



Meeting Announcement

Technical Working Group

Monday, November 14, 2022

4:00 p.m. – 5:30 p.m.

BY VIDEO CONFERENCE ONLY

Please click the link below to join the webinar:

<https://smcgov.zoom.us/j/97095497033>

Or Dial-in:

US: +1(669)900-6833 Webinar ID: 970 9549 7033

Note: To arrange an accommodation under the Americans with Disabilities Act to participate in this public meeting, please call (650) 363-4220 at least 2 days before the meeting date.

**Please see instructions for written and spoken comments at the end of this agenda.

AGENDA

Call to Order

Public Comment on Items NOT on the Agenda

CONSENT AGENDA

1. Action to Set Agenda and Approve Consent Agenda

2. Brown Act Remote Meetings Resolution (5-min)

Attachments: Memo and Resolution of Approval

pg. 3

REGULAR AGENDA

3. Introduction to the voluntary FAA Fly Quiet Program

Eugene Reindel, Technical Consultant

4. Roundtable Suggestions for GBAS 2A Innovative Procedure

Sam Hindi, Chairperson and
Kathleen Wentworth, Roundtable Coordinator

Attachments: Memo, map and suggestions

pg. 8

5. SFO Aircraft Noise Office Update

a. NIITE/HUSSH Update on Non-conforming Flights

Bert Ganoung, SFO Aircraft Noise Office Manager

6. Adjourn

****Instructions for Public Comment during Videoconference Meeting**

During videoconference of the Technical Working Group subcommittee meeting, members of the public may address the Roundtable as follows:

Written Comments:

Written public comments may be emailed in advance of the meeting. Please read the following instructions carefully:

1. Your written comment should be emailed to amontescardenas@smcgov.org.
2. Your email should include the specific agenda item on which you are commenting.
3. Members of the public are limited to one comment per agenda item.
4. The length of the emailed comment should be commensurate with two minutes customarily allowed for verbal comments, which is approximately 250-300 words.
5. If your emailed comment is received by 12:00 pm on the day before the meeting, it will be provided to the Roundtable and made publicly available on the agenda website under the specific item to which comment pertains. The Roundtable will make every effort to read emails received after that time but cannot guarantee such emails will be read during the meeting, although such emails will still be included in the administrative record.

Spoken Comments:

Spoken public comments will be accepted during the meeting through Zoom. Please read the following instructions carefully:

1. The Technical Working Group meeting may be accessed through Zoom online at <https://smcgov.zoom.us/j/97095497033>. The meeting ID: 970 9549 7033. The meeting may also be accessed via telephone by dialing in +1-669-900-6833, entering meeting ID: 970 9549 7033, then press #.
2. You may download the Zoom client or connect to the meeting using the internet browser. If you are using your browser, make sure you are using current, up-to-date browser: Chrome 30+, Firefox 27+, Microsoft Edge 12+, Safari 7+. Certain functionality may be disabled in older browsers including Internet Explorer.
3. You will be asked to enter an email address and name. We request that you identify yourself by name as this will be visible online and will be used to notify you that it is your turn to speak.
4. When the Roundtable Chairperson calls for the item on which you wish you speak click on "raise-hand" icon. You will then be called on and unmuted to speak.
5. When called, please limit your remarks to the time limit allotted.



November 10, 2022

TO: Technical Working Group

FROM: Kathleen Wentworth, Roundtable Coordinator

SUBJECT: Resolution to make findings allowing continued remote meetings under Brown Act

RECOMMENDATION:

Adopt a resolution finding that, as a result of the continuing COVID-19 pandemic state of emergency declared by Governor Newsom, meeting in-person would present imminent risks to the health or safety of attendees.

BACKGROUND:

On June 11, 2021, Governor Newsom issued Executive Order N-08-21, which rescinded his prior Executive Order N-29-20 and which waived, through September 30, 2021, certain provisions of the Brown Act relating to teleconferences/remote meetings. The Executive Order waived, among other things, the provisions of the Brown Act that otherwise required the physical presence of members of a local agency or other personnel in a particular location as a condition of participation or as a quorum for a public meeting. These waivers set forth in the Executive Order were to expire on October 1, 2021.

On September 16, 2021, the Governor signed Assembly Bill (AB) 361, a bill that codifies certain teleconference procedures that local agencies have adopted in response to the Governor's Brown Act-related Executive Orders. Specifically, AB 361 allows a local agency to continue to use teleconferencing under the same basic rules as provided in the Executive Orders under certain prescribed circumstances or when certain findings have been made and adopted by the local agency.

In order to continue to hold video and teleconference meetings, the Technical Working Group (TWG) of the San Francisco Airport/Community Roundtable will need to review and make findings every 30 days or thereafter that the state of emergency continues to directly impact the ability of the members to meet safely in-person and that state or local officials continue to impose or recommend measures to promote social distancing. If the TWG does continue to hold video and teleconference meetings, to meet the requirements of AB 361, the TWG will need to adopt a resolution at every meeting.

The San Mateo County Board of Supervisors has adopted a resolution to continue remote meetings and encouraged other local agencies to make similar findings.

The membership previously found, and it remains the case, that public meetings pose high risks for COVID-19 spread for several reasons. These meetings may bring together people from throughout a geographic region, increasing the opportunity for COVID-19 transmission. Further, the open nature of public meetings makes it difficult to enforce compliance with vaccination, physical distancing, masking, cough and sneeze etiquette, or other safety measures. Moreover, some of the safety measures used by private businesses to control these risks may be less effective for public agencies.

These factors continue to combine and directly impact the ability of members of the TWG to meet safely in person and to make in-person public meetings imminently risky to health and safety.

As noted above, under AB 361, local agency bodies were required to return to in-person meetings on October 1, 2021, unless they chose to continue with fully teleconferenced meetings and made the prescribed findings related to the existing state of emergency. At its meeting of September 20, 2022, the TWG membership continued to adopt a resolution wherein the membership found, and it continues to be the case that, among other things, as a result of the continuing COVID-19 state of emergency, meeting in-person would present imminent risks to the health or safety of attendees.

RECOMMENDATION:

We recommend that your subcommittee avail itself of the provisions of AB 361 allowing continuation of online meetings by adopting findings to the effect that conducting in-person meetings would present an imminent risk to the health and safety of attendees. A resolution to that effect and directing staff to return each 30 days with the opportunity to renew such findings, is attached hereto.

FISCAL IMPACT:

None

Attachments:

- a. Resolution TWG22-05

RESOLUTION NO. TWG22-05

RESOLUTION FINDING THAT, AS A RESULT OF THE CONTINUING COVID-19 PANDEMIC STATE OF EMERGENCY DECLARED BY GOVERNOR NEWSOM, MEETING IN PERSON FOR MEETINGS OF THE TECHNICAL WORKING GROUP, OF THE SAN FRANCISCO INTERNATIONAL AIRPORT/COMMUNITY ROUNDTABLE, WOULD PRESENT IMMINENT RISKS TO THE HEALTH OR SAFETY OF ATTENDEES

RESOLVED, by the Technical Working Group that

WHEREAS, on March 4, 2020, the Governor proclaimed pursuant to his authority under the California Emergency Services Act, California Government Code section 8625, that a state of emergency exists with regard to a novel coronavirus (a disease now known as COVID-19); and

WHEREAS, on June 4, 2021, the Governor clarified that the “reopening” of California on June 15, 2021 did not include any change to the proclaimed state of emergency or the powers exercised thereunder, and as of the date of this Resolution, neither the Governor nor the Legislature have exercised their respective powers pursuant to California Government Code section 8629 to lift the state of emergency either by proclamation or by concurrent resolution in the state Legislature; and

WHEREAS, on March 17, 2020, Governor Newsom issued Executive Order N-29-20 that suspended the teleconferencing rules set forth in the California Open Meeting law, Government Code section 54950 et seq. (the “Brown Act”), provided certain requirements were met and followed; and

WHEREAS, on September 16, 2021, Governor Newsom signed AB 361 that provides that a legislative body subject to the Brown Act may continue to meet without fully complying with the teleconferencing rules in the Brown Act provided the legislative body determines that meeting in person would present imminent risks to the health or safety of attendees, and further requires that certain findings be made by the legislative body every thirty (30) days or when meeting next; and,

