Appendix B:

All Meeting Documents

Agendas, Minutes, Presentations, and Public Comments Filed at Meetings

Ad Hoc Advisory Committee on South Flow Arrivals

Councilmember Jeffrey Cristina – Campbell	Vice Mayor Lisa Matichak — Mountain View
Councilmember Savita Vaidhyanathan— Cupertino	Councilmember Lydia Kou — Palo Alto
Mayor Jean (John) Mordo — Los Altos	Mayor Mary-Lynne Bernald — Saratoga
Councilmember Gary Waldeck — Los Altos Hills	Councilmember Charles "Chappie" Jones — San José
Councilmember Bob Nuñez – Milpitas	Councilmember Raul Peralez — San José
Councilmember Rowena Turner — Monte Sereno	Vice Mayor Kathy Watanabe — Santa Clara
Councilmember Rene Spring — Morgan Hill	Mayor Glenn Hendricks — Sunnyvale

1:00 P.M. May 18, 2018 San José Airport
Boeing/McDonnell Douglas
Conference Room
1701 Airport Boulevard, Suite B-1130
San José, CA 95110

MEETING AGENDA

I. Call to Order and Orders of the Day

II. Consent Calendar
- A. Approve the Minutes for April 27, 2018
- B. Approve the Minutes for May 18, 2018
  - 1) Recommendation: Authorize the Chair to approve and sign the final minutes and file with the Commission Secretary

III. Chair/Vice Chair Remarks

IV. Old Business

- A. Items on the Ad Hoc Advisory Committee Workplan
  - 1) Informational Briefing about South Flow
  - 2) Identification of Possible Noise Impact Reduction Measures
  - 3) Discussion of Possible Noise Mitigation Measures
  - 4) Adopting Recommendations
  - 5) Adoption of Final Report and Committee Recommendations

V. Public Comments (on items not on the agenda but within the subject matter responsibility of the Committee)

Agenda Items:
The Committee Agenda is set based on the workplan. The Committee will work through the workplan, which shall roll over from one meeting to the other.

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VI. Adjournment

OPEN FORUM: You may speak to the Committee about any item that is on the agenda, and you may also speak during Open Forum on items that are not on the agenda and are within the subject matter jurisdiction of the Committee. If you wish to speak to the Committee, please refer to the following guidelines:

- **Fill out a blue Speaker's Card and submit it to the Airport staff seated at the front table. Do this before the meeting or before the item is heard.** This will ensure that your name is called for the item(s) that you wish to address, and it will help ensure the meeting runs smoothly for all participants.
- When the Committee reaches your item on the agenda, the Chair will open the public hearing and call your name.
- Each speaker generally has two minutes to speak per item. The amount of time allotted to speakers may vary at the Chair's discretion, depending on the number of speakers or the length of the agenda.

Correspondence to the Committee are public record and will become part of the City's electronic records. Before posting online, the following may be redacted: addresses, email addresses, social security numbers, phone numbers, and signatures. However, please note: e-mail addresses, names, addresses, and other contact information are not required, but if included in any communication to the Commission, will become part of the public record. If you do not want your contact information included in the public record, please do not include that information in your communication.

Please be advised that, by law, the Committee is unable to discuss or take action on issues presented during Open Forum. According to State Law (the Brown Act) items must first be noticed on the agenda before any discussion or action.

Agendas, staff reports and some associated documents for the Committee items may be viewed on the Internet at http://flysanjose.com/Ad_Hoc_Advisory_Committee

To request an accommodation or alternative format under the Americans with Disabilities Act for City-sponsored meetings, events, or printed materials, please call (408) 392-3640 as soon as possible, but at least three business days before the meeting.

Please direct correspondence and questions to:

City of San José
Attn: Matthew Kazmierczak.
1701 Airport Boulevard, Suite B-1130
San José, California 95110
Tel: (408) 392-3640 Fax: (408) 441-4589
Email: MKazmierczak@sjc.org

Committee Members

Primary	Alternate
Councilmember Jeffrey Cristina Campbell Jeffc@cityofcampbell.com	Councilmember Liz Gibbons Campbell LizG@cityofcampbell.com
Councilmember Savita Vaidhyanathan Cupertino svaidhyanathan@cupertino.org	Councilmember Steven Scharf Cupertino sscharf@cupertino.org
Mayor Jean Mordo Los Altos jmordo@losaltosca.gov	Vice Mayor Lynette Lee Eng Los Altos lleeeng@losaltosca.gov
Councilmember Gary Waldeck Los Altos Hills GCWaldeck@losaltoshills.ca.gov	
Councilmember Bob Nuñez Milpitas bnunez@ci.milpitas.ca.gov	Vice Mayor Marsha Grilli Milpitas mgrilli@ci.milpitas.ca.gov
Councilmember Rowena Turner Monte Sereno rturner@cityofmontesereno.org	Vice Mayor Evert Wolsheimer Monte Sereno ewolsheimer@cityofmontesereno.org
Councilmember Rene Spring Morgan Hill Rene.Spring@morganhill.ca.gov	Councilmember Larry Carr Morgan Hill Larry.Carr@morganhill.ca.gov
Vice Mayor Lisa Matichak Mountain View Lisa.Matichak@mountainview.gov	Mayor Leonard Siegel Mountain View Lenny.Siegel@mountainview.gov
Councilmember Lydia Kou Palo Alto Lydia.Kou@cityofpaloalto.org	Vice Mayor Eric Filseth Palo Alto Eric.Filseth@cityofpaloalto.org
Mayor Mary-Lynne Bernald Saratoga mlbernald@saratoga.ca.us	Councilmember Howard Miller Saratoga hmiller@saratoga.ca.us

Primary	Alternate
Councilmember Charles "Chappie" Jones San José District1@sanjoseca.gov	Councilmember Johnny Khamis San José District10@sanjoseca.gov
Councilmember Raul Peralez San José District3@sanjoseca.gov	
Vice Mayor Kathy Watanabe City of Santa Clara kwatanabe@santaclaraca.gov	Councilmember Teresa O'Neill City of Santa Clara toneill@santaclaraca.gov
Mayor Glenn Hendricks Sunnyvale HendricksCouncil@sunnyvale.ca.gov	Vice Mayor Larry Klein Sunnyvale KleinCouncil@sunnyvale.ca.gov

Ad Hoc Advisory Committee Workplan

I. **The South Flow Procedure Presentation**: Why south flow procedure is used, how it works, the conditions requiring its use, and the air traffic environment over the South Bay, with Q&A from the Committee.

II. **Committee Identification of Possible Noise Impact Reduction Measures** – What are possible measures to reduce the noise impacts of the south flow procedure without reducing safety and efficiency of FAA air traffic control management? Possible measures raised in discussions include:

a) Bringing aircraft in at higher altitudes;
b) Greater dispersal of arriving aircraft;
c) Bringing aircraft in over the east of San José instead of over the west of San José.
d) Other possible solutions?

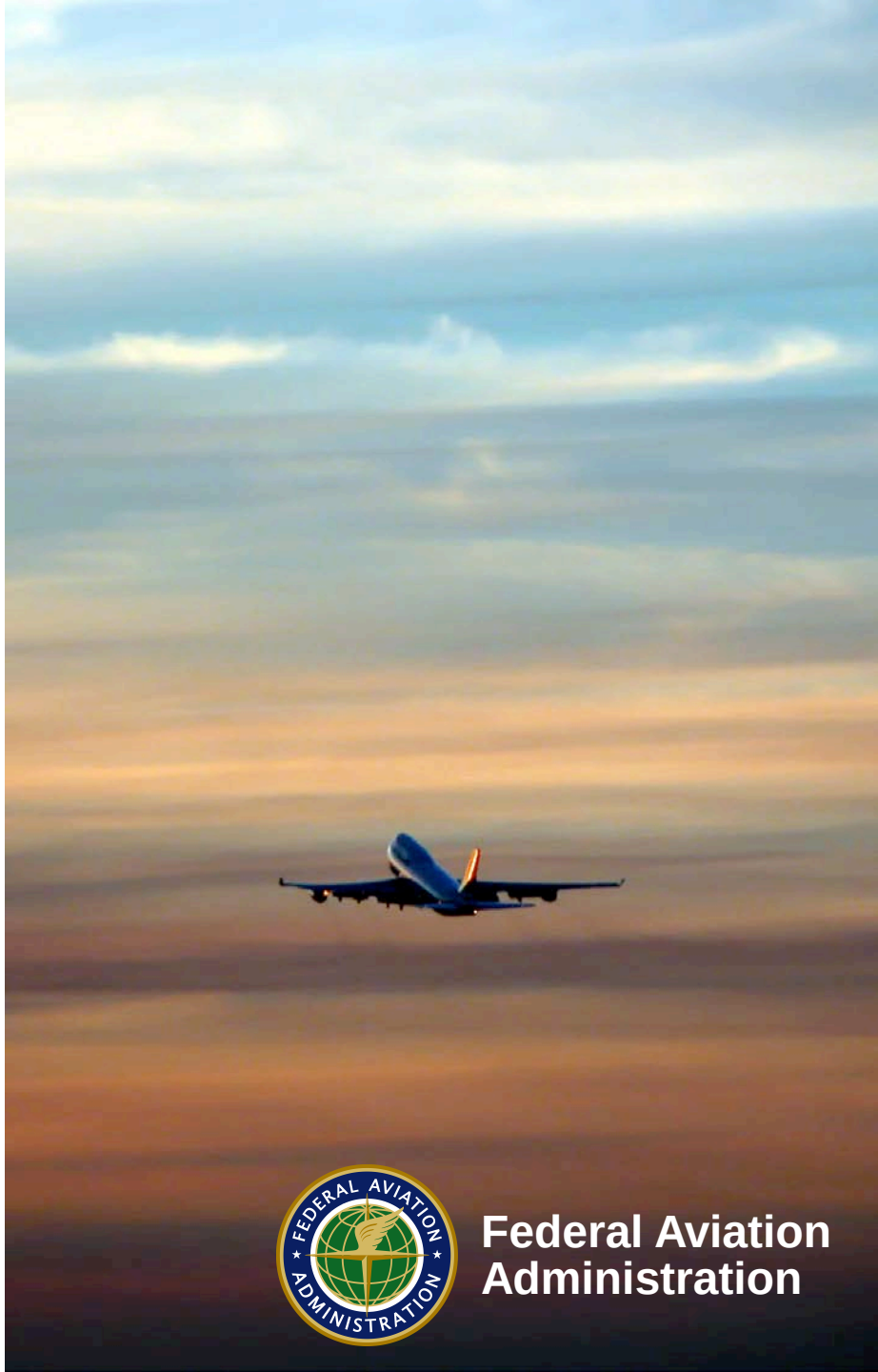
III. **Committee Discussion of Identified Noise Impact Reduction Measures** – An evaluation of what measures should be advanced for consideration to the FAA, given FAA direction on feasibility, safety, and efficiency.

IV. **Adopting Preliminary Recommendation(s)** – After Committee discussion of, and FAA comments on, all identified noise reduction options, preliminary adoption of recommended measures for FAA consideration.

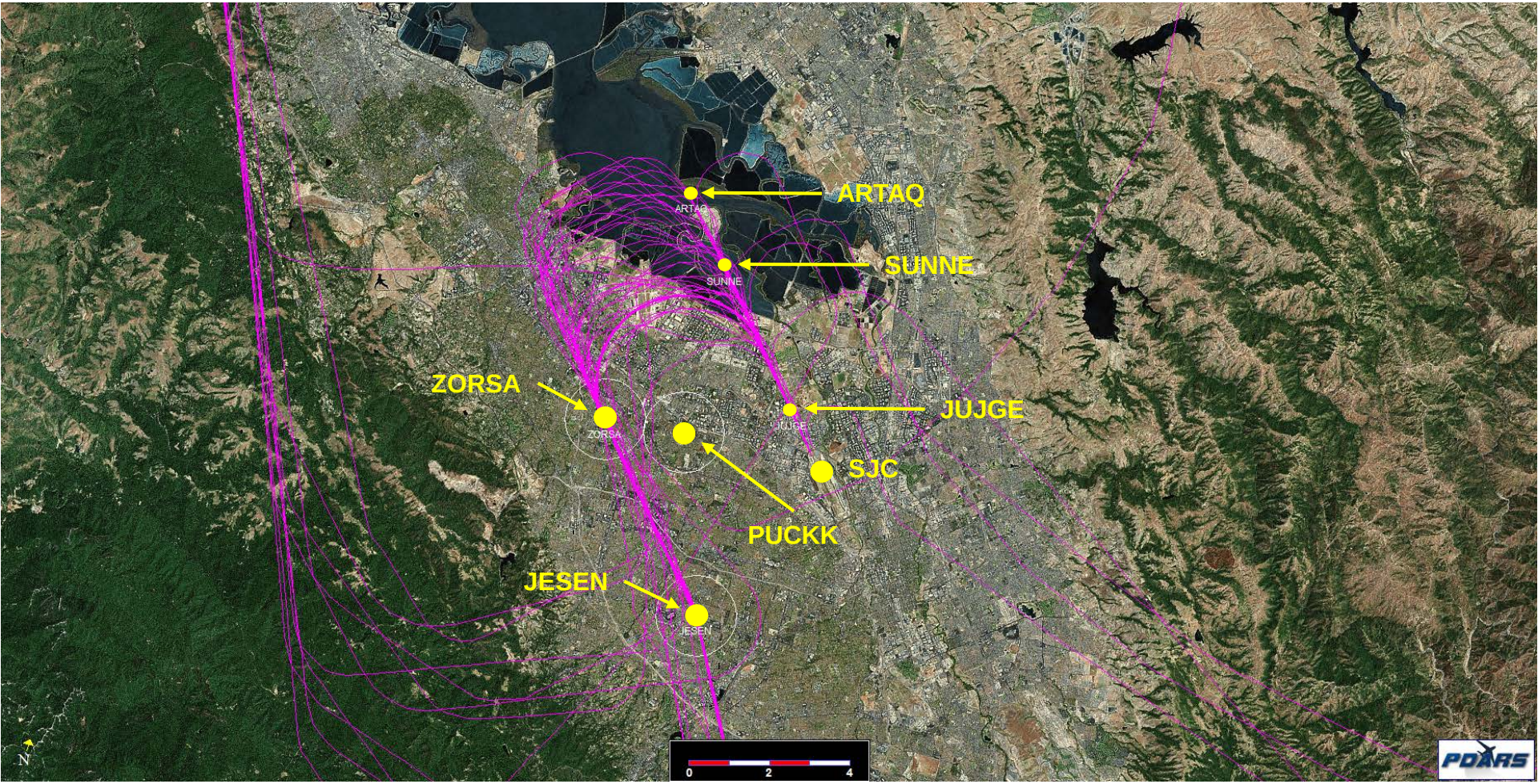
V. **Adoption of Final Report and Committee Recommendations**

San Jose Ad Hoc Advisory Committee on South Flow Arrivals

SJC South Flow Data
5/1/2018



SJC South Flow
May 1, 2018



58 Total Tracks

RNAV = 14 (24%)

Est. ILS = 10 (17%)

East = 5 (9%)

Other = 29 (50%)

Federal Aviation Administration

April 30, 2018

Mr. Dennis Roberts
Regional Administrator
FAA Western-Pacific Region
15000 Aviation Blvd
Lawndale, CA 90261

Dear Mr. Roberts:

It has come to our attention that the Federal Aviation Administration (FAA) recently published a notice on the Instrument Flight Procedures Information Gateway on the FAA website that a new arrival procedure is being designed by the FAA for use at Mineta San Jose International Airport (SJC) during certain South Flow configurations. This possible new procedure is deeply concerning to our communities.

Our cities suffer from the constant challenges presented by aircraft noise and emissions in and out of San Francisco International Airport and, now, with the South Flow arrivals, in to SJC. We have participated on various regional committees and are currently actively involved in the San Jose ad hoc committee on south flow arrivals. That is why we are shocked that this new arrival path was not brought to the attention of that group in a timely manner, nor has public input been sought for this significant change to the flight path. In addition, our research indicates there are no environmental reports available for public inspection.

This new flight path could have a significant impact on our communities as the track moves closer to the foothills than currently and moves the track further north. And, the impacts would be even greater as the proposal lowers the altitude of the flight path over our communities, including directly over schools and potentially over historic districts.

We respectfully request that the FAA delay implementation of this plan until a robust public and community input strategy can be formulated and implemented. We offer the services our agencies to assist you in publicizing opportunities for the public to participate in this important process.

Please let us know how you plan to proceed.

Sincerely,

Jean Mordo, Mayor	Lenny Siegel, Mayor	Liz Kniss, Mayor
City of Los Altos	City of Mountain View	City of Palo Alto

cc: Hon. Anna G. Eshoo, Member of Congress

CITY OF Fremont

Office of the Mayor
3300 Capitol Avenue, Building A | P.O. Box 5006, Fremont, CA 94537-5006
510 284-4011 *ph* | 510 284-4001 *fax* | www.fremont.gov

May 14, 2018

Mayor Hendricks, Sunnyvale, Committee Chair
Ad Hoc Advisory Committee on South Flow Arrivals
Mineta San Jose International Airport
1701 Airport Boulevard, Suite B-1130
San Jose, CA 95110

Subject: South Flow Arrivals to San Jose International Airport

Dear Mayor Hendricks:

The City of Fremont has been sending a staff member to observe the proceedings of the Ad Hoc Advisory Committee on South Flow Arrivals to San Jose Airport. Among the Committee's proposed recommendations for reducing noise for peninsular and south bay cities, inclusion of a new or busier eastern approach to the airport has been proposed and discussed by Committee members as a possible means of dispersing flights.

We understand that the City of San Jose has gone on record as being opposed to moving more flights to such an eastern approach. Likewise, the City of Fremont is concerned that an eastern approach could move noise over Fremont. Planning for an increase in low-flying planes in new areas would simply move the issue and would be disruptive to residents, park users, and environmentally sensitive natural ecosystems alike.

Consistent with the guiding principles of the Committee, the City of Fremont recommends that your report to the FAA specifically exclude moving more noise over our community. If the eastern approach is at all being considered, much more needs to be done to engage potentially impacted communities like Fremont before making a decision.

Sincerely,

Lily Mei

Lily Mei
Mayor

cc: Committee Vice-Chair Chappie Jones (San Jose Councilmember)

MEMORANDUM

To:	Lisa Matichak, City of Mountain View; Jean Mordo, Los Altos	Project Name:	San Jose South Flow Arrivals Ad Hoc Committee
Cc:	Christina Gilmore, City of Mountain View	Project Number:	1810.01
From:	Randy Waldeck, CSDA Dennis Hughes, Hughes AV	Subject:	Proposed Visual South Flow Arrival Route
Date:	April 27, 2018		

As a follow-up to our preliminary noise reduction alternatives memo dated March 7 (updated on March 22), we have further refined the proposed visual approach for South Flow. This approach extends the current turn that aircraft execute over Mountain View (shown in white in the figure on the following) page, and routes aircraft over Highway 85 and then over the Google campus before executing the right "u-turn" over the Bay to line up for final approach with RWY 12R. The benefits to this approach are as follows:

1. Level flight over Mountain View, Los Altos, and other South Peninsula communities.
2. Turn executed over the Bay. Since descending aircraft typically apply power (thrust) in a turn, turning aircraft often generate higher noise levels than descending aircraft flying straight. We plan to investigate this further in the AEDT.
3. Higher altitude due to longer track length. Currently, aircraft cross ZORSA at 3,000 feet (on average). With this proposed arrival path, aircraft will likely be approximately 1,500 to 2,000 feet higher (as our proposed track is approximately 6 nautical miles longer than the track which turns over Moffett Field). Roughly speaking, this increased altitude would result in 4 dBA decrease in noise levels due to the increased altitude.

Our proposed visual approach would take those aircraft currently being vectored at low altitude to an instrument procedure at higher altitudes utilizing a stable descent. Figure 1 illustrates the proposed path.

Note that this approach can only be used under Visual Flight Rules (i.e., when visibility is at least 5 nautical miles and the ceiling is at least 2,500 feet). This approach could be coded into the Flight Management Computer and avoids the need for the pilot to "hand fly" this procedure which results in the procedure being more tightly followed.

The proposed flight path, shown in red, generally follows the same flight path as currently utilized, but the turn for final approach is initiated later (currently it occurs around Moffett NAS); we propose that it occur midway between the Dumbarton Bridge and Moffett NAS. While the overall flight path is longer (approximately six nautical miles), we do not expect fuel burn/emissions to be significantly increased if aircraft follow a continuous descent profile (e.g., idle thrust). Flight times may be increased by a few minutes.

475 Sansome Street Suite 800 San Francisco, CA 94111 415.693.9800 www.csdadesigngroup.com

San Francisco • Los Angeles

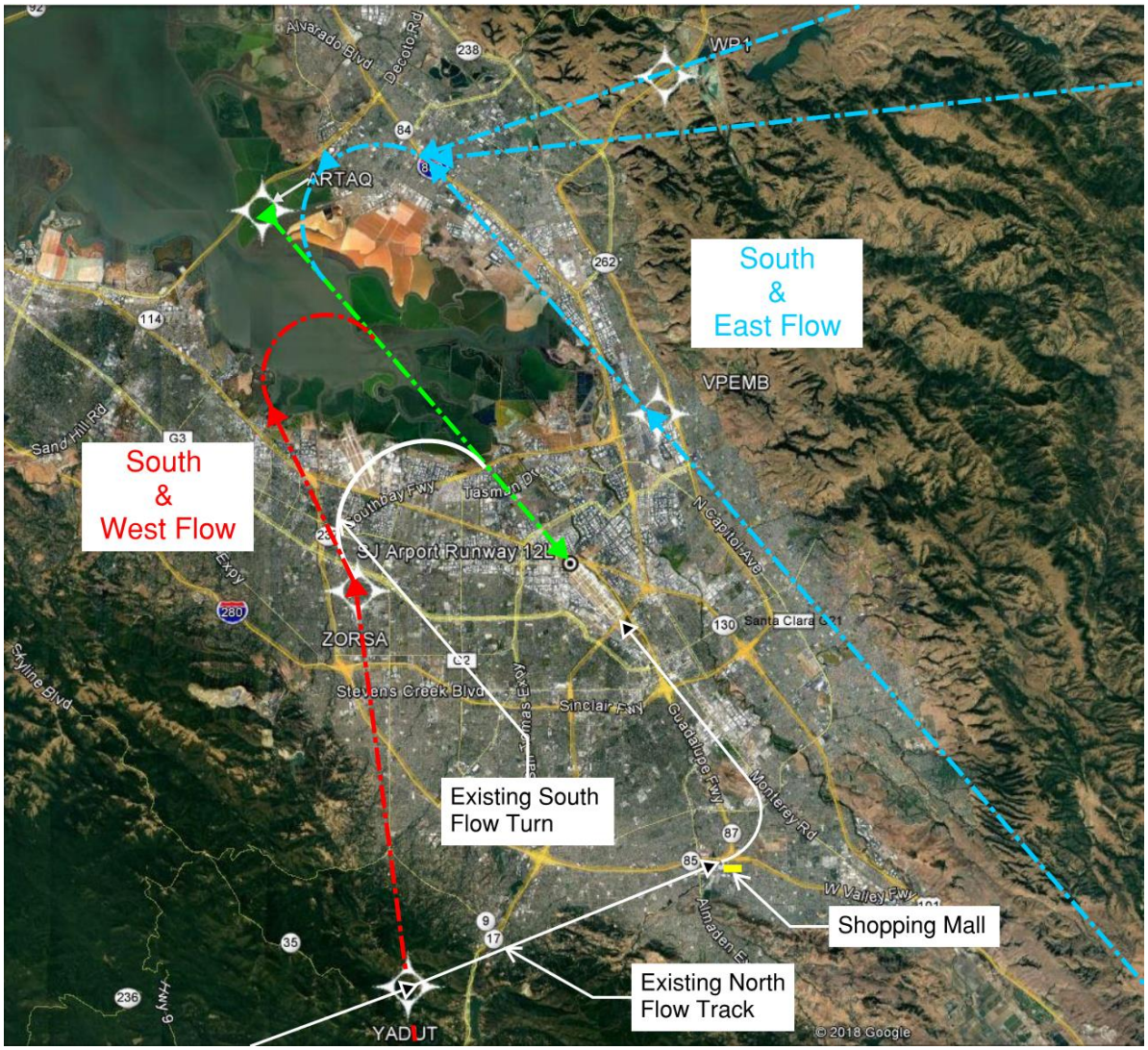


Figure 1: Proposed Charted Visual Approach (in red)

We plan to model this new arrival path to quantify the expected noise reduction as compared to the current flight path in the AEDT software.

475 Sansome Street Suite 800 San Francisco, CA 94111 415.693.9800 www.csdadesigngroup.com

San Francisco • Los Angeles

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Ad Hoc Advisory Committee on South Flow Arrivals

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MEETING AGENDA

I. Call to Order and Orders of the Day

II. Consent Calendar
   A. Approve the Minutes for the April 13, 2018

III. Chair/Vice Chair Remarks

IV. Old Business

   A. Items on the Ad Hoc Advisory Committee Workplan
      1) Informational Briefing about South Flow
      2) Identification of Possible Noise Impact Reduction Measures
      3) Discussion of Possible Noise Mitigation Measures
         - Discussion merits/feasibility
         - Prioritize measures (rank order)
      4) Adopting Recommendations
      5) Adoption of Final Report and Committee Recommendations

V. Public Comments (on items not on the agenda but within the subject matter responsibility of the Committee)

VI. Future Meeting Schedule and Agenda Items

Schedule of Upcoming Committee Meetings:

Date	**Location**	**Time**
Friday, May 18, 2018	San José Airport Boeing Conference Room	1:00 pm

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Email: MKazmierczak@sjc.org

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Mayor Savita Vaidhyanathan Cupertino svaidhyanathan@cupertino.org	Councilmember Steven Scharf Cupertino sscharf@cupertino.org
Vice Mayor Jean Mordo Los Altos jmordo@losaltosca.gov	Councilmember Lynette Lee Eng Los Altos lleeeng@losaltosca.gov
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Vice Mayor Lisa Matichak Mountain View Lisa.Matichak@mountainview.gov	Councilmember Lenny Siegel Mountain View Lenny.Siegel@mountainview.gov
Councilmember Lydia Kou Palo Alto Lydia.Kou@cityofpaloalto.org	Vice Mayor Eric Filseth Palo Alto Eric.Filseth@cityofpaloalto.org
Mayor Mary-Lynne Bernald Saratoga mlbernald@saratoga.ca.us	Councilmember Howard Miller Saratoga hmiller@saratoga.ca.us

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Mayor Glenn Hendricks Sunnyvale HendricksCouncil@sunnyvale.ca.gov	Councilmember Larry Klein Sunnyvale KleinCouncil@sunnyvale.ca.gov

Ad Hoc Advisory Committee Workplan

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V. **Adoption of Final Report and Committee Recommendations**

Air Traffic Environmental Program

By: Ryan Weller - FAA/ATO

Date: April 26, 2018

Air Traffic Environmental

- **NEPA requires FAA to:**
  - Address impacts of major federal actions on the human environment including noise, socioeconomic, land uses, air quality, water quality and others
  - Depending upon the context and potential impacts, NEPA analysis can differ
  - **Levels of NEPA**
    - Action not subject to NEPA/No further env. action
    - CATEX – Categorical Exclusion
    - EA – Environmental Assessment
    - EIS – Environmental Impact Assessment

AIR TRAFFIC ENVIRONMENTAL PROGRAM

Three Levels of NEPA Review

- **Categorical Exclusion (CATEX) – established list of actions that do not, individually or cumulatively, have a significant impact**
- **Environmental Assessment (EA) – analysis of proposed action and reasonable range of alternatives that could result in preparation of an Environmental Impact Statement or Find of No Significant Impact**
- **Environmental Impact Statement (EIS) – detailed analysis of environmental consequences and alternatives, cumulative impacts, and mitigation actions**

Categorical Exclusion (CATEX)

- Action that does not have a significant impact on the quality of the human environment
- FAA must review for extraordinary circumstances
  - **Adverse effect such as cultural resources, air quality, etc.**
- FAA Order 1050.1 - list of FAA CATEXs
  - **Establishes a list of common FAA actions that are CATEX'd**
  - **Example -**

Establishment of Global Positioning System (GPS), Flight Management System (FMS), Area Navigation/Required Navigation Performance (RNAV/RNP), or essentially similar systems that use overlay of existing flight tracks.

Environmental Assessment (EA)

- **Addresses environmental effects that are not anticipated to cause significant impact**

- **Analysis that could result in preparation of an Environmental Impact Statement or Finding of No Significant Impact**

- **When to prepare –**
  - Proposed action has no CATEX
  - Normally CATEX but involves extraordinary circumstance
  - Action normally requires an EA
  - Action that is not known to require an EIS and is not CATEX

Environmental Impact Statement (EIS)

- **Detailed analysis of environmental consequences of proposed action and alternatives, cumulative impacts and mitigation actions**

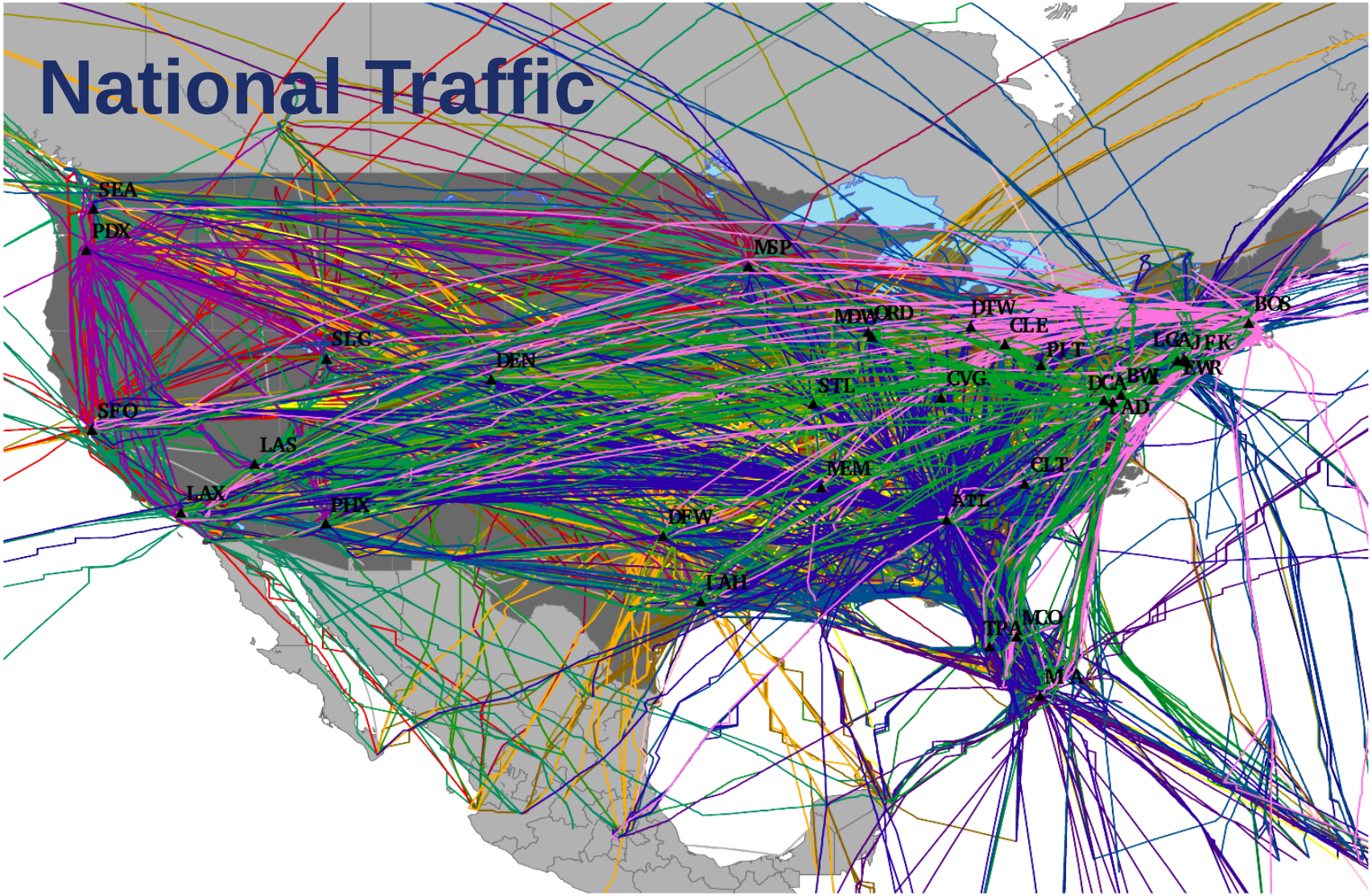
- **When to prepare?**
  - Based on an EA, a determination that the action would cause a significant environmental impact and mitigation would not reduce effects
  - FAA anticipates significant impacts, so prepare an EIS without first developing an EA

Airspace Actions

Typical Types of Actions

- **Jet Route Modification**
- **Procedure Changes (RNP/RNAV, OPD, etc.)**
  - Area Navigation Procedures (RNAV)
  - Required Navigation Performance (RNP)
  - Glide-path modifications
  - Altitude or lateral changes
- **Airspace Redesign- single site or regional**

National Traffic



Produced by the Air Traffic Airspace Laboratory
April 11, 2005

Ad Hoc Cmte - Mitigation List

Suggestion	Ad Hoc Comm. Priority	Estimated Feasibility		Category of Proposed Change	High Level Description	Details	Map	Notes & Questions	Potential ++ Pros / – Cons
	LM/GW	LM/GW	MV/LA Consultant						
A	1	1	5	Modify the way planes fly	Limit speed to slowest & safest possible	Limit speed to a minimum necessary for safety on approach. At 220kts, Airframe noise = Engine noise for departures. Since engine noise on arrivals is almost certainly lower than on departures for any given speed, the guidance would be to reduce the airframe noise as much as possible (until it reaches the engine noise): to do this, fly slower and cleaner.	--	Miniumum safe speed varies by airplane. It is the minium above the stall speed. MV/LA Consultant - The Aviation Environmental Design Tool (AEDT) does not allow the specification of min/max speeds. Rather it calculated speed based upon aircraft type and altitude restrictions. MV/LA Consultant - Current regulation, unless otherwise authorized or required by ATC, no person may operate an aircraft at or below 2,500 feet above the surface within 4 nautical miles of the primary airport of a Class C (SJC) or Class D airspace area at an indicated airspeed of more than 200 knots (230 mph). And unless otherwise authorized by the Administrator, no person may operate an aircraft below 10,000 feet MSL at an indicated airspeed of more than 250 knots (288 mph). Sec. 91.117 MV/LA Consultant - In a low power descent, airframe noise is greater than engine noise. The principle sources of airframe noise in commercial aircraft are leading edge slats, the side edges of flaps, the landing gear, the wheel well cavity (with landing gear extended), and speed brakes (or spoilers) when applied. The single event noise metric, SEL, used in the DNL descriptor for noise exposure, integrates the noise level and noise duration. The duration of a high speed flyover event is shorter than a low speed flyover, but the maximum noise level of the high speed flyover is greater. However, the shorter duration of the high speed flyover somewhat offsets its greater noise level.	
B	1	1	5	Modify the way planes fly	Limit speed to lowest possible when under 4000’	Limit speed to a maximum necessary for safety on approach when airplanes are 4000’ or lower.	--	Miniumum safe speed varies by airplane. It is the minium above the stall speed. MV/LA Consultant - Current regulation, unless otherwise authorized or required by ATC, no person may operate an aircraft at or below 2,500 feet above the surface within 4 nautical miles of the primary airport of a Class C (SJC) or Class D airspace area at an indicated airspeed of more than 200 knots (230 mph). And, unless otherwise authorized by the Administrator, no person may operate an aircraft below 10,000 feet MSL at an indicated airspeed of more than 250 knots (288 mph). Sec. 91.117 MV/LA Consultant - The single event noise metric, SEL, used in the DNL descriptor for noise exposure, integrates the noise level and noise duration. Therefore, the faster aircraft will produce slightly less noise exposure than would the same flyover with the same maximum noise level, thereby somewhat offsetting a noise increase from increased speed.	
C	1	1	n/a	Modify the way planes fly	Glide (OPD?)	Have planes glide to landing to eliminate noise from engines and minimize use of lift devices (flaps, slats) and braking devices.	--	Is FMS or pilot in control? MV/LV Consultant - FMS is in control; RNP procedures are designed to glide to a landing (i.e., OPD).	
D	1	4	n/a	Modify the way planes fly	Raise altitude	Raise altitude along the approach, provided airplanes do not have to fly dirtier or use jet thrust.	--	MV/LA Consultant - Can't feasibly raise altitudes without violating FAA design criteria (8260.58).	
E	3		n/a	Modify the way planes fly	Raise altitude at ZORSA	Return ZORSA to 3,200’ and make it a minimum altitude.	--	Why not? - FAA safety standards? Is the altitude at ZORSA a Minimum En Route Altitude (MEA instead of a crossing altitude)? A commercial pilot reviewing the RNP AR Z approach said that he wouldn’t be surprised if the 3000' altitude was programmed into the FMS. We should be able to determine this. MV/LA Consultant - There is not a crossing altitude at ZORSA.	
F	1		n/a	Modify the way planes fly	Relax altitude at HITIR	Relax the altitude requirements at HITIR from exactly 4000’ to at or above 4000’.	--	Use the additional altitude to reduce the need for lift devices and thrust during the remainder of the approach over residential areas. MV/LA Consultant - Coded at 4000' for runway transition and to avoid SFO traffic.	

