Faster flights, fewer delays:

Now is the time to innovate for smarter air traffic control

September 2025

I. Introduction

Aviation is awe inspiring. America's airspace is the safest in the world, thanks to the incredible people who manage it every day and keep more than 3 million passengers a day moving safely around our country. Our skies are managed through an incredibly large and complex air traffic control (ATC) system covering 5.3 million square miles of domestic air space and 24.1 million square miles of oceanic airspace. But the system is not where it needs to be or where it could be. The ATC system needs substantial investment and strategic attention. The good news is that there is widespread acknowledgment of the imperative to take action, but that does not mean that we can afford to lose momentum. We need the Federal Aviation Administration (FAA) to have sufficient resources to undertake concurrent investment efforts across the national airspace system (NAS), to address infrastructure and staffing as well as implement technology solutions to create the highest levels of safety, reliability, and efficiency for Americans.

Alaska Airlines and Hawaiian Airlines fly across the country and beyond, from major cities to the most austere and remote environments. We can attest from real-world experience that the need for ATC modernization is evident throughout. We applaud President Trump, Secretary of Transportation Duffy, Federal Aviation Administrator Bedford, and Congress for their leadership in investing in ATC infrastructure including the $12.5 billion recently authorized by the One Big Beautiful Bill Act. This down payment is a crucial and large undertaking to modernize the NAS for safety, reliability, and efficiency, but it is still just the beginning of what we need to realize the true potential of our national airspace.

An arrivals and departures board listing some of the most common flights in Alaska Airlines' network.

We suggest in this paper that the FAA take the following actions toward modernization:

- Set key metrics for success in this modernization endeavor.
- Fix the basic needs of the system.
- Embrace proven technology for controllers and aircraft, including both hardware and software enabled real-time data tools.
- Evolve regulations and foster use of this technology through collaboration across government, industry, and labor.
- Rely on risk-based assessments for when and where to invest.

We urge the FAA to take these actions simultaneously and not view these actions as sequential.

The reality is, people choose to fly because time matters. If we truly modernize ATC, Americans will feel a positive difference. Solutions would be felt across the NAS, across operators, and across all stakeholders who will benefit from modernization:

- Travelers will spend less time waiting through delays and sitting on taxiways.
- Operators will be more efficient.
- Commercial airlines will fly more reliably and save fuel.
- Air traffic controllers will be better equipped with the best technology to do their incredibly complex jobs.
- Communities will gain more predictable access to essential services.

This is not a competitive issue. This is about connecting people and strengthening our national infrastructure to reflect the best of American innovation. A successful effort will be a win-win-win for all so let's not miss this moment to invest in the future.

II. The U.S. ATC Experience Today

The American ATC system is a marvel. It is superlative in its complexity, scale, safety, and as an infrastructure that unites our nation and connects us with the world, and the men and women who operate and maintain it each day deserve our gratitude.

The interior of an air traffic control tower with technology and computers of various ages.

But our system is not where it needs to be, and specific, critical challenges must be addressed. American aviation has long since outgrown and outpaced the ATC system. It is not simply that the number of daily flights has vastly grown. Parts of the ATC system suffer from obsolescence. ATC equipment often remains in use well past useful life. Many new technologies are available but can't be currently used or don't work seamlessly together. Aircraft technology has dramatically advanced while ATC technology has changed little. Airspace structure and rules have not kept pace with modern aircraft capabilities. Taken together, this all results in persistent inefficiencies in ATC that create burdens for travelers and operators and risk an erosion of American leadership in global aviation. These inefficiencies flow into and throughout our economy and our daily lives at substantial cost in terms of dollars and irretrievably lost time.

Since at least 1981, the federal government has spent many billions of dollars on various modernization efforts. These programs have mostly failed to keep pace with the growth of aviation, technological innovation, and the needs of the traveling public. Americans directly experience this lack of meaningful change. In 2025 the air travel time between certain U.S. cities has grown longer relative to the 1980s, despite having modern jets. At the same time, other countries have shown an ability to innovate and prudently invest in ATC and see positive results. The U.S. cannot take its historic leadership for granted. Clearly, we need to try something new.

III. Safety

Owning Safety is Alaska Airlines' and Hawaiian Airlines' foundational value and our number one priority. Our approach to innovation is grounded in a clear set of principles: aviation must be safe above all else. But it must also be reliable, more efficient and sustainable for the long term, and more accessible to all communities, including those that depend on air service as a lifeline. These values, with safety as our north star, guide how we think about modernizing our air traffic control system: not as a technical upgrade, but as a critical investment in the future of aviation that serves everyone, everywhere.

