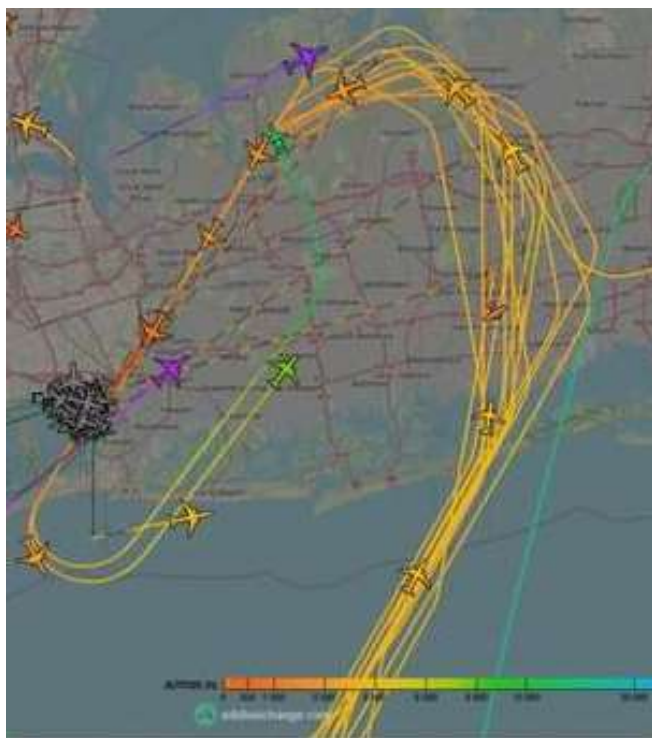


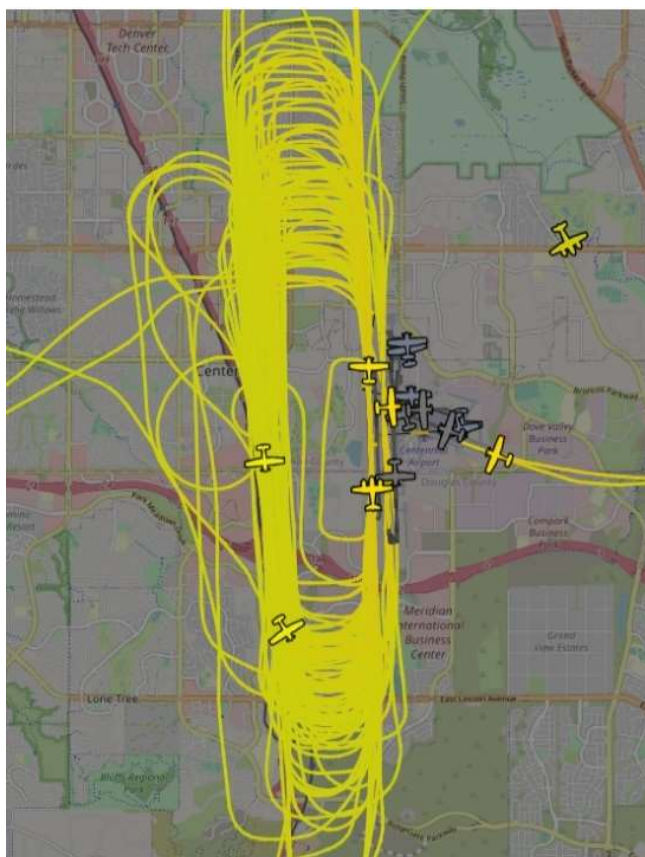
From the Oceans to the Mountains, What Do We Need from FAA to Mitigate Aviation Impacts?

Airports create impacts that diminish quality of life – and even health – for residents. This is the case for all busier airports, whether they serve small planes or larger passenger jets. Here’s two example airports.

KJFK is a major international hub. The parallel Runways 4 and 22 are clearly the most impactful flows. In a south flow (using Runways 22), ATC jams arrivals down low and slow for a long distance, onto a paired ‘Arcs of Doom’, thus burdening Long Island residents far to the north and east; in a north flow, many of those same residents (especially those closer in to KJFK) endure one departure after another for hours, and in worst cases, even for weeks on end.



Another example is Centennial Airport (KAPA), an over-busy general aviation airport south of Denver. Intensive flight training touch-and-goes are done to the west parallel Runway 17R/35L, which is only 700ft (center-line to center-line) from the parallel Runway 17L/35R.