Ad Hoc Cmte - Mitigation List

Suggestion	Ad Hoc Comm. Priority	Estimated Feasibility		Category of Proposed Change	High Level Description	Details	Map	Notes & Questions	Potential ++ Pros / -- Cons
G	1		n/a	Modify the way planes fly	Relax altitude and speed at HITIR	Allow planes to arrive at HITIR at altitudes and speeds that allow them to reach the Bay without flying dirty or using thrust.	--	MV/LA Consultant - There is no speed restriction at HITIR.	
H	1		n/a	Modify the way planes fly	Optimize descent profile to HITIR (OPD?)	Enable pilots of vectored flights to optimize their descent profile by telling them where they will turn early enough so that they can choose the best altitude at HITIR.	--	MV/LA Consultant - Aircraft being vectored are NOT on an instrument descent profile or track. They are assigned a heading and altitude by ATC based on the sequence and surrounding aircraft separation requirements. Thrust adjustments are needed for stability.	

Ad Hoc Cmte - Mitigation List

Suggestion	Ad Hoc Comm. Priority	Estimated Feasibility		Category of Proposed Change	High Level Description	Details	Map	Notes & Questions	Potential ++ Pros / – Cons
I	1		n/a	Modify the way planes fly	Use gradual, smooth descent (OPD)	Have planes gradually descend along a smooth decent flight pattern to limit stepping and the need for engine changes to maintain altitude.	--	Need to determine the amount of stepping that is currently occurring and where it is occurring. Need to understand how low a plane should go over which areas even with no steps. MV/LA Consultant – OPD is in the current criteria for all RNAV/PBN instrument procedures FAA Order 8260.58.	
J	1		4	Modify the way planes fly	Limit or defer flight procedures that are noisy	Limit flight procedures that are noisy when pilot controls and when FMS controls. Design arrival & departure procedures to minimize noise. Establish noise monitors in entire low altitude areas around airport. Use flight simulator to compare actual pilot behaviors with those computed by the computer model.	--	Are we measuring when FMS or pilot controls? What design data is available to route designers? Which flights are noisier? Why? The definition of a noisy procedure needs to be clarified - start with use of lift devices, braking devices and jet thrust. How will we measure this? Partial answer: Per the FAA, the FAA's noise modeling tool, AEDT version 2d, is being improved. Later this year, AEDT version 3a is "Seeking to improve abilities at lower DNL. Improving takeoff weight and thrust modeling; Improving aircraft performance module". AEDT4 will "incorporate airframe noise more explicitly" in a post 2020 release. Source: Dr. James Hileman presentation, 2/27/18. We need to get long-term, reliable and government acknowledged noise monitoring. Communities should decide.	
K	1		n/a	Modify the way planes fly	Optimize procedures for noise	Optimize all approach procedures for noise. Bring focus to the 75% of flights that do not fly the RNP approach.	--	How? One idea: Allow aircraft to arrive at different altitudes at HITIR. Use the additional altitude to reduce the need for lift devices and thrust during the remainder of the approach over residential areas. Especially appropriate for vectored flights. (Item H) MV/LA Consultant - The current RNP/RNAV tracks (demonstrating flight concentration) do not support the statement that 75% of flights do not use RNP.	
L	2		n/a	Modify flight paths	Change RNP path	Move RNP path North (over Bay not over other cities) to reduce noise, or eliminate path. Also disperse flights along rails (Western rail and turning rail.)	M	The tight turn, and concentration of flights on this path generates excessive noise. The RNP path is increasingly used. MV/LA Consultant - The current RNP Z RWY 12L/12R is OPD at thrust idle.	
M	2		2	Modify flight paths	Move turn over Bay	Move flights from the SW in their Northern turn over the Bay. Current, published flight path exists, but is no longer frequently used.	N	MV/LA consultant is working on a potential path. Expanding the Northern loop only helps if it also means altitude is raised over the cities.	- - Potential of moving noise over another city or different group of residents.
N	1	1	2	Modify flight paths	New path from East	Create a new path that approaches airport from the East.	O	Want information from the FAA if there is a formal eastern approach to SJC? What is it being used for today? What situations use this approach? FAA suggestion. Planes already fly these routes, but the number is decreasing.	++ Moves South flow traffic from SJ, Cup, SV & MV to over the Bay.
P	1	4	n/a	Modify flight paths	Community defined flight paths	Where does the community want the planes to fly?	--		
Q	2	5	5	Disperse flights	Revert to pre-2012 paths and dispersion	Manually disperse flights paths to pre-2012 levels, or create and publish multiple flight paths that will accomplish similar dispersion.	--	Unlikely - ATC would need to issue distinct commands to implement.	
R	2	5	5	Disperse flights	New parallel flight paths to West	Create additional flight paths to the West of current paths by vectoring planes at different locations along the Bay.	Q	Unlikely - Each charted route would mean a new procedure - very expensive to implement.	- - Flights over the Santa Cruz mountains are more turbulent.
S	1	1	5	Disperse flights	New parallel flight paths to East (Fan Out Flight Paths)	Create additional flight paths to the East of current paths. Do this by recasting ZORSA from a fly-over waypoint to a fly-by waypoint, and relocate HITIR to be as close to JESEN as possible or perhaps eliminate it.	R	A fly-over waypoint concentrates flights. Today ZORSA is located to accommodate the turning radius of the largest planes. As a fly-by waypoint, smaller planes could turn sooner, dispersing the flights. By moving or eliminating HITIR maximum dispersion would be possible after JESEN.	

Ad Hoc Cmte - Mitigation List

Suggestion	Ad Hoc Comm. Priority	Estimated Feasibility		Category of Proposed Change	High Level Description	Details	Map	Notes & Questions	Potential ++ Pros / – Cons
T	2	5	5	Disperse flights	Automate dispersion	Modify the NextGen system to automatically disperse flights.	--	Unlikely. MV/LA consultant indicated that the FAA may be working on this. And they are currently evaluating which method benefits the most number of people (dispersed or non-dispersed).	++ Addresses safety, efficiency, and noise.
U	2	5	5	Disperse flights	Use multiple flight paths	Define multiple flight paths across the historic corridor and rotate planes between them.	--	Unlikely - Will be a long time waiting.	-- Too many routes to design.
V	2	1	2	Disperse flights	Charted visual flight procedures	Create a charted visual flight procedure with the turn over the Bay. Many airlines issue instructions that the pilots MUST USE the regular Instrument Approaches	U	FAA suggestion. Also an MV/LA consultant suggestion. Pilots have more discretion when flying a visual approach than when flying RNAV approaches. Unlikely - Airlines often insist that only instrument approaches are used.	++ Provides pilots with another flight path. ++ More likely to be endorsed by airlines and used by pilots. ++ Might align better with historical flight corridor because an RNAV visual approach permits a sharper turn than RNP does. - - Can only be used when visual approach can be used which may be limited when South flow is used and weather causes low visibility.
W	2	4	n/a	Disperse flights	Revert final waypoint to PUCKK	Revert the final waypoint on the STAR procedure to PUCKK. Smaller Airplanes?	--	Historically, planes missed the PUCKK waypoint more than they hit it. The result was more dispersed planes.	
X	3	3	n/a	Disperse flights	Revert final waypoint to JESEN	Revert the final waypoint on the STAR procedure to JESEN. Remove HITIR and ZORSA from airplanes' Flight Management Systems. Encourage ATC to disperse flights.	--	HITIR and ZORSA guide airplanes past JESEN so they need to be removed.	
Y	2	5	5	Disperse flights	Relax waypoints	Give planes more flexibility around hitting the waypoints.	--	Need more info and examples. How to do it?	
Z	4	5	n/a	Disperse flights	Move, eliminate waypoints	Move or eliminate waypoints.	--	Need more info and examples. Unlikely	
AA	2	5	n/a	Disperse flights	Approach tailored to plane size	Define different approach paths for large and medium-to-small planes. An approach path could be created after JESEN suitable for medium-to-small planes. ZORSA could be used by large planes.	--	Large planes need a wider turning radius than small planes.	- - Return to historic corridor over Sunnyvale. - - Too many routes to design.
BB	5	5	n/a	Disperse flights	Efficiency or not procedures	Define two sets of procedures – one for when efficiency is demanded (which is more noisy), one for when efficiency is not required (which is less noisy).	--	During non-peak hours, noise-optimized procedures would be used.	
CC	1	5	n/a	Disperse flights	Discourage concentration	Discourage narrow, concentrated (single line) flight paths. Stop eliminating discretionary paths.	--	Can ATC (Flight Controllers) do this? How?	

Ad Hoc Cmte - Mitigation List

Suggestion	Ad Hoc Comm. Priority	Estimated Feasibility		Category of Proposed Change	High Level Description	Details	Map	Notes & Questions	Potential ++ Pros / – Cons
DD	1	1	5	Penalize noise	Expand noise curfew hours	Change curfew hours to 10:00 pm - 6:30 am (from 11:30 pm - 6:30 am) perhaps just when using South flow is being used.	--	Curfew hours only prohibit noisy flights from using the airport during those hours. Quiet flight can still use the airport during curfew hours. Exceptions exist for weather, mechanical, etc. issues. SJC is grandfathered into having a curfew. No new curfews can be established. Grandfathered curfews are not likely to allowed to change. Which entity controls the curfew at the airport - SJC. What would be done with the money collected - SJC collects. How would changing the curfew impact the overall schedule for SJC - Very little.	
EE	2	5	5	Penalize noise	Increase noise curfew violation fines		--	SJC defines the fines and f\ines exist. $2,500 per occurrence, with many exceptions granted. Very few aircraft are not allowed to fly at night.	
FF	3	5	5	Penalize noise	Base landing fees on noise generated during arrival		--	What would be done with the money collected? How do we determine the definition of noise that should be charged a fee? How can this be measured? Airport authority controls the landing fees at SJC. MV/LA Consultant - A Part 161 study would be required, and the likelihood of approval is slim to none.	
GG	1	1	n/a	Penalize noise	Require Airbus 320 air deflectors	Require Airbus 320 family to install “wake vortex generators”	--	Other ities have done this Who controls the authority to require this? UA started their retrofit in Nov 2017. SJC can impose limits of use & fines At a recent SFO Roundtable, SFO staff suggested they had some ideas for how to encourage airlines to install vortex generators if they were initially reluctant. Discuss with them.	- - A given airline would have to do this to their entire fleet of the aircraft type as they don’t know which aircraft will end up on a specific flight.
HH	5	5	3	Penalize noise	Require curfew violation reporting	Require flights landing during the noise curfew to report online what is causing them to violate the curfew in advance of their landing.	--	How will they know that a problem exists? What is a quiet vs. a noisy procedure? What is definition to use? What would they do if it did? Need to model noise and use model to decide if exceeded. Easy to say that a 'safety' issue caused it. At the Airplane Noise Symposium in Long Beach in late February, it was reported that one airport had success with this approach.	
II	5	5	5	Reward quiet	Incentives	Provide incentives to airlines to fly quieter.	--	Need to define definition of quieter. What incentives and how are they funded? dBA is the accepted unit of measurement. Individual cities have their own limits FAA has limits too, but allows "emergency procedures". MV/LA Consultant - This is the inverse of increased landing fees for noisy aircraft. It would be challenged by the FAA (Part 161).	

Ad Hoc Cmte - Mitigation List

Suggestion	Ad Hoc Comm. Priority	Estimated Feasibility		Category of Proposed Change	High Level Description	Details	Map	Notes & Questions	Potential ++ Pros / – Cons
JJ	4	5	n/a	Change SJC operations to reduce noise	Remove displaced runway designation	Remove the displaced runway designation at SJC in order to make use of full runway.	--	This may not be achievable because of the height of buildings in downtown SJ.	- - Very expensive
KK1	4	5	n/a	Change SJC operations to reduce noise	Use GBAS	GBAS (Ground-Based Augmentation System) is a system that augments the primary airport systems and provides enhanced management of all phases of approach, landing, departure and surface operations. It can result in steeper landing paths.	--	Virtually same as JJ. Is this still at the beginning (experimental) phase? How long until this is ready for full use?	++ SJC - Initial reports indicate it could potentially lower noise around some airports due to steeper approaches. - - MV/LA consultant - Not all planes can use the system yet. - - MV/LA consultant - Airport capital investment is $10M+. - - MV/LA consultant - Current ILS for CAT I/II/III planes are in place and provide similar capabilities. - - MV/LA consultant - Noise improvement with GBAS is unlikely at SJC. - - MV/LA consultant – Steeper descents may reduce noise due to higher altitude, but increased airframe noise and use of speed brakes may negate higher altitude benefits.
KK2	3	3	5	Change SJC operations to reduce noise	Trigger when greater than 5 knots	Trigger South flow operations when wind is at 6 knots, or 7 knots, or 8 knots, or 9 knots, or 10 knots. (Use highest safe value)		MV/LA consultant has indicated that the FAA is looking at increasing the trigger to 10 knots at all airports. MV/LA consultant - Unless otherwise agreed FAA Order 7110.65 directs the runway most aligned with the wind, direct tailwind not to exceed 5 knots unless the airport has established a "Preferential Runway Use Program;" SJC does not have a program similar to SFO. FAA Order 8400.9 (currently under revision), outlines the criteria for Runway Use Programs and FAA Order 1050.11A outlines Noise Control Planning.	
LL	1	1	1	Change SJC operations to reduce noise	Monitor noise	Monitor noise North, East and West of the airport at various distances from the airport on an ongoing basis	--	It is essential to understand noise (from monitors)	

Ad Hoc Cmte - Mitigation List

Suggestion	Ad Hoc Comm. Priority	Estimated Feasibility		Category of Proposed Change	High Level Description	Details	Map	Notes & Questions	Potential ++ Pros / -- Cons
MM	1	4	4	Change FAA operations to reduce noise	Stricter rules for ground noise	Require stricter rules for ground noise when implementing future Procedure changes.	--	This might be a methodology change within the FAA process for review of procedure changes. MV/LA Consultant - FAA noise policy is outlined in FAA Order 1050.1 and is now allowing supplemental values for consideration under certain circumstances.	
NN	1	2	2	Change FAA operations to reduce noise	Change when information is provided to pilot	ATC must provides information to pilot sooner.	--	What Information? How will this impact noise to our residents? Is a safety consideration - need to keep pilot load light as possible on approach and landing.	
OO	1	3	3	Change FAA operations to reduce noise	Model changes for noise	Model all changes prior to implementation in order to minimize noise impact on residents.	--	Use theoretical models and compare computer predicted flight maneuvers with actual flight simulators to align with what pilots are really doing. Ground monitors should be used to validate the simulation predictions. MV/LA Consultant - Current development protocols already require these steps and the FAA does not monitor ground noise.	
PP	1	1	3	Provide SJC with more airspace	Reduce SFO BDEGA West arrivals into SFO	Route more SFO arrivals through the BDEGA East over the Bay so that there are fewer BDEGA West arrivals from the North.	--	Balanced Runway usage is the goal. But the reality is that if a quieter runway is free, they should use it. MV/LA Consultant - ATC manages the traffic based on demand. Nor Cal TRACON is aware of the imbalance on the BDEGA path. Traffic may conflict with the DYAMD STAR and descent to the ILS or LOC RWY 12R. Pending Nor Cal Work group.	
QQ	1	2	5	Provide SJC with more airspace	Route SFO SERFR South arrivals over South East corner of Bay	Have SERFR South arrivals join DYAMD or fly a similar route parallel to and/or above DYAMD.	O	Could also address the noise problem of SJC BRIXX arrivals since BRIXX altitude could be increased because SERFR would no longer be a constraint. BRIXX is a SJC arrival route that flies under SERFR. MV/LA Consultant - NextGen protocols reduce track miles not increase. This type of suggestion was offered during the Select Committee and dismissed by the FAA. The SERFR could be routed Avenal direct FAITH/ILS RWY 28R but may conflict with SJC and SFO departures.	
RR1	1	1		Provide SJC with more airspace	Route SFO West oceanic arrivals to BDEGA over ocean	Have SFO oceanic arrivals from the West join BDEGA over the ocean West of the Golden Gate Bridge rather than use MENLO. SJC South Flow would then only compete with BDEGA West arrivals.	--	This is the Golden Gate 7 approach Must be done with adequate time to reprogram FMS. MV/LA Consultant - When SJC is using South flow, 95% of the time SFO is still landing on RWYS 28 L/R. Less conflicted would be to Woodside or South. Pending Nor Cal work group.	++ Cost, if done soon after takeoff, would be almost non-existent. -- Last minute changes can impose errors.
RR2	1	1		Provide SJC with more airspace	Change vectors of BDEGA West arrivals	Vector BDEGA West arrivals to maximize vertical and lateral separations for aircraft flying in opposite directions (BDEGA flights going North and SJC flights going South).	--	This is the Golden Gate 7 approach. Must be done with adequate time to reprogram FMS. MV/LA Consultant - When SJC is using South flow, 95% of the time SFO is still landing on RWYS 28 L/R. Less conflicted would be to Woodside or South. Pending Nor Cal work group.	
SS	5	5	5	Provide SJC with more airspace	SJC use SFO space when SFO changes pattern	Allow SJC to use some SFO airspace when SFO changes their landing pattern, since SFO flights are at high altitudes when they are close to SJC.	--	Needs to be coordinated with Nor Cal TRACON. Possible safety Issues. Need to carefully model all possibilities.	-- SFO might ask for more of SJC airspace in return
TT			1	Other	Create technical working group	Create technical working group to study each of the proposals in conjunction with the FAA. Present findings and recommendations during ad hoc committee meetings for full discussion and final recommendations.	--	Roundtable at Cities Association which includes Santa Clara and Santa Cruz counties. Should it also include Alameda county so cities in the East Bay that currently have SJC traffic are included?	

From: Robert Holbrook <
Sent: Wednesday, April 25, 2018 12:03 AM

Subject: Consolidated Suggestions for the Ad Hoc Advisory Committee's Report

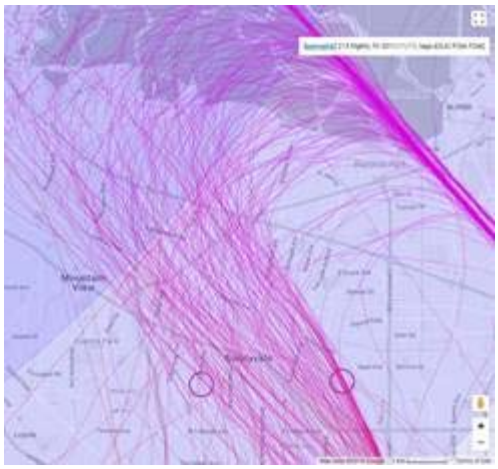
Chairman Hendricks and Members of the Ad Hoc Advisory Committee,
As you develop the report for the Committee's consideration and vote, members of the community who have actively followed the Committee's progress would like to encourage you to adopt the following recommendations.

Most, but not all, of these suggestions are present in the spreadsheet. The suggestions regarding weather conditions arose from FAA responses at the last meeting. The suggestion for opt-in notification has been added because a new approach procedure being proposed by the FAA for South Flow was discovered late last week. While it is unclear how much traffic would be affected, that approach would route South Flow traffic over an entirely new path through Sunnyvale, Los Altos and Palo Alto. Implementation is scheduled for July 19th; the comment period ends Tuesday. As with the spreadsheet, a few of the new suggestions are outside the scope of what the FAA can implement but are suitable for discussion among City representatives.

Robert Holbrook
Mountain View

These suggestions are meant to be combined with maximum effect:

1) Disperse flights
    a. Principle: move noise back to where it was for many years before 2012, in the same geographic proportions (*figure 1*).
    b. Principle: "break the rails" introduced by performance based navigation (PBN) (*figure 2*).



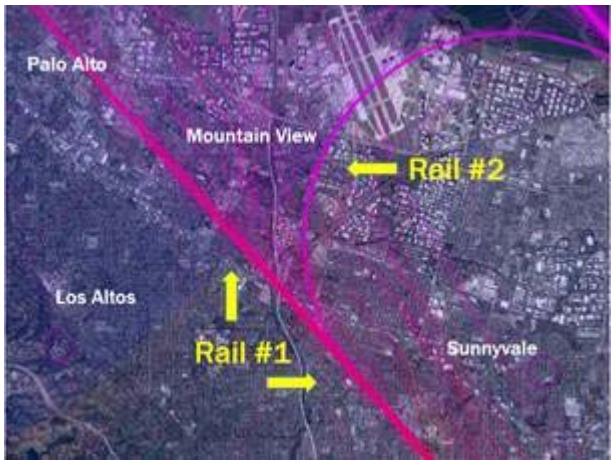


Figure 1 *Figure 2*

c. Create a charted visual flight procedure – these are for environmental/noise considerations.
d. Convert ZORSA to a 'fly by' waypoint, enabling dispersion East of ZORSA. HITIR should be a fly-by waypoint, too. If this is not possible due to design criteria for STAR procedures, amend the STAR procedures terminating at ZORSA to achieve same effect, that is, to allow airplanes to turn per their turning radiuses and FMS programming as soon as possible after JESEN.
e. Return discretion to pilots until Flight Management Systems (FMS) can disperse planes automatically. Back off of FMS until then, including no FMS after JESEN.
f. Revert the final waypoint on the STAR procedures to PUCKK, recognizing that most planes will not be able to reach it.
g. ATC to fan out airplanes by providing many different headings to pilots, spreading flights laterally over corridors two nautical miles wide or more.
h. Ensure that the percentage of flights flying the Eastern Approach stays at historical averages and doesn't drop, especially to zero.

2) Reduce per flight noise on the ground
   a. Principle: During South Flow, weather is usually cool and often windy. To reduce the number of noise event indoors with windows closed, South flow traffic should favor lower peak noise over event duration, within reason.
   b. Principle: Noise is greatly increased by use of lift devices, brakes and jet thrust. The way airplanes are flown should adapt skillfully to changes in weather conditions in order to minimize noise.

c. Return discretion to pilots until Flight Management Systems (FMS) can fly as quietly as human pilots under 98% of weather conditions. Back off of FMS until then, including no FMS after JESEN.
d. ATC to structure arrivals for vectored flights so that they can descend at a glide. Provide ATC with tools to support this, if required.
e. Provide altitude flexibility at HITIR (4000' or above).
f. Any published arrival or approach procedure should permit the quietest possible descent under varying weather and wind conditions, but especially the conditions most common when South Flow is used. Review existing procedures to ensure this is the case.
g. Retrofit airplanes with equipment to reduce per-flight noise, such as vortex generators.

3) Raise the wind speed threshold used to trigger South Flow conditions.
4) SJC and airlines to schedule no more airplanes to arrive SJC during any time window than can actually land at SJC during that time window.
5) Tracking of noise and modeling of future changes:
    a. Adopt improved noise metrics: dB-C weighted noise, not dB-A; noise metrics that better reflect human annoyance, factoring in repeated exposures and focusing on noise events over limited durations (hours vs a yearly average). Note: existing noise metrics do not adequately capture the effects of the concentration introduced by Nextgen.
    b. Principle: FAA should model noise under a range of weather conditions with emphasis on actual conditions versus ideal conditions (see also 2f).
    c. FAA models to be calibrated against noise monitors on the ground, under a range of weather conditions.
    d. FAA to enable interested persons and groups to be notified of proposed FAA actions as soon as they are made public. To achieve this, the FAA should enable opt-in email notifications for FAA web pages of community interest. Users should be able to restrict their notifications to a single airport. In particular, email opt-in should be made available for the following pages in the IFP Gateway: 'Charts', 'IFP Production Plan', 'IFP Coordination' and 'IFP Documents (NDBR)'. (Opt-in notifications are available today in the IFP Gateway, but only for procedures already listed on those web pages. It is not possible to be notified when a new procedure is introduced.)
    e. FAA to post all supporting information showing the noise impact of proposed procedures entered in the IFP Gateway at the time those procedures are posted to the IFP Gateway for comment (or the fact that a 'categorical exclusion' was used and the grounds for using it). When reporting on the results of models, state the assumptions and parameters used.
    f. Community to develop a regional noise monitoring strategy.
6) Acquire resources:
    a. Add ATC personnel, if required to support the above actions.
    b. Lobby airlines to adopt the above actions.
    c. Going forward, coordinate with other interested groups within the metroplex and nationally.
7) Appeal to Congress:
    a. Include the changes to law proposed in this section in the September Appropriations Bill for the FAA.
    b. Place noise on an equal footing with safety and efficiency, and higher than efficiency over dense residential areas.
    c. Enable reasonable business incentives to mitigate noise. Amend the Airport Noise and Capacity Act (ANCA) of 1990 to permit incentives to airlines by airport operators to be adopted without FAA approval (per an attorney specializing in airline law, the FAA has approved only one proposal contested by airlines under ANCA in 28 years). Consider

changes to statutory law to permit City, County and State governments to enact reasonable incentives.

d. Change laws per the Maryland Proposal (link below).
e. Mandate development of supplemental noise metrics, including those listed in 5a, above.
f. Note: Formal recommendations to Congress members should be considered by all regional representative bodies: Ad Hoc Advisory Committee, SFO Roundtable, South Bay Roundtable, etc.

Link to the Maryland Proposal:
http://maacommunityrelations.com/_media/client/anznoiseupdate/2018/What%20Went%20Wrong%20with%20NextGen%20and%20How%20Congress%20Can%20Fix%20It.pdf

Kazmierczak, Matthew

From: Marie-Jo Fremont <>
Sent: Thursday, April 26, 2018 10:25 AM
To:
Cc: Kazmierczak, Matthew
Subject: Additonal Recommendation for SJC South Flow Arrivals: De-Activate the SJC South Flow RNAV procedure

Dear Committee Member,

As you enter the final stretch of preparing recommendations on the SJC South Flow arrivals, I would like you to consider asking the FAA to de-activate the NextGen RNAV approach given its very low utilization and the large community noise impact caused by its implementation.

In the April 13, 2018 meeting, the FAA reported that the **SJC South Flow RNAV procedure** (e.g. the tight arch from Zorsa to the SJC localizer) was **used 14% of the time**.

Changes to the SJC south flow approaches occurred because this new RNAV precision route (which concentrated planes around a narrow and new ground track) was put in place. As a result of its implementation, residents have been experiencing a tremendous level of noise, some because they are now living under a low altitude, extremely narrow rail corridor and others because they are now living under a narrow path of vectored aircraft flying below 3,000 ft.

Low altitude, extremely narrow air traffic corridors, such as this RNAV procedure, create living hells for residents. This procedure should never have been created in the first place without prior and proper consulting with communities.

Furthermore, the very low utilization of the RNAV procedure means that **85% of the SJC south flow flights are vectored north at low altitudes** (typically between 2,000 and 3,000 ft) **over several miles of densely populated residential areas**.

How can anyone justify keeping a procedure that is not used 85% of the time, especially knowing the resulting noise impact of the vectored flights? Why does the FAA allow planes to continue their descent when there is an 85% probability that they will be vectored north?

The FAA offered two reasons why this RNAV procedure is used so little:

- Lack of proper avionics or RNAV pilot certification.
  - The FAA stated that not all aircraft or crew can fly the RNAV procedure because aircraft do not have the proper avionics equipment or pilots have not been trained. It would be interesting to know the % of aircraft that are RNAV-enabled, the % of RNAV-certified pilots, and the assumptions that the FAA made on both items when they decided to implement the RNAV procedure for the SJC south flow.
- Congestion (e.g. too many planes trying to land at the same time)
  - The FAA stated that planes have to be delayed due to congestion at SJC. Today, Air Traffic Control vectors the planes north at low altitudes over several miles of densely populated areas on the west side of the Bay. Given that congestion is not a last minute surprise, why does the FAA allow planes to pile up at low altitudes just a few miles away from SJC? Why can't planes be held back far from the airport or spaced farther apart?

In the April 13, 2018 meeting, Joe Brooke from the FAA made an analogy that sequencing flights for final approach is like merging cars from an on-ramp with freeway traffic. Indeed, sequencing is similar to merging but a destination airport is not a freeway. It's a dead-end with a finite capacity (e.g. number of slots) that is highly variable but well-defined at any given moment in time.

Could it be that airlines have unrealistic schedules? Unrealistic schedules are great to make on-time performance metrics look good but could create unnecessary congestion problems because the schedules have little resemblance with reality.

Could it be that airlines are pushing for unrealistic throughput rates at any cost, including the noise impact on residents but also the additional fuel and exhaust associated with vectoring aircraft at altitudes below 3,000 ft? Maximum throughput means that airlines want to take off and land as many planes as possible in the shortest amount of time. The FAA has accommodated these requests by reducing aircraft separation to the minimum that is considered safe. To maintain this minimum separation, pilots are now forced to adjust speed through thrust or brakes and/or Air Traffic Control is forced to vector the planes to create additional separation.

It is quite surprising that in this age of machine learning, queuing models, and real-time GPS data, the FAA cannot better manage arrivals. Furthermore, the FAA has control mechanisms that could be used many miles away from the airport to avoid vectoring flights near the ground. The FAA could increase in-trail spacing (e.g. the separation between planes) on the arrival routes. The closer planes follow each other, the higher the ripple effect on subsequent planes when there is any sequencing change for final approach. Increasing in-trail spacing would decrease the probability of vectoring. The FAA could also hold planes at high altitudes (as typically specified in the procedures) to delay them as necessary.

As part of your final recommendations, **I would like you to consider asking the FAA to de-activate the current RNAV south flow procedure. The FAA could revert to the pre-NextGen procedures while they design new south flow arrival procedures that would:**

- **disperse flights,**
- **allow pilots to fly quiet over residential areas,**
- **route planes at low altitudes over non-residential areas (e.g. commercial & industrial areas, freeways, and water),**
- **increase in-trail spacing,**
- **hold planes at high-altitudes (over 10,000 ft Above Ground Level) as necessary.**

Such new procedures and their expected impact on people would also have to be reviewed with communities prior to implementation.

Thank you for considering my input.

Best regards,

Marie-Jo Fremont

Palo Alto resident

City of San José

AD HOC ADVISORY COMMITTEE ON SOUTH FLOW ARRIVALS

Meeting Minutes of the Ad Hoc Advisory Committee on South Flow Arrivals

FRIDAY **SAN JOSE, CALIFORNIA** **April 27, 2018**

The Ad Hoc Advisory Committee on South Flow Arrivals held a meeting on April 27, 2018 at 1:00 p.m. at the San José International Airport Administrative Offices in the McDonnell Douglas & Boeing Conference Rooms.

ATTENDEES:

COMMISSIONERS

Glenn Hendricks (Chair)	- Present
Chappie Jones (Vice-Chair)	- Present at 2:05pm
Mary-Lynne Bernald	- Absent
Savita Vaidhyanathan	- Present
Jean Mordo	- Present
Gary Waldeck	- Present
Bob Nuñez	- Present
Rowena Turner	- Present
Rene Spring	- Absent
Eric Filseth	- Present
Lisa Matichak	- Present
Raul Peralez	- Present
Kathy Watanabe	- Present
Jeffrey Cristina	- Absent

AIRPORT STAFF PRESENT

Matthew Kazmierczak
Janelle Adams
Curt Eikerman

FAA STAFF:

Tony DiBernardo
Perry Oleck
Joe Brooke
Tonya Patterson

I. Call to Order and Orders of the Day

The meeting was called to order at 1:06 p.m. by Chair Hendricks with ten Committee members in attendance and four absent.

II. Consent Calendar

A. Approve the Minutes for the April 13, 2018 meeting

Action: Upon motion by Committee Member Turner, seconded by Committee Member and Vice-Chair Jones, to approve the meeting minutes, the motion passed 10-0, 4 absent.

Documents Filed: 18-04-13 Ad Hoc Advisory Committee Minutes

III. Chair/Vice Chair Remarks

None.

IV. Old Business

A. Items on the Ad Hoc Advisory Committee Workplan

Perry Oleck from the FAA reported on his findings on the feasibility of Items L-TT. The FAA also addressed questions from the April 13, 2018 meeting regarding the eastern approach alternative and ILS. The Committee was notified about the FAA's timeline to change south flow arrivals.

Documents Filed: FAA Presentation

Ryan Weller, FAA/ATO, provided a PowerPoint presentation on the overview of the environmental process and how it is implemented. Mr. Weller explained the three levels of the NEPA review and how it applies to SJC south flow issues.

Documents Filed: Mitigation List

B. Adoption of Final Report and Committee Recommendations

The Committee agreed to remove "eastern approach" as the second item on the report and include this under "dispersed approach."

V. Public Comment

Members of the public were invited to speak on noise mitigation comments for the Committee.

Speakers include: Jennifer Landesmann, Robert Holbrook, Jim Whitfield, Joel Pullen, Chris Moylan, Darlene Yaplee, Marie-Jo Fremont, Laura Kostinksky, Mary Shefveland, John Haulsen and Toni Rath.

Documents Filed: Attachment 1 Attachment 2

VI. Future Meeting Schedule and Agenda Items

The final meeting will be at the San José International Airport Administrative Offices on Friday, May 18, 2018. The Chair will need final comments and suggestions to the draft report in the next few days so the next meeting can be utilized as a time to review the final draft to submit to the FAA.

VII. Adjournment

The meeting was adjourned at 4:40 pm.

ATTEST:

Glenn Hendricks
Chairperson

Matthew Kazmierczak
Manager of Strategy & Policy

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Ad Hoc Advisory Committee on South Flow Arrivals

Councilmember Jeffrey Cristina – Campbell	Vice Mayor Lisa Matichak — Mountain View
Mayor Savita Vaidhyanathan— Cupertino	Councilmember Lydia Kou — Palo Alto
Vice Mayor Jean (John) Mordo — Los Altos	Mayor Mary-Lynne Bernald — Saratoga
Mayor Gary Waldeck — Los Altos Hills	Councilmember Charles "Chappie" Jones — San José
Councilmember Bob Nuñez – Milpitas	Councilmember Raul Peralez — San José
Councilmember Rowena Turner — Monte Sereno	Vice Mayor Kathy Watanabe — Santa Clara
Councilmember Rene Spring — Morgan Hill	Mayor Glenn Hendricks — Sunnyvale

1:00 P.M. April 13, 2018 San José Airport
Boeing/McDonnell Douglas
Conference Room
1701 Airport Boulevard, Suite B-1130
San José, CA 95110

MEETING AGENDA

I. Call to Order and Orders of the Day

II. Consent Calendar
   A. Approve the Minutes for the March 23, 2018

III. Chair/Vice Chair Remarks

IV. Old Business

   A. Items on the Ad Hoc Advisory Committee Workplan
      1) Informational Briefing about South Flow
      2) Identification of Possible Noise Impact Reduction Measures
      3) Discussion of Possible Noise Mitigation Measures
         - Discussion merits/feasibility
         - Prioritize measures (rank order)
      4) Adopting Recommendations
      5) Adoption of Final Report and Committee Recommendations

V. Public Comments (on items not on the agenda but within the subject matter responsibility of the Committee)

VI. Future Meeting Schedule and Agenda Items

Schedule of Upcoming Committee Meetings:

Date	**Location**	**Time**
Friday, April 27, 2018	San José Airport Boeing Conference Room	1:00 pm
Friday, May 18, 2018	San José Airport Boeing Conference Room	1:00 pm

Agenda Items:
The Committee Agenda is set based on the workplan. The Committee will work through the workplan, which shall roll over from one meeting to the other.

