 final rule - Aviation Training Device Credit for Pilot Certification - https://www.federalregister.gov/documents/2016/04/12/2016-08388/aviation-training-device-credit-for-pilot-certification - "FAA approves the use of ATDs for private pilot, commercial pilot, and airline transport pilot certification through the issuance of LOAs under the Administrator's authority in § 61.4(c)."

[11] 61.4, Qualification and approval of flight simulators and flight training devices, (a) states "Except as specified in paragraph (b) or (c) of this section, each flight simulator and flight training device used for training,"; (c) states "The Administrator may approve a device other than a flight simulator or flight training device for specific purposes."

[12] ICAO Annex 1, section 2.6 – ATP, paragraph 2.6.3.1.1 "The applicant shall have completed not less than 1 500 hours of flight time as a pilot of aeroplanes. The Licensing Authority shall determine whether experience as a pilot under instruction in an FSTD is acceptable as part of the total flight time of 1 500 hours. Credit for such experience shall be limited to a maximum of 100 hours, of which not more than 25 hours shall have been acquired in a flight procedure trainer or a basic instrument flight trainer."

[13] See public ACT ARC website - https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afx/afs/afs200/afs280/act_arc/

An important consideration regarding pilot training must consider how pilots actually build flight time. Contrary to the rhetoric that new pilots gain 1,500 hours of flight time by renting a small airplane in fair weather, many pilots after obtaining a commercial pilots license will obtain a certified flight instructor (CFI) certificate and get paid to instruct the next generation of pilots as their primary means of building the flight time experience needed to acquire an ATP certificate. Additionally, pilots fly for commuter or on demand air carriers in revenue service conducting operations under Part 135 regulations, typically with 9 or fewer passengers. Finally, pilots also build their flight time experience to qualify for an R-ATP or full ATP by flying for a charter operator with a local fixed base operation under FAR 135 and business or corporate flying under part 91 or 91K. Some pilots will do a combination of all these things after they obtain their commercial pilot certificate in order to build experience to qualify for an ATP. However, most will flight instruct either at the university where they completed their degree or at a civilian flight school. Put simply, pilots build hours toward the ATP or R-ATP certificate by flying in real world conditions, which gives them necessary experiential training to progress to flying transport category aircraft under FAR 121.

Increasing the hours that can be done in the simulator would also significantly hamper the ability to maintain the needed CFI population to train future pilots. After pilots obtain their appropriate certificates (i.e. private pilot and commercial pilot) and instrument and multi-engine ratings, they typically have around 200 to 250 hours of flight experience. This leaves pilots with 800 hours of experience to build to qualify for the R-ATP pilot certificate. Currently CFIs are reaching the qualifications to train new CFI's14 before they meet the current requirements to be a First Officer for an FAR 121 air carrier. Reducing the number of hours or adding credits toward an ATP will negatively impact the availability of flight instructors and cause significant strain on flight schools and aviation colleges.

I appreciate the Committee's thoughtful and thorough consideration of our industry's workers and our contributions to the safest period in air transportation in history. The pilots of ALPA stand ready to assist this Committee with its important policy and oversight work.

[14] See 14 CFR, Part 61, 61.195(h), Qualifications of the flight instructor for training first-time flight instructor applicants