WHEREAS, the Technical Working Group has an important interest in protecting the health and safety of attendees, and welfare of those who participate in its meetings; and

WHEREAS, at its meeting October 5, 2022, the San Francisco Airport/Community Roundtable continued to adopt, by unanimous vote, a resolution wherein the membership found, *inter alia*, that as a result of the continuing COVID-19 state of emergency, meeting in person would present imminent risks to the health or safety of attendees: and

WHEREAS, The Technical Working Group has not met since its meeting in September 20, 2022; and

WHEREAS, the membership has reconsidered the circumstances of the state of emergency and finds that the state of emergency continues to impact the ability of members of the Roundtable/TWG to meet in person because there is a continuing threat of COVID-19 to the community, and because membership meetings have characteristics that give rise to risks to health and safety of meeting participants (such as the increased mixing associated with bringing people together from across the community); and

WHEREAS, in the interest of public health and safety, as affected by the emergency caused by the spread of COVID-19, the membership deems it necessary to find that meeting in-person would present imminent risks to the health an safety of attendees, and thus intends to invoke the provisions of AB 361 related to teleconferencing;

NOW, THEREFORE, IT IS HEREBY DETERMINED AND ORDERED that

1. The recitals set forth above are true and correct.
2. The Technical Working Group finds that meeting in person would present imminent risks to the health or safety of attendees.
3. Staff is directed to return no later than thirty (30) days after the adoption of this resolution or at their next regular meeting to consider making the findings required by AB 361 in order to continue meeting under its provisions.
4. Staff is directed to take such other necessary or appropriate actions to implement the intent and purposes of this resolution.

* * * * *

Adopted at the Technical Working Group of _____.

Sam Hindi
Subcommittee Chairperson

Date

November 10, 2022

TO: SFO Roundtable Members & Alternates
FROM: Kathleen Wentworth, Roundtable Coordinator
SUBJECT: Roundtable *Suggestions* for GBAS Innovative Procedures



EXECUTIVE SUMMARY: Attached are ten *Suggestions* for possible GBAS flight procedures. These are being submitted to the Technical Working Group (TWG) for review, consideration and to determine if the TWG wishes to refer any suggestions to the SFO Airport Community Roundtable (SFORT) Members at the December 7, 2022 Roundtable meeting.

BACKGROUND: The FAA describes GBAS as a “Ground Based Augmentation System [which] augments the existing Global Positioning System (GPS) used in U.S. airspace by providing corrections to aircraft in the vicinity of an airport in order to improve the accuracy of, and provide integrity for, these aircrafts' GPS navigational position.” In addition, it has some enhanced flexibility in the design of GBAS procedures. **GBAS works only with arrival procedures to augment approaches for landing.** Its coverage extends out from the SFO airport for about 23 miles. It is *not designed* to work with procedures for takeoffs and departures.

As you well know, the SFO GBAS team is working far in advance of actual procedure design. They have asked that any GBAS suggestions or concepts for innovative ideas be submitted as soon as possible.

Attachment B in this memo includes ten Suggestion pages. Each Suggestion page is a mere concept – a suggestion that, if this subcommittee desires, can be submitted to the SFORT for submission to the SFO GBAS Team for their consideration and analysis. None of the Suggestion pages is a proposal; none of the *Suggestions* is a vetted or analyzed flight procedure. The GBAS team has requested suggestions from the public and has said that they prefer a basic suggestion that they can build on. If the SFO GBAS Team decides to design a procedure based on any of these or other Roundtable suggestions—or *any suggestion*—any proposed GBAS procedure will be subject to all applicable FAA regulations and processes as well as to SFO processes including presentation to the SFORT for review.

There are many reasons why a suggestion that sounds promising, may not succeed as a flight procedure – even a GBAS flight procedure. The Bay Area is compact and hosts three major airports sharing the airspace. Stringent, important FAA safety regulations -including adequate separation between flight paths – is a critical factor. Sometimes, there is just no space available for even the best of suggestions.

Most of the landings at SFO are to runways 28L and 28R (referred to as SFO’s “west flow” pattern) with a smaller number of landings on runways 19L and 19R. The landings on 19L and 19R typically occur when we have strong winds from the southeast – usually during rainy weather (referred to as SFO’s “southeast flow” pattern). (There are also very few landings during a year on runways 10L/R and 01L/R).

You will note that most of these ten *Suggestions* propose flight procedures which are: incremental, at nighttime, or apply to approaches and landings on runways 28L or 28R. There are mostly incremental improvements suggested because the constricted airspace offers very few opportunities for totally new flight procedures, so we have suggested improvements in existing flight procedures. But at night, when there are fewer other airplanes to get in the way, there may be more flexibility in options for improving the flight paths. And most *Suggestions* incorporate landings at 28L or 28R because that is where the overwhelmingly number of landings at SFO occur.

The flight path images – both those showing existing flight paths and those showing suggested new flight paths are very approximate. Because of airspace constraints, much of the SFO traffic is vectored (turned) away off of the published flight path either for safety or for airline efficiency, so there is not always a narrow path of actual flight tracks. In many images, we chose to show a possible path for a new GBAS by illustrating an existing offset approach such as the SFO RNAV(RNP)Y approach. GBAS has the potential to improve even on this approach.

Suggestion 1: Down the Bay. The GBAS team has already proposed GLS Down the Bay procedures. The suggested modification in this packet is a modest change to this GBAS Down the Bay Approach which would keep the final approach flight path offset to 28R – farther over the Bay - thereby reducing noise to mid-Peninsula Bayside cities.

Suggestions 2A-2B-2C: New GBAS offset arrival to 28R. This group of 3 *Suggestions* are variations on a concept that at minimum during the nighttime (and maybe also lower traffic hours during the day). Each of the *Suggestions* would apply to flights arriving on the **BDEGA** Arrival, **SERFR** Arrival or **PIRAT** Arrival. These three arrivals typically (but not always) approach and land on runway 28L. This suggested modification would route the arrivals to fly past the 28L path and to join a new GBAS procedure designed to maximize the offset to have airplanes approach and land on 28R.

Suggestions 3A-3B-3C: New GBAS procedure with longer circuitous route to an offset arrival to 28R. This group of three *Suggestions*, which is a nighttime only suggestion, builds on the 2A-2B-2C group of *Suggestions*, but adds that a plane would **fly a longer circuitous path over the Bay** before joining an offset route to 28R. It is anticipated that this concept of circuitous routing over the Bay will create additional flight mileage which could be used to dissipate aircraft altitude. This opportunity to dissipate “excess altitude” later in the approach **may allow the altitudes to be higher, and thus quieter, in the earlier portions of the arrival over highly populated communities.**

Suggestion 4: New GBAS procedure for an overwater route to Runways 19L and 19R. This suggestion is for a new route when SFO is using the southeast flow pattern and landing on runways 19L and 19R. Although this southeast flow pattern takes place on fewer of days in the year, the impact on residents is significant. Flights from the south are typically routed north up the San Mateo County coastline inland over residential areas at relatively low altitudes and then turned north/northeasterly over San Francisco neighborhoods at low altitudes. The suggested route would keep the northbound flights over the ocean away from the land near the coast and would direct the flights over the waters of the Golden Gate until joining the landing pattern for runway 19L/19R. It would also incorporate a holding pattern over the ocean – maybe near GOBBS – where airplanes can hold without impacting residents.

Suggestion 5: New GBAS procedure to replace the SERFR at night by incorporating an eastern arrival to the Bay with an offset approach to 28R. This suggestion would replace the SERFR Arrival for nighttime only. The SERFR flights fly from Los Angeles (LAX) and other airports to the Bay Area. This suggestion would create a newly combined route composed of much of an existing route, a new short connector segment and a new GBAS offset approach that would be similar to, but likely improved, from other offset approaches to 28R.