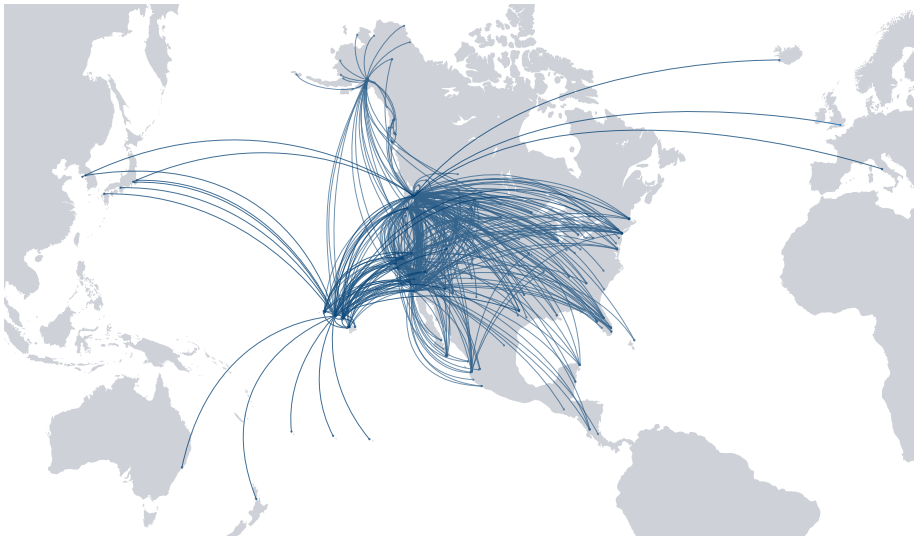
READY SAFE GO

The logos for the Alaska Airlines "Ready, Safe, Go" and Hawaiian Airlines "Safety Kuleana" safety programs.

IV. Alaska and Hawaiian are Leaders and Pioneers

Alaska Airlines and Hawaiian Airlines bring a distinct operator perspective to the ATC discussion. Each day, we uniquely *fly it all* in our NAS from the busiest airspace, to the most remote, and everything in between.

We operate in the nation's busiest and most complex airspace and airports including New York-JFK, Newark, Denver, Orlando, Chicago-O'Hare, Los Angeles, Honolulu and San Francisco with extensive ATC infrastructure, high traffic volumes, stringent regulatory requirements, and mixtures of operations including military flights.



Alaska Airlines and Hawaiian Airlines combined network operates in all types of airspace.

We also serve some of our nation's most remote communities such as Adak near the western tip of the Aleutian Island chain, Utqiagvik on Alaska's Arctic coast, and Pago Pago which is 2,600 miles southwest of Honolulu, among others. These are often communities with neither control towers nor radars and minimal ATC services. We also serve many airports "in between" such as Kansas City, Pittsburgh, Boise, Missoula, Lihue, and Nashville which have ATC infrastructure such as control towers with varying hours and radar services.

Serving these communities and operating this network requires us to be resourceful. As a result, we have been a leader for decades in using *existing* technologies at hand to solve unique and complex airspace challenges. As an example, Alaska Airlines' operations to Juneau were once hampered by a combination of mountainous terrain and frequent poor weather that led to service disruptions. In the early 1990s, Alaska Airlines pilots identified and developed a solution using capabilities already installed on aircraft worldwide to pioneer Required Navigation Performance (RNP), which is a form of precision satellite-guided navigation. RNP is a high-fidelity version of a broad set of technologies known as Performance Based Navigation (PBN). These efforts to harness and fully utilize the modern aircraft equipment led to a 75% reduction in missed approaches and substantial improvements in terms of reduced cancellations and delays. The FAA responded by updating airspace rules to take advantage of these technological advancements. Today, RNP and PBN are used around the world – but, as noted below, still starkly underutilized in our country.

Our decades of experience operating in these "edge case" environments and using technology solutions to enhance safety, reliability, and efficiency uniquely equips us to lend our voice to shape a modernization effort in a way that benefits all parts of the NAS.

Relevant examples of how we have leveraged technological tools more recently are through embracing machine learning and artificial intelligence. This includes early adoption of a tool called “Flyways AI” from Air Space Intelligence to provide our dispatchers and pilots with constantly optimized routes that are safe, save fuel, shorten flying time and improve our on-time performance. We also use a tool called Assaia, an AI-driven computer vision and data analytics platform that, utilized in partnership with airports, optimizes every second of aircraft ground operations to improve turns at the gate. These are just some of many examples of the type of innovation that is on the market or in development now.

