



**SANTA CLARA/SANTA CRUZ COUNTIES
AIRPORT/COMMUNITY ROUNDTABLE**

*Response to Questions Asked at the
Fourteenth Regular Meeting of the
Roundtable*

**October 28, 2020
1:00 – 4:00 PM PDT**

Question #1

Robert Holbrook: The bedrock principle of my noise advocacy has been that people need the ability to plan when they make big life decisions like where to live. And NextGen has upended that because flights are much more concentrated and I think louder, creating some big, big losers. I support returning to the dispersion we had before NextGen as much as possible. Today's presentation made clear that's not possible with RNAV. But what's possible today might be possible tomorrow with new technologies. A few years ago, I flew to DC and addressed the NextGen Advisory Committee. I asked them to prioritize research into what I call "fine-grained dispersion," enabled by future precision navigation. After the meeting, I spoke with Acting FAA Administrator Elwell, who told me that "programmatic dispersion" (as he called it) was something the FAA might want to consider. I also mentioned this idea in a meeting I had with Ro Khanna, and he seemed receptive. This is just one of the ideas that the Roundtable could propose to our Congressional representatives on this topic. Other ideas include allowing alternate procedures that make less noise to be used during off-peak hours (and there are some problems that would need to be resolved with that); maybe extending Section 175 to apply to arrivals as well as departures (and there are some issues there too); and perhaps establishing with ground-based noise measurements whether airplanes flown by flight management systems really are louder than airplanes flown by pilots, which anecdotally certainly seems to be true. I'd like to suggest that the Roundtable pass a motion enabling the Legislative Committee to consider and perhaps propose actions for the Roundtable to consider for returning dispersion as much as possible to pre-NextGen levels, if not now, then in the future. I believe this motion would be appropriate when we get to Agenda Item Number 1. Finally, I observe that the Roundtable could ask Congress to clarify FAA priorities with respect to noise – noise is one of the three things that's in the FAA's charter – and to do this particularly with regard to NextGen. It does appear that dispersion is possible, but unless an efficiency objective is given, they're going to say no. Thank you.

Response:

A major reason why the FAA is implementing RNAV across the National Airspace System (NAS) is that RNAV allows the FAA to use airspace more efficiently. Because RNAV flight procedures inherently concentrate flights, the FAA can better predict where aircraft will be in the air. That

allows the FAA to reallocate airspace and potentially reduce the amount of airspace dedicated to each aircraft operation without adversely affecting safety. All RNAV procedures go through a safety review before being implemented.

In other words, reducing flight track dispersion is an intentional feature of RNAV, which is actually a key benefit to the FAA air traffic controllers. Adding dispersion back into flight procedures, where there is no operational or efficiency benefit, would run counter to the FAA's interest in RNAV. While there may be a future potential for "fine-grained dispersion," such technology development would require coordination between the FAA, aircraft manufacturers, aircraft operators, flight management system (FMS) manufacturers, and the International Civil Aviation Organization (ICAO) at a worldwide level. Therefore, such technology would take many years to develop.

The idea of having alternate procedures that reduce noise exposure during off-peak hours may be worth discussing with FAA representatives. The existing conversation regarding the use of BDEGA-east as opposed to BDEGA-west touches upon this topic. The FAA may be more amenable to ideas that leverage currently-published procedures as much as possible, rather than developing new procedures that would be used only during off-peak periods. Development of new procedures requires substantial time from FAA staff across multiple FAA lines of business.

Ideas such as extending Section 175 of the FAA Reauthorization Act of 2018 would require Congressional action; the Roundtable may wish to have the Legislative Committee look at this along with the idea of seeking clarification from Congress on FAA priorities with respect to noise.

Question #2

Darlene Yaplee: Hi Chris thank you for your informative presentation. I think there is an important opportunity that might be available to us; the SFO Airport is implementing GBAS, and as you mentioned, the opportunity to create dispersion has to happen further away from the airport. And if technically if we could move the STARs further back, we could maximize the opportunity for GBAS to be able to curve and use the Bay as opposed to fly over the peninsula. I would be interested in your technical perspective on how to best optimize GBAS technology, moving STARs, and any other suggestions you may have, so that we could in fact do dispersion with this new technology. Thank you.

Response:

The primary goal of the Ground Based Augmentation System (GBAS) is to provide a satellite-based version of an airport's Instrument Landing System (ILS), which is a ground-based radio system that uses radio beacons to help aircraft align with the runway and land in adverse

weather conditions.¹ The FAA's interest with GBAS is therefore to modernize the technology involved in an aircraft's final approach. During this phase of flight, aircraft must already be aligned with the runway centerline – therefore, there is no opportunity for dispersion. A presentation on GBAS was given at the San Francisco International Airport (SFO) Roundtable Technical Working Group meeting on November 19, 2020.² This presentation indicated that the “GLS precision approach path is currently limited to the final approach segment, which is approximately 5 – 10 Nautical Miles from the end of the runway.” The presentation also indicated that over the next five years, GBAS approaches would be limited to using the existing Standard Terminal Arrival Route (STAR) transitions to SFO.