Suggestion 6: New GBAS procedure for dual offset approaches to runways 28L AND 28R. This suggestion has been made many times over the years by various entities and residents from Foster City, East San Mateo and other cities and residents. A recommendation for dual offset approaches was made by the Roundtable in their 2016 Recommendations to the FAA as part of the NorCal Initiative. This suggestion is challenging. But GBAS may be the technology which can achieve it – today or in the very near future. While today’s GBAS range at SFO is about 23 miles, apparently there are extended range GBAS options available. Because GBAS can use innovative flight path designs, such as curved paths, it might be possible to solve the challenge of 28L and 28R aircraft path separation in the crowded, shared Bay airspace by being able to use a curved flight path and only having to “curve out” the two runway approach paths over a short distance.

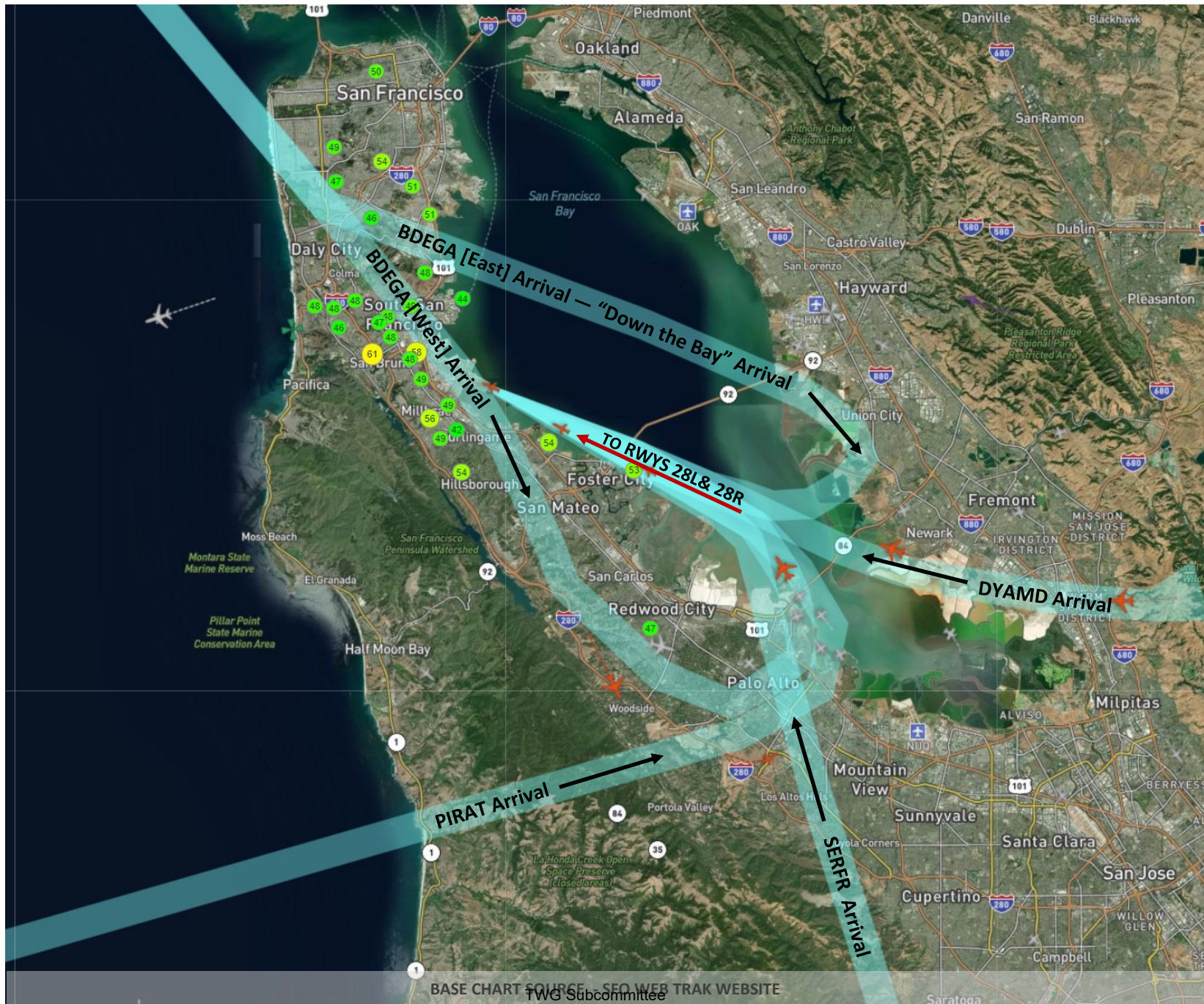
It’s not too late...If you have an idea, concept, suggestion for how to improve an approach into SFO or have a suggestion for a new approach to landing design procedure, you can discuss it at the TWG meeting or you can submit it directly to the SFO GBAS Team - SFO.GBAS@flysfo.com. Just a couple of sentences will be sufficient, but sooner is better.

RECOMMENDATION: It is recommended that the Technical Working Group refer these *Suggestions*, along with other appropriate suggestions proffered at the TWG meeting, to the SFO Roundtable Members at the December 7, 2022 Roundtable meeting.

ATTACHMENTS:

- a. Image: SFO West Flow – Arrivals
- b. Ten *Suggestions* for possible submission to SFO Roundtable/SFO GBAS Team

SFO West Flow — Arrivals

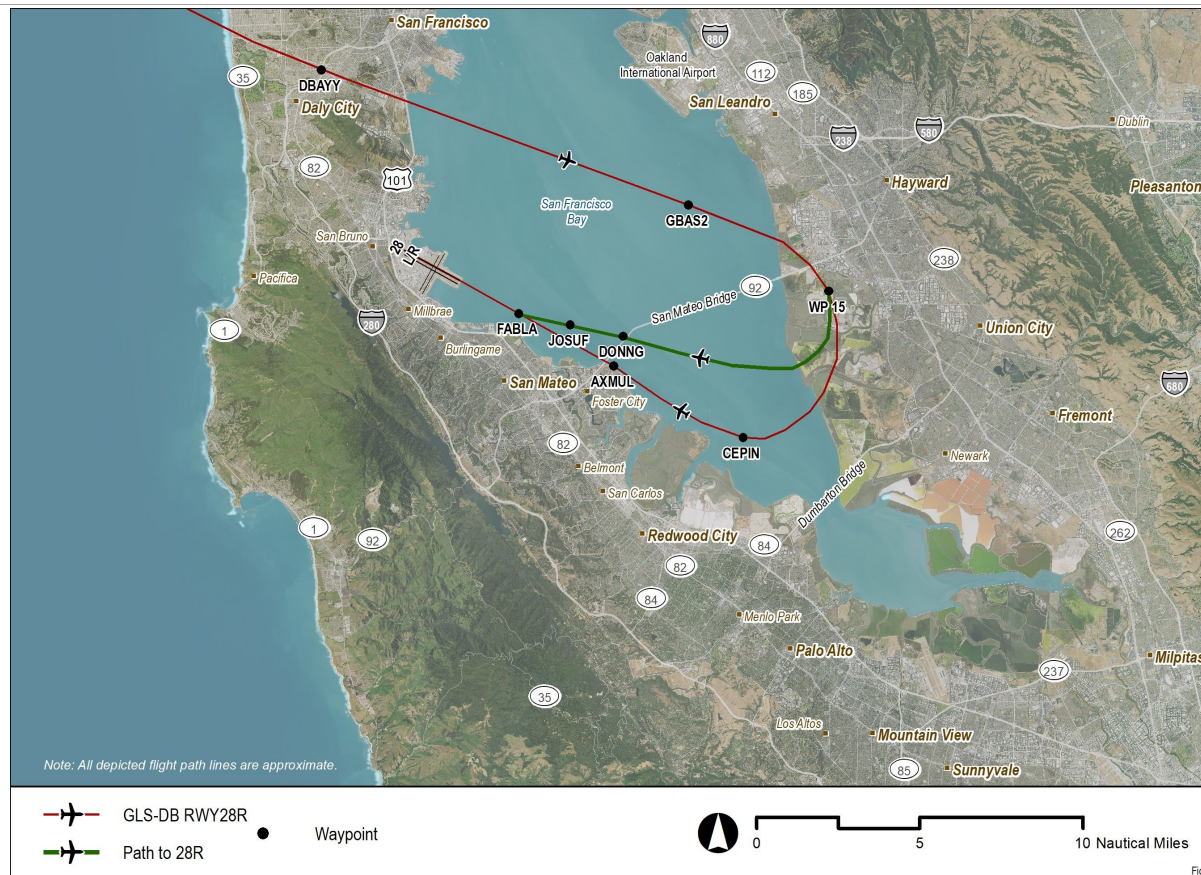


Below is a **Suggestion**— by the SFO ROUNDTABLE to the SFO GBAS Team —for their consideration and analysis.
THIS IS NOT A PROPOSAL — THIS IS NOT A VETTED OR ANALYZED FLIGHT PROCEDURE.