Like a beehive, a steady drone begins early on each good flying day, and it is not uncommon for the pattern to have 6-, 8-, even 10- or more airplanes.



The infamous Key Lime midair occurred on 5/12/2021, and miraculously both aircraft were able to land. Then, on 7/17/2022, another midair occurred in the pattern being worked by ATC, at the

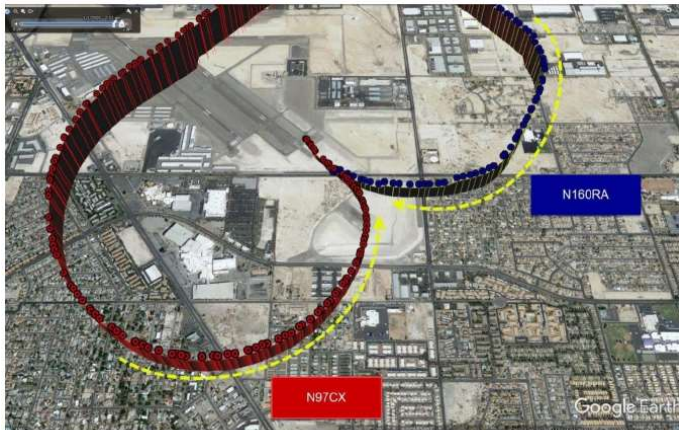


Figure 1. ADS-B Flight Paths for N97CX (PA-46) and N160RA (Cessna 172)

main GA airport in Las Vegas, (North Las Vegas, KVGT), killing four people. The midairs were identical: convergence on final by two planes lined up for two closely-spaced parallel runways. The NTSB investigations of both midairs makes it very clear: it was just by luck and mere inches (or even a fraction of an inch) that the KAPA midair did not result in at least three fatalities and a potential for destruction of homes under the finals to Runways 17R/17L. Despite this stark reality - *an actual midair collision of two arrivals being worked by ATC, and twice, at two FAA-controlled airports!* - FAA has not done anything to reduce or more safely manage closed pattern operations, not even a simple limit on the number of flights allowed to remain in the closed pattern. A *NATIONAL* directive would have been appropriate, but FAA didn't even issue local directives for the controllers at KVGT or KAPA.

The Need for Change at FAA, and the Need for Insider Advocacy

If FAA wanted to serve all of us (not just aviation money), they would make sure that all citizens have full access to the resources needed for effective engagement. What do we need? We need to be able to precisely define the current procedures use by

pilots and controllers, and we need to be able to quantify the present impacts. If the key data and documents are openly shared, we can have full discussions toward mitigating impacts, and toward achieving an appropriate balance between aviation activities and community impacts.

So, it starts with a major change at FAA: becoming cooperative and transparent. But, it needs to go even further. History has shown that the aviation industry (including FAA) is entrenched, and will never achieve changes without at least one aviation party advocating for those changes. Thus, if we are to fix the impact problems at airports like KAPA and KJFK, we need to find at least one major aviation party that will acknowledge impacts and advocate for needed changes. Ignoring lobbyists, who are the major aviation parties who actually ***WORK in aviation***, and might advocate? Top-down they include FAA, airport authorities, airlines, and aviation labor unions (especially NATCA, representing controllers).

Nearly always, Airport Authorities are beholden to airlines, and thus will not impose restrictions that diminish potential profits, even the tiny marginal profit gains of nonstop flows at peak capacity.¹ It also appears that, nearly always, FAA aligns in support of the profit-seeking objectives of the airlines. Consequently, impacted residents are not able to obtain cooperation from the Federal regulator (FAA) or from airport officials (PANYNJ), even for the simplest needs, such as advocacy for mitigation. The airlines are so focused on increasing revenues and profits, they do not even acknowledge their impacts. Lastly, it is understood that the air

1 Over many decades, FAA has spent millions on capacity studies, and billions on the development and rollout of NextGen, showing a consistent obsession with tweaking commercial airport flow-rates upwards, often by small amounts. If an airport models a flow-rate of 50 airline arrivals per hour in a given set of weather conditions, well, FAA is trying to help the one or two hub airlines using that airport by tweaking that number up to 54- or 56- per hour. This tiny marginal operational increase often carries a much larger marginal increase in impacts on the community. It enables the hub airline to cram more flights into the airport each hour, so a lot more passengers can be shuffled around and departed via connecting flights. That can add a small increase in profits for the airline, but at what cost?

traffic controllers (ATC) are well-paid FAA employees, doing their safety-related jobs, within a culture where it is not really acceptable to advocate on behalf of impacted residents. As such, residents cannot expect supportive advocacy via discussions with ATC personnel. So, in total, ***none of the key aviation players are willing*** to advocate for impacted residents.