Copies of the meeting minutes, agendas, and other material are available online at: http://www.flysanjose.com/Ad_Hoc_Advisory_Committee

VII. Adjournment

OPEN FORUM: You may speak to the Committee about any item that is on the agenda, and you may also speak during Open Forum on items that are not on the agenda and are within the subject matter jurisdiction of the Committee. If you wish to speak to the Committee, please refer to the following guidelines:

- **Fill out a blue Speaker's Card and submit it to the Airport staff seated at the front table. Do this before the meeting or before the item is heard.** This will ensure that your name is called for the item(s) that you wish to address, and it will help ensure the meeting runs smoothly for all participants.
- When the Committee reaches your item on the agenda, the Chair will open the public hearing and call your name.
- Each speaker generally has two minutes to speak per item. The amount of time allotted to speakers may vary at the Chair's discretion, depending on the number of speakers or the length of the agenda.

Please be advised that, by law, the Committee is unable to discuss or take action on issues presented during Open Forum. According to State Law (the Brown Act) items must first be noticed on the agenda before any discussion or action.

Agendas, staff reports and some associated documents for the Committee items may be viewed on the Internet at http://flysanjose.com/Ad_Hoc_Advisory_Committee

To request an accommodation or alternative format under the Americans with Disabilities Act for City-sponsored meetings, events, or printed materials, please call (408) 392-3640 as soon as possible, but at least three business days before the meeting.

Please direct correspondence and questions to:

City of San José
Attn: Matthew Kazmierczak.
1701 Airport Boulevard, Suite B-1130
San José, California 95110
Tel: (408) 392-3640 Fax: (408) 441-4589
Email: MKazmierczak@sjc.org

Committee Members

Primary	Alternate
Councilmember Jeffrey Cristina Campbell Jeffc@cityofcampbell.com	Mayor Liz Gibbons Campbell LizG@cityofcampbell.com
Mayor Savita Vaidhyanathan Cupertino svaidhyanathan@cupertino.org	Councilmember Steven Scharf Cupertino sscharf@cupertino.org
Vice Mayor Jean Mordo Los Altos jmordo@losaltosca.gov	Councilmember Lynette Lee Eng Los Altos lleeeng@losaltosca.gov
Mayor Gary Waldeck Los Altos Hills GCWaldeck@losaltoshills.ca.gov	
Councilmember Bob Nuñez Milpitas bnunez@ci.milpitas.ca.gov	Vice Mayor Marsha Grilli Milpitas mgrilli@ci.milpitas.ca.gov
Councilmember Rowena Turner Monte Sereno rturner@cityofmontesereno.org	Vice Mayor Evert Wolsheimer Monte Sereno ewolsheimer@cityofmontesereno.org
Councilmember Rene Spring Morgan Hill Rene.Spring@morganhill.ca.gov	Councilmember Larry Carr Morgan Hill Larry.Carr@morganhill.ca.gov
Vice Mayor Lisa Matichak Mountain View Lisa.Matichak@mountainview.gov	Councilmember Lenny Siegel Mountain View Lenny.Siegel@mountainview.gov
Councilmember Lydia Kou Palo Alto Lydia.Kou@cityofpaloalto.org	Councilmember Eric Filseth Palo Alto Eric.Filseth@cityofpaloalto.org
Mayor Mary-Lynne Bernald Saratoga mlbernald@saratoga.ca.us	Councilmember Howard Miller Saratoga hmiller@saratoga.ca.us

Primary	Alternate
Councilmember Charles “Chappie” Jones San José District1@sanjoseca.gov	Councilmember Johnny Khamis San José District10@sanjoseca.gov
Councilmember Raul Peralez San José District3@sanjoseca.gov	
Vice Mayor Kathy Watanabe City of Santa Clara kwatanabe@santaclaraca.gov	Councilmember Teresa O’Neill City of Santa Clara toneill@santaclaraca.gov
Mayor Glenn Hendricks Sunnyvale HendricksCouncil@sunnyvale.ca.gov	Councilmember Larry Klein Sunnyvale KleinCouncil@sunnyvale.ca.gov

Ad Hoc Advisory Committee Workplan

I. **The South Flow Procedure Presentation**: Why south flow procedure is used, how it works, the conditions requiring its use, and the air traffic environment over the South Bay, with Q&A from the Committee.

II. **Committee Identification of Possible Noise Impact Reduction Measures** – What are possible measures to reduce the noise impacts of the south flow procedure without reducing safety and efficiency of FAA air traffic control management? Possible measures raised in discussions include:

a) Bringing aircraft in at higher altitudes;
b) Greater dispersal of arriving aircraft;
c) Bringing aircraft in over the east of San José instead of over the west of San José.
d) Other possible solutions?

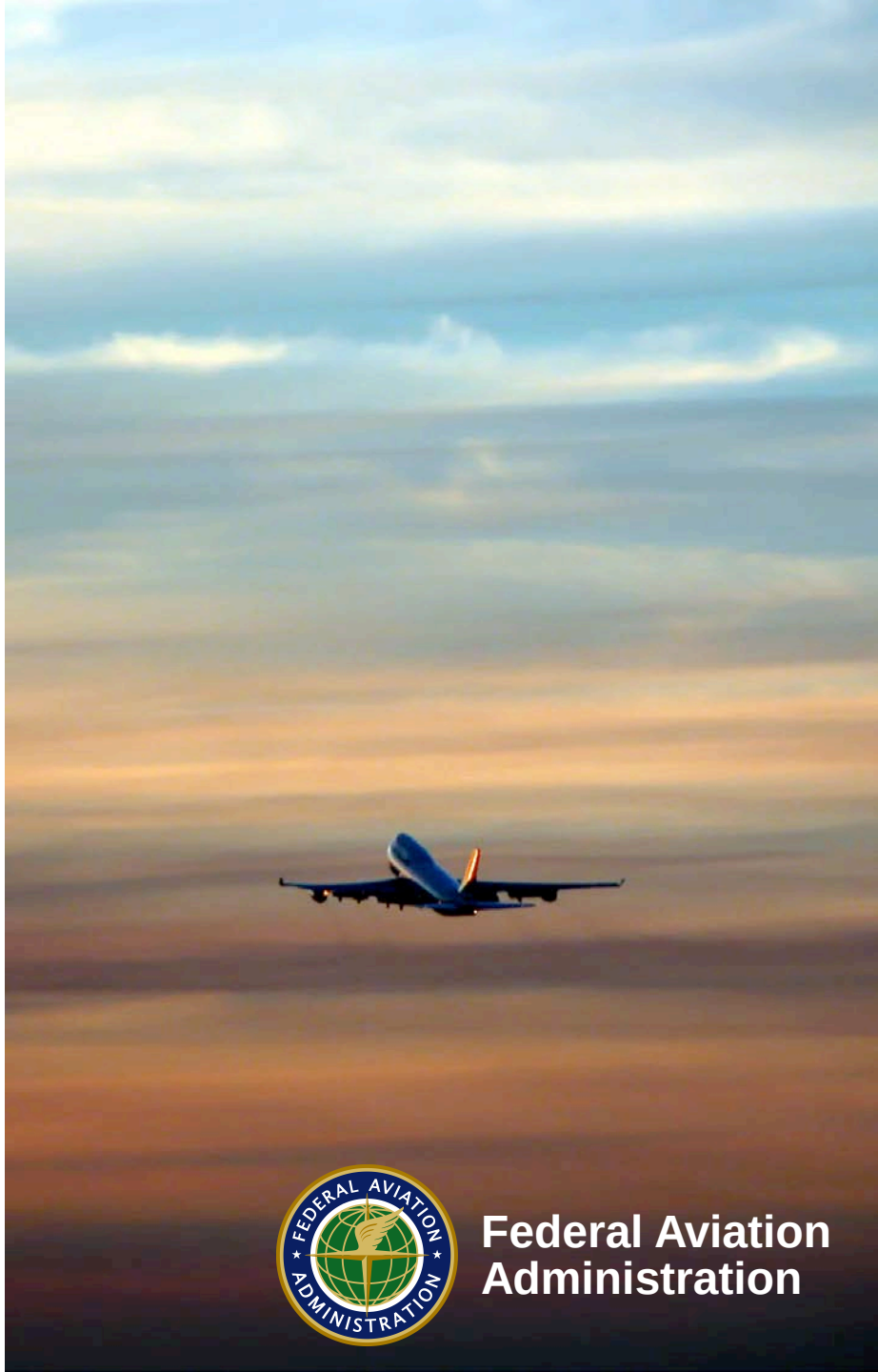
III. **Committee Discussion of Identified Noise Impact Reduction Measures** – An evaluation of what measures should be advanced for consideration to the FAA, given FAA direction on feasibility, safety, and efficiency.

IV. **Adopting Preliminary Recommendation(s)** – After Committee discussion of, and FAA comments on, all identified noise reduction options, preliminary adoption of recommended measures for FAA consideration.

V. **Adoption of Final Report and Committee Recommendations**

San Jose Ad Hoc Advisory Committee on South Flow Arrivals

Committee Meeting: April 13, 2018



Data Analysis

The Ad Hoc Advisory Committee on South Flow Arrivals met on March 23, 2018. The following data analysis is in response to questions posed to the FAA during the meeting.

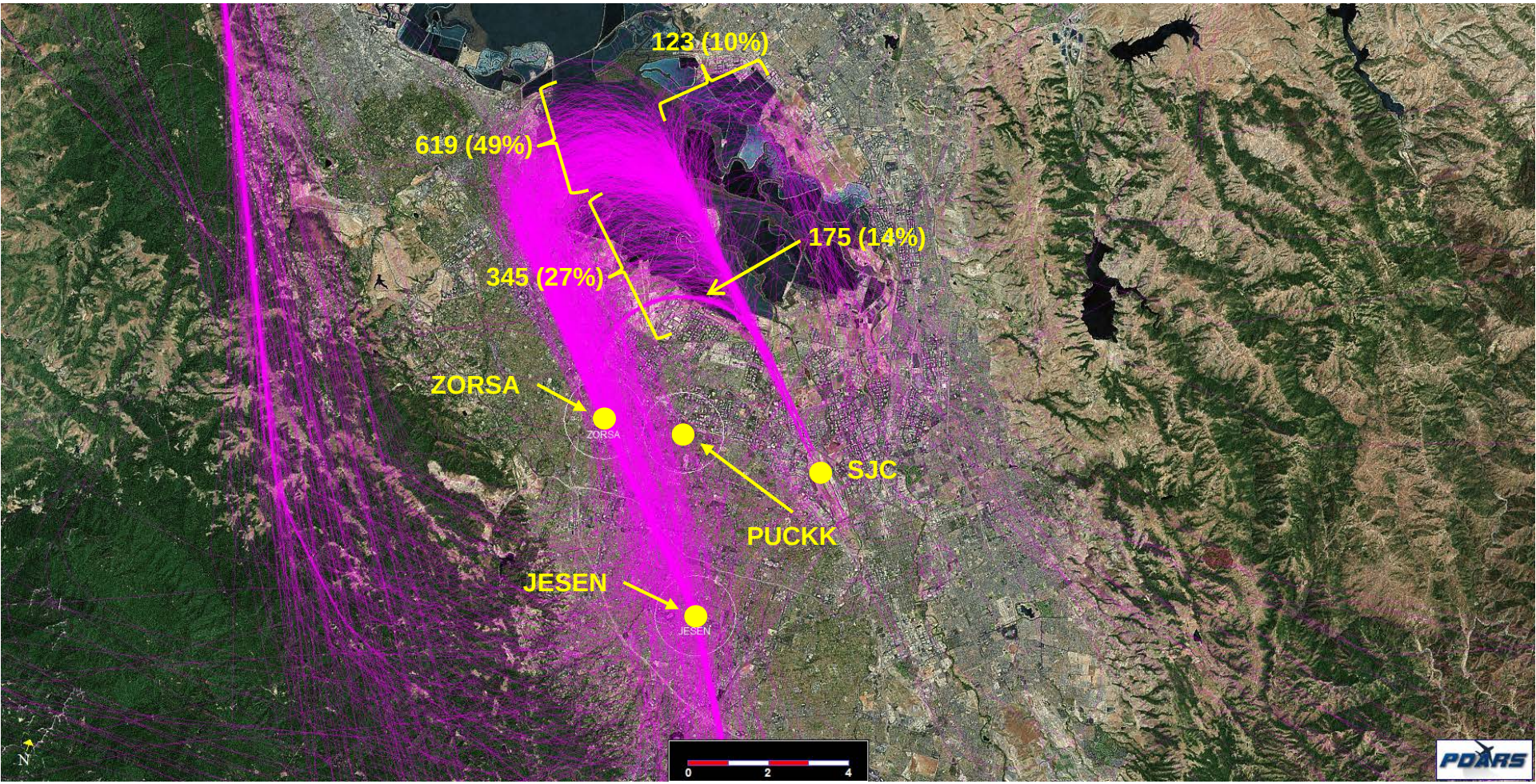
Northern California TRACON (NCT) radar data was analyzed in response to these Requests and Questions.

A number of months were reviewed, with the following selected for their similarity in time of year and, more importantly, similar traffic count during San Jose Airport (SJC) South Flow operations.

- February, 2011 – 1,111 SJC South Flow arrival aircraft
- January, 2018 – 1,262 SJC South Flow arrival aircraft

* For brevity, and because of it's similarity to the 2018 data, the 2016 has been removed.

SJC 2018 South Flow
1,262 Arrivals
(Static Image)



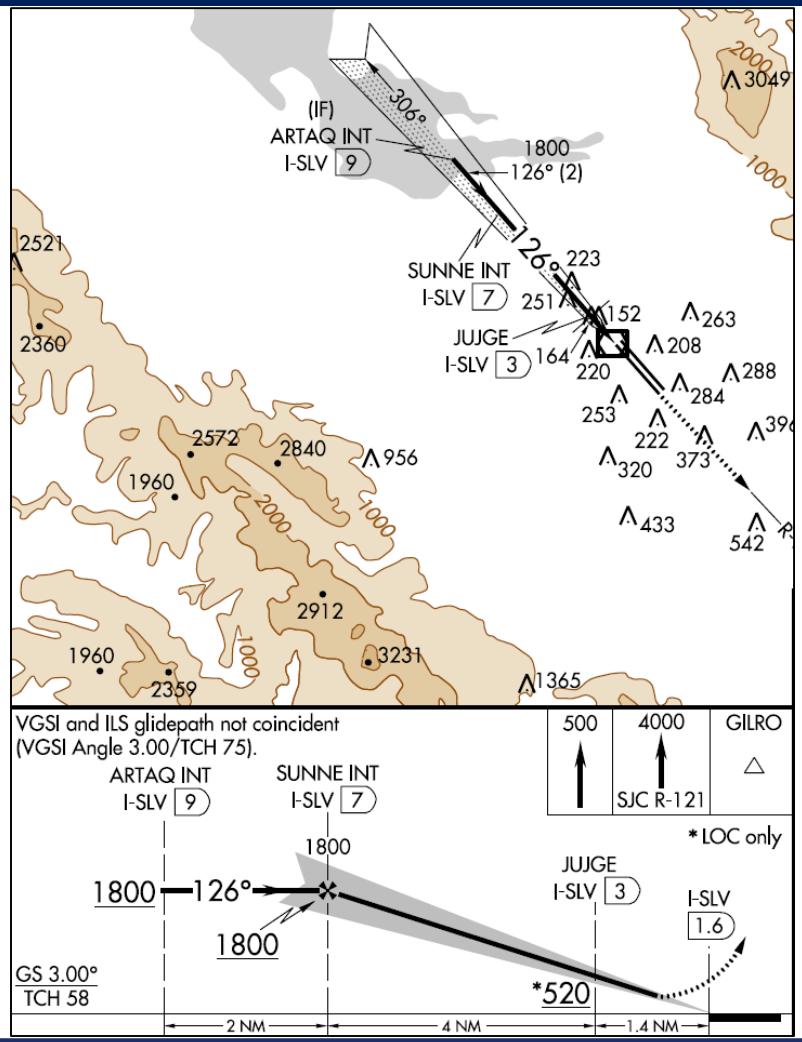
SJC South Flow
ILS Runway 12R (edited)

The image to the right is a version (edited for clarity) of the ILS RWY 12R approach plate in to SJC. Note the following:

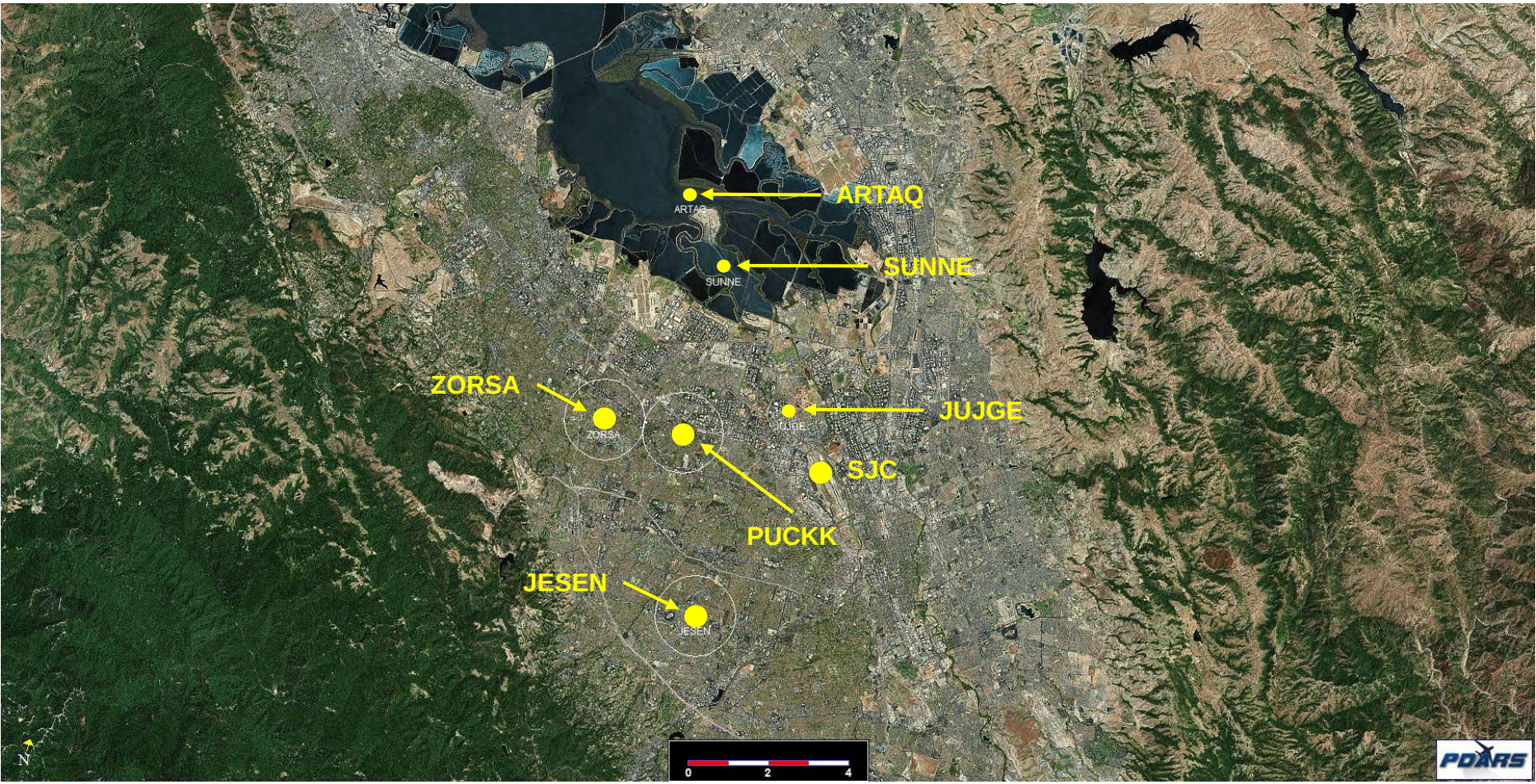
- **Glideslope (GS) of 3.00°**
- **Final Approach Fix (FAF) SUNNE**
  - **Altitude of At or Above 1,800 ft MSL (1800)**
- **Intermediary Fix (IF) ARTAQ**
  - **Altitude of At or Above 1,800 ft MSL (1800)**

The glideslope, which aircraft must be underneath to properly intercept, is depicted by the rising (right to left) line in the lower portion of the image, between SUNNE and JUJGE. If that line is extrapolated beyond SUNNE, the horizontal line between ARTAQ and SUNNE, at altitude 1800 feet, will intercept the glideslope from underneath.

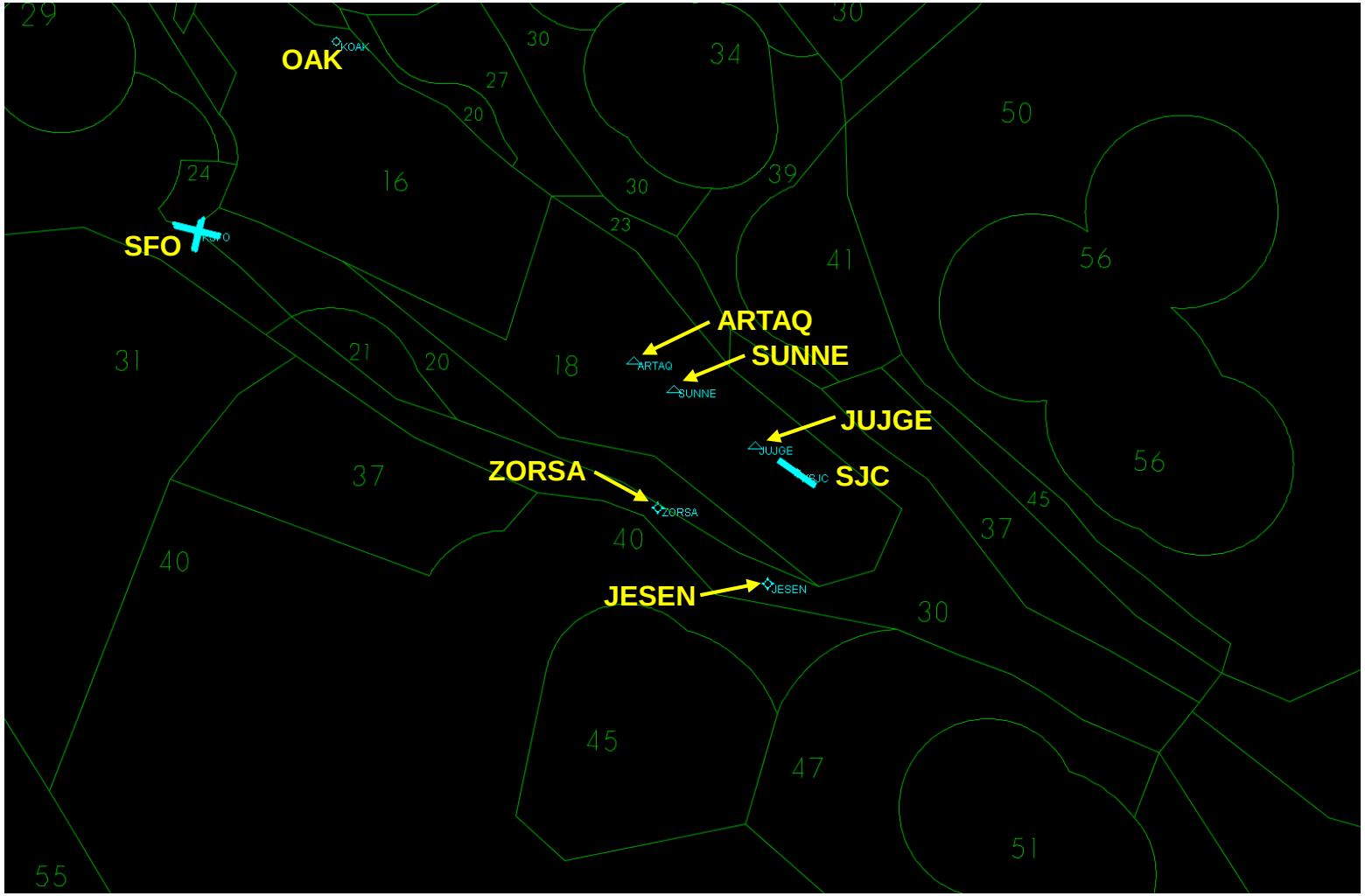
Aircraft are required to be 'established' on the ILS at least 1 NM outside (or before) the FAF SUNNE in normal weather. During low-visibility weather, aircraft must be established on the ILS at least 2 NM outside the FAF.



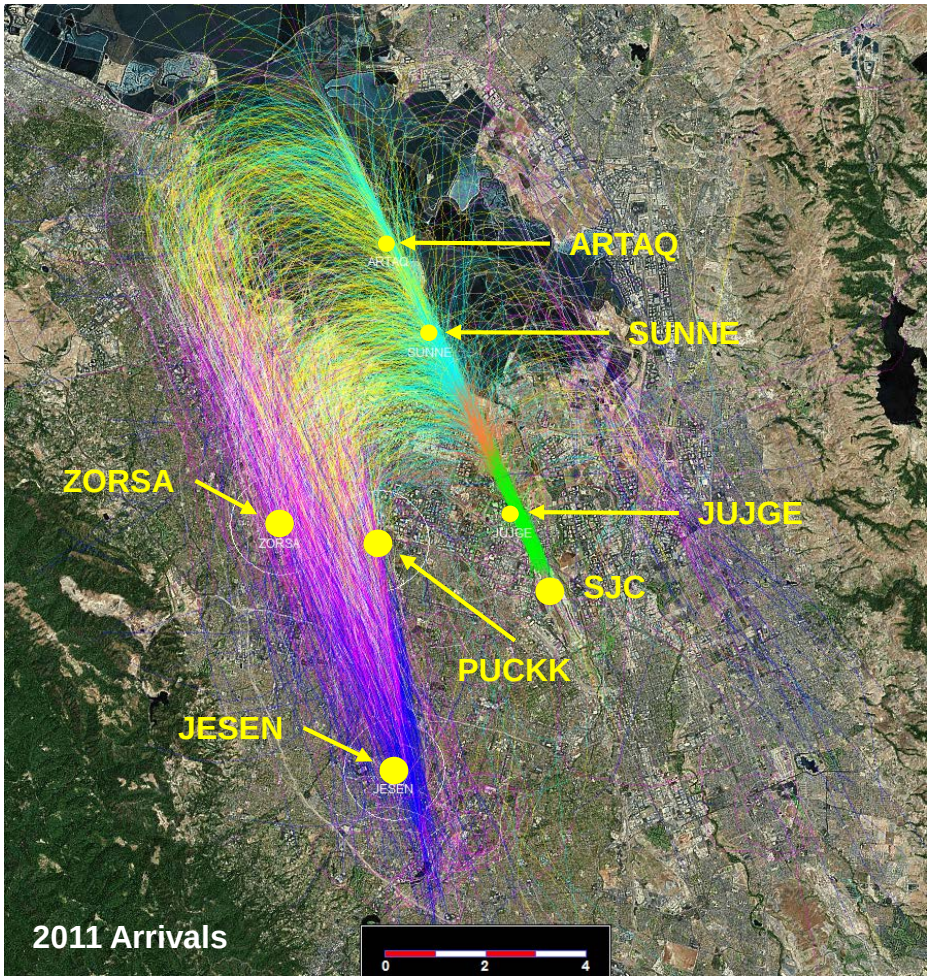
SJC South Flow
ILS Fixes

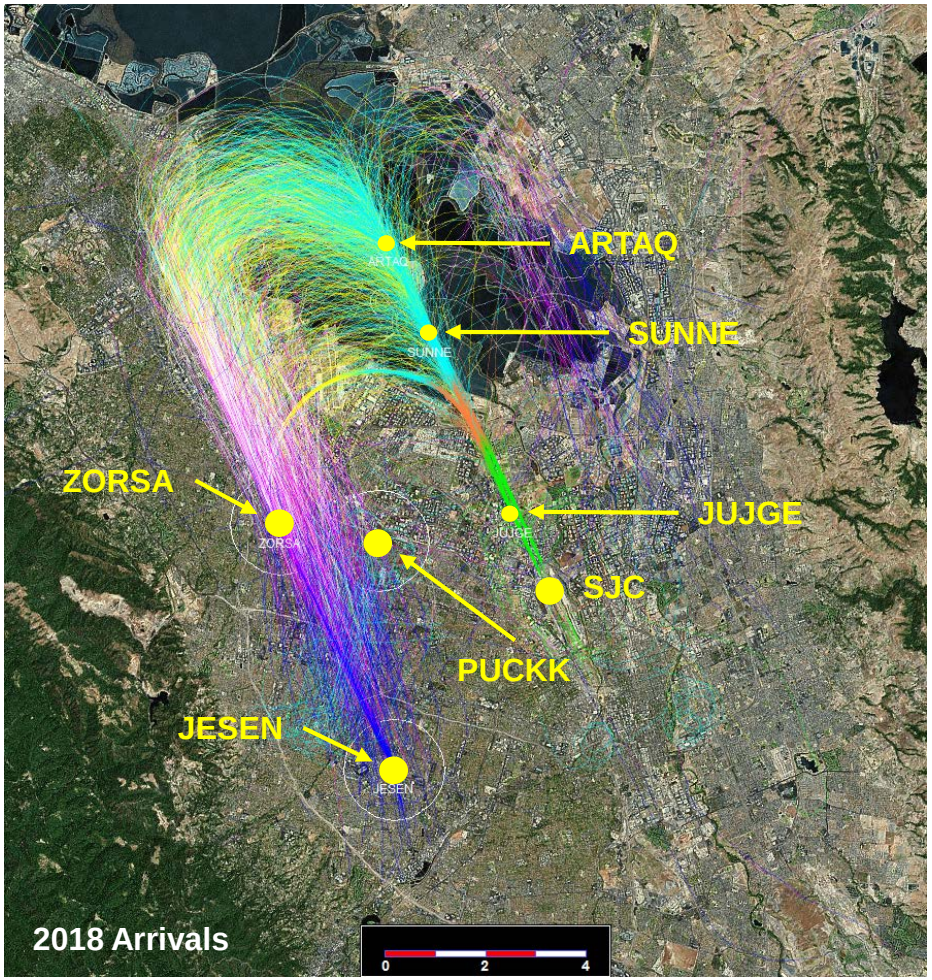


SJC Area
MVA Map (In 100's of feet)



SJC South Flow
Arrivals by Altitude
(Static Image)





Altitude in Feet MSL

- 0 – 1,000
- 1,000 – 1,500
- 1,500 – 2,000
- 2,000 – 2,500
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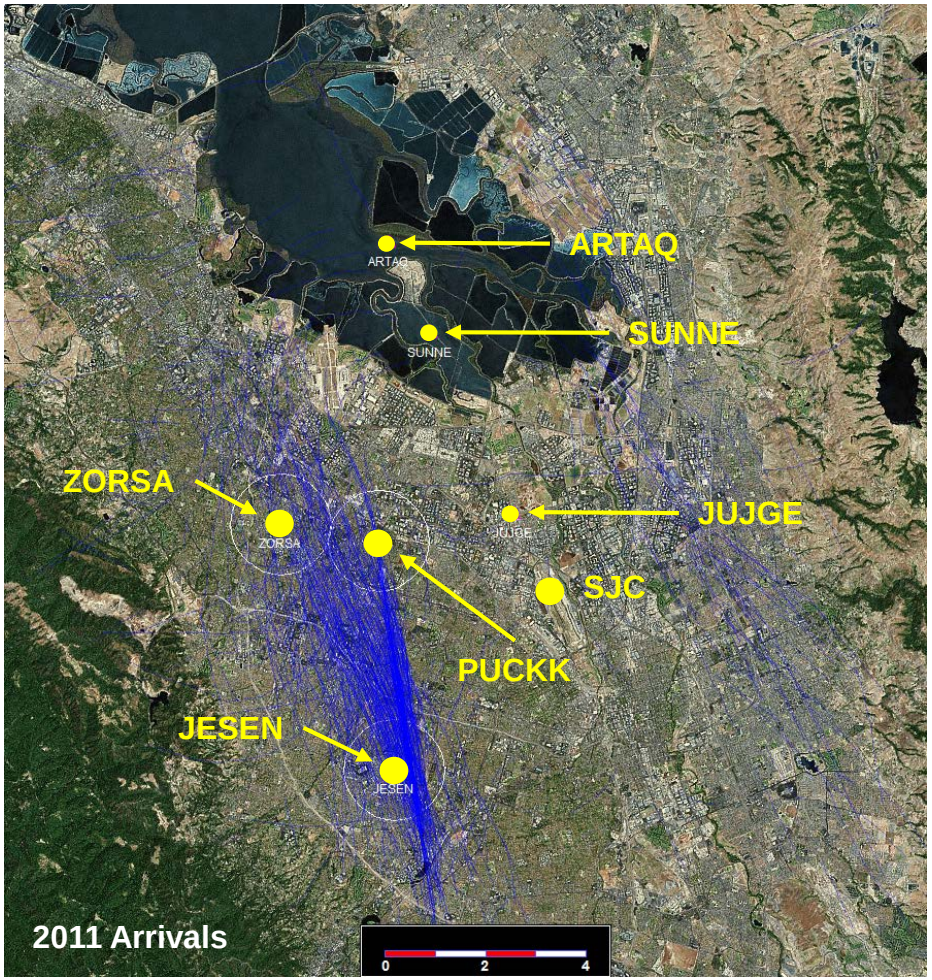
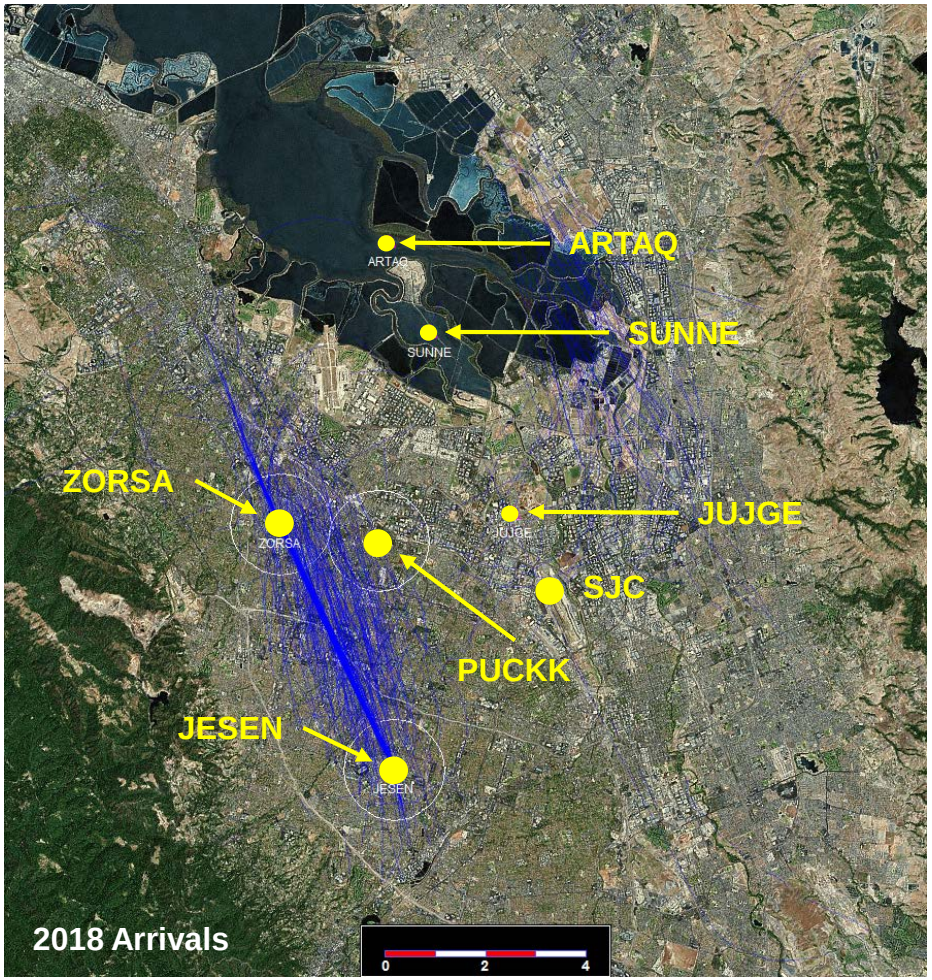
- 3,000 – 3,500
- 3,500 – 4,500

Federal Aviation Administration

SJC South Flow
Arrivals by Altitude
(Static Image)





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Federal Aviation Administration