If the SFO GBAS Team decides to design a procedure based on this *Suggestion*—or *any suggestion*—any proposed GBAS procedure will be subject to all applicable FAA regulations and processes as well as SFO processes including presentation to the SFO Roundtable for review.

1	SFO	WEST FLOW	ARVL	DAY NIGHT	GBAS	GBAS SUGGESTION: Modify all the proposed GBAS “Down the Bay” arrivals to couple each with an offset approach and landing to 28R.
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As generally depicted in the proposed **GBAS “Down the Bay**. An airplane can fly the initial portion of the GBAS “Down the Bay” and at an appropriate point, when the aircraft starts a right turn towards the San Mateo Bridge, the plane should head toward the vicinity of DONNG intersection. Upon reaching the San Mateo Bridge, airplane turns left to intercept the ILS 28R localizer, other appropriate approach to 28R or to visually line up with 28R extended centerline to land on 28R (not Rwy 28L).



EXAMPLE: suggested modification of the **GBAS “Down the Bay” (red line)** to incorporate an **offset path to 28R until passing the San Mateo Bridge (green line)**

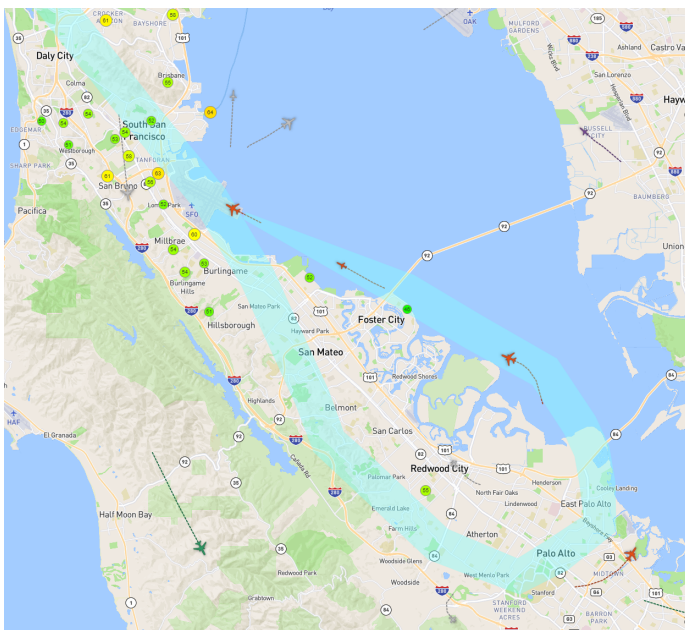
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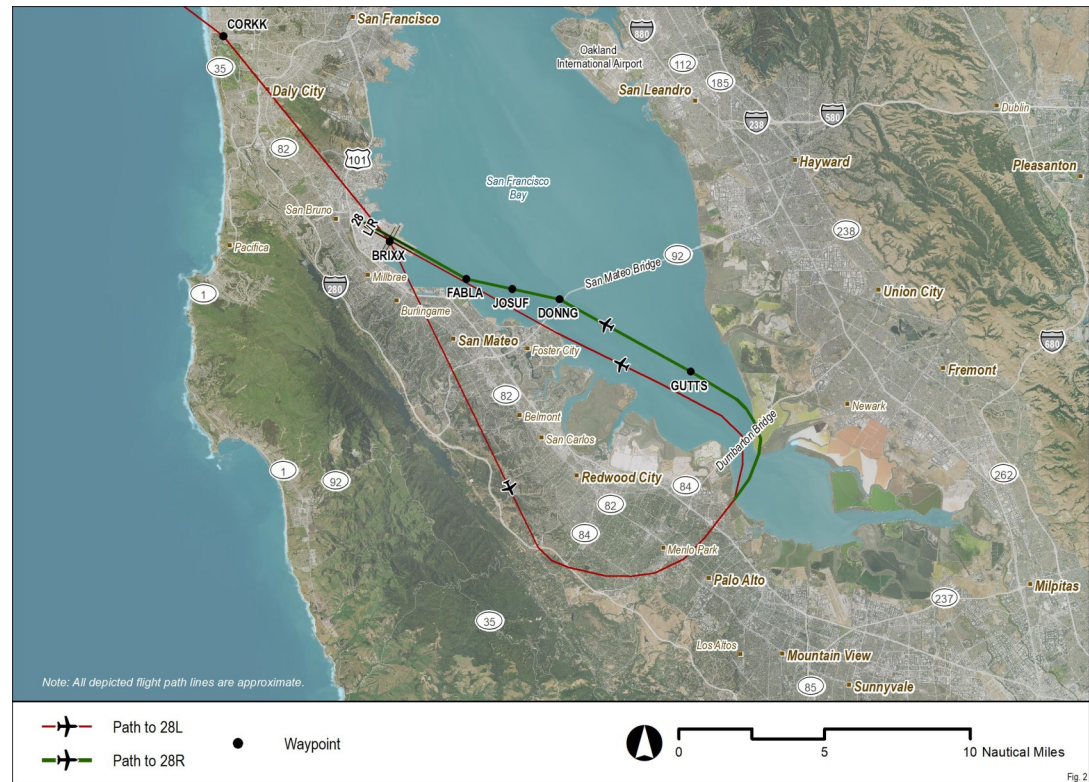
2A	SFO	WEST FLOW	ARVL	DAY NIGHT	GBAS	GBAS SUGGESTION: BDEGA Arrivals to fly a new GBAS path that connects the BDEGA Arrival to a new 28R offset approach that maximizes offset in the vicinity of the final approach to 28R, fol-lowed by a landing on 28R.
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Via the **BDEGA ARRIVAL** [including aircraft on the arrival path as well as aircraft being vectored] from an approximate point where BDEGA flights are typically as-signed a heading to connect to ILS 28L...instead of turning toward the 28L path...instead to continue via a path to a **Rwy28R offset** approach such as a newly created GBAS path that can maximize offset in the vicinity of the final approach to 28R.

- NOTE 1:** *It is important that any new track does not alter flight paths of existing BDEGA arrivals while over residential areas.*
- NOTE 2:** *It is suggested that this approach could be used at night and perhaps at certain times of the day when traffic will allow.*



BDEGA Arrival path as shown on the SFO Flight Trak website.



Green line: suggested offset path to 28R until passing the San Mateo Bridge

Below is a **Suggestion**— by the SFO ROUNDTABLE to the SFO GBAS Team —for their consideration and analysis.
THIS IS NOT A PROPOSAL — THIS IS NOT A VETTED OR ANALYZED FLIGHT PROCEDURE.

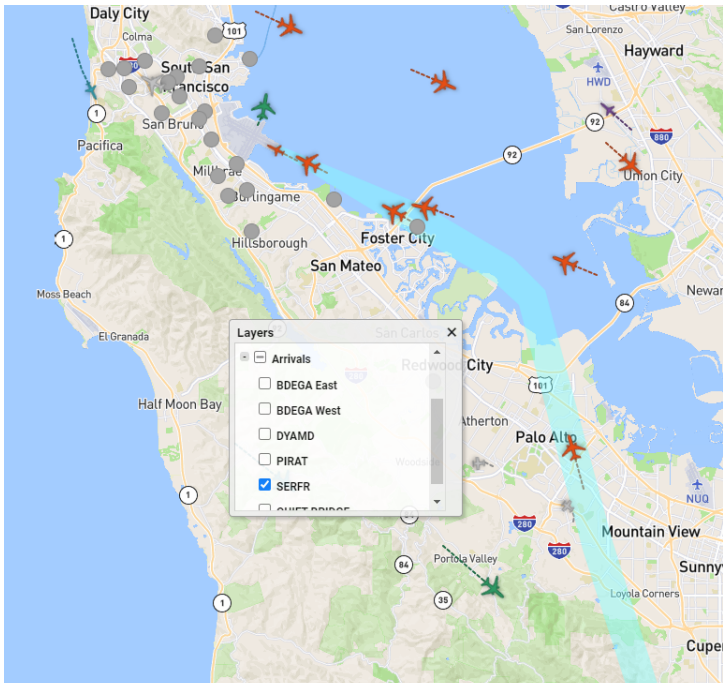
If the SFO GBAS Team decides to design a procedure based on this *Suggestion*—or *any suggestion*—any proposed GBAS procedure will be subject to all applicable FAA regulations and processes as well as SFO processes including presentation to the SFO Roundtable for review.