In 1989, Alaska was the first airline to adopt the Head-Up Guidance System, which allows takeoffs and landings in the lowest minimum weather conditions certified by the FAA.

v. Meet the Moment

Alaska Airlines and Hawaiian Airlines commend the Department of Transportation (DOT) and FAA for expeditiously undertaking the enormous challenge of ensuring the ATC system is properly staffed and with infrastructure that does not fail. These improvements are essential and represent table stakes for our national airspace.

To be successful in the long run, we need to fix today’s problems while also working on tomorrow’s infrastructure – at the same time. We support a concurrent focus on technology, as the key lever to transform how we optimize airspace, a constrained resource, to bring greater predictability and efficiency to operations for the benefit of all stakeholders.

This new system should be able to compute and process the massive amount of data we have today to safely guide air traffic and provide controllers across the country with more precise and predictable planning tools to understand the traffic, weather and issues coming their way, as they perform their critical function. In our vision, today’s ATC modernization effort would, in the long term, be understood as setting in motion a continuous transformation, rather than mere renovations of our existing system.

vi. How to Measure Success: A Transformative Experience for Operators, Controllers, and Travelers

At the outset of the ATC modernization effort, we believe it is essential for government and stakeholders to together identify the right metrics and goals. We need them to assess our progress towards our shared objectives, to define success, and understand various tradeoffs. We offer our ideas on what these could be.

METRIC ONE: Fix the “basics” without delay - reducing/eliminating disruptions:

Metric One: Fix the “basics” without delay - reducing/eliminating disruptions: This effort must address staffing, equipment, and physical infrastructure that together was constructed over decades. Fixing these foundational problems will not be easy, particularly in a short timeframe.

The effort must ensure that system crippling events like the 2023 NOTAM outage do not occur. It must prevent intermittent failures of critical equipment like those recently seen at Newark, Denver and Oakland Oceanic Control, as well as equipment failures in our most rural areas that depend very heavily on aviation but experience continuing unreliability of weather observation systems as is the case in Yakutat, Alaska or Lihue, Hawaii. Failures are highly disruptive to not just us as operators, but the people and the communities we serve. Much of the resources for these basics are thankfully included in the $12.5 billion investment and we look forward to continuing to work collaboratively with the FAA on implementation without delay.

Airports in the state of Alaska face weather challenges during the majority of the year.

Air traffic controller staffing is another persistent and complex issue. This Administration has taken essential first steps towards bolstering recruitment and retention, addressing high academy washout rates and shortening – where appropriate and possible – training times. We must continue to think boldly about building a bigger pipeline, modernizing curriculum, and leveraging state-of-the-art interactive technology to help train controllers.

METRIC TWO: Improve predictability for Americans and "bring order to the chaos":

Metric Two: Improve predictability for Americans and "bring order to the chaos": Many Americans experience morning driving commutes in which the time the commute takes can vary drastically for various reasons from one day to the next. Or no apparent reason at all. The same thing is often true for aviation and the ATC system. Despite efforts at improvement, the current ATC system is still victim to many variables, which at times create erratic flows of aircraft that are a burden to pilots, air traffic controllers, and airlines as they each work to maintain safe aircraft separation and be on-time. The present lack of ability to dynamically reorganize traffic flows in real time generates higher workloads, schedule uncertainty, lost time, and greater societal costs. Time matters and we can do better. Accordingly, we propose improved system predictability as an explicit goal that Americans can noticeably experience.

METRIC THREE: Achieve efficiency — stabilize or decrease average "block times" consistently, measurably, and repeatably:

Route	1980 Duration	2025 Duration	Difference
SEA-SFO	1h 45m	2h 15m	+ 30 mins
SEA-PDX	35 mins	60 mins	+ 25 mins
SEA-ANC	3h 15m	3h 45m	+ 30 mins

"Block time" is the time elapsed between an aircraft beginning its movement to stopping its movement – gate to gate. Block times between some U.S. cities have crept upwards despite having modern aircraft and billions spent on ATC. They also fluctuate day by day. Airlines cope with unpredictability by building "pads" into their schedules. These pads often become apparent to us when flights arrive "early" and sit on the ground for extended times after landing waiting for an available gate. Airlines use schedule pads to ensure that they can offer schedules, including flight connections, to our guests that we can deliver upon given the vagaries of ATC. To be sure, pads come at a high cost – to everyone.