SJC South Flow
Arrivals by Altitude
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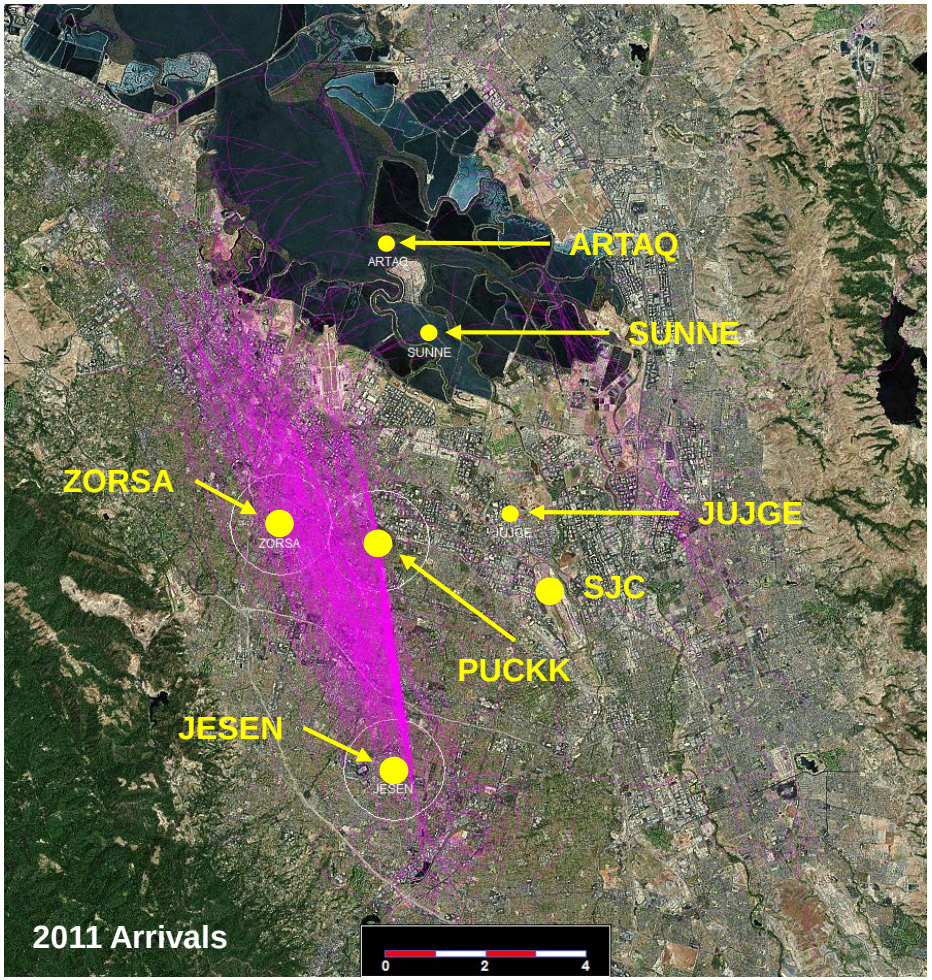

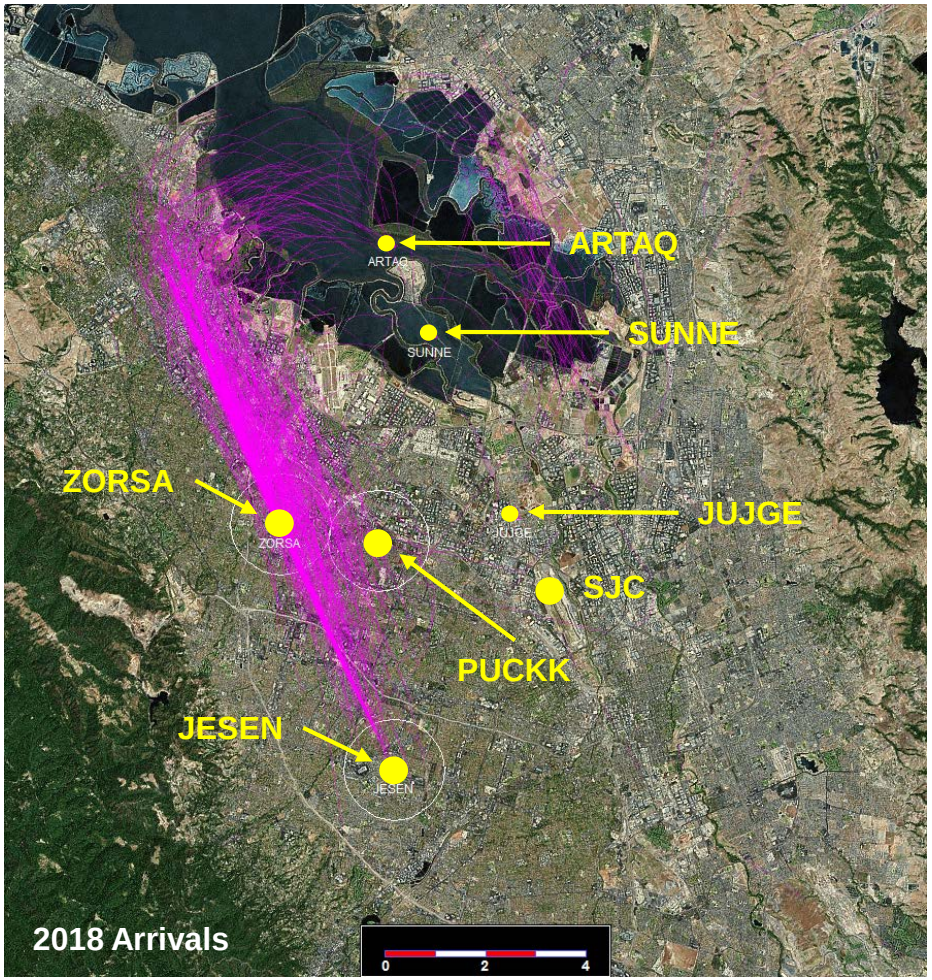

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Federal Aviation Administration

SJC South Flow
Arrivals by Altitude
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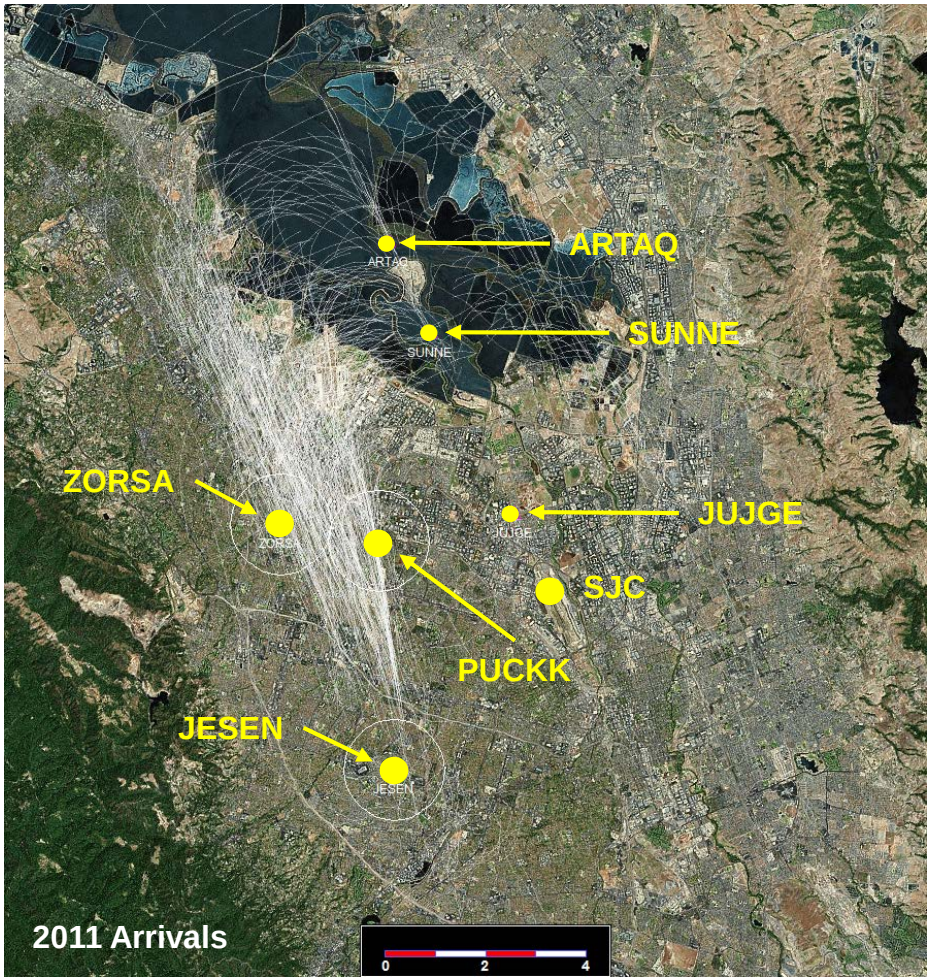

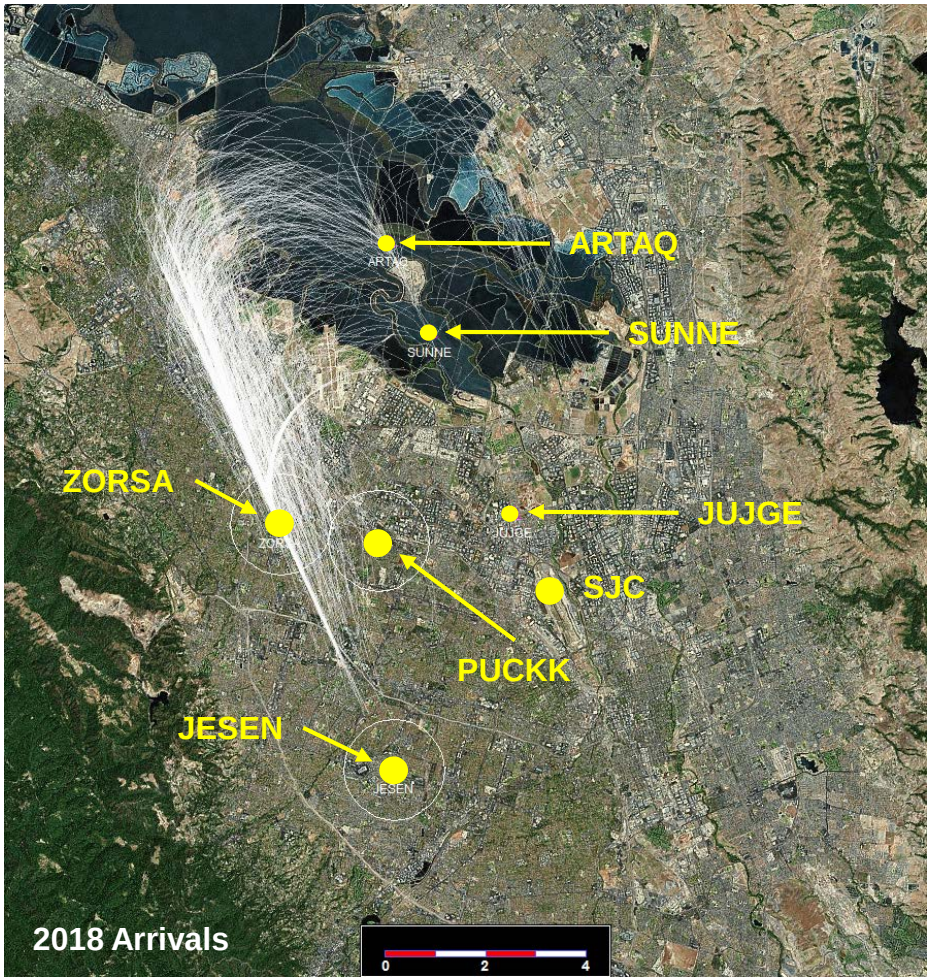

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Federal Aviation Administration

SJC South Flow
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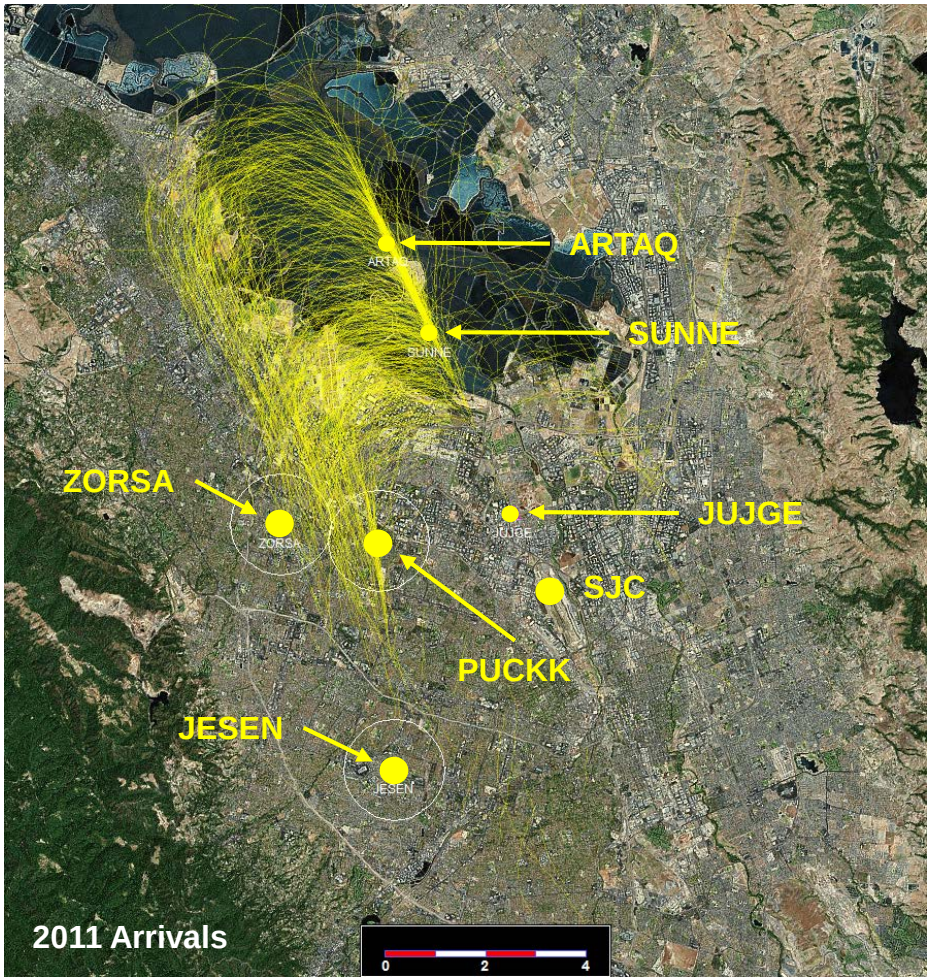

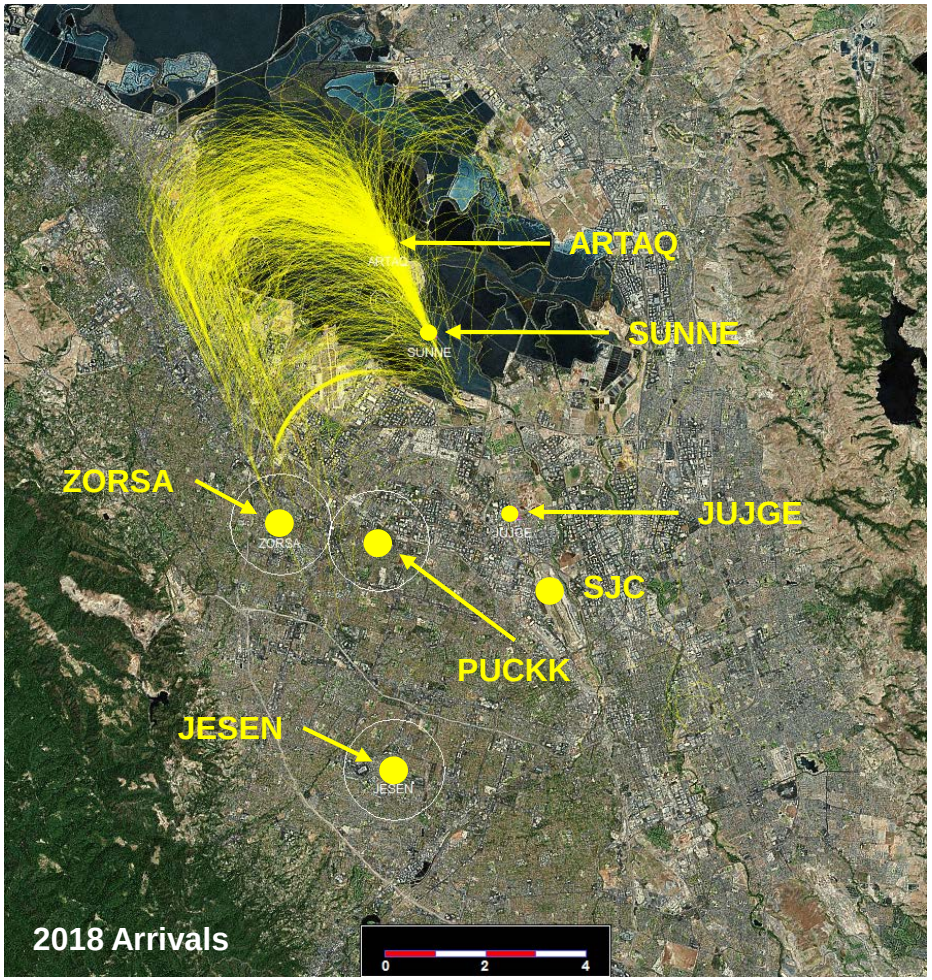

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Federal Aviation Administration

SJC South Flow
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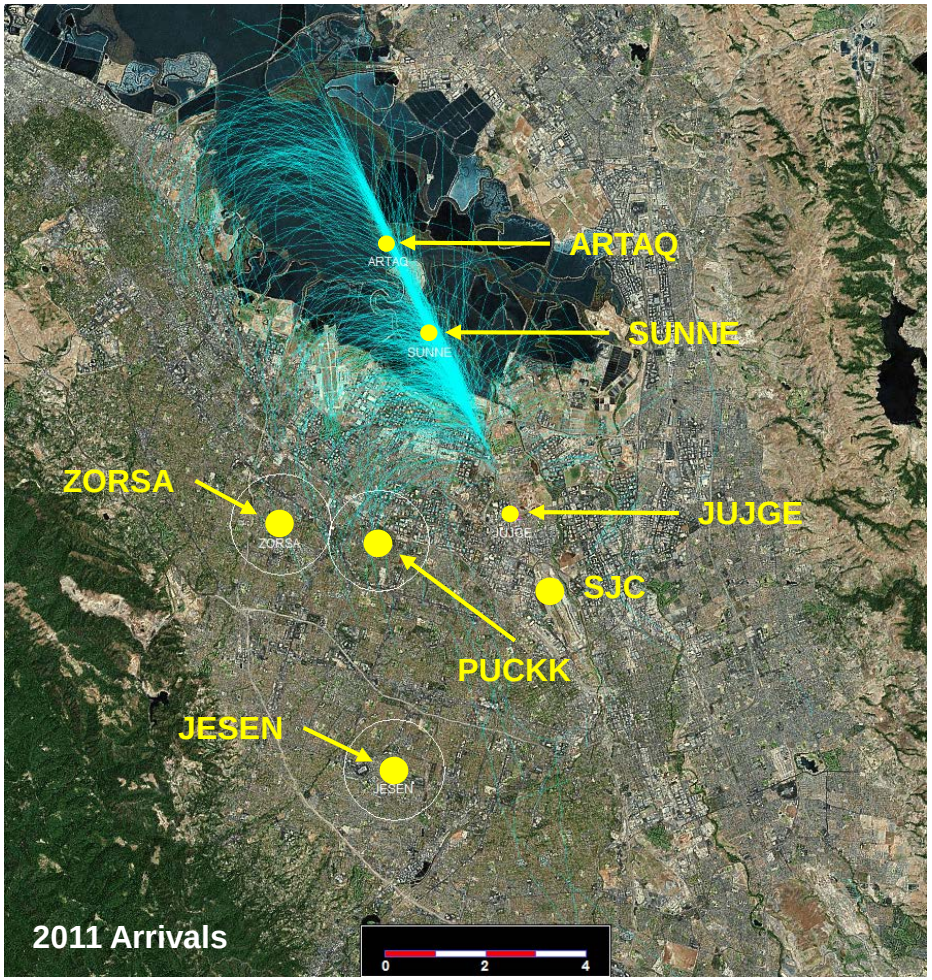
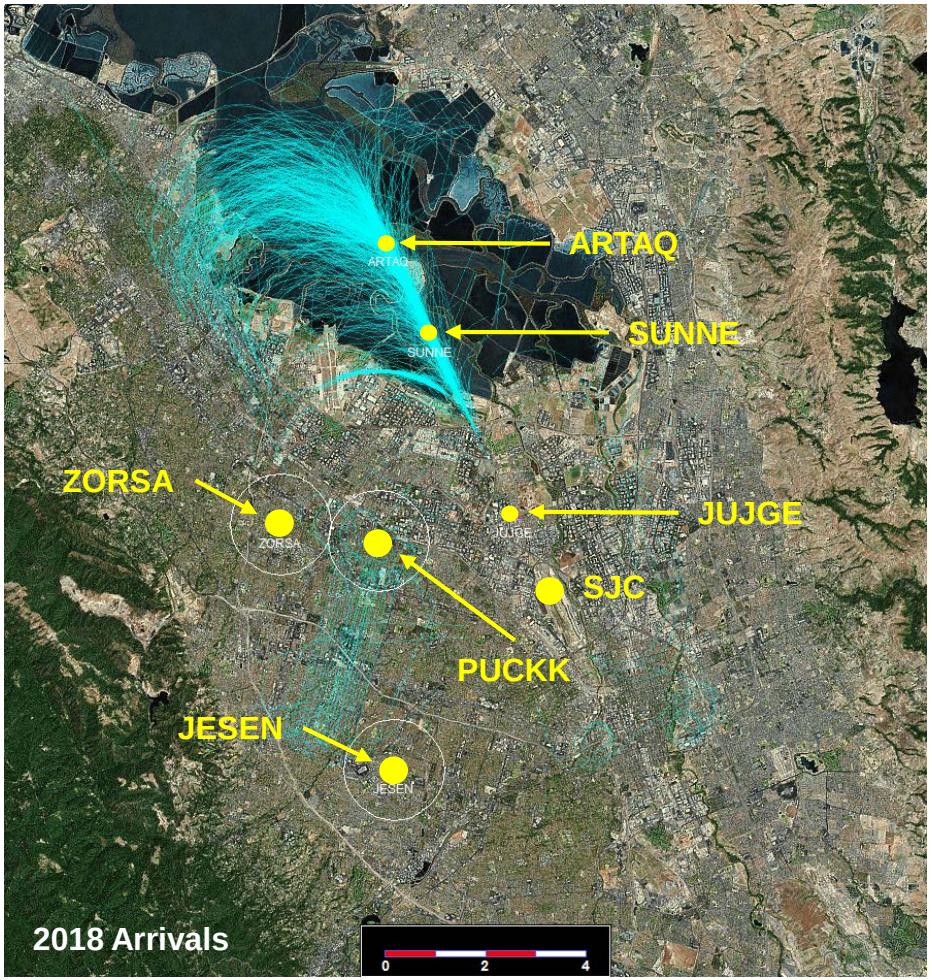
(Static Image)





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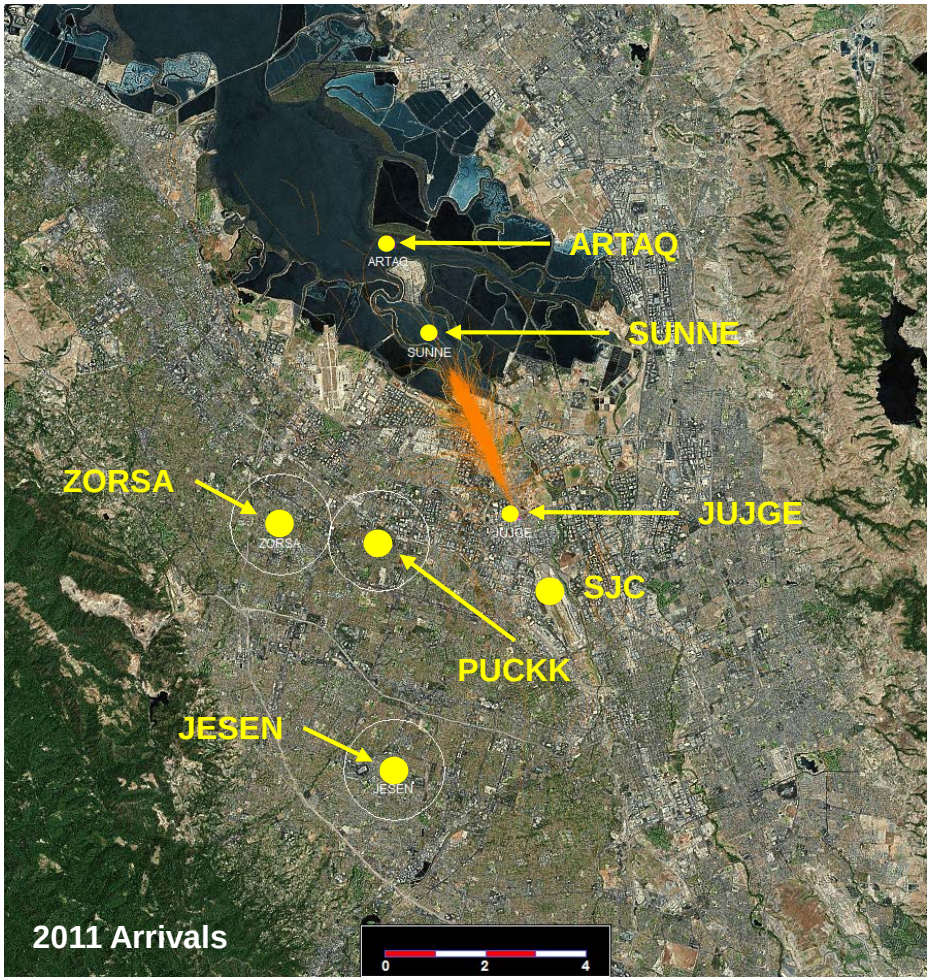
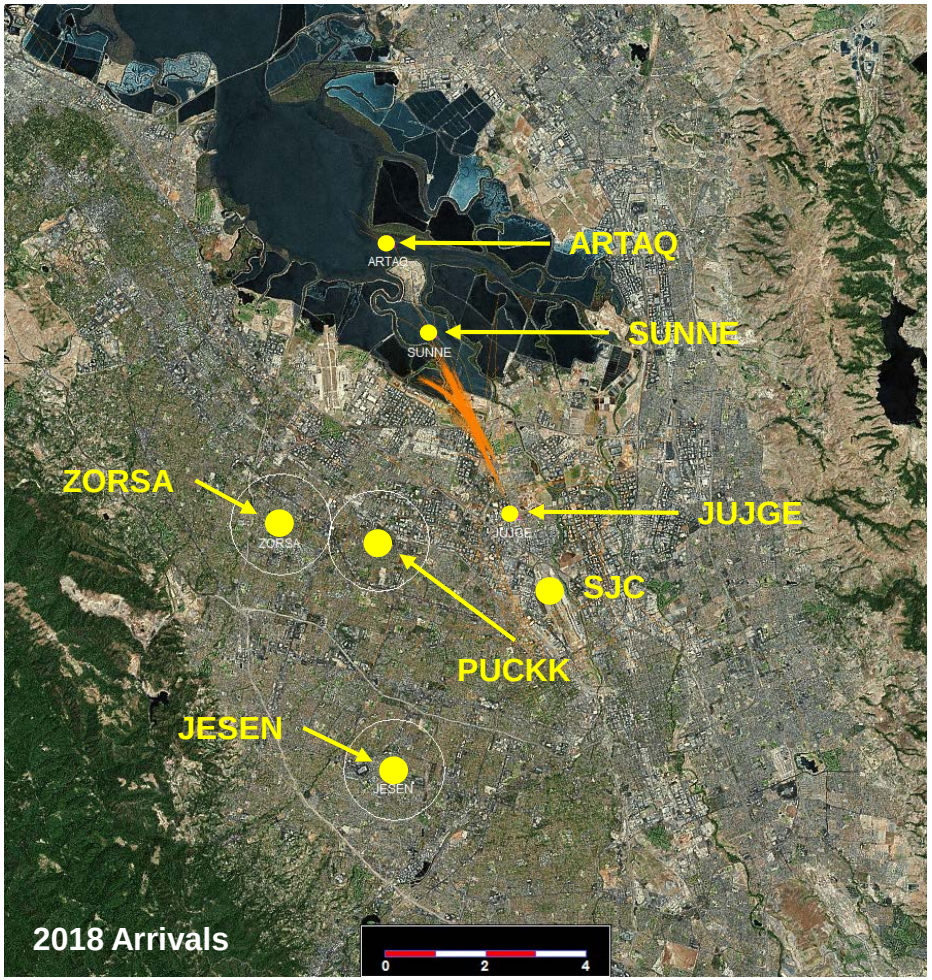
Federal Aviation Administration

SJC South Flow
Arrivals by Altitude
(Static Image)





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Federal Aviation Administration

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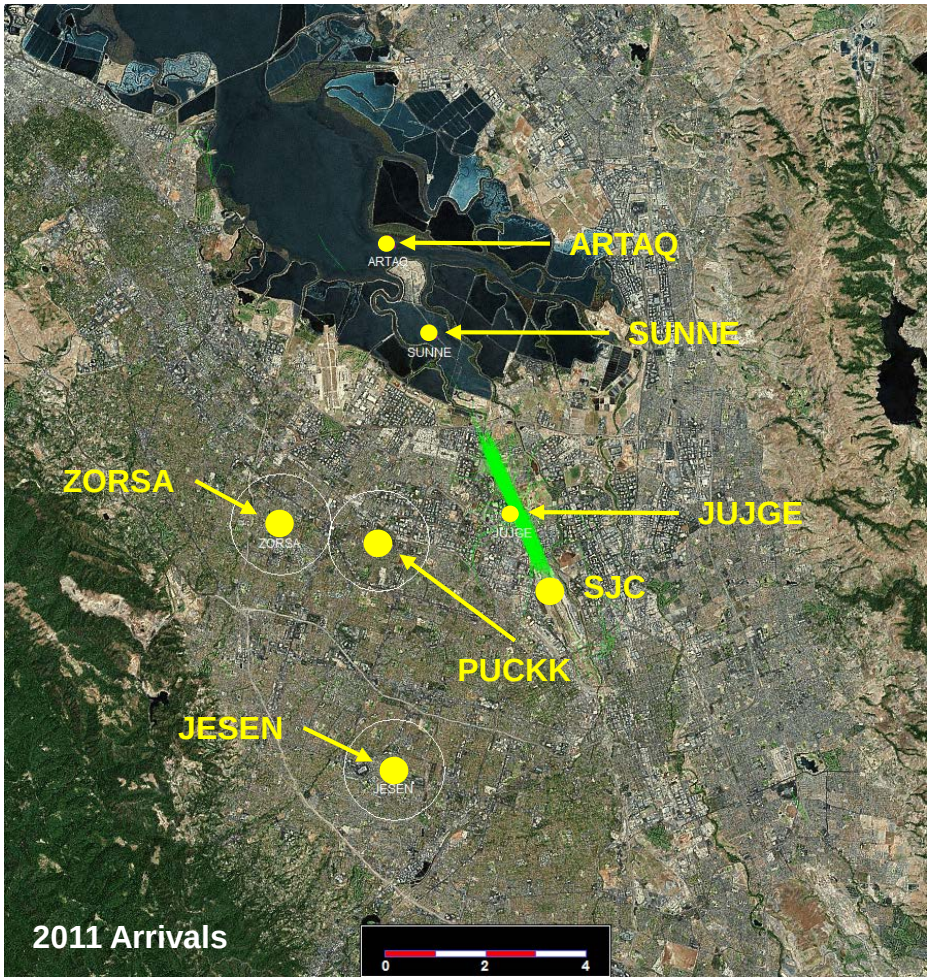

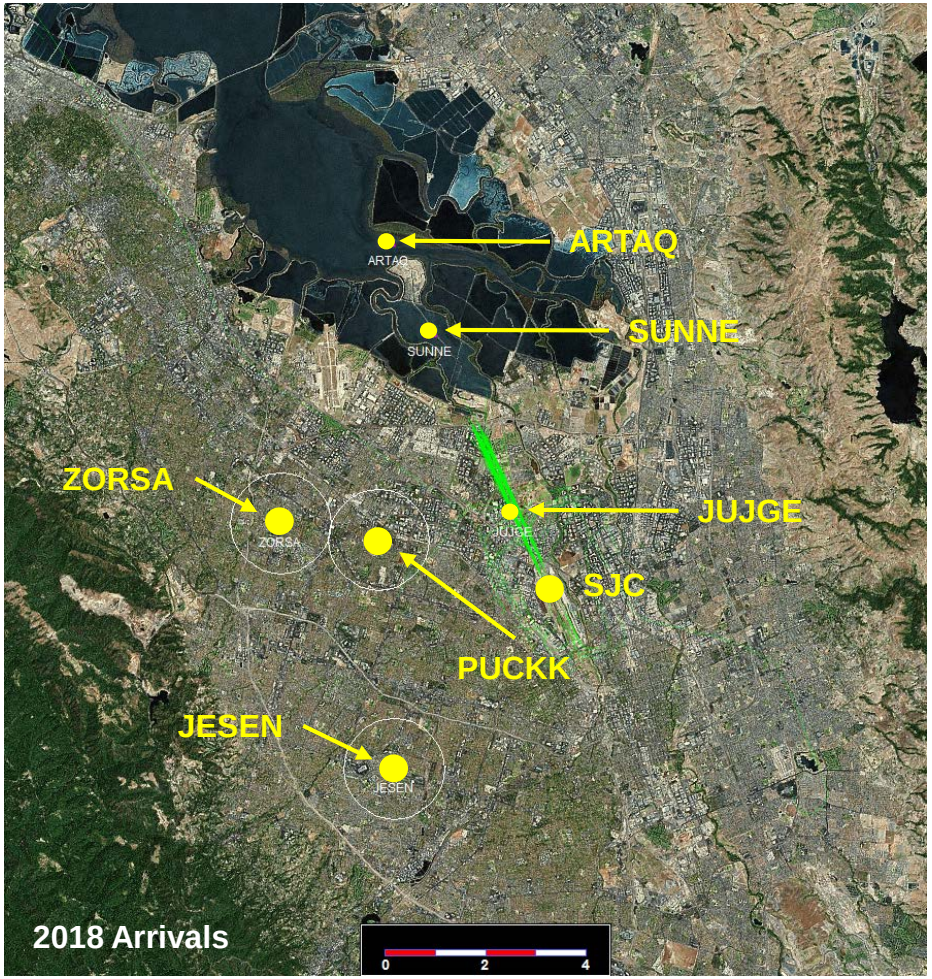

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Federal Aviation Administration

Data Analysis

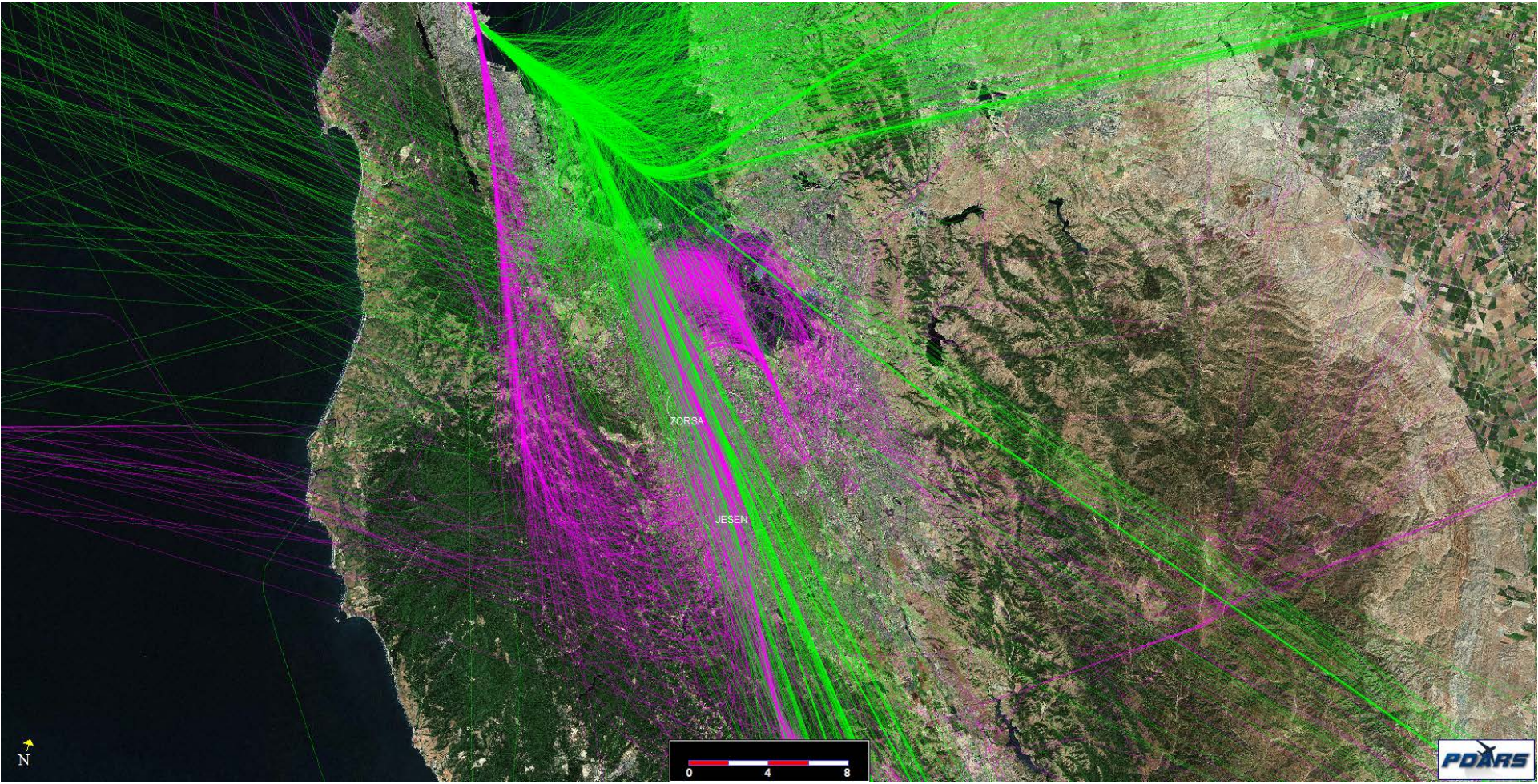
The Ad Hoc Advisory Committee on South Flow Arrivals met on March 23, 2018. The following data analysis is in response to questions posed to the FAA during the meeting.