2B	SFO	WEST FLOW	ARVL	DAY NIGHT	GBAS	GBAS SUGGESTION: SERFR Arrivals to fly a new GBAS path that connects the SERFR Arrival/ILS28L transition from the vicinity of Highway 84 to a new 28R offset approach that maximizes offset in the vicinity of the final approach to 28R, then landing on 28R.

Via the **SERFR ARRIVAL** [including aircraft on the published arrival path as well as aircraft being vectored] could connect from the existing path of the SERFR Arrival/ILS28L transition until clear of residential areas. After passing Highway 84, continue via a path to a **Rwy 28R offset approach** such as a newly created GBAS path that can maximize offset in the vicinity of the final approach to 28R.

NOTE 1: *It is important that any new track does not alter flight paths of existing SERFR arrivals while over residential areas.*

NOTE 2: *It is suggested that this approach might be used at night and perhaps at certain times of the day when traffic will allow.*



SERFR Arrival path as shown on the SFO Flight Trak website.



Green line: suggested offset path to 28R until passing the San Mateo Bridge

Below is a **Suggestion**— by the SFO ROUNDTABLE to the SFO GBAS Team —for their consideration and analysis.
THIS IS NOT A PROPOSAL — THIS IS NOT A VETTED OR ANALYZED FLIGHT PROCEDURE.

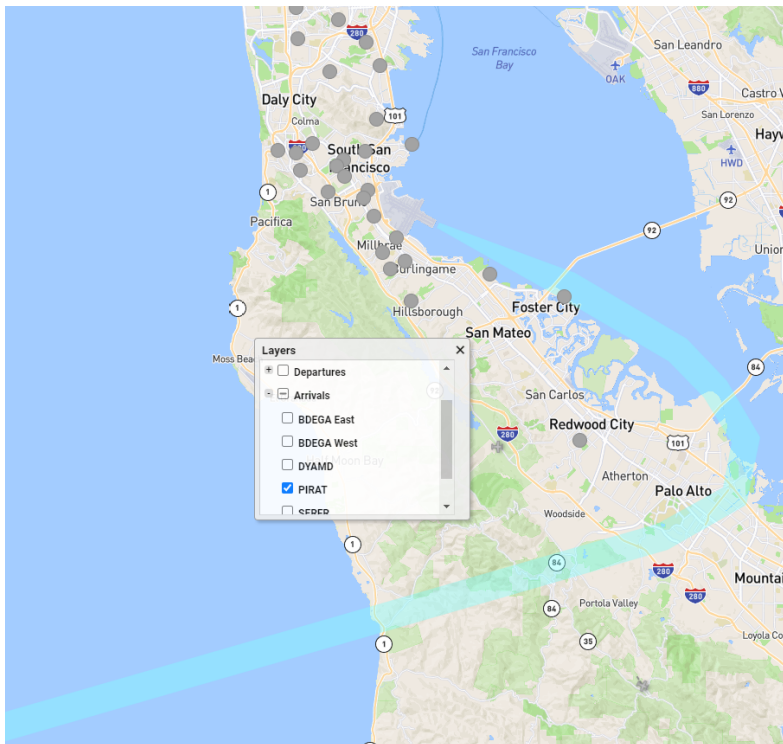
If the SFO GBAS Team decides to design a procedure based on this *Suggestion*—or *any suggestion*—any proposed GBAS procedure will be subject to all applicable FAA regulations and processes as well as SFO processes including presentation to the SFO Roundtable for review.

2C	SFO	WEST FLOW	ARVL	DAY NIGHT	GBAS	GBAS SUGGESTION: PIRAT Arrivals to fly a new GBAS path that connects the PIRAT Arrival to a new 28R offset approach that maximizes offset in the vicinity of the final approach to 28R, then landing on 28R.
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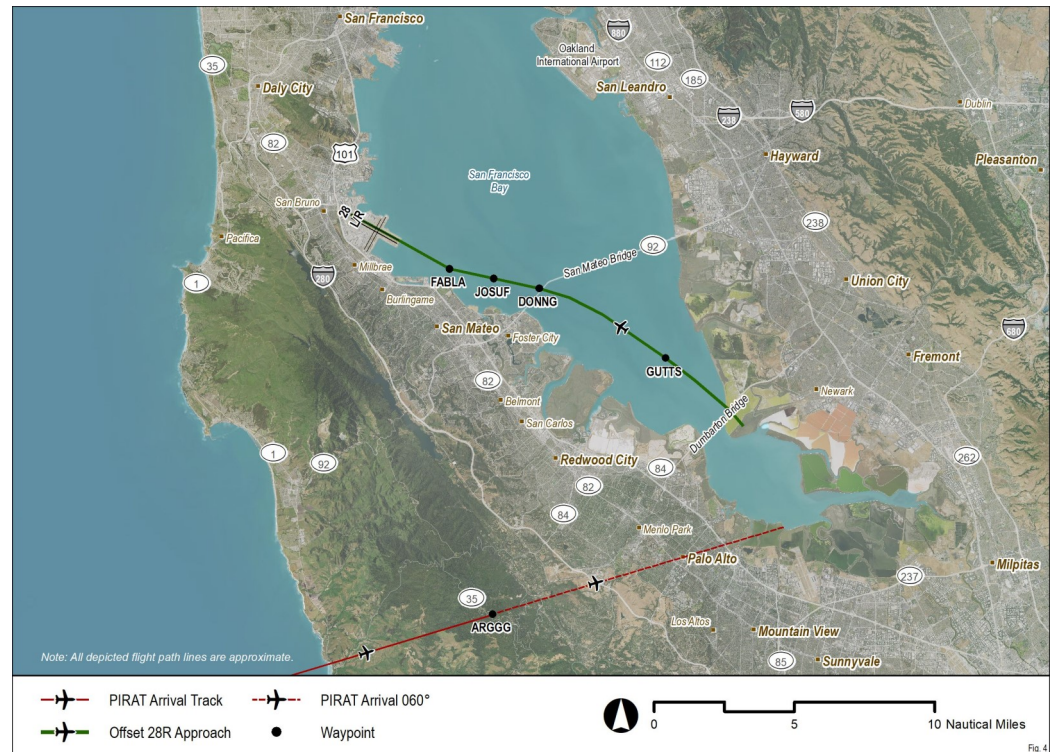
Via the **PIRAT ARRIVAL** [including aircraft on the published arrival path as well as aircraft being vectored] from an approximate point where PIRAT flights are typically assigned a heading to intercept the ILS 28L...instead of turning toward the 28L path, instead continue via a path to a **Runway 28R offset approach** such as a newly created GBAS path that can maximize offset in the vicinity of the final approach to 28R.

NOTE 1: *It is important that any new track does **not alter flight paths of existing PIRAT arrivals** while over residential areas.*

NOTE 2: *It is suggested that this approach might be used at night and at certain times of the day when traffic will allow.*



PIRAT Arrival path as shown on the SFO Flight Trak website.



Red line: PIRAT Arrival track and 060° heading.

Green Line: suggested offset path to 28R until passing the San Mateo

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If the SFO GBAS Team decides to design a procedure based on this *Suggestion*—or *any suggestion*—any proposed GBAS procedure will be subject to all applicable FAA regulations and processes as well as SFO processes including presentation to the SFO Roundtable for review.