Because schedule pads commit aircraft to specific flights longer than should be required, this means fewer flights and destinations are offered than would be possible with a more efficient ATC system. In turn, airline passengers must budget more of their time toward travel and less time for the things that are more important to them. A successful modernization effort should reverse the growth of block times, freeing up our aircraft to fly more often and to more places while also saving fuel and reducing emissions. In 2024, we saved approximately 6.4 million gallons through operational efficiency initiatives which improved both our financial and environmental performance. We envision a system in which every flight moves more efficiently, and our customers get their valuable time back. It would enable us to re-invest time and resource savings into our routes, products, people, and guests. It would create benefits and opportunities for consumers, airlines, businesses and our broader economy.

METRIC FOUR: A "future proof" and evolving system:

The mobile devices in our pockets have more than 100,000 times the computing power of the Apollo Guidance Computer which safely guided Americans to the moon in 1969. They have capabilities scarcely imaginable even 20 years ago. In contrast, U.S. ATC has largely been "trapped in amber" and impervious to much of this progress. A truly modernized system will safely and steadily absorb innovations and technological advances, including by leveraging strategic software, and not be a time capsule of 2025. It will be a forward-looking system that will not be caught flatfooted.

Ben Minicucci speaks about ATC modernization at The Wings Club in New York in March 2025.

Together, these metrics would enable us to assess our progress towards a modernized, continually evolving ATC system that is not only more efficient but safer as well.

VII. The 'How'

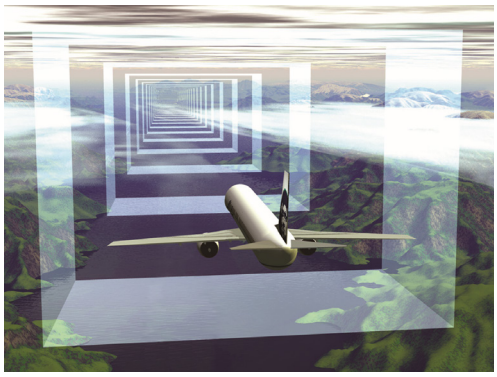
We believe the FAA should facilitate and foster collaboration among airspace users given the nature of ATC and draw upon the lessons from the agency's own successes and build upon them. One notable success is the FAA's Data Communications program. The program greatly improved pilot-air traffic control communications across the country and improved operational efficiency and safety.

Going forward we propose **three** categories of actions beyond setting metrics and fixing the basics, which is underway.

CATEGORY ONE: The first category of action can be understood as leveraging existing technologies.

Use the technology already on aircraft. Modern aircraft and avionics have capabilities that have been underutilized, or entirely unused, for many decades.

RNP, or PBN, is an example. In the early days of aviation, aircraft navigated primarily flying routes between ground-based navaids or landmarks such as farmers' nighttime bonfires at first and, more recently, between radio beacons. PBN changed that ground-based dependance and enables airplanes to fly new routes untethered to any ground references and thus more freely and efficiently – it's a better "road system" in the sky – and ground navaids are the redundant back up. PBN also includes the capability to fly these newer routes with remarkable precision.



A visual rendering of the Performance-Based Navigation (PBN) system.

Furthermore, pilots can program modern airplanes to arrive at points along a route at exact times also with remarkable precision. Using these features together regularly would result in predictable, efficient air traffic flows. Doing so would reduce pilots' and air traffic controllers' workloads and reduce stress on the system.

> ***Action***: The FAA should ensure technologies like PBN are utilized to achieve safety and efficiency benefits. Once PBN technologies are more appropriately utilized and available, it will be then possible to overlay aircraft timing capabilities onto flight paths to achieve further improvement.

The commercial market today offers the FAA and the air traffic organization other technological solutions. In the past, as a country, we have "modernized ATC" through slow and complex regulatory processes coupled with unwieldy procurement. These problems are compounded by poor technological implementation that has created obstacles to unlocking the efficiency of the airspace and leaving controllers, flight crews and guests frustrated and stressed. The results are systems that cost billions, take years to complete, while ultimately failing to produce meaningful benefit.

> ***Action***: The FAA should fully exercise its procurement authority to integrate proven commercial, off-the-shelf dynamic tools into flow management solutions. We are using AI and machine learning in our own operations, as are other airlines, and we believe in the potential to apply these tools to the broader ATC system. Technology-based flow management solutions should be a critical focus of the modernization effort. Without it, our country will miss an opportunity to create the step-change needed to better manage our highly complex, constrained airspace and achieve measurable safety, reliability and efficiency gains. ATC has always been collaborative and cooperative. While Alaska Airlines and Hawaiian Airlines compete vigorously in the market to earn customers' business, we share the airspace with our competitors, general aviation, law enforcement and the military. It is quite literally the case that we are all "on the same wavelength" while using airspace and ATC in any given area.