Northern California TRACON (NCT) radar data was analyzed in response to these Requests and Questions.

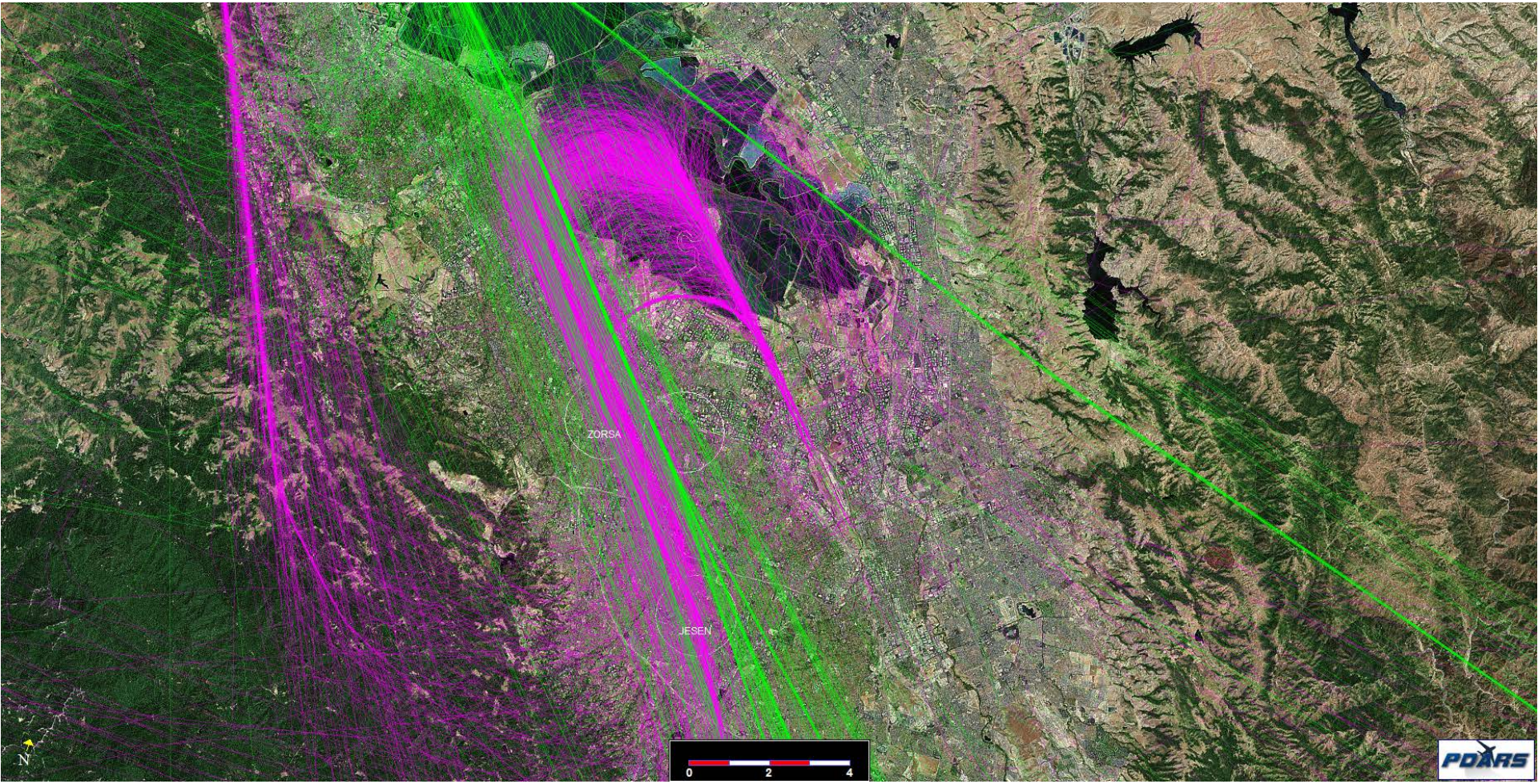
The following analysis compares the January, 2018 SJC data to SFO Runway 10 L/R departure data.

- January, 2018 – 1,262 SJC South Flow arrival aircraft
- March, 2018 – 1,124 SFO Runways 10 departure aircraft
- January, 2018 – 17,904 SFO Runways 28 arrival aircraft

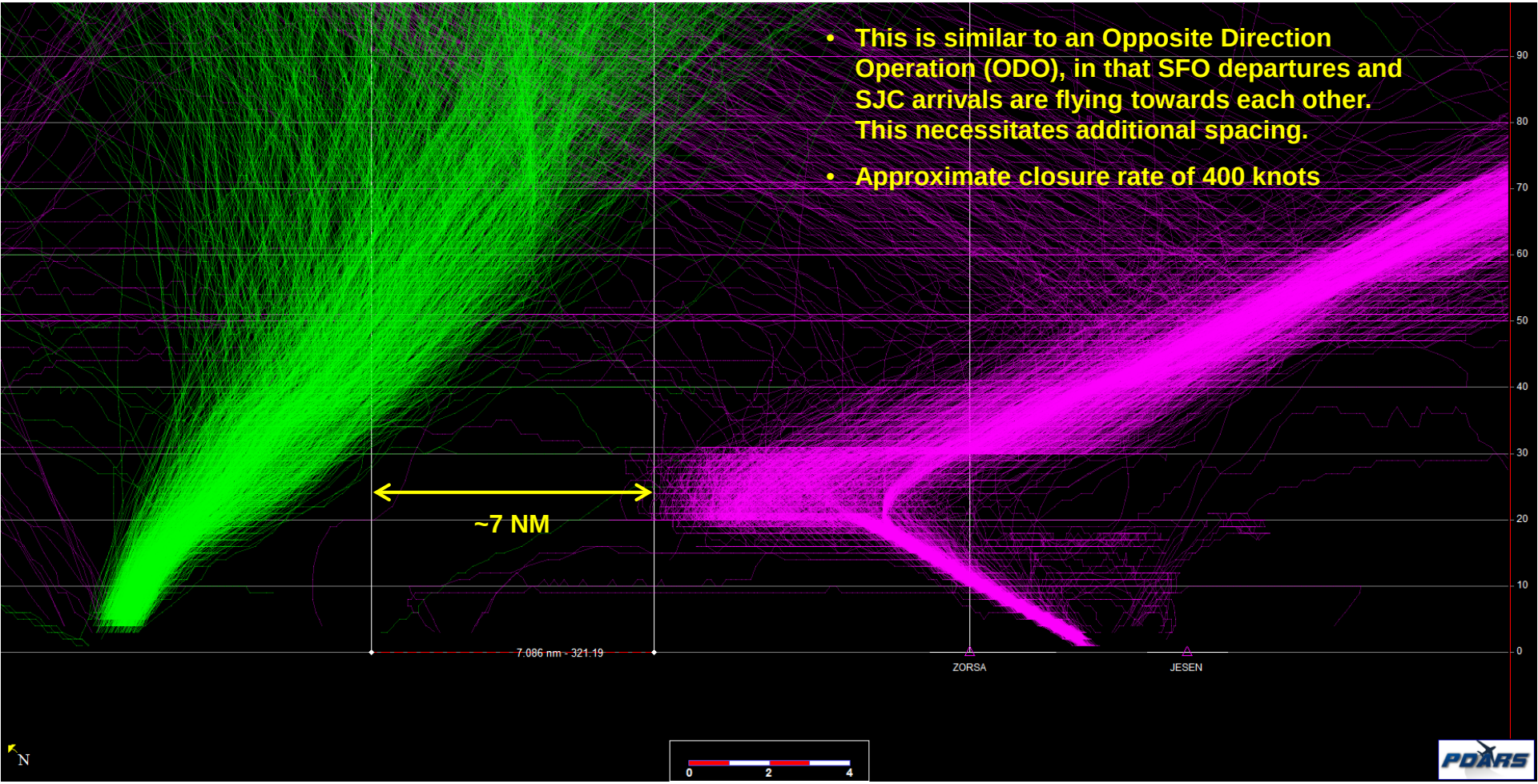
SJC Runway 12 L/R Arrivals
SFO Runway 10 L/R Departures
(Static Image)



SJC Runway 12 L/R Arrivals
SFO Runway 10 L/R Departures
(Static Image)

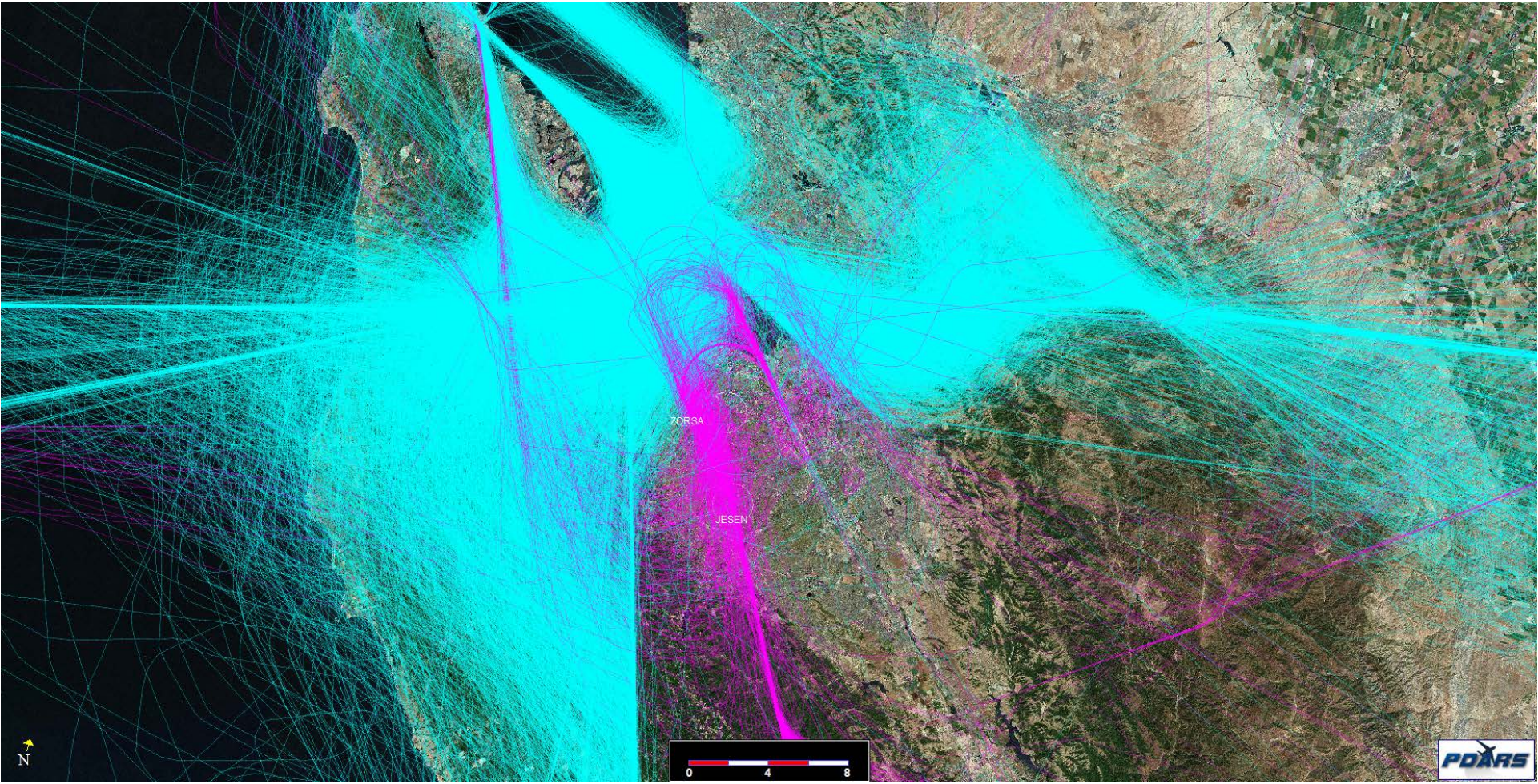


SJC Runway 12 L/R Arrivals
SFO Runway 10 L/R Departures
(Static Image)

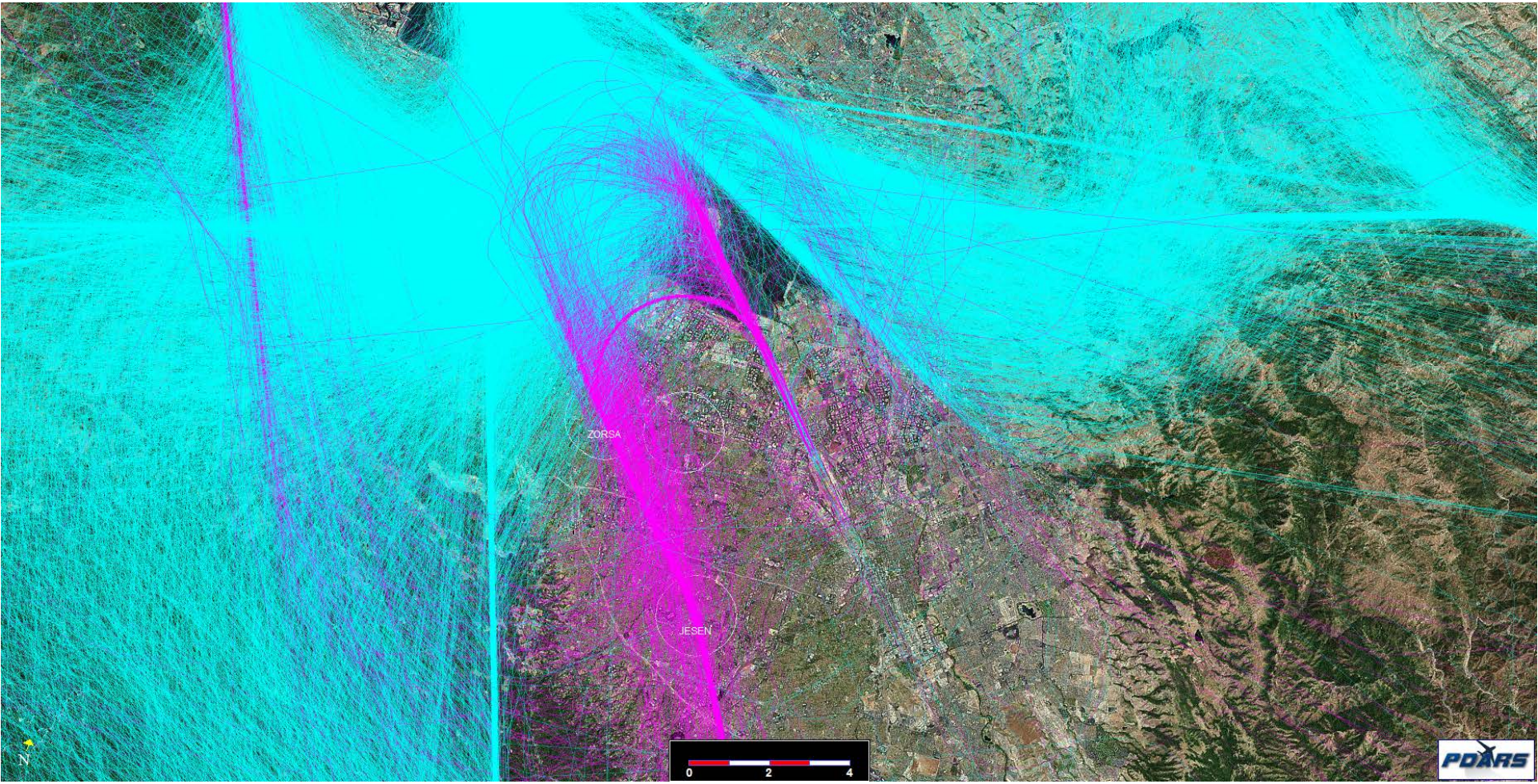


- This is similar to an Opposite Direction Operation (ODO), in that SFO departures and SJC arrivals are flying towards each other. This necessitates additional spacing.
- Approximate closure rate of 400 knots

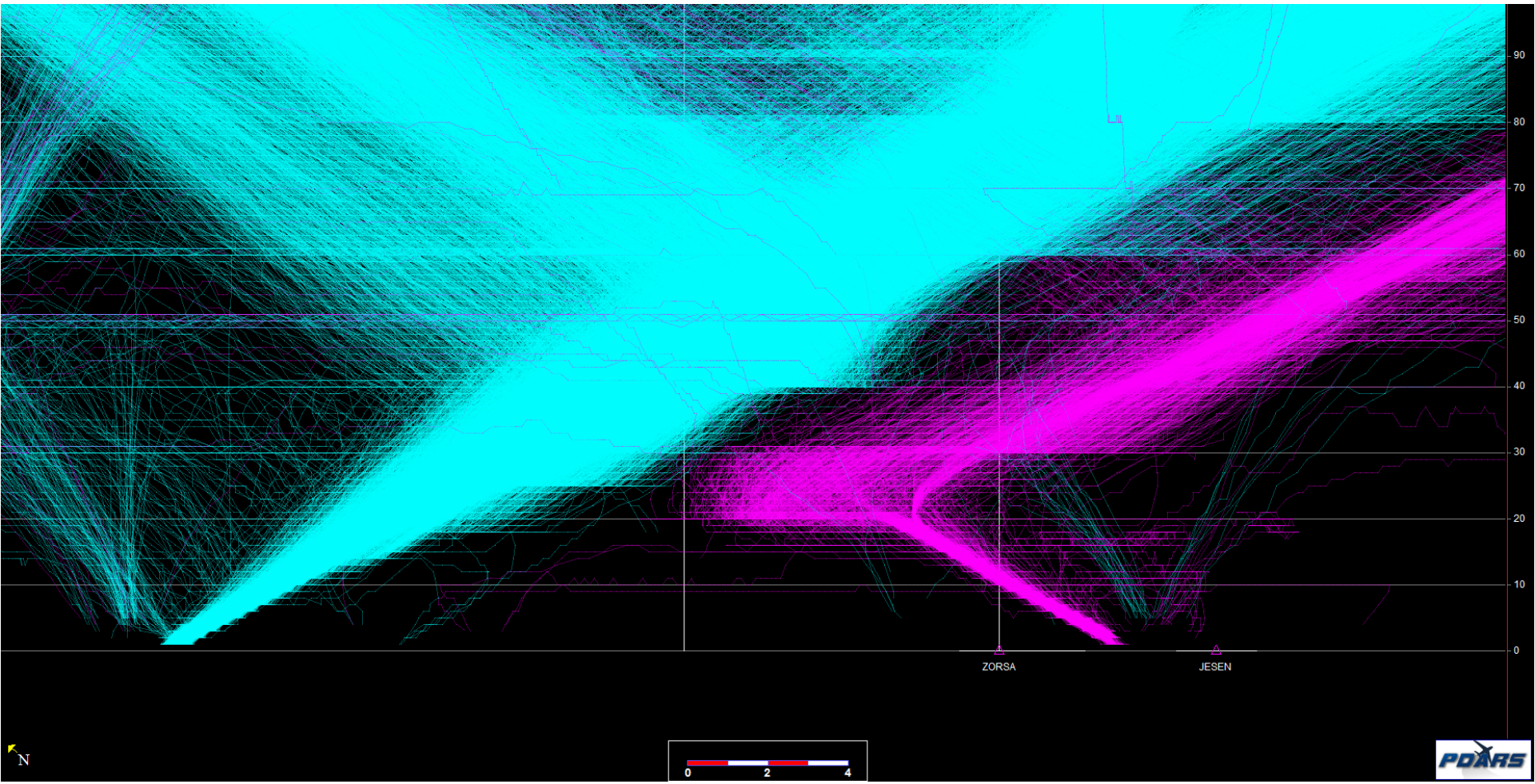
SJC Runway 12 L/R Arrivals
SFO Runway 28 L/R Arrivals
(Static Image)



SJC Runway 12 L/R Arrivals
SFO Runway 28 L/R Arrivals
(Static Image)



SJC Runway 12 L/R Arrivals
SFO Runway 28 L/R Arrivals
(Static Image)



Kazmierczak, Matthew

From: Gary Waldeck <gcwaldeck@gmail.com>
Sent: Friday, April 13, 2018 5:14 PM
To: Kazmierczak, Matthew; 'Glenn Hendricks'
Subject: Additional Suggestions on SJC South Flow arrivals

Matthew and Glenn
Attached is the email message that Marie-Jo Fremont mailed to the Cmte members.
Please include her message as a part of today's minutes as a part of the public comments.
Thank you,
Gary

Gary Waldeck
GCWaldeck@Gmail.com
(510) 219-9464 (Office/Cell)

From: Marie-Jo Fremont [mailto:]
Sent: Thursday, April 12, 2018 9:34 AM
To:
Subject: Additional Suggestions on SJC South Flow arrivals

Dear Committee member,

First and foremost, thank you for your continued work and support to resolve the severe noise problems created by the FAA NextGen implementation in our Metroplex, and in particular the changes to the SJC south flow arrivals.

I was not able to attend the March 23, 2018 meeting but listened to the audio tape and reviewed the associated materials.

Below are some proposed additional suggestions that I would like the Committee to consider:

1. **Ask the FAA to share what the airlines requested when they asked for new procedures**.
    a. Having examples of previous requests would help the Committee understand how to better communicate its needs to the FAA.

2. Ask the FAA to share the Environmental Assessment report (data, analyses, and conclusions) for the changes in the SJC South Flow procedures.

a. The FAA presentation on March 23, 2018 demonstrates clearly that changes have occurred. Did the FAA conduct an environmental analysis? If so, can the FAA share the report?

3. **Ask the FAA if the SJC south flow flights that are vectored north to turn over Palo Alto come in and out of the SJC airspace.** If they do, does this create a potential safety issue given the proximity of the Palo Alto Airport (PAO) and the SFO SERFR arrivals that routinely fly below 4,000 ft near the MENLO waypoint?

Anecdotal evidence: I routinely experience SJC south flow arrivals over my Palo Alto house at altitudes below 2,500 ft (few are between 2500 ft and 3,000 ft; I have also experienced some as low as 1,800 ft).

4. Simplify Mitigation List spreadsheet

a. **Remove Feasibility column** because Feasibility can encompass multiple aspects (such as technical, change management, acceptance by stakeholders). Instead ask the FAA to assess the technical feasibility of the proposals and the implementation impact on Air Traffic Control.

b. **Create fewer categories of proposed change and group individual line items**. Examples of possible new categories:

i. "Modify existing procedures": this category could include things such as raise altitude, limit speed, modify ground track.

ii. "Create new procedures": this category could include things such as create new procedure on the east side, create charted visual procedure

iii. "Vector planes over large area": this category could include things such as create multiple vectoring paths, rotate planes between vectoring paths, route planes further north and west

5. **Stay away from using technical terms such as "OPD" and "SFO airspace"** because they have serious implications for people on the ground and the FAA may interpret these words literally

a. "Gliding" or "Flying at idle power" are much better words than OPD (Optimized Profile Descent) because they are easier to understand and they probably reflect what you want. OPD is a procedure that does NOT require planes to fly idle. Although portrayed as "gliding down the banister" on the FAA literature, OPDs are not quiet at low altitudes. Many residents who live under the SERFR OPD (SERFR is an SFO arrival route) can attest to the high level of noise created by the planes on that procedure. Furthermore, OPDs concentrate planes in a narrow corridor, which is why residents have labeled them "sacrificial noise corridors". Please do not request OPDs for SJC south flow arrival procedures unless flying altitudes over residential areas are at least 7,000 ft Above Ground Level.

b. Any reference to "SFO airspace" may be interpreted by the FAA as a request to modify the existing Class B SFO airspace. Requesting a change to the SFO airspace is a big undertaking.

6. **Combine items PP, QQ, and RR into one item**.

a. In my March 8 email, I proposed a scenario to allow SJC south flow arrivals to use new flight paths. This scenario was built upon 3 different actions that must all take place to represent a viable solution.

b. In addition, the proposed changes should not be labeled as a request to "Provide SJC with more airspace" given that the new SJC south flow flight paths may not conflict with the existing SFO Class B airspace. The proposed changes should be under a broad category such as "create new procedures".

Finally, I have attached below different images of the airspace controlled by each airport in the Bay area to help committee members better understand the current layout and constraints.

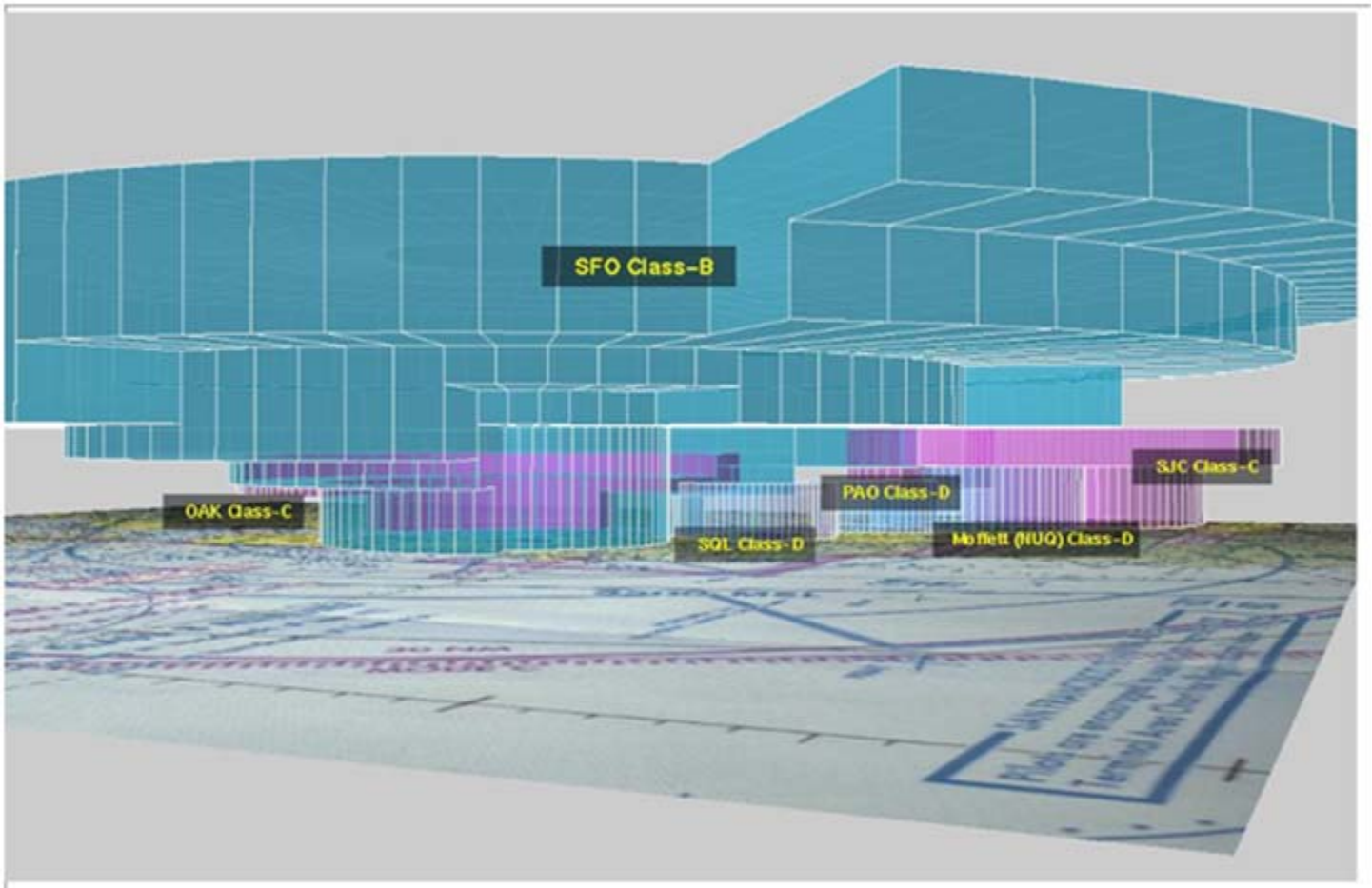
Thank you for considering my input. I plan to attend the meeting tomorrow.

Best regards,

Marie-Jo Fremont

Palo Alto resident


OAKLAND
SAN FRANCISCO
SAN JOSE
SAN JOSE CLASS C
42
48
36
24
SFC
40 SFC
FOR REASONS OF NATIONAL SECURITY
VFR/IFR ARE PROHIBITED TO ANY FLIGHT
ATTEMPTING TO OPERATE IN THIS AREA
CTC NORCAL APP WITHIN
20 NM OF KSJC 3,273.35
CTC NORCAL APP WITHIN
20 NM OF KOAK 135.65 370.5
CTC NORCAL APP WITHIN
20 NM OF KSJC 120.1 299.25
NIGHT FLIGHT
OPERATIONS
IN THIS AREA
TAC

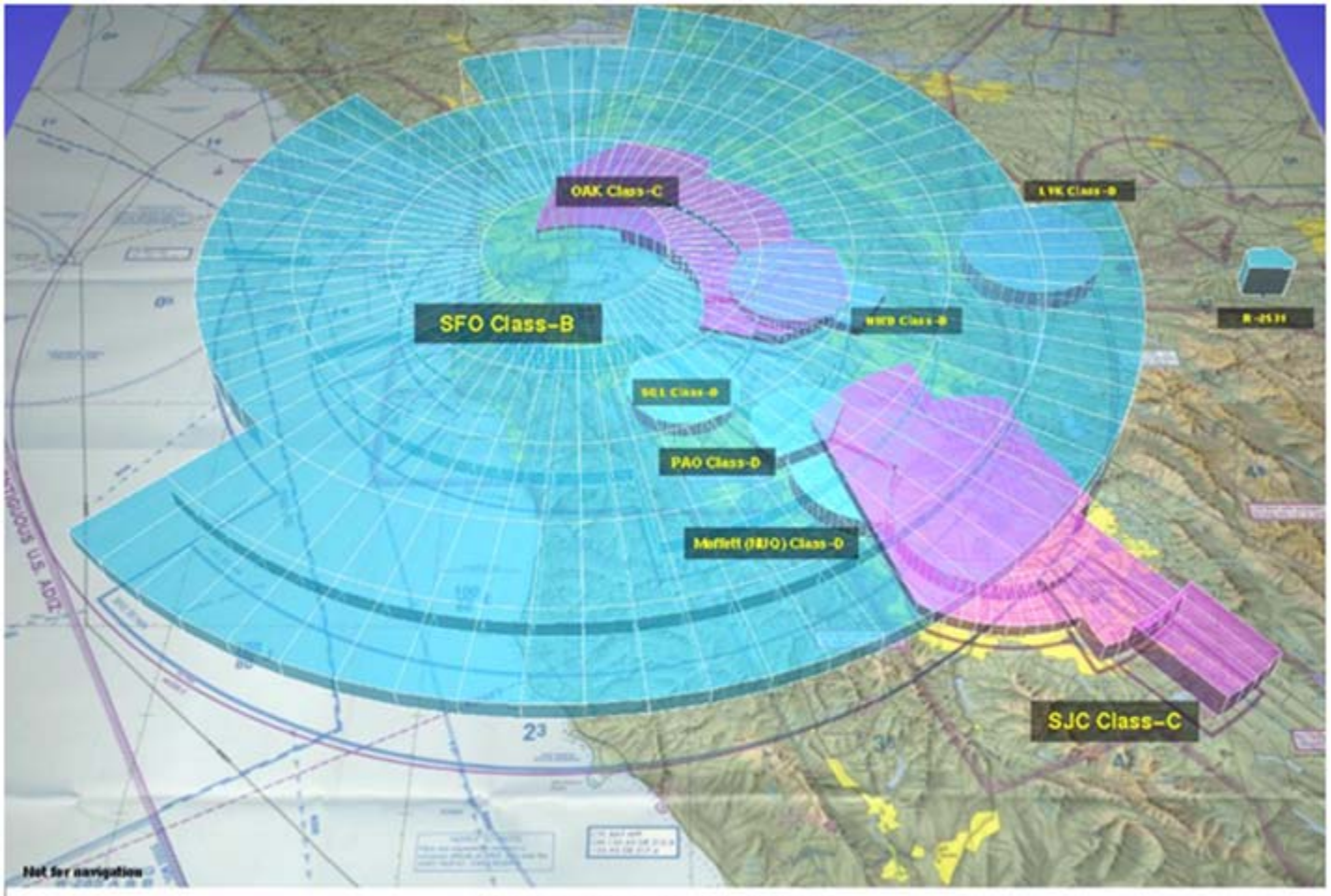


"View from above the Pacific Ocean"

SAN FRANCISCO Class-B airspace

Not to scale. Vertical scaling is approx. 6.875:1 for better visualization of altitudes.
Not to be used for navigation

3D models and image Created by: Gabor Nagy, using EQUINOX-3D:
http://www.equinox3d.com
"Fly-through" animations coming soon!



"A view from space (~120000 feet)"

SAN FRANCISCO Class-B airspace

Not to scale. Vertical scaling is approx. 3.037:1 for better visualization of altitudes (1 horizontal unit= 1NM, 1 vertical unit = 2000 feet).

3D models and image Created by: Gabor Nagy, using EQUINOX-3D™
http://www.equinox3d.com/flying.html

"Fly-through" animations coming soon!

City of San José
AD HOC ADVISORY COMMITTEE ON SOUTH FLOW ARRIVALS

Meeting Minutes of the Ad Hoc Advisory Committee on South Flow Arrivals

FRIDAY SAN JOSE, CALIFORNIA April 13, 2018

The Ad Hoc Advisory Committee on South Flow Arrivals held a meeting on April 13, 2018 at 1:00 p.m. at the San José International Airport Administrative Offices in the McDonnell Douglas & Boeing Conference Rooms.

ATTENDEES:

COMMISSIONERS

Glenn Hendricks (Chair)	- Present
Chappie Jones (Vice-Chair)	- Present
Mary-Lynne Bernald	- Absent
Steven Scharf	- Present
Lynette Lee Eng	- Present
Gary Waldeck	- Present at 2:54pm
Bob Nuñez	- Present at 1:09pm
Rowena Turner	-Absent
Rene Spring	- Present
Lydia Kou	- Present
Lisa Matichak	- Present
Raul Peralez	- Absent
Kathy Watanabe	- Present
Jeffrey Cristina	- Absent

AIRPORT STAFF PRESENT
Matthew Kazmierczak
Janelle Adams
Michael Winans

FAA STAFF:
Tony DiBernardo
Perry Oleck
Joe Brooke

I. Call to Order and Orders of the Day

The meeting was called to order at 1:03 p.m. by Chair Hendricks with eight Committee members in attendance and six absent.

II. Consent Calendar

A. Approve the Minutes for the March 23, 2018 meeting

Action: Upon motion by Committee Member Vice-Chair Jones, seconded by Committee Member Lee Eng, to approve the meeting minutes, the motion passed 8-0, 6 absent.