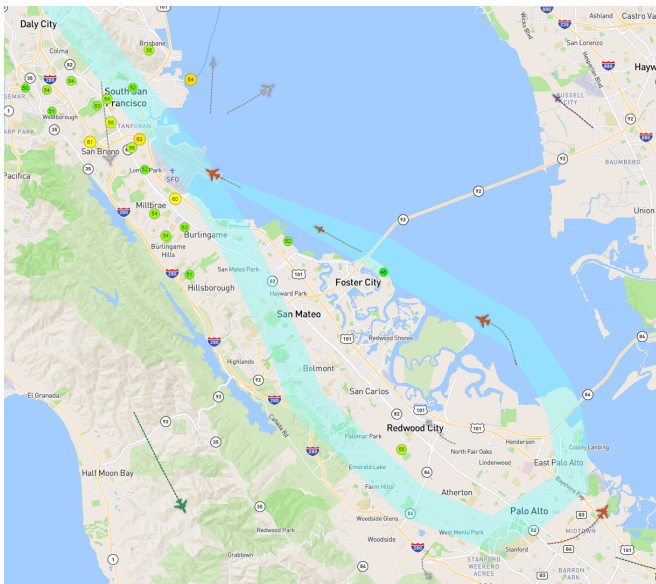
3A	SFO	WEST FLOW	ARVL	NIGHT ONLY	GBAS	GBAS SUGGESTION: BDEGA Arrivals to fly a new GBAS path that connects the BDEGA Arrival via a longer circuitous route over the Bay to a new 28R offset approach that maximizes offset in the vicinity of the final approach to 28R, followed by a landing on 28R.
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Via the **BDEGA ARRIVAL** [including aircraft on the arrival path as well as aircraft being vectored], from an approximate point where BDEGA flights are typically assigned a heading to connect to the ILS 28L...instead, the plane could fly a longer circuitous path utilizing the available airspace over the Bay and then to connect via a path to the vicinity of DONNG intersection at the San Mateo Bridge, and then to turn left to intercept the ILS 28R localizer, GBAS or other appropriate approach to 28R or visually line up with the 28R extended centerline to land on 28R (not Rwy 28L).

NOTE 1: *It is important that any new track does not alter flight paths of existing BDEGA arrivals while over residential areas.*

NOTE 2: *It is anticipated that this concept of circuitous routing over the Bay will create additional flight mileage which could be used to dissipate aircraft altitude. This opportunity to dissipate “extra altitude” later in the approach may allow the altitudes to be higher, thus quieter, in the earlier portions of the arrival over highly populated communities.*

NOTE 3: *It is suggested that this approach might be used during certain night hours when traffic will allow.*



BDEGA Arrival path as shown on the SFO Flight Trak website.



Green line: Suggested wide circuitous offset path to 28R until passing the San Mateo Bridge

Below is a **Suggestion**— by the SFO ROUNDTABLE to the SFO GBAS Team —for their consideration and analysis.
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If the SFO GBAS Team decides to design a procedure based on this *Suggestion*—or *any suggestion*—any proposed GBAS procedure will be subject to all applicable FAA regulations and processes as well as SFO processes including presentation to the SFO Roundtable for review.

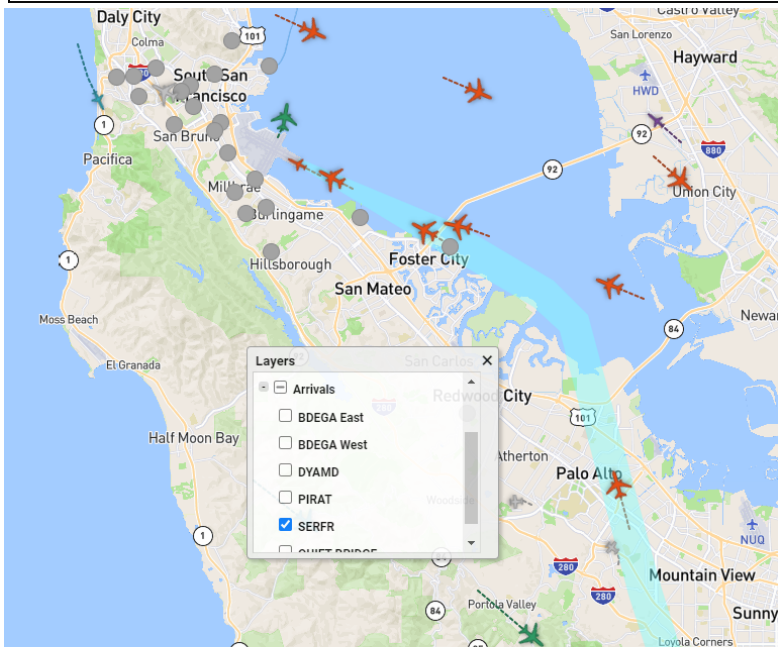
3B	SFO	WEST FLOW	ARVL	NIGHT ONLY	GBAS	GBAS SUGGESTION: SERFR Arrivals to fly a new GBAS path that connects the SERFR Arrival via a longer circuitous route over the Bay to a new 28R offset approach that maximizes offset in the vicinity of the final approach to 28R, followed by a landing on 28R.
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Via the **SERFR ARRIVAL** [including aircraft on the arrival path as well as aircraft being vectored], instead of turning directly onto the 28L path, the plane could fly a longer circuitous path utilizing the available airspace over the Bay and then to connect via a path to the vicinity of DONNG intersection at the San Mateo Bridge, and then to turn left to intercept the ILS 28R localizer, GBAS or other appropriate approach to 28R or visually line up with the 28R extended centerline to land on 28R (not Rwy 28L).

NOTE 1: *It is important that any new track does **not alter flight paths of existing SERFR arrivals** while over residential areas.*

NOTE 2: *It is anticipated that this concept of circuitous routing over the Bay will create additional flight mileage which could be used to dissipate aircraft altitude. This opportunity to dissipate “extra altitude” later in the approach may allow the altitudes to be higher , **thus quieter**, in the earlier portions of the arrival over highly populated communities.*

NOTE 3: *It is suggested that this approach might be used during certain night hours when traffic will allow.*



SERFR Arrival path as shown on the SFO Flight Trak website.



Green line: suggested wide circuitous offset path to 28R until passing the San Mateo Bridge

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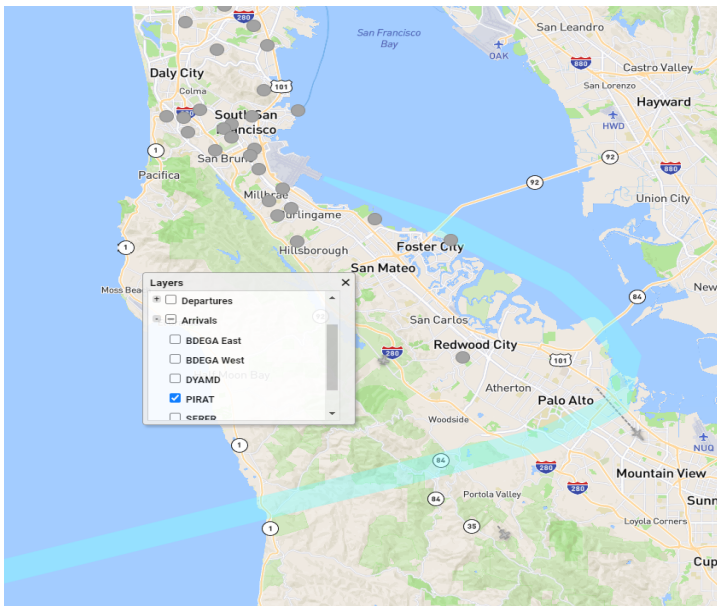
3C	SFO	WEST FLOW	ARVL	NIGHT ONLY	GBAS	GBAS SUGGESTION: From the PIRAT arrival via the typical routing until reaching the Bay shoreline, at which point, the plane would fly a longer circuitous route over the Bay to a landing on 28R [not 28L].
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Via the **PIRAT ARRIVAL** [including aircraft on the arrival path as well as aircraft being vectored], instead of turning onto the 28L path, the plane could fly a circuitous path utilizing the available airspace over the Bay and then to connect via a path to the vicinity of DONNG intersection at the San Mateo Bridge, and then to turn left to intercept the ILS 28R localizer, GBAS or other appropriate approach to 28R or visually line up with the 28R extended centerline to land on 28R (not Rwy 28L).