Existing dispersion for aircraft arrivals in the Bay Area happens when air traffic controllers vector aircraft from STARs to runway approach procedures. Because air traffic controller vectoring takes place through verbal commands and happens at different times during an aircraft's flight depending on factors like pilot/controller workload and aircraft performance, dispersion naturally occurs. Because there are multiple airports within close proximity in the Bay Area, there are very few opportunities to move the waypoints of STARs without causing unsafe interference with other aircraft operations. The SFO GBAS presentation showed several aircraft approach procedure concepts utilizing Required Navigation Performance (RNP) to direct aircraft along a curved flight path to a GBAS final approach. RNP is a type of RNAV technology that can improve aircraft navigation accuracy enough to allow for navigation along specific curved flight paths. However, many commercial aircraft are not equipped to fly RNP flight paths. In addition, all RNP concepts shown in the SFO GBAS presentation included at least some overflight of land areas. Furthermore, replacing ATC vectoring with RNP would reduce dispersion rather than increase it.

Question #3

Marie-Jo Fremont: Thank you. So I have two comments. Slide 19, I think, of the presentation said that the result of RNAV procedures are, and I quote, “fewer people are overflown, but those people are overflown more often.” So my question, because we have to be careful with words is, how is it known that fewer people are affected, given that number 1, FAA doesn't look at population densities when making NextGen changes – we learned that at the San Jose South Flow Committee meeting – and number 2, the FAA doesn't look at impacts after the end of the procedure, when the planes are vectored. So indeed the FAA could use population densities all the way to the airport to design routes that would avoid people, but they don't do that with NextGen. As Chris said, efficiency comes first. And, what I want to challenge also is using this fewer people argument – fewer people have been affected by noise – is not a good justification, because really what matters is the total noise that's impacting people and how that noise is distributed. For instance, our insane level of noise on 1,000 people – is it better

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https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/gnss/laas/howitworks/

² “San Francisco International Airport GBAS Procedure Review.” Presentation at SFO Roundtable Technical Working Group Meeting, November 19, 2020.

than much smaller levels of noise on 20,000 people? No. So using fewer people to justify procedure changes is too simplistic, because you need to look at the changes of the noise levels. If you reduce noise by 0.1 dB for 20,000 people, it's not a good thing if this is going to increase noise by 5 dB for 1,000 people – and that's really what NextGen rails did. And my second comment is about the MIT work to disperse traffic for the Boston Logan Airport. ESA didn't mention anything about it, so I would like to know if they looked at the MIT dispersion study and if there's some learnings that could be extracted for Bay Area arrivals given that we are not lined up (in our communities) with the runways of the airport. Thank you.

Response:

Using population densities in the flight procedure design process presents its own challenges. The data may help the FAA understand where people are located – but moving flight tracks from a high-population density area to a low-population density area is not necessarily an equitable solution by itself. The FAA is still required to consider whether a flight procedure design causes increases in noise that meet the FAA threshold of significance (an increase of 1.5 dB at or above DNL 65) or the threshold of reporting (an increase in noise of 3 dB between DNL 60 and 65, or an increase in noise of 5 dB between DNL 45 and 60), and must also perform an environmental justice analysis to determine whether minority or low-income communities are disproportionately affected by a proposed procedure. These analyses are necessary regardless of population density. In addition, the vicinities of major airports in the Bay Area are heavily populated in general, and it is not feasible to place all arrivals and all departures over water.

ESA has reviewed the FAA's August 14, 2020 response to several Boston Logan International Airport (BOS) procedure proposals developed in part by MIT.³ The FAA assembled a wide set of stakeholders to review the proposed procedure designs and response, including air traffic controllers, the FAA's Office of Environment and Energy, the FAA Flight Standards office, and Air Traffic Organization procedure designers. This stakeholder group raised several high-level concerns with the proposed procedure designs:

- The proposed procedure designs would reduce predictability of aircraft locations vs. the existing procedures, leading to the need to increase spacing between aircraft and communicate with aircraft more frequently. This would increase pilot and air traffic controller workload.
- Increases in workload and verbal communication frequency increases opportunities for human error, which reduces safety. This negates the safety benefit provided by the increased predictability of RNAV procedures.

Ultimately, all airports and airspace regions are unique; each proposed procedure design requires its own analysis. However, the FAA does have standard RNAV processes, design criteria,

³ Federal Aviation Administration. Letter from Colleen M. D'Alessandro to Mr. Matthew A. Romero. August 14, 2020.

and safety requirements. Proposed procedure designs that do not fit into those standard processes and requirements are unlikely to be implemented by the FAA.