Documents Filed: 18-03-23 SIGNED Minutes of Ad Hoc Advisory Committee Meeting

III. Chair/Vice Chair Remarks

None.

IV. Old Business

A. Items on the Ad Hoc Advisory Committee Workplan

Joe Brooke and Perry Oleck from the FAA followed up on questions regarding data analysis from the March 23, 2018 Ad Hoc Advisory Meeting. The slides showed the percentage of south flow arrivals thus far in calendar year 2018 and the altitude levels in 2011 compared to 2018. The FAA also compared SFO and SJC's traffic comparison for January 2018 and March 2018.

The Committee recommended the FAA to bring staff to the next meeting that can fully answer questions from the mitigation list, specifically items L-TT and the feasibility of using the Eastern approach.

The FAA identified which items could be answered by Airport staff at the next meeting.

Documents Filed: 18-04-13 FAA Presentation

V. Public Comment

Members of the public were invited to speak on noise mitigation comments for the Committee.

Speakers include: Jennifer Landesmann, Robert Holbrook, Shari Emling, Joel Pullen, Zachary Kaufman, Darlene Yaplee, Marie-Jo Fremont, Steve Harris and Toni Rath.

VI. Future Meeting Schedule and Agenda Items

The next meeting will be at the San José International Airport Administrative Offices on Friday, April 27, 2018. The next meeting is intended to review items L-TT on the noise

mitigation spreadsheet and speak with the FAA on various approaches.

VII. Adjournment

The meeting was adjourned at 3:53 pm.

ATTEST:

Glenn Hendricks
Chairperson

Matthew Kazmierczak
Manager of Strategy & Policy

Ad Hoc Advisory Committee on South Flow Arrivals

Councilmember Jeffrey Cristina – Campbell	Vice Mayor Lisa Matichak — Mountain View
Mayor Savita Vaidhyanathan— Cupertino	Councilmember Lydia Kou — Palo Alto
Vice Mayor Jean (John) Mordo — Los Altos	Mayor Mary-Lynne Bernald — Saratoga
Mayor Gary Waldeck — Los Altos Hills	Councilmember Charles "Chappie" Jones — San José
Councilmember Bob Nuñez – Milpitas	Councilmember Raul Peralez — San José
Councilmember Rowena Turner — Monte Sereno	Vice Mayor Kathy Watanabe — Santa Clara
Councilmember Rene Spring — Morgan Hill	Mayor Glenn Hendricks — Sunnyvale

1:00 P.M. March 23, 2018 San José Airport
Boeing/McDonnell Douglas
Conference Room
1701 Airport Boulevard, Suite B-1130
San José, CA 95110

MEETING AGENDA

I. Call to Order and Orders of the Day

NOTICE OF PARTICIPATION OF COMMITTEE MEMBER BY TELEPHONE

Committee Member Mary-Lynne Bernald intends to participate via telephone from the following location:

20400 Saratoga-Los Gatos Road
Saratoga, CA 95070

II. Consent Calendar
   A. Approve the Minutes for the March 9, 2018

III. Chair/Vice Chair Remarks

IV. Old Business

   A. Items on the Ad Hoc Advisory Committee Workplan
      1) Informational Briefing about South Flow
      2) Identification of Possible Noise Impact Reduction Measures
         - Review, discuss, and edit list of possible mitigation measures
         - Report from working group on mitigation ideas
      3) Discussion of Possible Noise Mitigation Measures
         - Discussion merits/feasibility
         - Prioritize measures (rank order)
      4) Adopting Recommendations
      5) Adoption of Final Report and Committee Recommendations

V. Public Comments (on items not on the agenda but within the subject matter responsibility of the Committee)

VI. Future Meeting Schedule and Agenda Items

Schedule of Upcoming Committee Meetings:

Date	**Location**	**Time**
Friday, April 13, 2018	San José Airport Boeing Conference Room	1:00 pm
Friday, April 27, 2018	San José Airport Boeing Conference Room	1:00 pm
Friday, May 18, 2018	San José Airport Boeing Conference Room	1:00 pm

Agenda Items:
The Committee Agenda is set based on the workplan. The Committee will work through the workplan, which shall roll over from one meeting to the other.

Copies of the meeting minutes, agendas, and other material are available online at:
http://www.flysanjose.com/Ad_Hoc_Advisory_Committee

VII. Adjournment

OPEN FORUM: You may speak to the Committee about any item that is on the agenda, and you may also speak during Open Forum on items that are not on the agenda and are within the subject matter jurisdiction of the Committee. If you wish to speak to the Committee, please refer to the following guidelines:

- **Fill out a blue Speaker's Card and submit it to the Airport staff seated at the front table. Do this before the meeting or before the item is heard.** This will ensure that your name is called for the item(s) that you wish to address, and it will help ensure the meeting runs smoothly for all participants.
- When the Committee reaches your item on the agenda, the Chair will open the public hearing and call your name.
- Each speaker generally has two minutes to speak per item. The amount of time allotted to speakers may vary at the Chair's discretion, depending on the number of speakers or the length of the agenda.

Please be advised that, by law, the Committee is unable to discuss or take action on issues presented during Open Forum. According to State Law (the Brown Act) items must first be noticed on the agenda before any discussion or action.

Agendas, staff reports and some associated documents for the Committee items may be viewed on the Internet at http://flysanjose.com/Ad_Hoc_Advisory_Committee

To request an accommodation or alternative format under the Americans with Disabilities Act for City-sponsored meetings, events, or printed materials, please call (408) 392-3640 as soon as possible, but at least three business days before the meeting.

Please direct correspondence and questions to:

City of San José
Attn: Matthew Kazmierczak.
1701 Airport Boulevard, Suite B-1130
San José, California 95110
Tel: (408) 392-3640 Fax: (408) 441-4589
Email: MKazmierczak@sjc.org

Committee Members

Primary	Alternate
Councilmember Jeffrey Cristina Campbell Jeffc@cityofcampbell.com	Mayor Liz Gibbons Campbell LizG@cityofcampbell.com
Mayor Savita Vaidhyanathan Cupertino svaidhyanathan@cupertino.org	Councilmember Steven Scharf Cupertino sscharf@cupertino.org
Vice Mayor Jean Mordo Los Altos jmordo@losaltosca.gov	Councilmember Lynette Lee Eng Los Altos lleeeng@losaltosca.gov
Mayor Gary Waldeck Los Altos Hills GCWaldeck@losaltoshills.ca.gov	
Councilmember Bob Nuñez Milpitas bnunez@ci.milpitas.ca.gov	Vice Mayor Marsha Grilli Milpitas mgrilli@ci.milpitas.ca.gov
Councilmember Rowena Turner Monte Sereno rturner@cityofmontesereno.org	Vice Mayor Evert Wolsheimer Monte Sereno ewolsheimer@cityofmontesereno.org
Councilmember Rene Spring Morgan Hill Rene.Spring@morganhill.ca.gov	Councilmember Larry Carr Morgan Hill Larry.Carr@morganhill.ca.gov
Vice Mayor Lisa Matichak Mountain View Lisa.Matichak@mountainview.gov	Councilmember Lenny Siegel Mountain View Lenny.Siegel@mountainview.gov
Councilmember Lydia Kou Palo Alto Lydia.Kou@cityofpaloalto.org	Councilmember Eric Filseth Palo Alto Eric.Filseth@cityofpaloalto.org
Mayor Mary-Lynne Bernald Saratoga mlbernald@saratoga.ca.us	Councilmember Howard Miller Saratoga hmiller@saratoga.ca.us

Primary	Alternate
Councilmember Charles “Chappie” Jones San José District1@sanjoseca.gov	Councilmember Johnny Khamis San José District10@sanjoseca.gov
Councilmember Raul Peralez San José District3@sanjoseca.gov	
Vice Mayor Kathy Watanabe City of Santa Clara kwatanabe@santaclaraca.gov	Councilmember Teresa O’Neill City of Santa Clara toneill@santaclaraca.gov
Mayor Glenn Hendricks Sunnyvale HendricksCouncil@sunnyvale.ca.gov	Councilmember Larry Klein Sunnyvale KleinCouncil@sunnyvale.ca.gov

Ad Hoc Advisory Committee Workplan

I. **The South Flow Procedure Presentation**: Why south flow procedure is used, how it works, the conditions requiring its use, and the air traffic environment over the South Bay, with Q&A from the Committee.

II. **Committee Identification of Possible Noise Impact Reduction Measures** – What are possible measures to reduce the noise impacts of the south flow procedure without reducing safety and efficiency of FAA air traffic control management? Possible measures raised in discussions include:

a) Bringing aircraft in at higher altitudes;
b) Greater dispersal of arriving aircraft;
c) Bringing aircraft in over the east of San José instead of over the west of San José.
d) Other possible solutions?

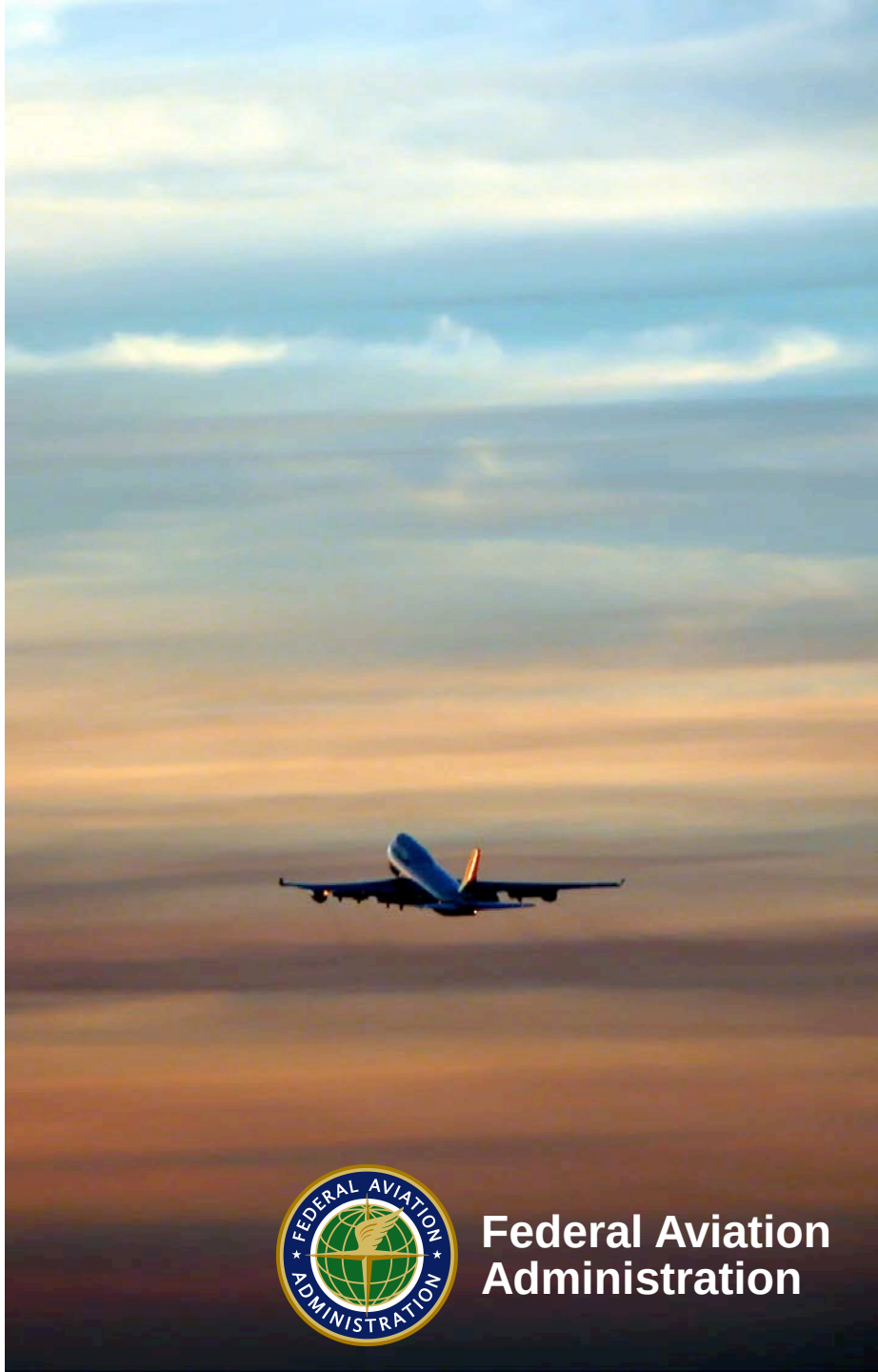
III. **Committee Discussion of Identified Noise Impact Reduction Measures** – An evaluation of what measures should be advanced for consideration to the FAA, given FAA direction on feasibility, safety, and efficiency.

IV. **Adopting Preliminary Recommendation(s)** – After Committee discussion of, and FAA comments on, all identified noise reduction options, preliminary adoption of recommended measures for FAA consideration.

V. **Adoption of Final Report and Committee Recommendations**

San Jose Ad Hoc Advisory Committee on South Flow Arrivals

FAA Data regarding February 28, 2018 Request, Questions, and Next Steps



Data Analysis

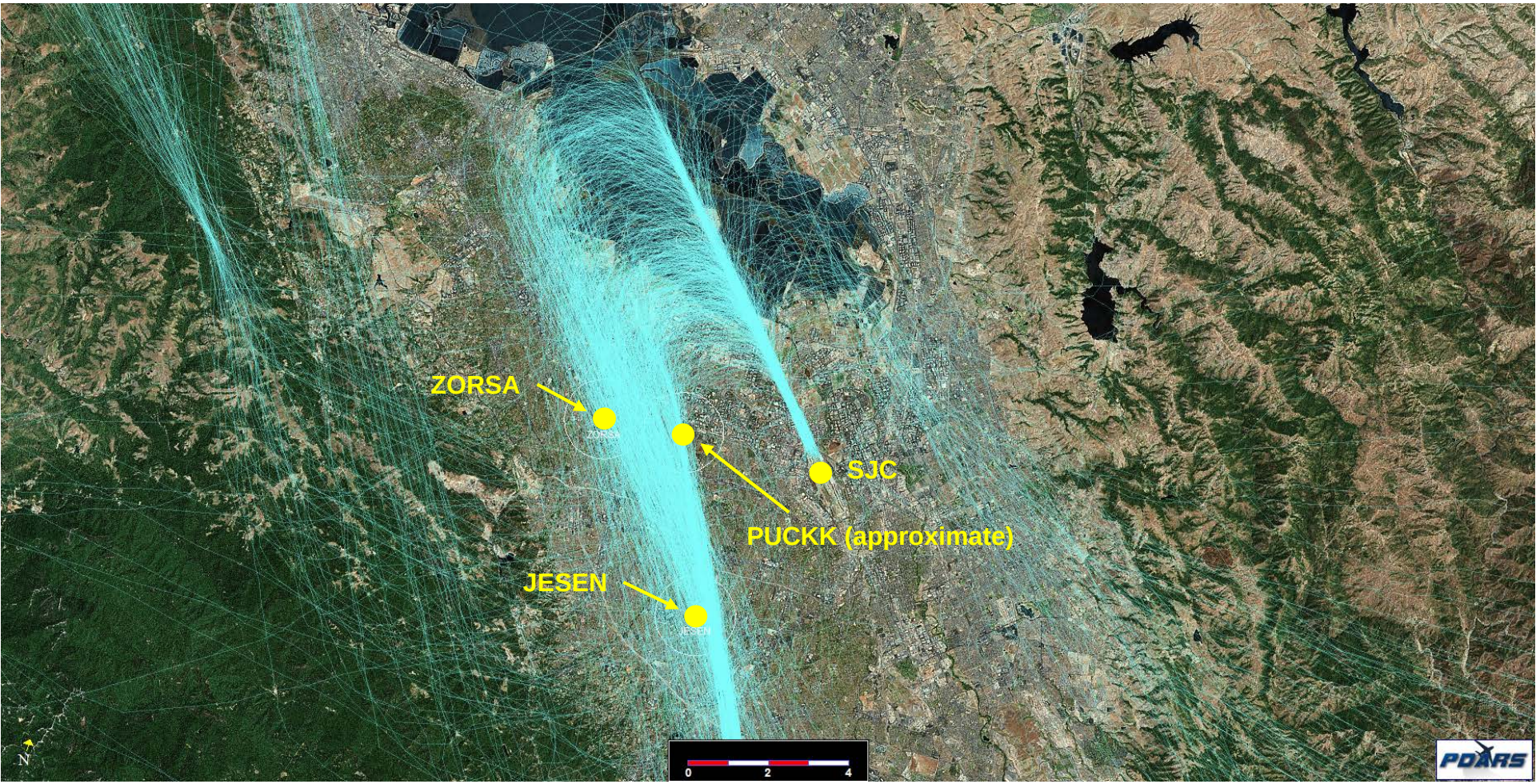
The FAA received the Ad Hoc Advisory committee on South Flow Arrivals Requests, Questions and Next Steps, dated February 28, 2018 on March 5, 2018.

Northern California TRACON (NCT) radar data was analyzed in response to these Requests and Questions.

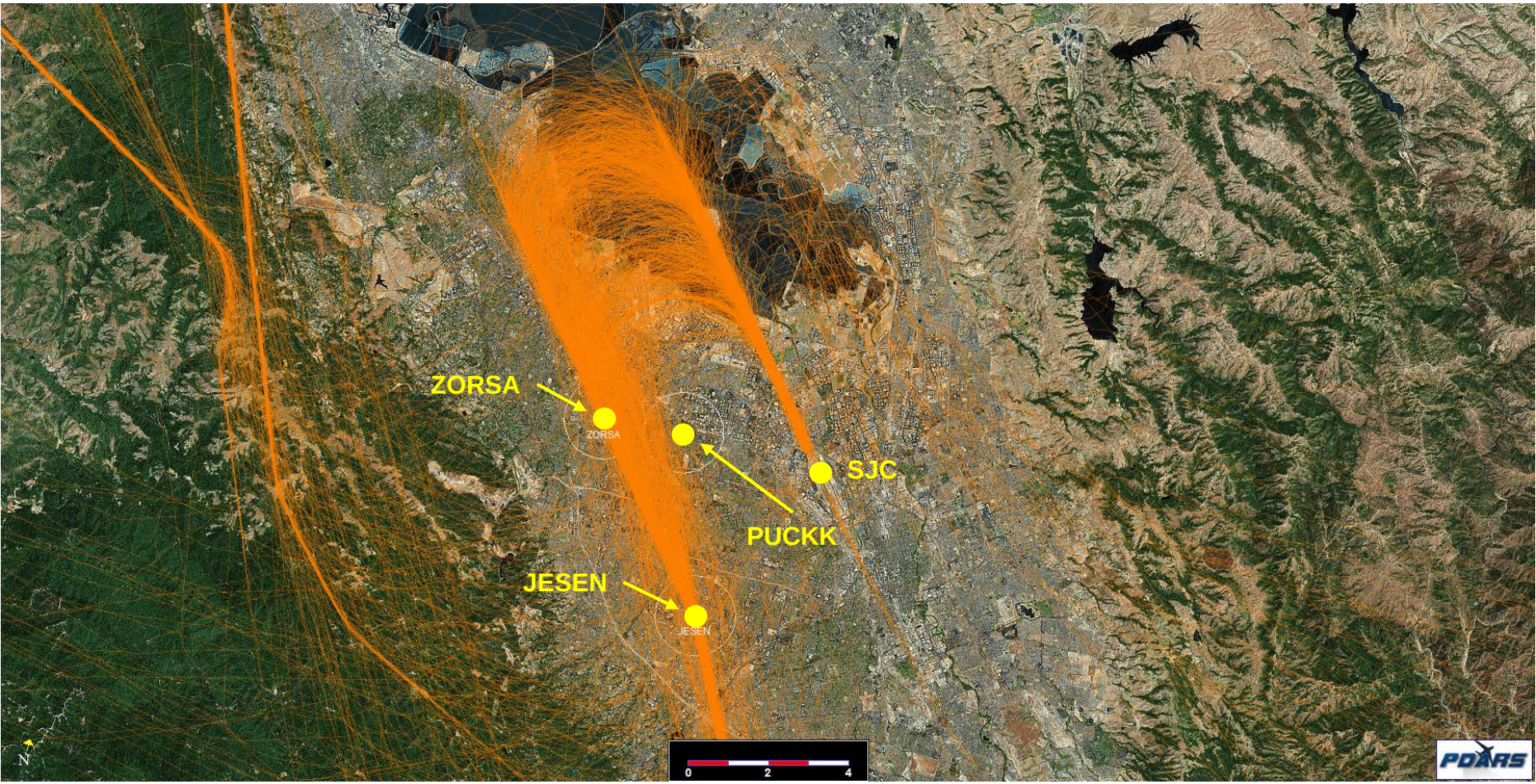
A number of months were reviewed, with the following selected for their similarity in time of year and, more importantly, similar traffic count during San Jose Airport (SJC) South Flow operations.

- February, 2011 – 1,111 SJC South Flow arrival aircraft
- March, 2016 – 1,589 SJC South Flow arrival aircraft
- January, 2018 – 1,262 SJC South Flow arrival aircraft

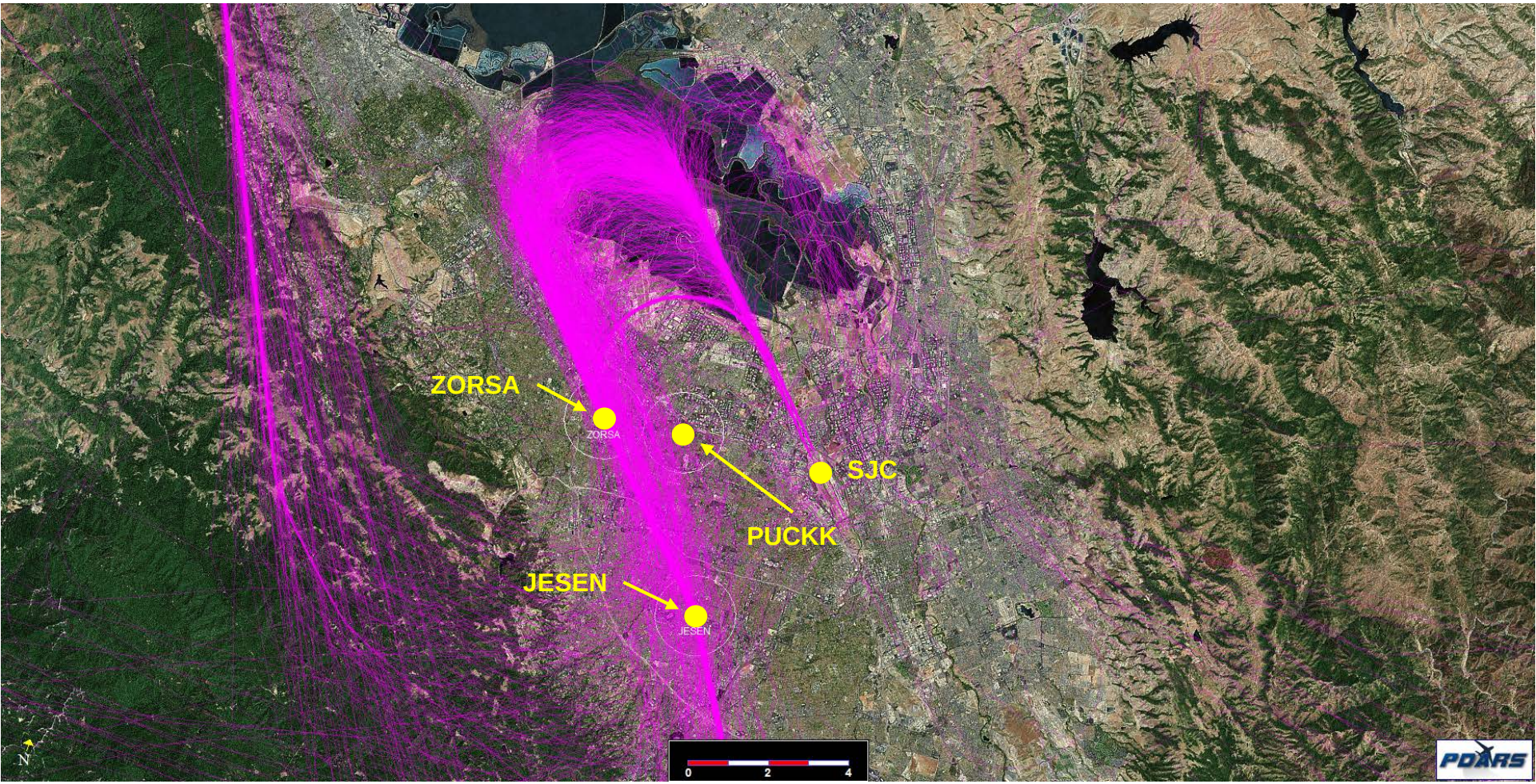
SJC 2011 South Flow
1,111 Arrivals



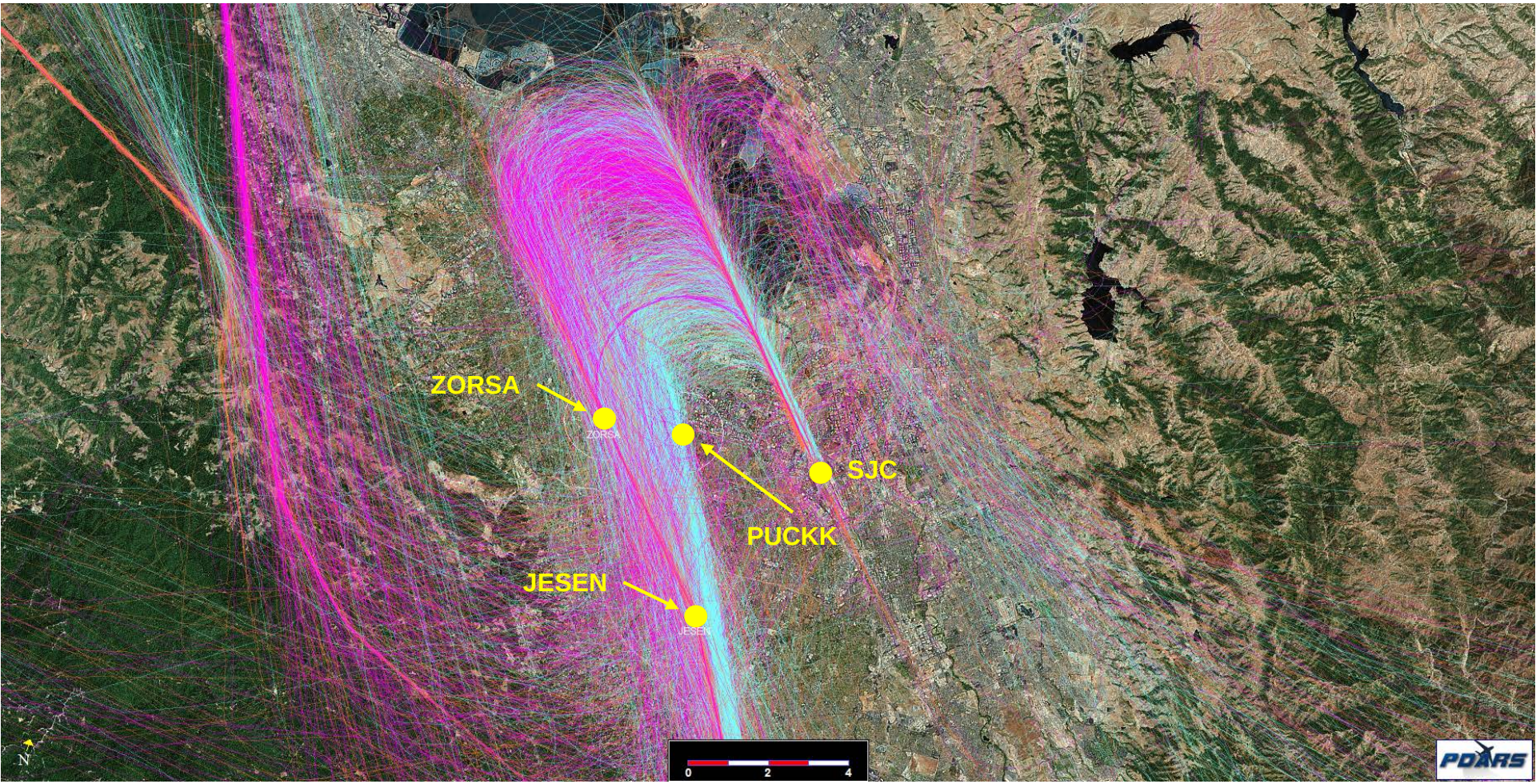
SJC 2016 South Flow
1,589 Arrivals



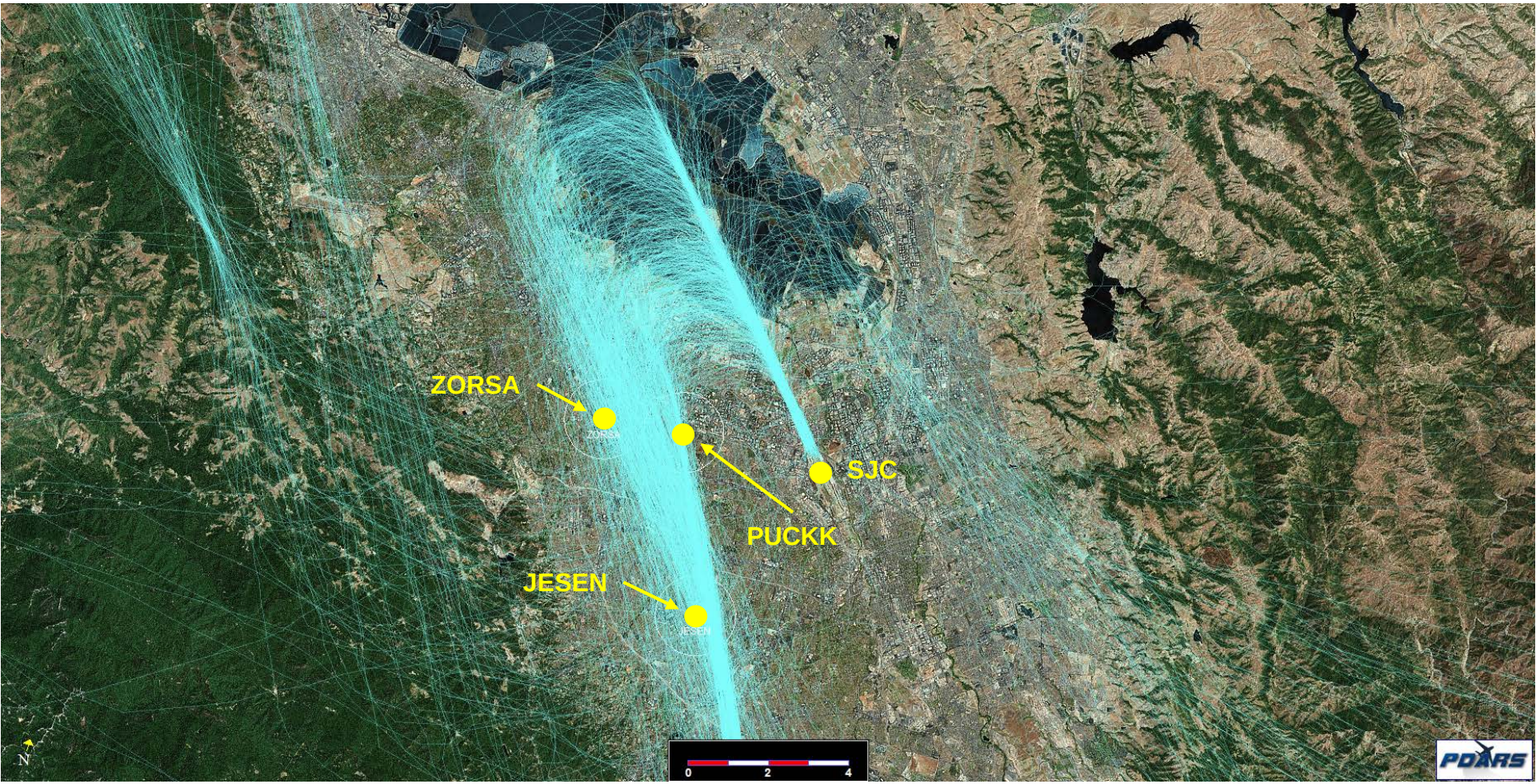
SJC 2018 South Flow
1,262 Arrivals



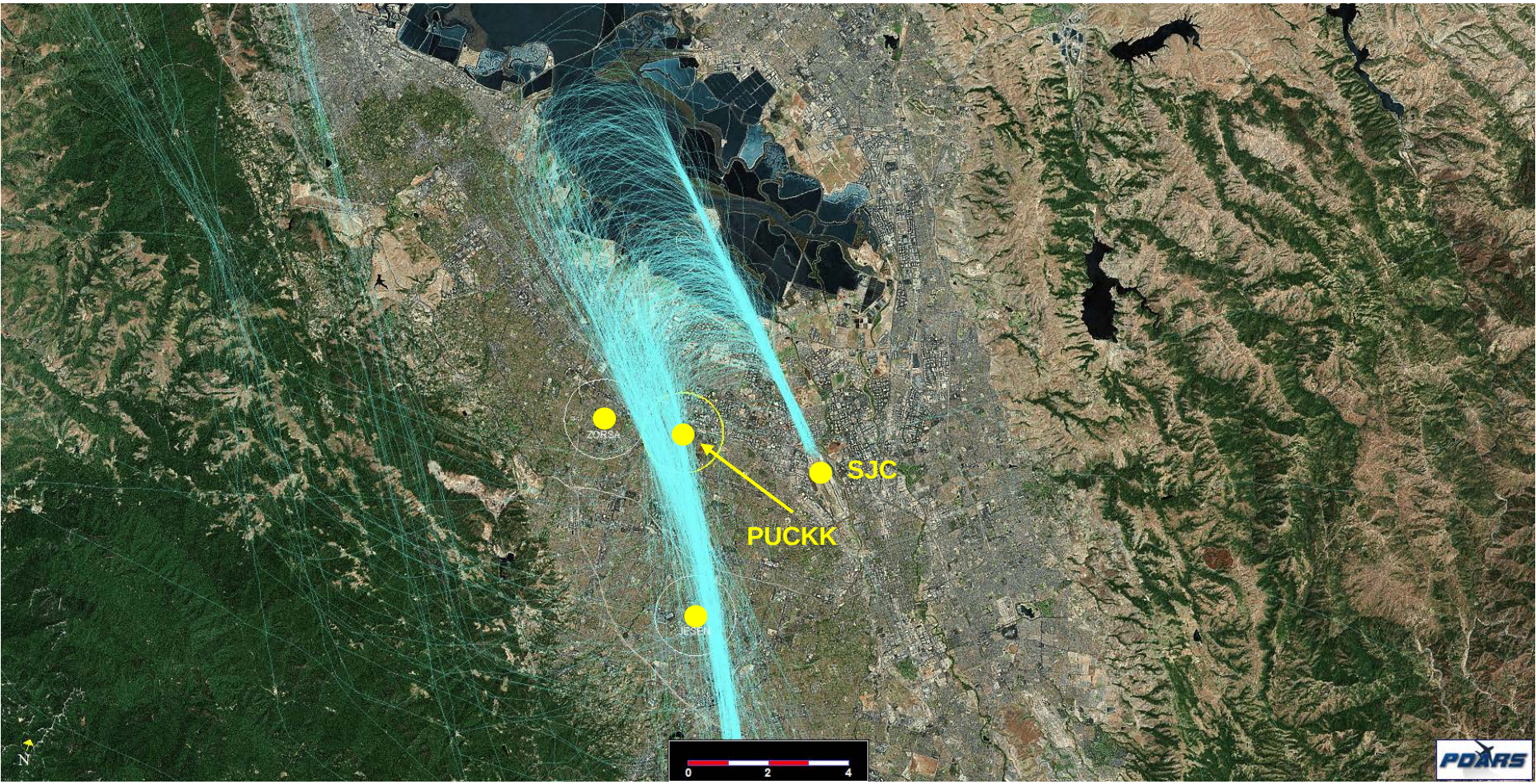
SJC South Flow
‘11, ‘16 and ‘18 Arrivals