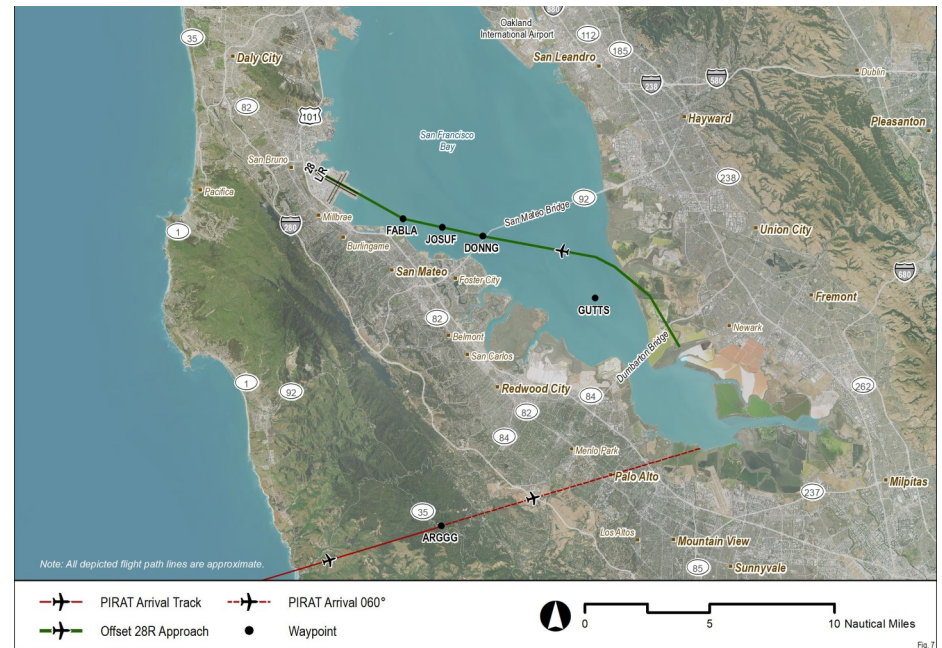
NOTE 1: *It is important that any new track does **not alter flight paths of existing PIRAT arrivals** while over residential areas.*

NOTE 2: *It is anticipated that this concept of circuitous routing over the Bay will create additional flight mileage which could be used to dissipate aircraft altitude. This opportunity to dissipate “extra altitude” later in the approach may allow the altitudes to be higher, thus quieter, in the earlier portions of the arrival over highly populated communities.*

NOTE 3: *It is suggested that this approach might be used during certain night hours when traffic will allow.*



PIRAT Arrival path as shown on the SFO Flight Trak website.



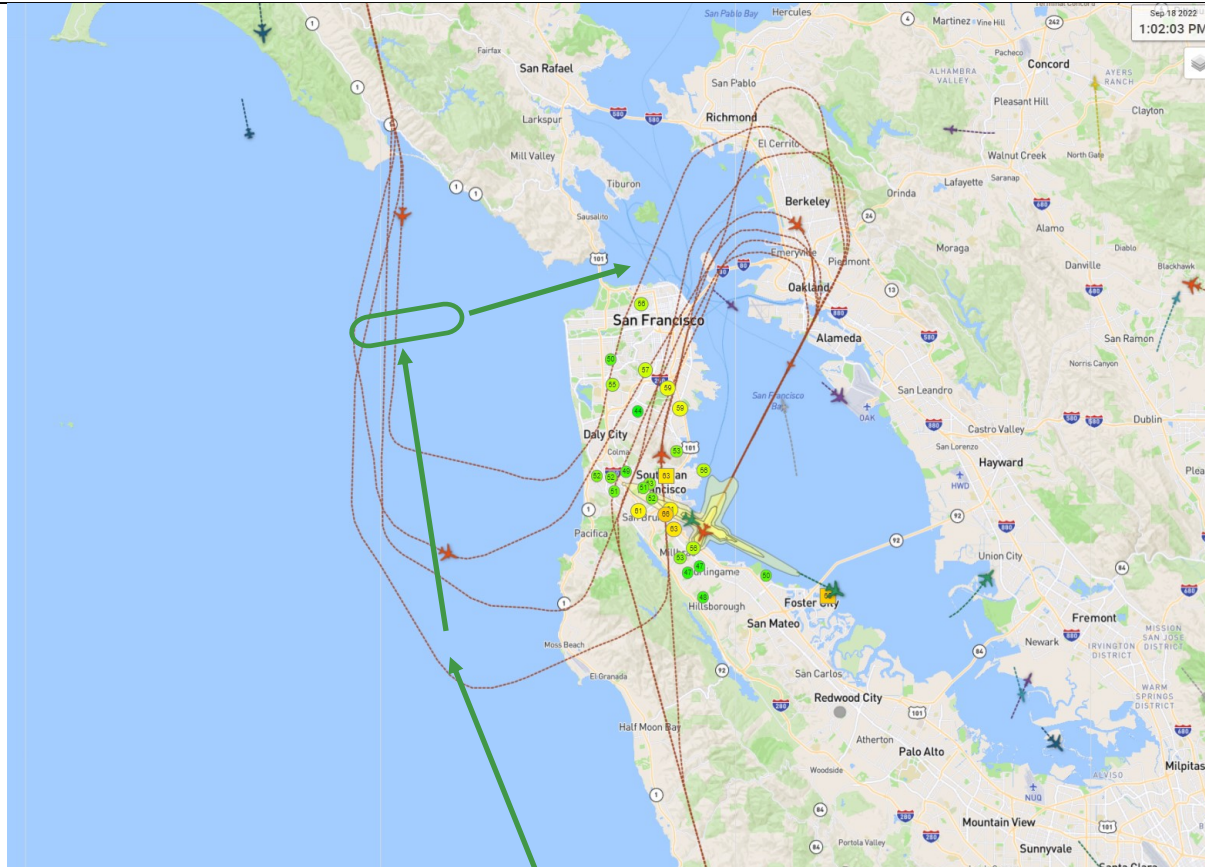
Green line: suggested wide circuitous offset path to 28R until passing the San Mateo Bridge

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4	SFO	SOUTH-EAST FLOW	ARVL	DAY NIGHT	GBAS	<p>GBAS SUGGESTION: New GBAS flight procedure to be used in Southeast Flow to route flights offshore, use (as necessary) a holding pattern, and route planes single file through the Golden Gate on their downwind leg.</p>
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In place of current typical routing during southeast flow, which routes flights inland up the San Mateo County coastline over residential areas and across San Francisco at low altitudes, it is suggested that that a new GBAS flight procedure could route flights *near* the San Mateo County coastline, but out over the ocean by several miles. Additionally, to avoid low altitude flight over the center of San Francisco on the downwind leg to Runways 19L/R, consider a holding fix (perhaps in the vicinity of GOBBS) where planes could hold and be routed single file over the water of the Golden Gate to join the downwind leg.