Given this bleak reality, how can impacted residents achieve mitigation? They have to ‘tool up’ with data and documents, so they can effectively self-advocate. At a minimum, at every airport with ATC services and/or receiving federal grant monies, FAA should mandate monthly posting² of the following data and documents:

- ATC’s Runway Use Guidelines³
- ATC Facility Orders⁴
- Airport Activity Metrics:⁵

- 2 The ‘posting’ could be accomplished in two ways, either directly by the airport authority, or indirectly via an FAA data/documents website portal. Either way, each airport should be mandated to compile and release a monthly report viewable online early in the following month.
- 3 There are clearly written guidelines, shared by different ATC facility personnel, to smooth over decision-making for runway use configurations. They typically define the default (calm wind or preferred) runway configuration. They also typically specify what combinations of wind speed and wind direction are to be used to trigger a change in runway configuration. FAA needs to fully disclose these to impacted residents.
- 4 Understand that ATC is not a random and reactive process. ATC is very structured. There are Facility Operating Orders, Letters of Agreement LOAs), Memorandums of Understanding (MOUs), and other formal documents that all controllers have to learn, because they define how the controller is to do their work. These are the precise guidelines FAA needs to fully disclose to impacted residents, so they can be analyzed and proposed improvements can be developed.
- 5 A bit more detail: (1) Fuel: because airports generate revenues from fuel flowage fees, there is precise data on fuel served/sold at each airport. The community should know precisely how many gallons each month, and also know what type of fuel (jet vs leaded avgas vs unleaded avgas). (2) airports with ATC already produce very precise operations figures; airports without ATC should provide reliable estimates, validated by frequent on-airport sampling. (3) enplanement data at hub airports needs to be broken down, to quantify each of three types of

- Airport Impact Metrics⁶
- Airport Revenue Metrics⁷
- Airport Plans Documentation⁸

The Bias Against Reforms

FAA has been implementing NextGen for nearly 20-years, and the NextGen conceptualization began in the early 1990’s. The NextGen program (and name) gained traction and accelerated in the years immediately following the 9/11 attack. At the larger commercial airports (especially at airline hubs), the core intent when designing NextGen was to enable operators to increase capacity, enabling more flights per hour. Another key objective with NextGen was to replace labor with automation: let the airplane computers (autopilots) fly precise automated

passenger: those arriving and ending their trip at the airport, those arriving but passing THROUGH the airport, and those starting their trip and departing from the airport. (4) air cargo, in the belly of passenger flights, or in cargo-only flights (which historically have used louder older planes arriving in the dead of night), also generates airport revenues; thus, this data is available to be shared with the community, so they can better understand their local airport.

- 6 Impact Metrics should include the number of complaints filed each day, and a table quantifying the runway configurations for each complaint. Sharing such data can help everyone come to agreement about both defining the impacts and pursuing effective mitigation.
- 7 Airport Revenue Metrics: at a minimum, the airport authority should post an accounting of all revenues for each month, to include: fuel flowage fees, passenger fees, cargo fees, lease fees, parking revenues, and any other revenue streams. Additionally, airport authorities should be required to fully disclose copies of all agreements that reduce potential revenues or allow for ‘in-kind’ payment of fees; for example, airlines are often given reduced charges if they ‘remain-overnight’ (RON) at some airports; as another example, GA groups like EAA chapters may get use of facilities in exchange for doing an annual mowing of hay crops on airport lands, or other tasks. If the community is to fully understand their airport, these details need to be disclosed.
- 8 PDF copies should be readily available online, with readable versions of the current Airport Master Plan, Airport Layout Plan, each study or report or FAA decision on any noise or other environmental matter, Competition Study, and other relevant documents.

procedures. NextGen implemented an expansive set of procedures – departures, arrivals, and routes between each pair of airports – which in turn created concentrated, repetitive flight routes. But an unintended consequence of this automation is that noise and air pollutant impacts became focused and intensified upon a ‘new’ set of victims: the citizens who live and/or work under these new ‘noise tunnels’.