SJC 2011 South Flow (repeated)
1,111 Arrivals



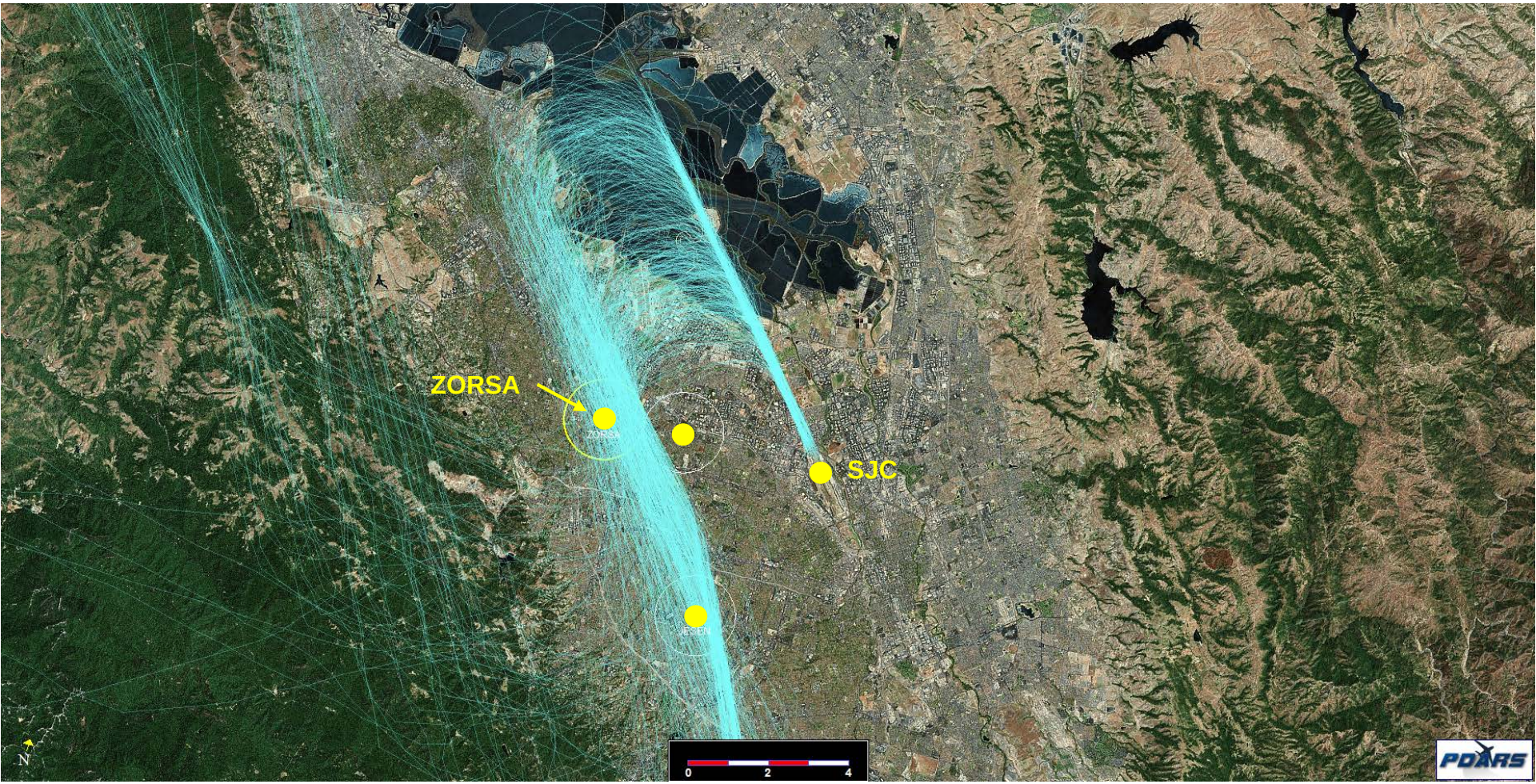
SJC 2011 South Flow
1,111 Arrivals



Tracks through 1 NM radius circle around PUCKK = 506 (45.5%)

Federal Aviation Administration

SJC 2011 South Flow
1,111 Arrivals

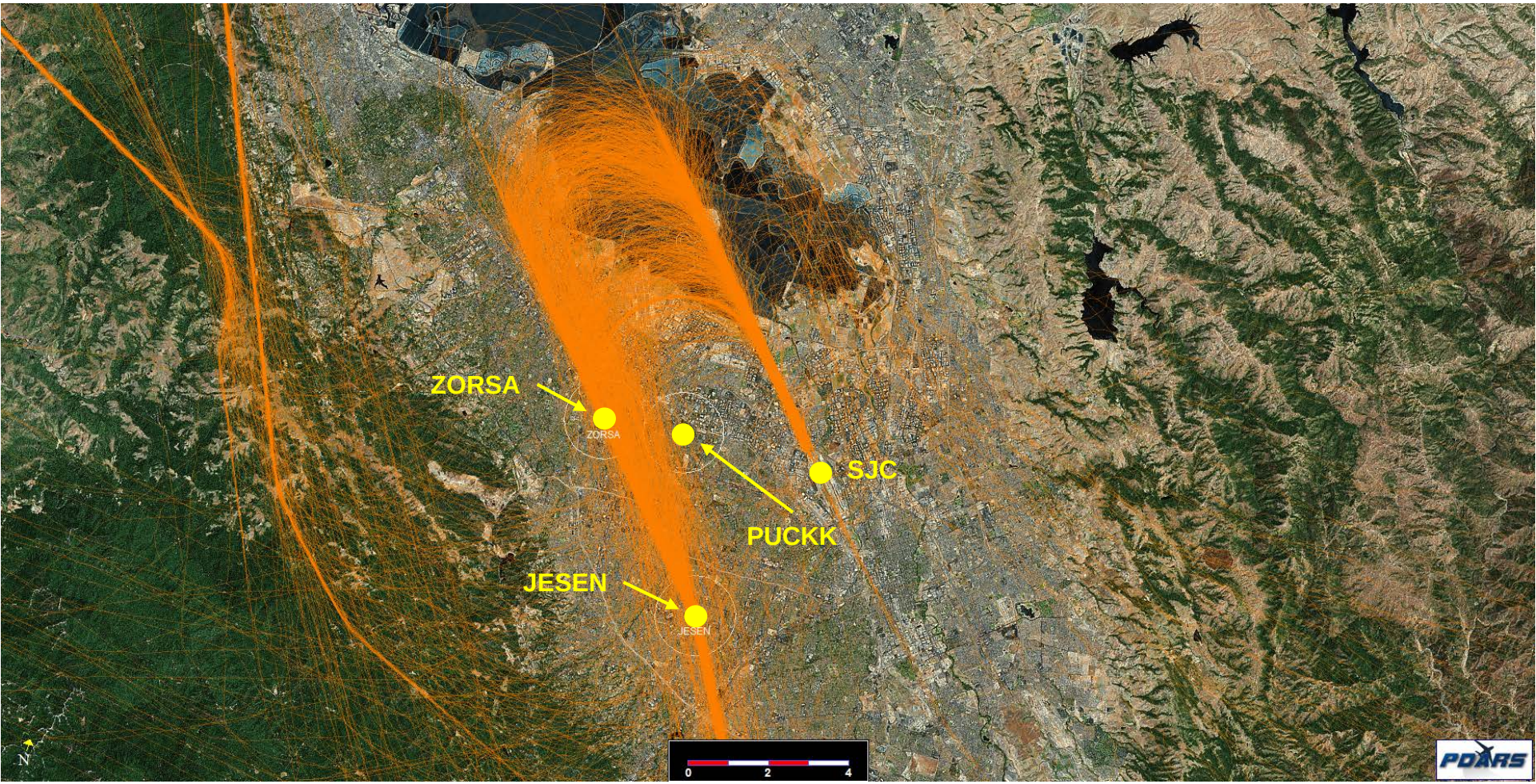


Tracks through 1 NM radius circle around ZORSA = 502 (45.2%)

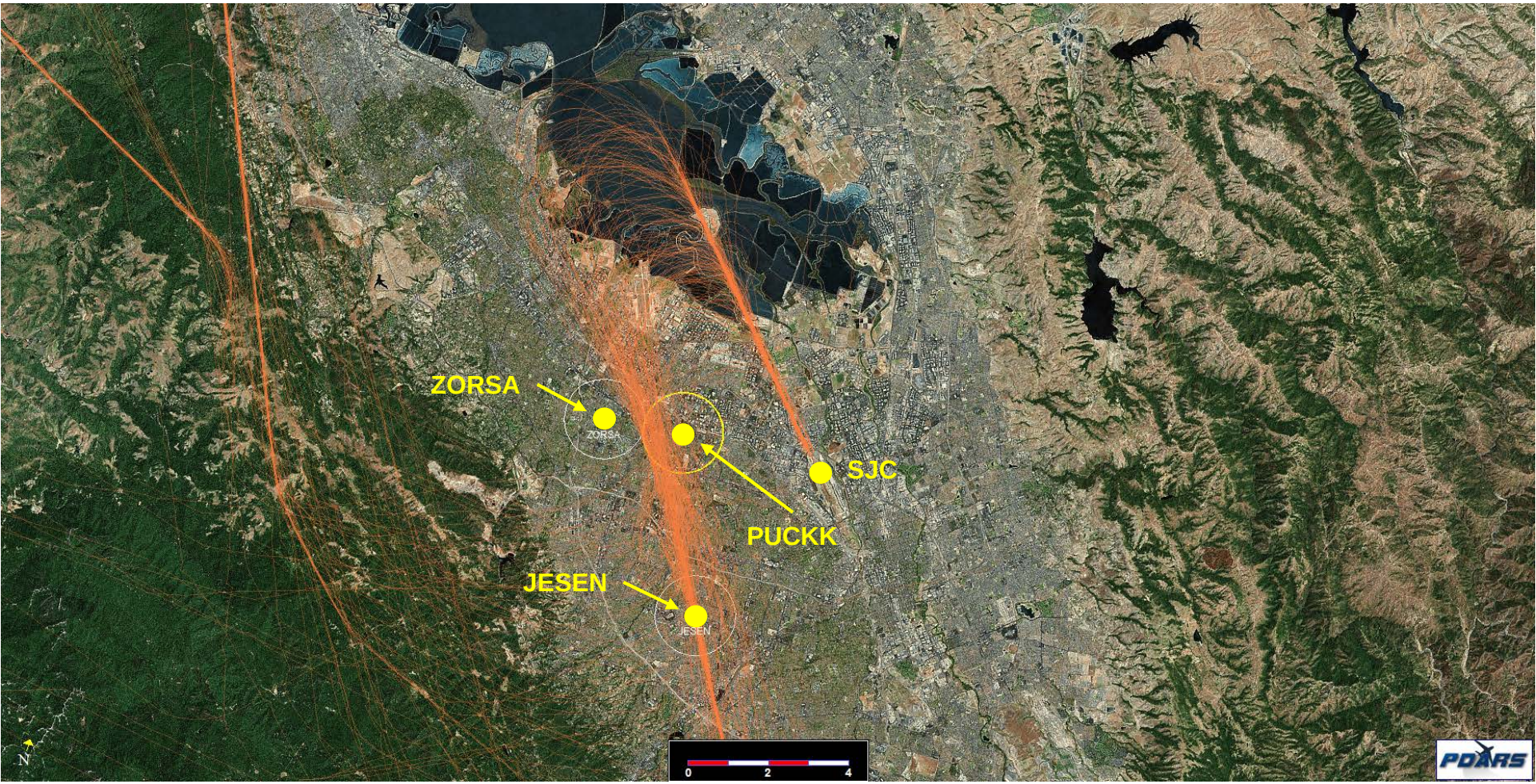
Average Altitude passing ZORSA = 2,730 feet MSL

Federal Aviation Administration

SJC 2016 South Flow (repeated)
1,589 Arrivals



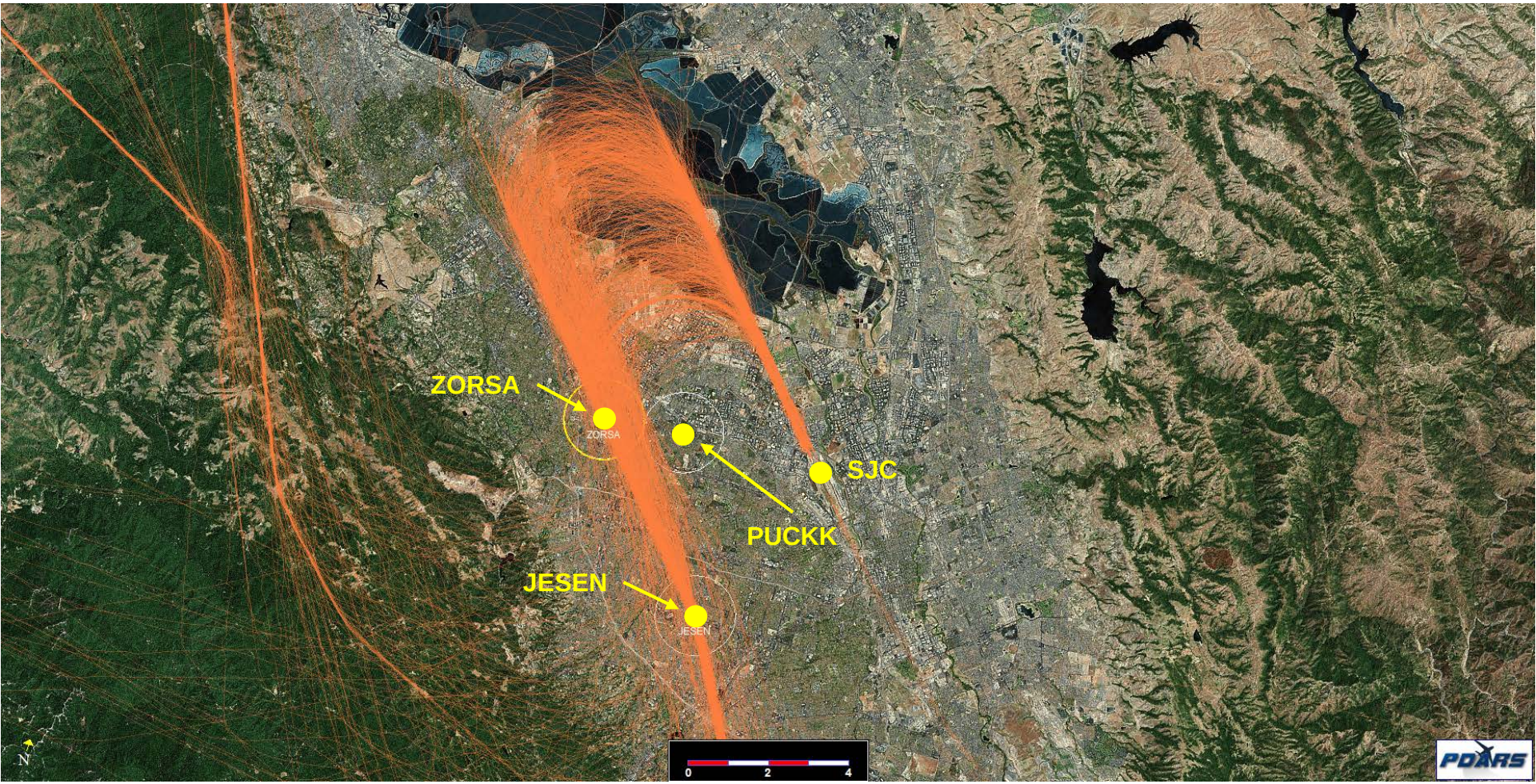
SJC 2016 South Flow
1,589 Arrivals



Tracks through 1 NM radius circle around PUCKK = 205 (12.9%)

Federal Aviation Administration

SJC 2016 South Flow
1,589 Arrivals

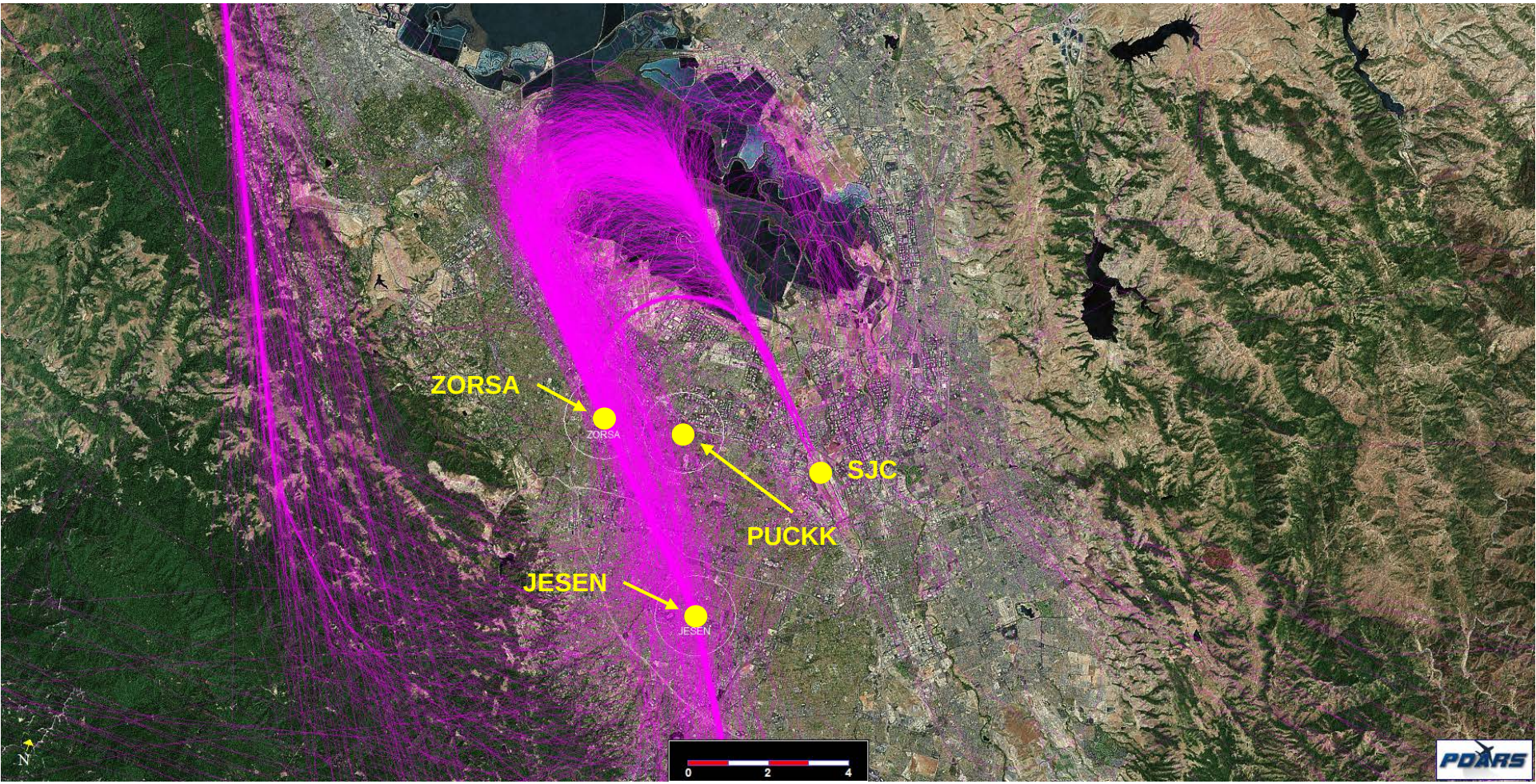


Tracks through 1 NM radius circle around ZORSA = 1,196 (75.3%)

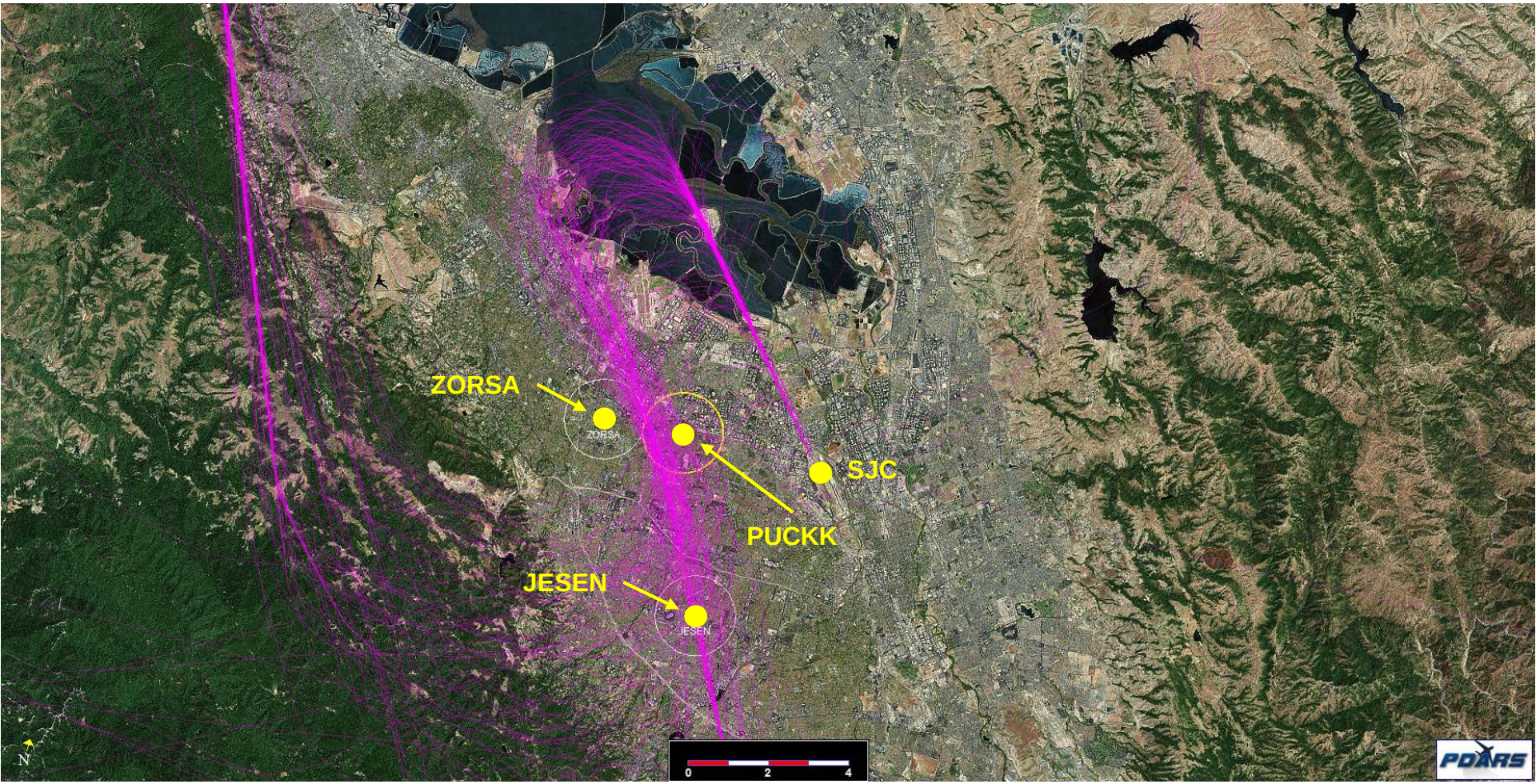
Average Altitude passing ZORSA = 3,040 feet MSL

Federal Aviation Administration

SJC 2018 South Flow (repeated)
1,262 Arrivals



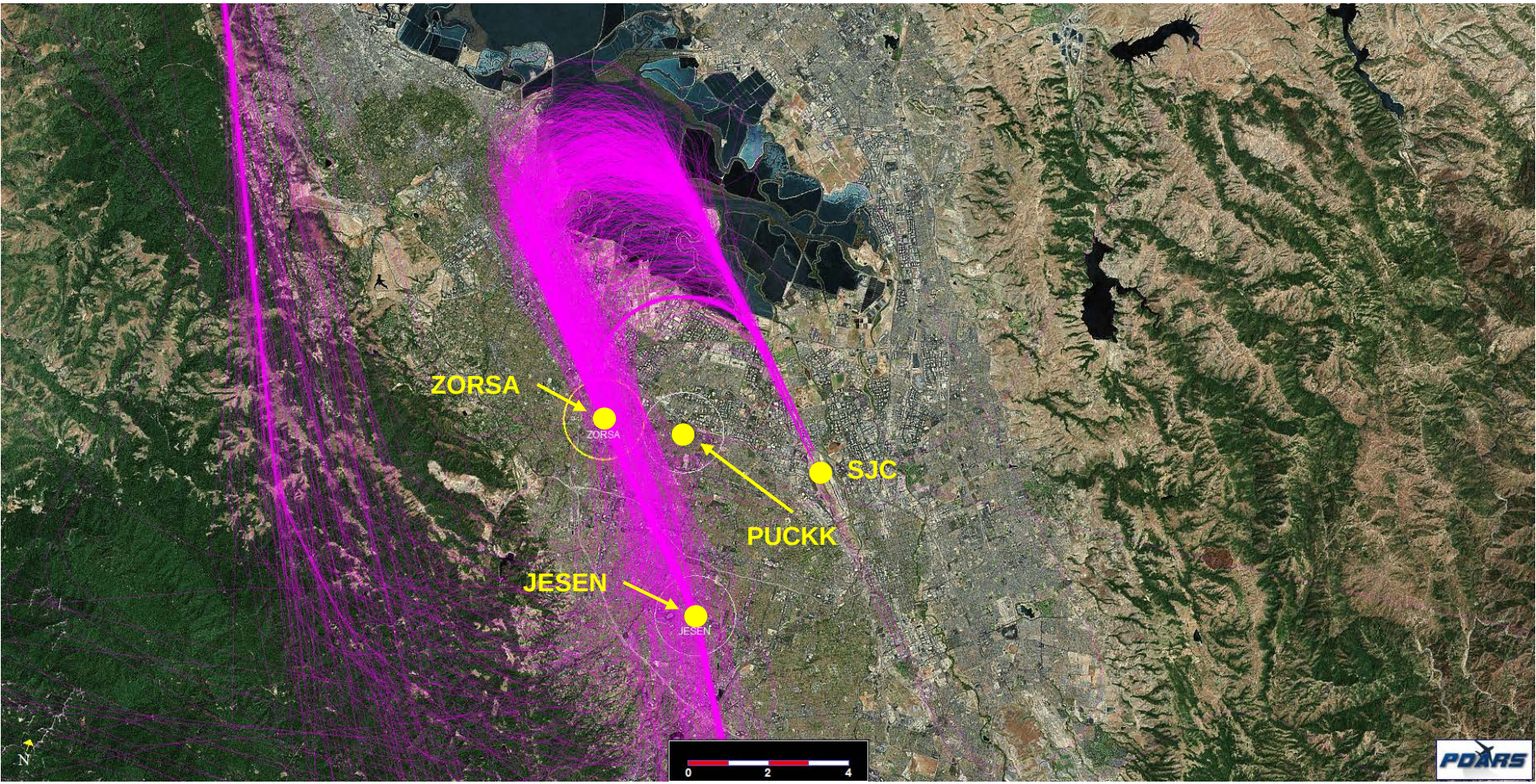
SJC 2018 South Flow
1,262 Arrivals



Tracks through 1 NM radius circle around PUCKK = 156 (12.4%)

Federal Aviation Administration

SJC 2018 South Flow
1,262 Arrivals

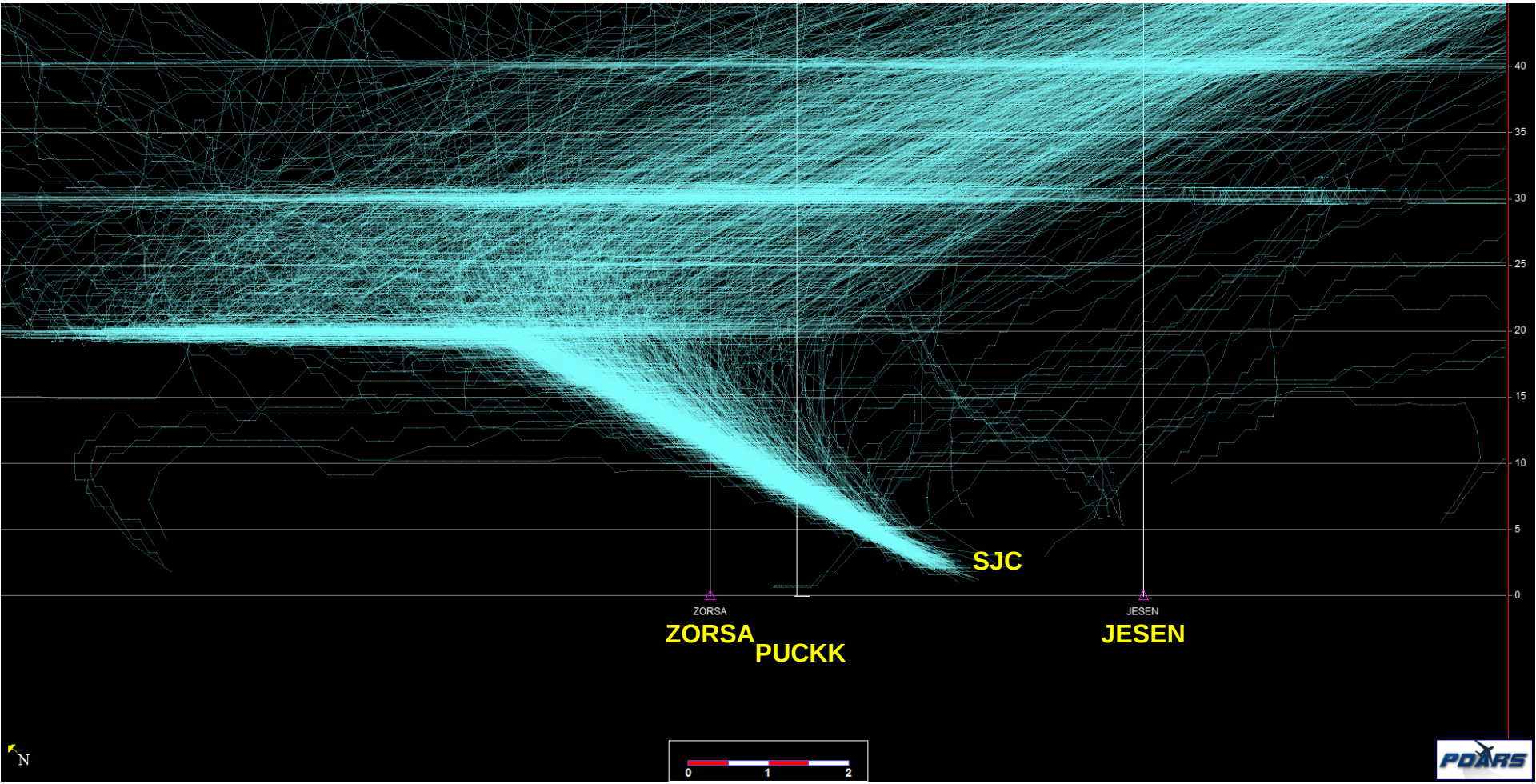


Tracks through 1 NM radius circle around ZORSA = 1,043 (82.6%)

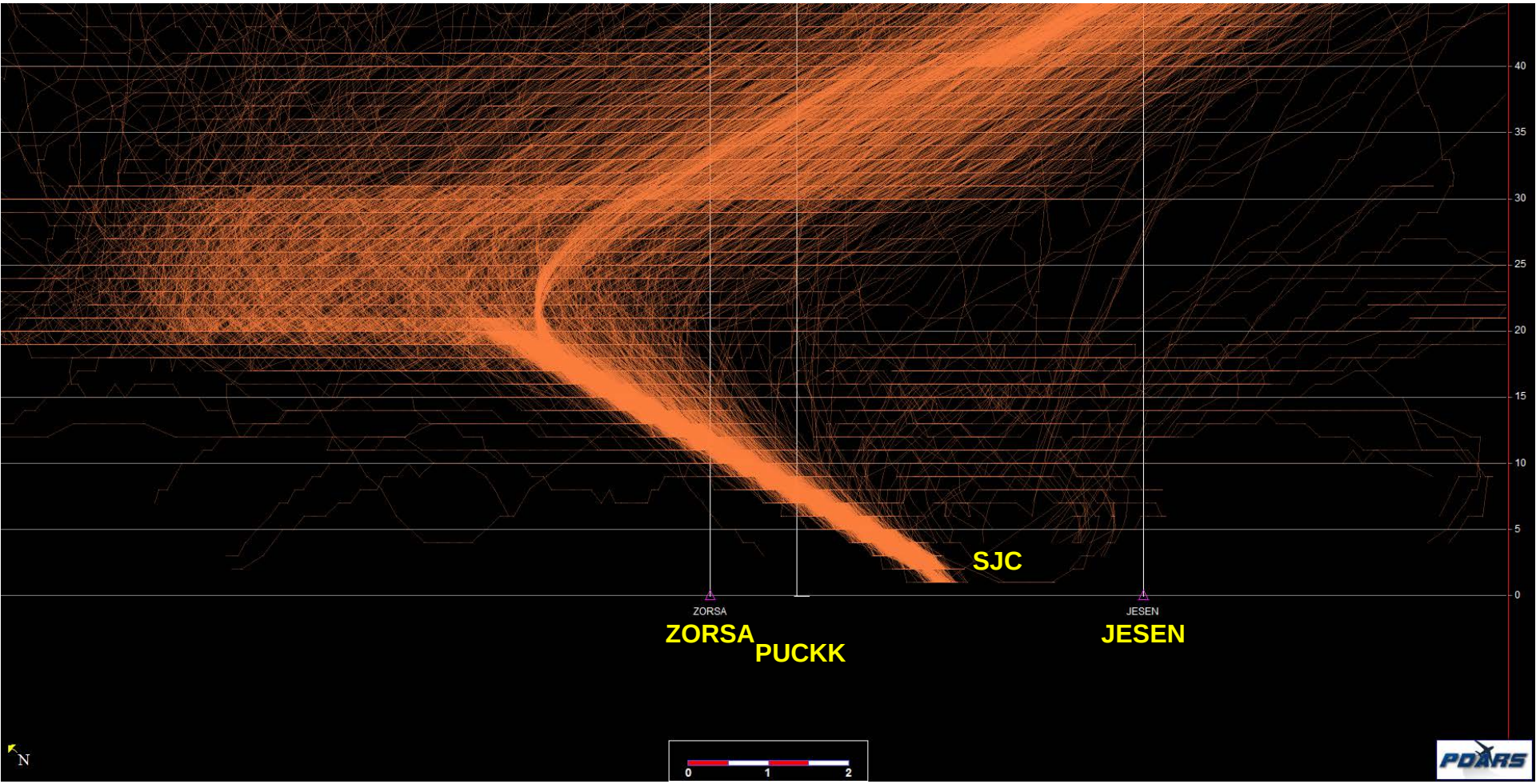
Average Altitude passing ZORSA = 3,080 feet MSL