Question #4

Jennifer Landesmann: Thank you Chris for the presentation. Since you were at the FAA from 2009 until 2016: knowing everything the FAA knew about what was going to happen, why was an Environmental Impact Statement not chosen, so that the public could have the benefit of seeing all these things that have not been looked at by the public. And, I'm a little bit uncomfortable with how NextGen was pitched to Congress, because, if it was similar to all the videos that came out with NextGen in the beginning – I don't know if you recall – but all the videos showed how quiet everything would be, sliding down the bannister and everything. So I feel that there's this continuous bait-and-switch with FAA with the project descriptions, and NextGen's objectives, among them, were to have a reduction of fuel burn, emissions, and noise. Environmental objectives. Certainly we need environmental objectives in all big infrastructure projects. But I'm really interested in knowing why the FAA does not do a full EIS, because that's what we need at this point. Right now there are three airports that do international flights – I mean, is that really necessary? The communities have to start thinking really hard about what costs are being imposed on citizens and align the stories a little bit straighter, because it's really very difficult for the public to understand with NextGen, given that – And one last thing, safety. NextGen really reduces safety because of the reduction in spacing and airplanes, and while FAA takes responsibility for this, there are some serious safety issues. So we really need an EIS, and I'd like to know what your thoughts are about that. Thank you.

Response:

The FAA's National Environmental Policy Act (NEPA) review requirements are dictated in FAA Order 1050.1F. This Order details circumstances in which a categorical exclusion (CATEX) is normally applicable, circumstances in which an Environmental Assessment (EA) is normally required, and circumstances in which an Environmental Impact Statement (EIS) is normally required. CATEXs, EAs, and EISs are all different types of NEPA reviews. The phrase "categorical exclusion" describes the fact that FAA Order 1050.1F provides categories of FAA actions that are normally excluded from further environmental review. In other words, a CATEX is a type of NEPA review that determines whether a proposed federal action necessitates an EA or an EIS or instead does not need an EA or an EIS before being implemented. To establish categorical exclusions, federal agencies (including the FAA) must coordinate with the White House Council on Environmental Quality (CEQ) and demonstrate why actions proposed for categorical exclusions do not normally have a significant impact on the human environment.

Many types of air traffic and flight procedure actions undertaken by the FAA fall under categories of actions that are normally excluded from further environmental review. However, FAA Order 1050.1F requires the FAA to review proposed actions to determine whether they may have "extraordinary circumstances," which would prevent the use of a categorical exclusion.

One of those “extraordinary circumstances” is whether the action has the potential to significantly increase noise over noise-sensitive areas.

The FAA’s definition of a “significant increase” in noise is an increase of 1.5 dB at or above DNL 65 over a noise-sensitive area. In order to determine whether a proposed flight procedure may cause a significant increase in noise, the FAA may elect to perform an environmental “screening” analysis. This involves reviewing the proposed procedure using special analysis that is designed to quickly indicate whether the procedure could cause significant noise impacts. The FAA Order 1050.1F Desk Reference details screening methods that the FAA can use. If the FAA finds that a categorical exclusion applies to a proposed procedure and screening indicates that the procedure would not cause significant noise impacts, the FAA may choose to use a categorical exclusion for that procedure.

The FAA chose to perform environmental reviews of Metroplex projects as EAs in part to provide a standard framework for engaging with the public and documenting potential environmental impacts of Metroplex projects in a consistent way. In addition, Metroplex projects typically involve changes in airspace and flight procedures that are well outside of the immediate vicinity of airports where DNL 65 contours are typically located. This limits the potential for Metroplex projects to significantly increase noise over noise-sensitive areas. It’s important to note that the EA process is a way for a federal agency to analyze a proposed project to see if it may cause significant impacts on the human environment. If EA analysis shows that significant impacts are possible, the federal agency would be required to undertake an EIS or change the project so that it does not have the potential to cause significant impacts. Conversely, if EA analysis shows that there is no potential for a proposed project to cause significant impacts, the federal agency can choose to produce a Finding of No Significant Impact (FONSI). The FAA to date has not proposed Metroplex projects that may cause significant impacts according to the definitions of “significant” in FAA Order 1050.1F. Therefore, the FAA has produced FONSI for all Metroplex EAs to date. It is important to note that conducting an EIS when an EA has determined there are no significant impacts will not result in identifying significant impacts.

Question #5

It was requested by Roundtable Members (Member Matichak, Member Enander), and members of the public if the Roundtable could investigate the two SJC RNAV items on the IFP Gateway for 12 L and 12 R.

Response:

Based on the IFP Gateway review document that was referred to during the 10/28/2020 SCSC Roundtable meeting, there are three procedures related to San Jose International Airport (SJC) that are no longer listed on the IFP Gateway as of 11/23/2020. Specifically, of the three removed from the IFP Gateway, the two RNAV items for 12 L and 12 R were removed.

However, for reference, these items would have been updates to already existing Required Navigation Approach (RNP) approach procedures that have been in effect at SJC since July 2016. RNP is a type of RNAV technology that is highly precise, requiring less protection of airspace to maintain adequate separation between aircraft. Use of RNP procedures requires special pilot training and navigational equipment on board. We are unable to identify exactly what the changes to the procedures would have been, but since the IFP Gateway items were updates to existing procedures, it is likely that any vertical and/or lateral changes would have been limited. The precision of RNP procedures is usually so precise that there is very limited flight track dispersion. The IFP Gateway will continue to be monitored for additional updates should these procedures reappear.