Accordingly, we have long stood shoulder to shoulder with our peer airlines, our labor partners, the FAA, manufacturers, and others to share lessons learned and improve aviation safety. Safety is each of our top priority. We do not compete on it. We help each other and can work together to pilot and test out new opportunities to improve our system. The same should be the case as we look to optimize the safety, efficiency, and reliability of the NAS.

ATC modernization should be a collaborative effort to enhance the safety and efficiency of the NAS.

> ***Action***: We propose that the FAA should launch AI-powered traffic flow management tools through a full-scale simulation in partnership with airlines and other operators leveraging data flows. The FAA would then have additional proving ground to determine the power of AI to solve what are essentially complex math problems to organize and "smooth" aircraft flows to lessen the burdens on air traffic controllers and flight crews. To reiterate, this would require multiple operator participation.

The FAA has been wrestling with a persistent shortage of air traffic controllers for years. While a complex issue, part of the bottleneck lies in the FAA's controller training structures and technology.

> ***Action***: The FAA should assess commercially available state-of-the-art interactive technology that would qualitatively improve and expedite air traffic controllers' training.

CATEGORY TWO: The second category of action relates to how the government fosters the use of new technology to enhance safety and how it regulates the implementation of those technologies.

Good technology sells itself. Alaska Airlines and Hawaiian Airlines invest and equip proactively with technologies that demonstrably improve safety and efficiency.

When it comes to equipage, the FAA should ensure that any mandates result in measurable safety improvements. Critically, the FAA must also be prepared to adapt its own regulations to fully realize these safety improvements and unlock efficiency gains. History shows that FAA mandates of various technologies often fail to achieve their promised benefits because of inconsistencies in the FAA's policies, including user exclusions, technology investment decisions resulting in patchworks, or failure to update various agency regulations.

> ***Actions***:
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> - The FAA should approach equipage mandates or related exclusions with clearly identified goals for how specific equipment will provide safety enhancements over existing safety equipage.
> - The FAA should evaluate and evolve regulations to routinely permit safe, more efficient separation between aircraft reflecting the benefits of new technology.
> - The FAA should expedite efforts to reexamine airspace all over this country to ensure airspace designs that are decades old are modern, safe, and efficient.

CATEGORY THREE: The third category of action relates to how, when, and where the FAA decides to invest in its ATC infrastructure based on risk.

There is no one standard architectural design for an ATC tower.

While perhaps counterintuitive, some of the "low hanging fruit" to reduce risk and improve safety in U.S. airspace are in areas with fewer airplanes, rather than the most. Traffic density alone is not the only risk factor in serious incidents. Recent incidents in places like Kansas City, Missouri and Minot, North Dakota illustrate this nuanced point. Additionally, in even more remote locations, airports are lifelines for

medical, food, and essential supplies. Failures of weather or communications equipment in places like this have outsized impacts.

> ***Action***: The FAA should take a **risk-based approach** to its investments to maximize safety and operators' return on their investments while ensuring that lifeline communities alongside congested hubs receive the attention they deserve. This would entail a tailored, adaptive approach to measuring and mitigating risk on an ongoing basis. One recent example is the FAA's approval of new aircraft tracking tools to aid controllers' situational awareness and communication with pilots at smaller airports without radars or other such infrastructure. The FAA should seek other such opportunities to invest in technology that appreciably improves safety in airspace environments supporting a wide variety of flight operations.

VIII. Concluding thoughts

We share these views as part of our commitment to ATC modernization. Our airspace must function safely and efficiently for everyone: travelers, operators, air traffic controllers, communities, our military, law enforcement and the broader nation for decades to come and beyond. A high-performing, reliable, and innovative ATC-system is indispensable for U.S. global and economic leadership.

We believe that enabling proven technologies and leveraging AI-enabled tools to tackle the twin problems of unpredictability and variability of air traffic flows could deliver meaningful improvements in the very near term.

The success of ATC modernization is important for reasons beyond aviation. Time and air space are finite and valuable. ATC efficiencies and inefficiencies are consequential throughout multiple sectors of our economy and in the daily lives of ordinary people. A successful effort will be a win-win-win for all.

ATC Modernization serves to make air travel safer for all.

It would be easy for government and industry to miss this moment of transformation, given the monumental nature of the task at hand to fix the fundamentals. Let's not allow that to happen. Instead, as a country, let's fix the fundamentals and simultaneously leverage technology to rapidly optimize the efficiency, capacity, and safety of our skies.

The work ahead will not be easy. As we press forward, we should avoid the traps of "paralysis by analysis," avoid taking to heart the doubts of naysayers, and just go "do." We should keep in mind that the United States has accomplished truly big things before, including daunting ones that seemed unthinkable. Successfully modernizing ATC is within our collective power.