The public outcry against these concentrated impacts has resulted in two common strategy suggestions to mitigate NextGen impacts: either disperse the routes (to spread out the impacts) or scale down the operations (to reduce total impacts on the community). One strategy aims to ‘share the problem’, the other strategy aims to ‘fix the problem’.

Dispersal does not fix the problem. Instead, it broadens the area impacted, and thus increases the number of people experiencing excessive aviation above. FAA and industry like to tell Congress fewer people are impacted, so they are biased against dispersal.

There is also a bias (albeit, strictly commercial) against scaling back operations. Obviously, the airlines are focused on profit margins; thus, they want maximum capacity and minimum rules, plus they also like to use FAA to insulate them from impacted citizens (the ‘captured regulator’ effect). But this commercial bias extends to other aviation interests, too, especially the airport authority and ATC.

The airport authorities derive a lot more federal grant monies if they increase through-passengers; so, hub airline⁹ expansion proposals are eagerly accepted, and FAA’s AIP federal grant monies are eagerly pursued. Similarly, airport profits from parking fees are a huge revenue source for airports. The net result is there is a large incentive for the airport to suck up all airline service over an expansive region, taking on a large capture basin, becoming the monopoly airline service provider for

9 It is important to recognize that, in the U.S., the vast majority of our commercial airports are strongly dominated by only one or two airlines (monopoly, or duopoly). Competition is very low. It is not uncommon for a single airline and its regional affiliate feeders to have 70% or more of total passenger enplanements.

a population that has to drive 2+ hours to get to the airport. This is why we see a few airports over-expand while many others are slowly dying. The current set of economic incentives, and the absence of needed federal level system planning and regulation, produces an inefficient and inequitable free-for-all.

Then, too, there is ATC. FAA ATC pay levels are defined by airport activity levels; an airport like KAPA will pay more to the controllers, if the overall traffic operations count reaches the next pay plateau. This reality tends to motivate controllers to accommodate more operations, like closed pattern flights; it also inclines personnel to quietly avoid advocating against reducing operations.

How FAA Could Better Use NextGen Technologies

With all this in mind, what can we do to reduce impacts, like the infamous KJFK Arcs of Doom? Can NextGen help us to actually reduce impacts for a huge stretch of Long Island residents? Is there a way to use NextGen to do more than facilitate increased airport throughput and an upward tweak of airline profits? Yes, there is.



Take another look at the earlier graphic, showing the arrival flow to KJFK Runways 22. You will see a series of vectors, issued by ATC, to sequence each of the KJFK arrivals for landing on either Runway 22L or Runway 22R. The work of sequencing and spacing is being done low and over tens of thousands of homes, in the final 30+ miles, arcing over Long Island. At all times, ATC wants to make their job easier. When there are no clouds, or just a scattered low cloud layer, they will try to take advantage of the potential for pilots to fly a visual approach to KJFK. To make this happen, ATC routinely jams arrivals down lower and sooner, to get them under the lowest cloud layers.

A better strategy is to end the early jam-downs, and instead have ATC accomplish sequencing and spacing further out, at higher altitudes and even over unpopulated sea water. It is very much like a metered on-ramp: ATC is the metering device, and the optimal location for their work is *NOT* in the final ~30 miles, but instead in the flight portion 20- to 100-miles prior to landing. NextGen provides the tools allowing ATC to precisely structure an optimized arrival stream. If NextGen automation is used, to accomplish this stream further out, we can then fly a steeper arrival to a stabilized final approach (last 5-miles, roughly), without the impactful early-and-low descents and level-offs. Heck, it would also reduce the huge carbon footprint for each flight.

Of course, too, the ultimate mitigation for KJFK is simply to reduce operations. If/when data show the large percentage of passengers passing *THROUGH* this airport (neither arriving in NYC nor departing from NYC), a solid argument becomes clear for FAA to take efforts to reduce operations by reducing through-passenger counts; i.e., if 20% of arriving passengers are passing through, we can theoretically reduce the number of operations by as much as 20%, just be helping those passengers acquire flights – even desirable nonstop routings – that do not pass through KJFK. The airlines and airport authorities may not like this change, but it will be good for ATC and the rest of us. And the planet would benefit, too.