Red lines indicate actual flight tracks over coast and San Francisco on September 18, 2022 from SFO Flight Trak website

Green lines indicate a suggestion only for a possible GBAS procedure largely remaining over water

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5	SFO WEST FLOW	ARVL NIGHT GBAS	GBAS SUGGESTION: As an alternative to the use of the SERFR Arrival at nighttime, consider the use of another largely existing route which could connect to a new GBAS offset approach to 28R which could largely overlie existing offset 28R approaches.
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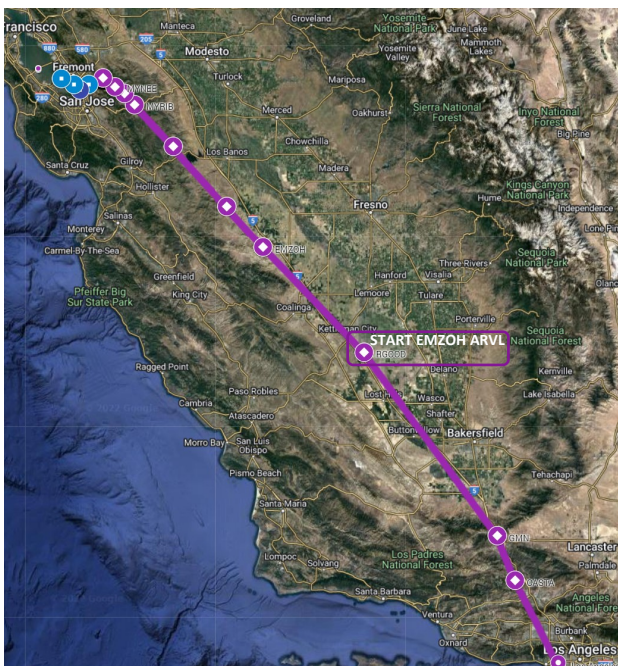
During night hours, a **SERFR alternative procedure** could be designed to allow flights which currently file for **SERFR** to fly another route combining an existing route such as the OAK EMZOH Arrival which starts about half way between LAX and the Bay Area and could connect to the existing SFO DYAMD Arrival or connect to the SFO RNAV(RNP)Y or better yet connect to a new GBAS path that could maximize offset for a Runway 28R approach and landing.

Designing such a procedure would take close collaboration with the FAA in the use of existing paths and connecting existing paths. Designing such a procedure may not be available immediately as the current range of the SFO GBAS is about 23 miles from SFO. However, extended range GBAS systems are apparently available.

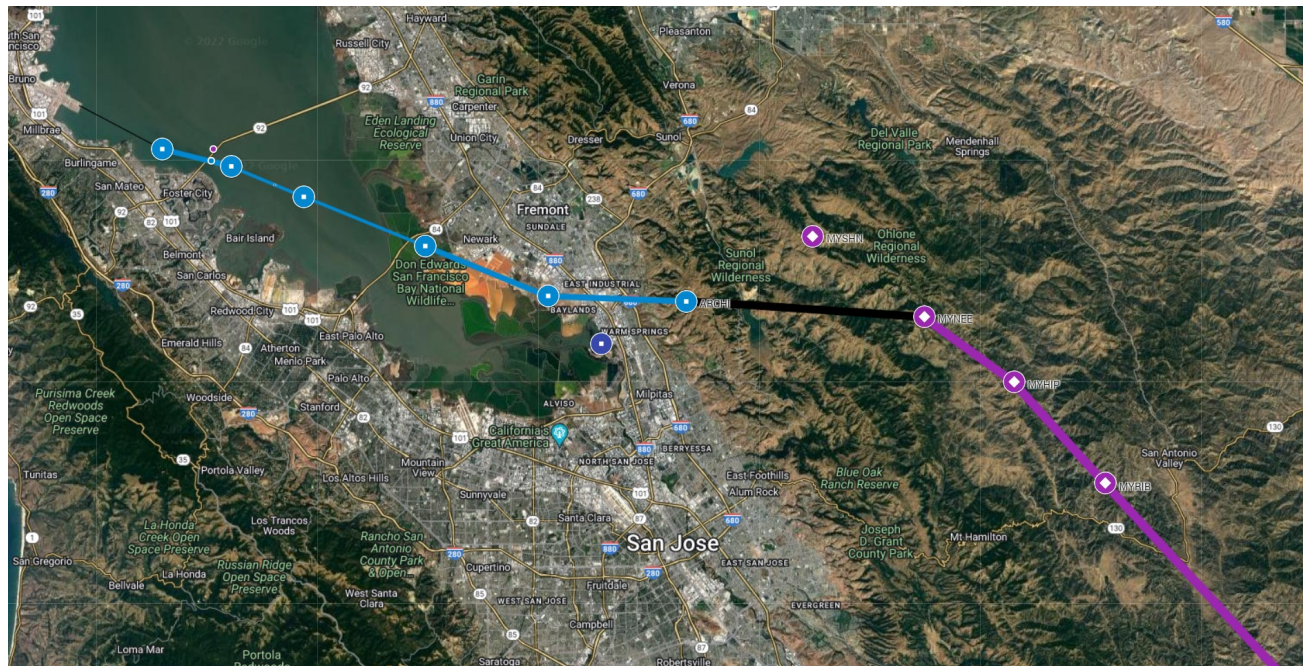
NOTE 1: It is suggested that this approach might be used during **nighttime hours** when traffic and other procedures will allow.

NOTE 2: Use of this suggestion should be balanced against possible decreased ability to the use of the GBAS Down the Bay Arrival at the same time.

NOTE 3: This is but one way to route nighttime flights to arrive so as to be able to use an overwater approach to SFO.



EXAMPLE: LAX to BAY AREA with (OAK) EMZOH Arrival [existing routing]



EXAMPLE: (OAK) EMZOH Arrival to MYNEE Waypoint [existing routing] TO [BLACK] ROUTE [not existing] TO OFFSET ARRIVAL to 28R (EXAMPLE shown here is the existing RNAV(RNP)Y to SFO)

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6	SFO	WEST FLOW	ARVL	DAY NIGHT	GBAS	<u>GBAS SUGGESTION</u> : Design a new GBAS procedure to allow almost simultaneous dual offset approaches to Runways 28L <u>AND</u> 28R .
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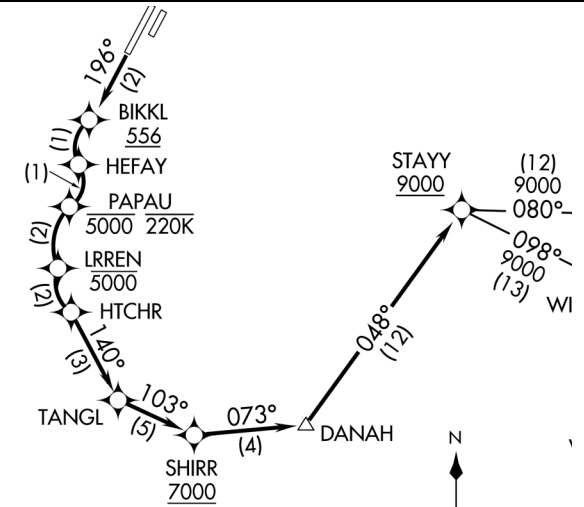
In 2016, as part of the FAA’s NorCal Initiative, the SFO Roundtable submitted a number of recommendations to the FAA for flight procedures, including DUAL OFFSET (almost simultaneous) approaches to 28L & 28R (see color image below). This would allow dual approaches with *both* paths offset from Peninsula cities along the Bay. The FAA’s response at that time to the concept of dual flight paths was that they would not meet the “required separation standards”.

As GBAS, FAA and airplane technologies continue to evolve, these dual offset approaches may now be or may soon become feasible. The dual paths to 28L and 28R probably won’t look like the rudimentary SFORT concept image from 2016 below — instead, it may have two curved paths or even one or two zig zag paths (an example of zig zag paths is the Orange County STAYY Departure—image below). Use of this type of unusual style of paths might require that only a small section of the approach paths might need to “curve out” toward the middle of the Bay, thereby reducing the length of the approach path that would be needed to overcome airplane separation challenges.

NOTE: The use of Dual Offset approaches could be limited to VMC (visual meteorological conditions) or limited to other conditions or restrictions.

**EXECUTIVE WORKING OUTLINE
SFO AIRPORT/COMMUNITY ROUNDTABLE RESPONSE TO FAA INITIATIVE**

RWY 28 APPROACHES Foster City	Determine the feasibility of creating dual offset (VMC or IMC) RNAV, RNAV (RNP) or other type of approach to Runway 28L and to Runway 28R.	This requested concept would create two offset paths with both the 28L path and the 28R path remaining well clear of Foster City and other bayside communities until past the San Mateo Bridge when aircraft would then line up with each runway for landing.
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STAYY FOUR DEPARTURE (RNAV)

While the STAYY flight procedure at Orange County Airport is a Departure (not an GBAS-appropriate Arrival), the curved zig zag path is an example of using technology available today.