Federal Aviation Administration

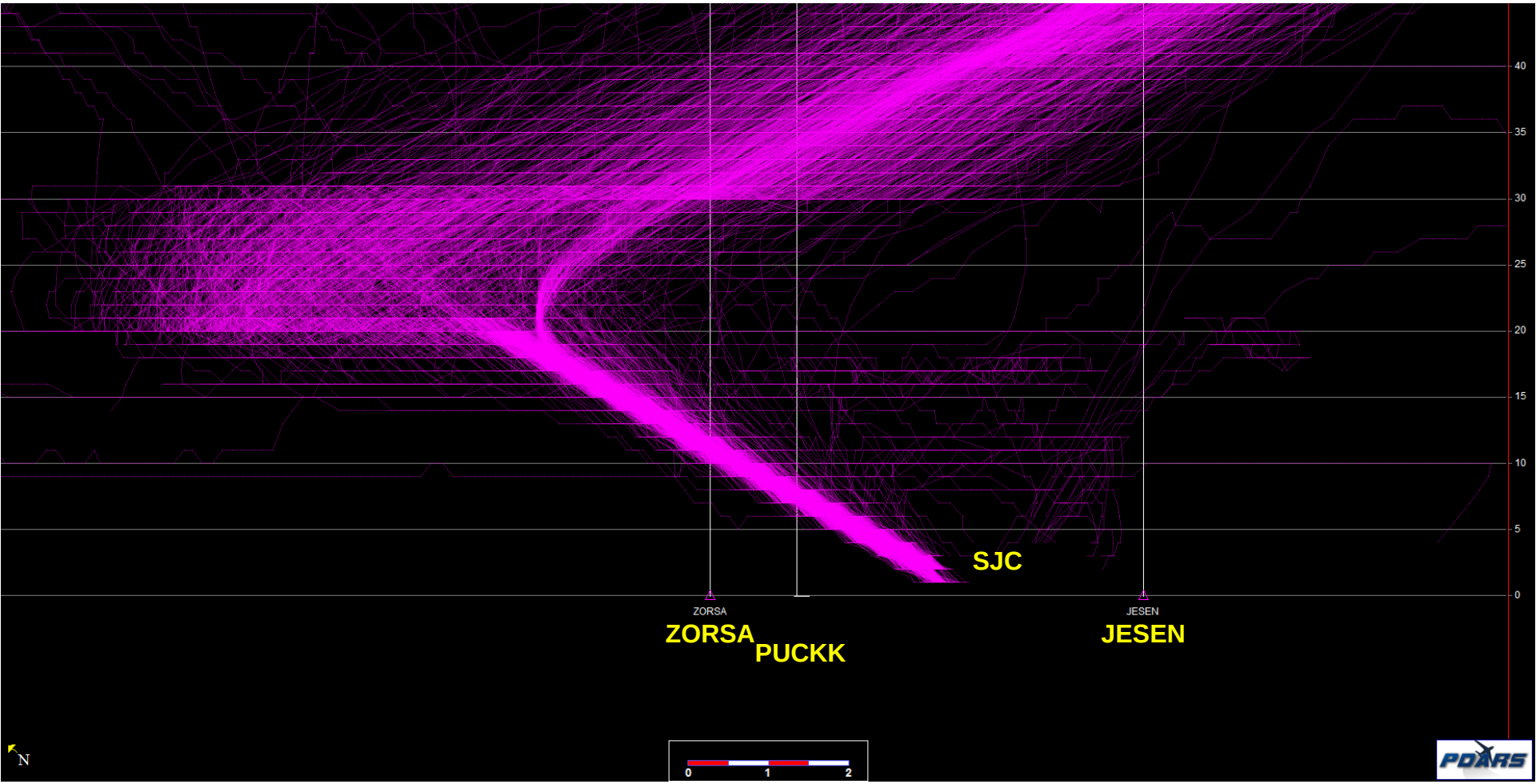
SJC 2011 South Flow
1,111 Arrivals



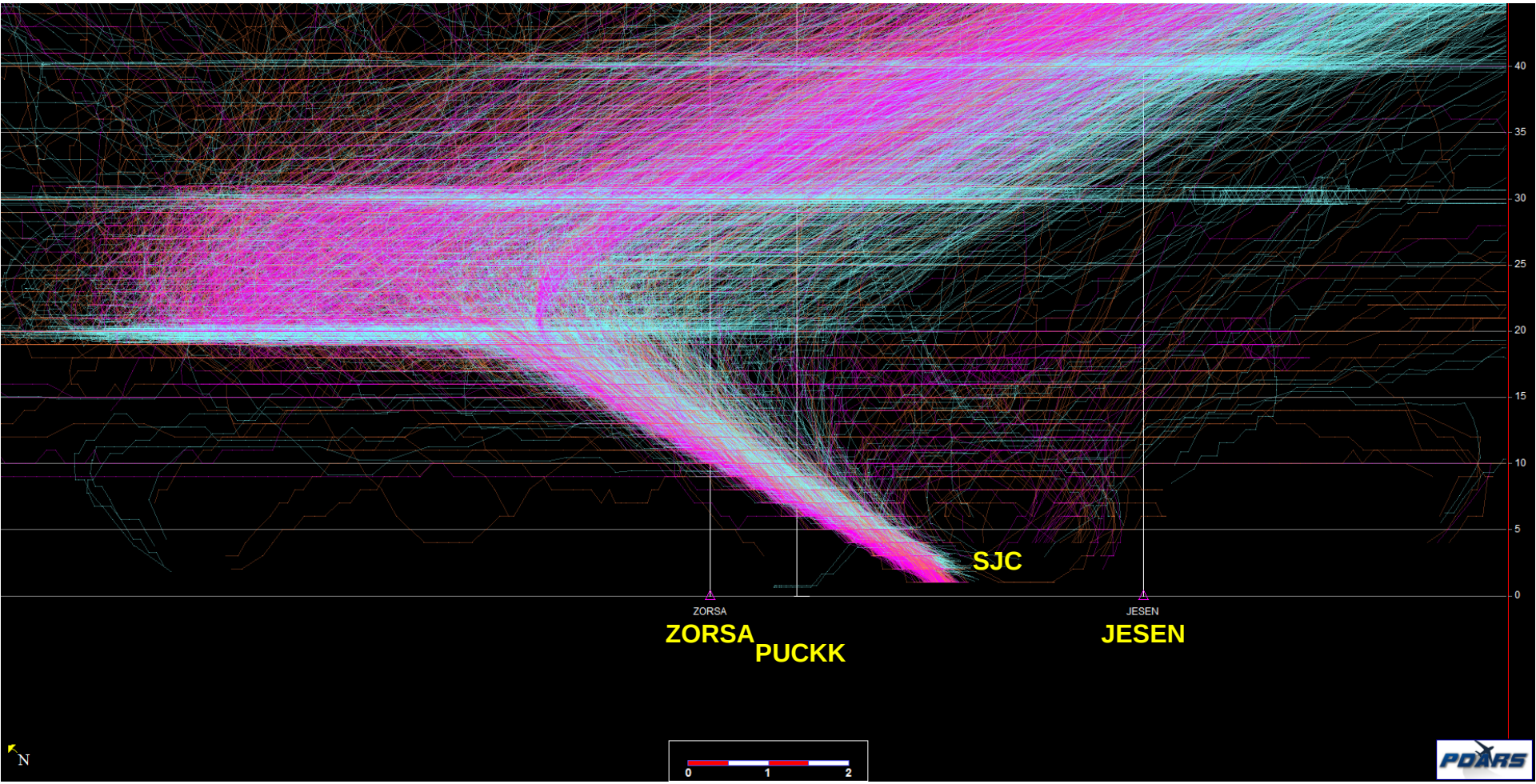
SJC 2016 South Flow
1,589 Arrivals



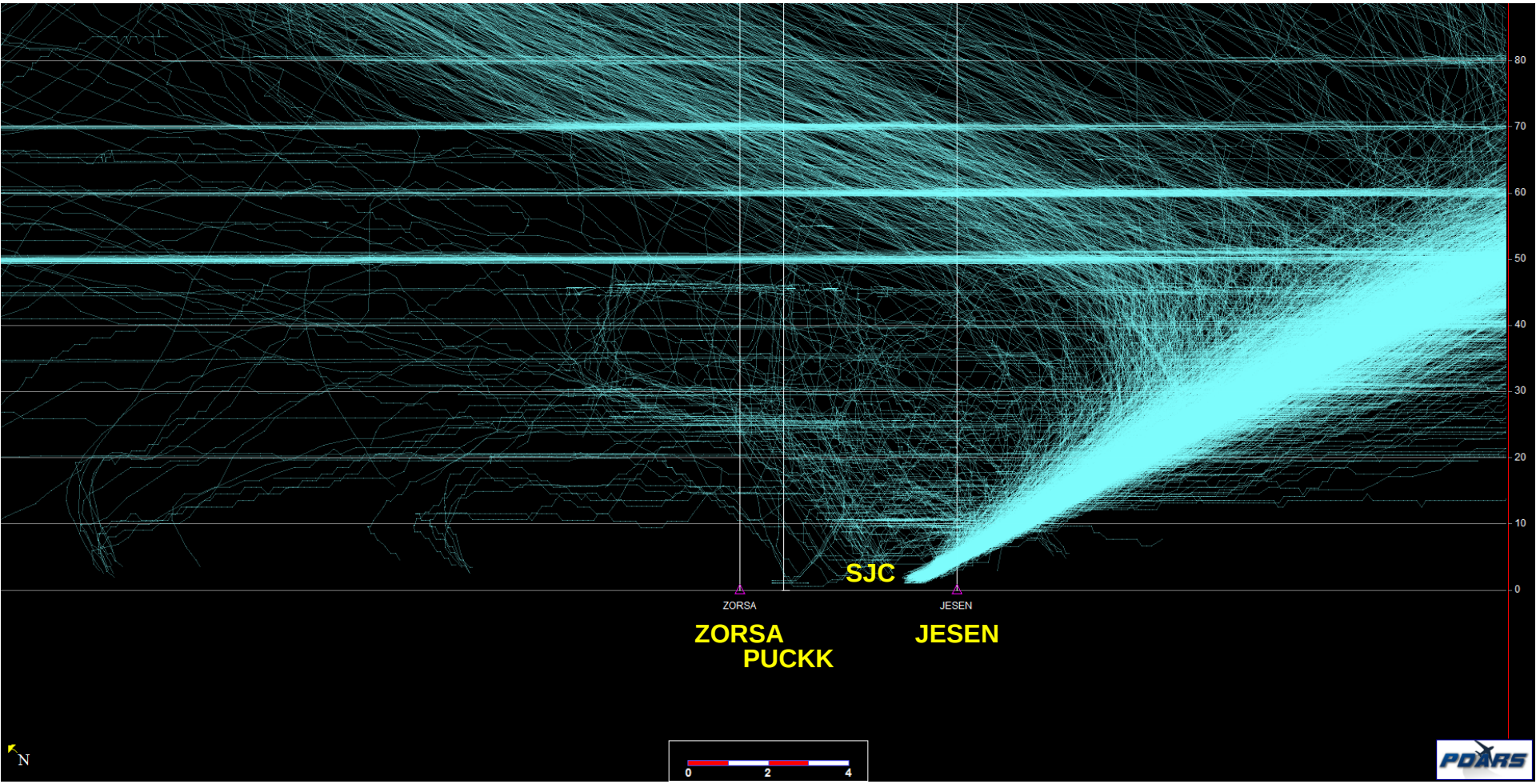
SJC 2018 South Flow
1,262 Arrivals



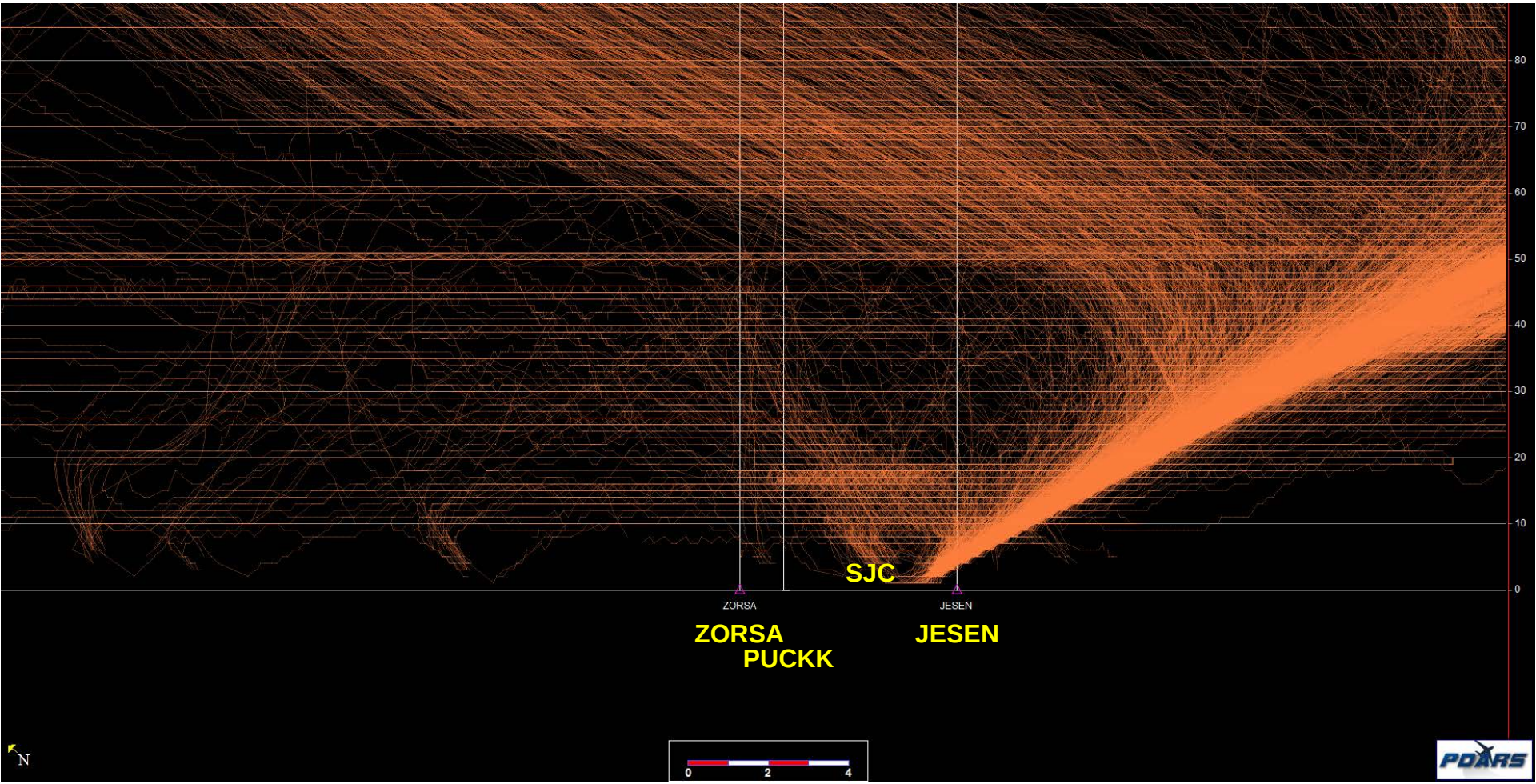
SJC South Flow
‘11, ‘16 and ‘18 Arrivals



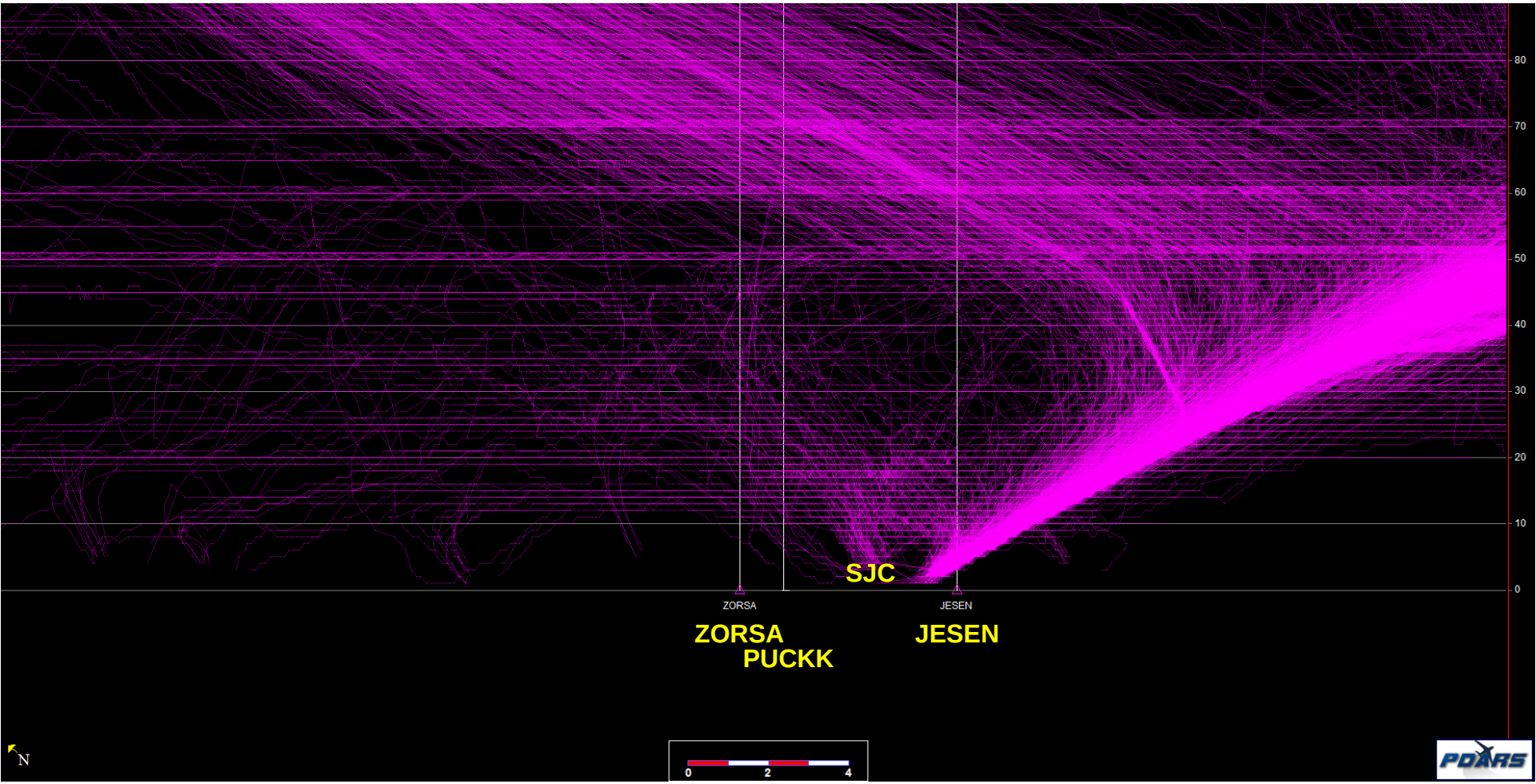
SJC 2011 North Flow
3,758 Arrivals



SJC 2016 North Flow
4,541 Arrivals



SJC 2018 North Flow
5,776 Arrivals

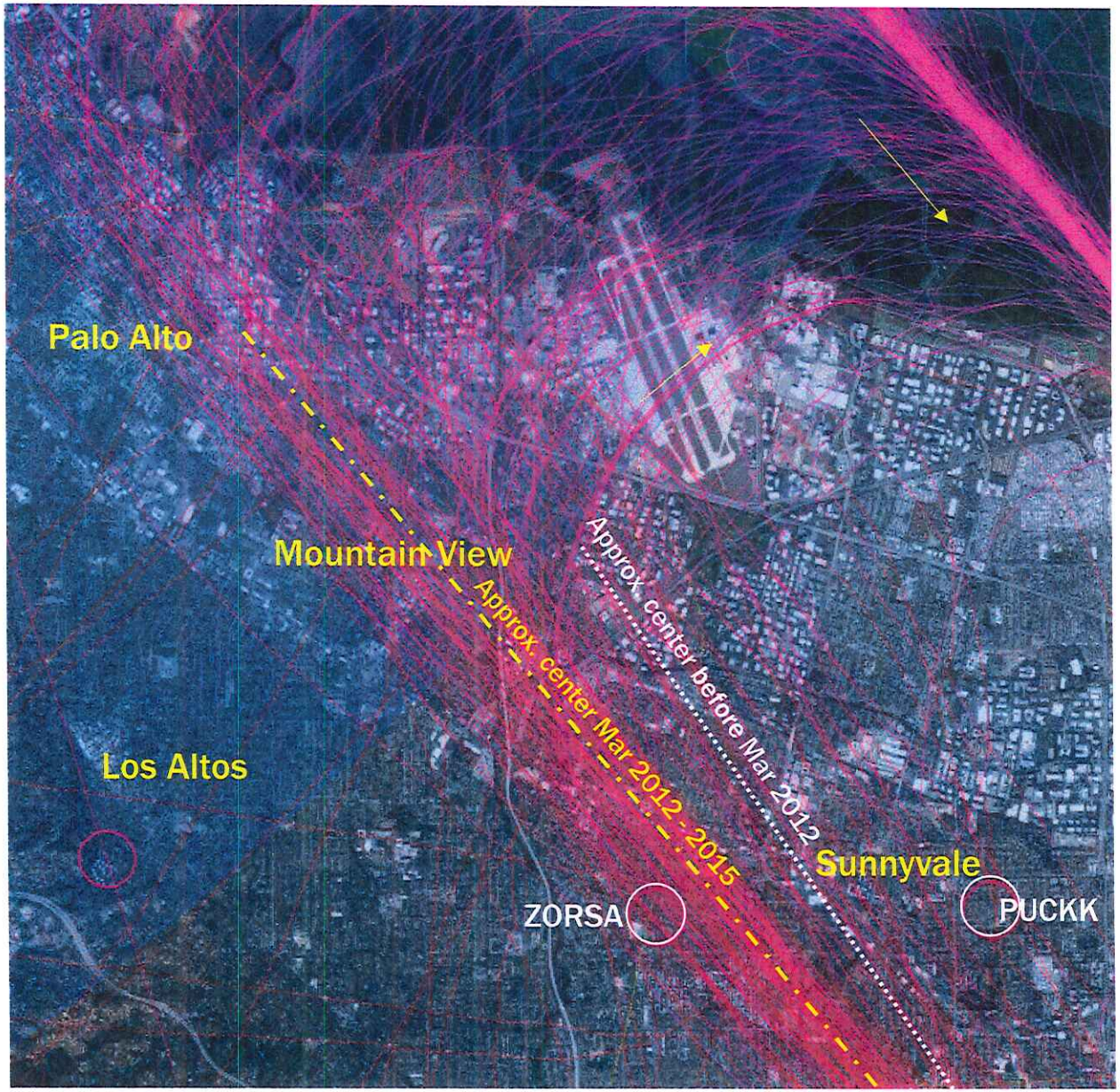


Shift of flight corridor

Superimposed on Phase I tracks (211 flights - 2/6/12-2/9/12)

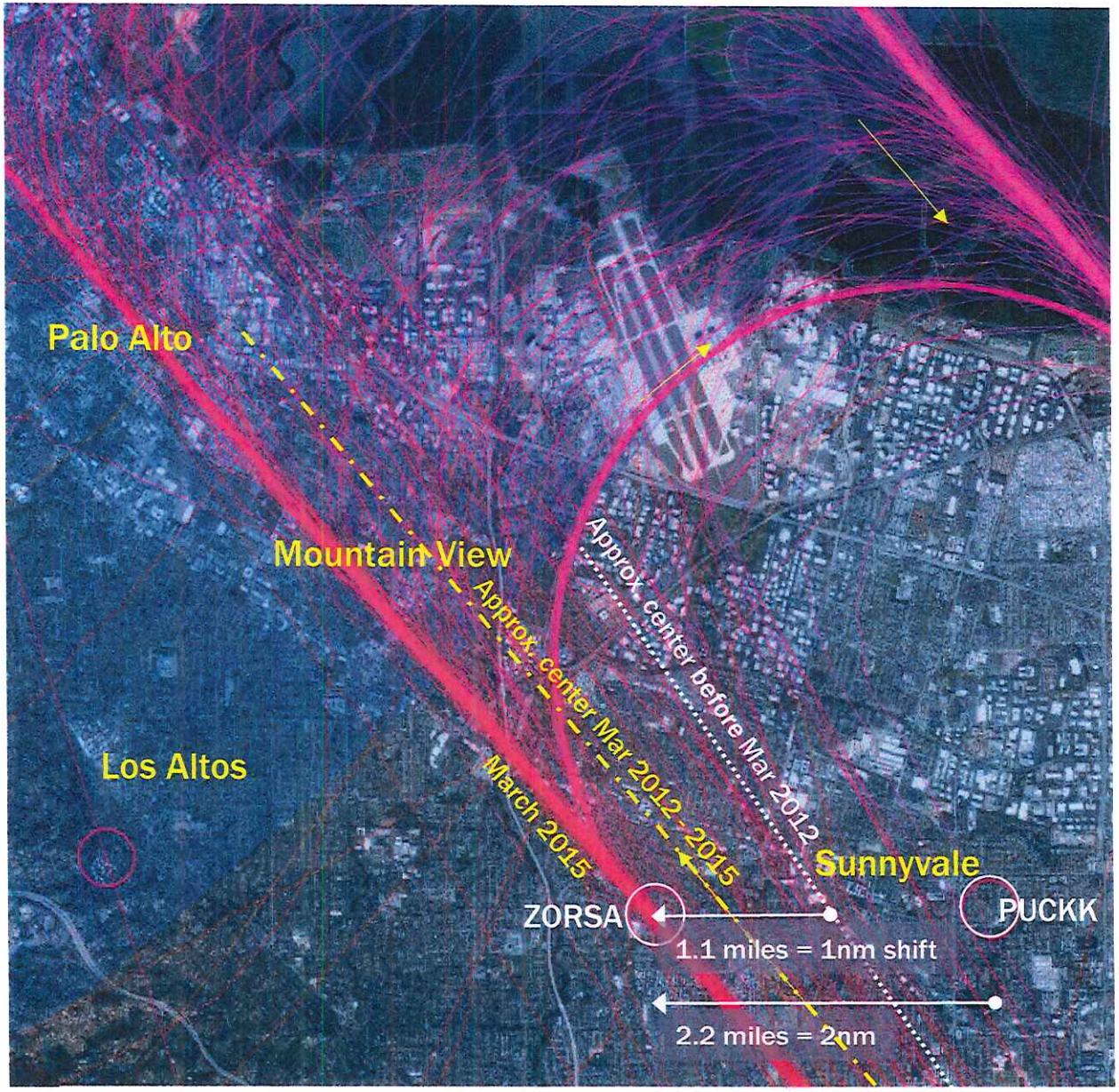
Shift of flight corridors

Superimposed on Phase II tracks (225 flights - 12/5/14)

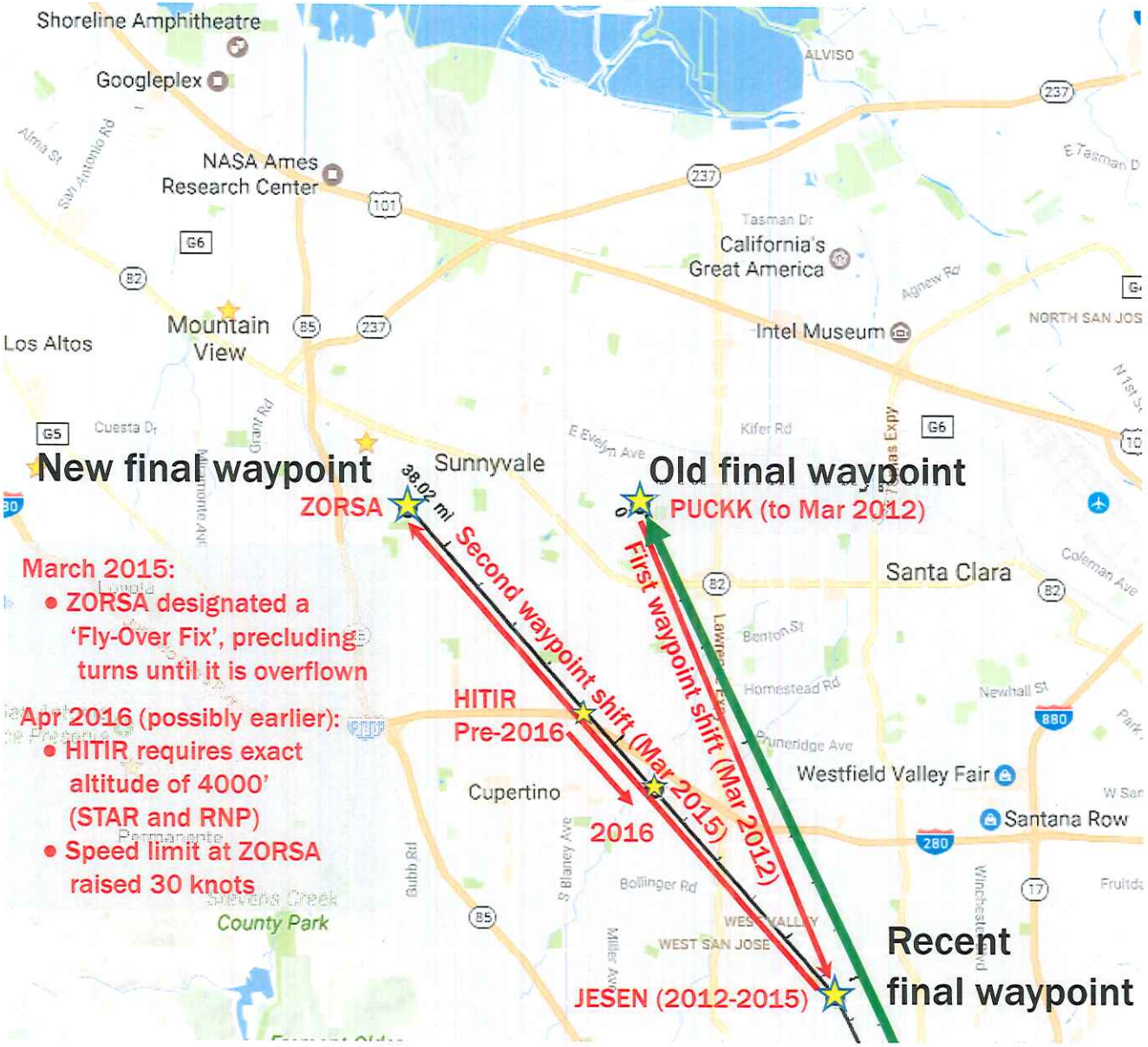


Shift of flight corridor

Superimposed on Phase III tracks (224 flights – 3/10/16)



Changes to FAA procedures explain concentration and shift of flight corridors



City of San José
AD HOC ADVISORY COMMITTEE ON SOUTH FLOW ARRIVALS

Meeting Minutes of the Ad Hoc Advisory Committee on South Flow Arrivals

FRIDAY **SAN JOSE, CALIFORNIA** **March 23, 2018**

The Ad Hoc Advisory Committee on South Flow Arrivals held a meeting on March 23, 2018 at 1:11 p.m. at the San José International Airport Administrative Offices in the McDonnell Douglas & Boeing Conference Rooms.

ATTENDEES:

COMMISSIONERS

Glenn Hendricks (Chair)	- Present
Chappie Jones (Vice-Chair)	- Present
Mary-Lynne Bernald	- Present via telephone conference
Steven Scharf	- Present
Jean Mordo	- Present 1:11-3:53pm
Gary Waldeck	- Present
Bob Nuñez	- Absent
Rowena Turner	- Present 1:11-3:59 pm
Rene Spring	- Absent
Lydia Kou	- Absent
Lisa Matichak	- Present
Johnny Khamis	- Present 1:11- 3:35pm
Kathy Watanabe	- Absent
Jeffrey Cristina	- Absent

AIRPORT STAFF PRESENT

Judy Ross
Curt Eikerman
Matthew Kazmierczak
Janelle Adams

FAA STAFF:

Tonya Patterson
Perry Oleck
Joe Brooke

I. Call to Order and Orders of the Day

The meeting was called to order at 1:11 p.m. by Chair Hendricks with nine Committee members in attendance and five absent.

II. Consent Calendar

A. Approve the Minutes for the March 9, 2018 meeting

Action: Upon motion by Committee Member Vice- Chair Jones, seconded by Committee Member Khamis, to approve the meeting minutes, the motion passed 9-0, 5 absent.

Documents Filed: 18-03-09 SIGNED Minutes of Ad Hoc Advisory Committee Meeting

III. Chair/Vice Chair Remarks

Committee Chair, Glenn Hendricks, introduced the guests from the FAA, Joe Brooke and Perry Oleck, and explained the FAA presentation would be first on the agenda due to time constraints.

IV. Old Business

A. Items on the Ad Hoc Advisory Committee Workplan

Joe Brooke and Perry Oleck from the FAA answered questions based on the February 28, 2018 document formed by the Committee. The south flow arrivals and altitude levels were compared based on data from the 2011, 2016 and 2018 flight patterns. The Committee asked the FAA questions regarding the process of changing flight patterns.

Documents Filed: FAA Presentation

B. Identification of Possible Noise Impact Reduction Measures

Committee reviewed and discussed spreadsheet on possible mitigation measures compiled by subcommittee. The Committee asked the FAA to review Items A-K to see if these suggestions are something currently executed at SJC or if they are feasible solution in the future.

C. Discussion of Possible Noise Mitigation Measures

FAA and Committee conversed about various noise mitigation measures including dispersal of aircraft and the issues surrounding the recommendation.

D. Adopting Recommendations

Committee reviewed the mitigation spreadsheet and inserted additional notes to prepare to rank the items.

V. Public Comment

Members of the public were invited to speak on noise mitigation comments for the Committee.

Speakers include: Jennifer Landesmann, Robert Holbrook, Mary Shefveland, Joel Pullen, Zachary Kaufman, Chris Moylan, Karen Porter and Toni Rath.

VI. Future Meeting Schedule and Agenda Items

The next meeting will be at the San José International Airport Administrative Offices on Friday, April 13, 2018. The next meeting is intended to rank mitigation ideas from the spreadsheet. Airport staff will post the revised spreadsheet with the notes from this meeting to the website.

VII. Adjournment

The meeting was adjourned at 4:08 pm.

ATTEST:

Glenn Hendricks
Chairperson

Matthew Kazmierczak
Manager of Strategy & Policy

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Ad Hoc Advisory Committee on South Flow Arrivals

Councilmember Jeffrey Cristina – Campbell	Vice Mayor Lisa Matichak — Mountain View
Mayor Savita Vaidhyanathan— Cupertino	Councilmember Lydia Kou — Palo Alto
Vice Mayor Jean (John) Mordo — Los Altos	Mayor Mary-Lynne Bernald — Saratoga
Mayor Gary Waldeck — Los Altos Hills	Councilmember Charles "Chappie" Jones — San José
Councilmember Bob Nuñez – Milpitas	Councilmember Raul Peralez — San José
Councilmember Rowena Turner — Monte Sereno	Vice Mayor Kathy Watanabe — Santa Clara
Councilmember Rene Spring — Morgan Hill	Mayor Glenn Hendricks — Sunnyvale

1:00 P.M. March 9, 2018 San José Airport
Boeing/McDonnell Douglas
Conference Room
1701 Airport Boulevard, Suite B-1130
San José, CA 95110

MEETING AGENDA

I. Call to Order and Orders of the Day

II. Consent Calendar
   A. Approve the Minutes for the February 23, 2018

III. Chair/Vice Chair Remarks

IV. Old Business

   A. Items on the Ad Hoc Advisory Committee Workplan
      1) Informational Briefing about South Flow
         - Review, discuss, and edit list of questions from last meeting
      2) Identification of Possible Noise Impact Reduction Measures
         - Review, discuss, and edit list of possible mitigation measures
         - Solicit addition mitigation ideas from Committee and the public
      3) Discussion of Possible Noise Mitigation Measures
         - Discussion merits/feasibility
         - Prioritize measures (rank order)
      4) Adopting Recommendations
      5) Adoption of Final Report and Committee Recommendations

V. Public Comments (on items not on the agenda but within the subject matter responsibility of the Committee)

VI. Future Meeting Schedule and Agenda Items

Schedule of Upcoming Committee Meetings:

Date	**Location**	**Time**
Friday, March 9, 2018	San José Airport Boeing Conference Room	1:00 pm
Friday, March 23, 2018	San José Airport Boeing Conference Room	1:00 pm
Friday, April 13, 2018	San José Airport Boeing Conference Room	1:00 pm
Friday, April 27, 2018	San José Airport Boeing Conference Room	1:00 pm
Friday, May 18, 2018	San José Airport Boeing Conference Room	1:00 pm

Agenda Items:
The Committee Agenda is set based on the workplan. The Committee will work through the workplan, which shall roll over from one meeting to the other.

Copies of the meeting minutes, agendas, and other material are available online at: http://www.flysanjose.com/Ad_Hoc_Advisory_Committee

VII. Adjournment

OPEN FORUM: You may speak to the Committee about any item that is on the agenda, and you may also speak during Open Forum on items that are not on the agenda and are within the subject matter jurisdiction of the Committee. If you wish to speak to the Committee, please refer to the following guidelines:

- **Fill out a blue Speaker's Card and submit it to the Airport staff seated at the front table. Do this before the meeting or before the item is heard.** This will ensure that your name is called for the item(s) that you wish to address, and it will help ensure the meeting runs smoothly for all participants.
- When the Committee reaches your item on the agenda, the Chair will open the public hearing and call your name.
- Each speaker generally has two minutes to speak per item. The amount of time allotted to speakers may vary at the Chair's discretion, depending on the number of speakers or the length of the agenda.

Please be advised that, by law, the Committee is unable to discuss or take action on issues presented during Open Forum. According to State Law (the Brown Act) items must first be noticed on the agenda before any discussion or action.

Agendas, staff reports and some associated documents for the Committee items may be viewed on the Internet at http://flysanjose.com/Ad_Hoc_Advisory_Committee

To request an accommodation or alternative format under the Americans with Disabilities Act for City-sponsored meetings, events, or printed materials, please call (408) 392-3640 as soon as possible, but at least three business days before the meeting.

Please direct correspondence and questions to:

City of San José
Attn: Matthew Kazmierczak.
1701 Airport Boulevard, Suite B-1130
San José, California 95110
Tel: (408) 392-3640 Fax: (408) 441-4589
Email: MKazmierczak@sjc.org

Committee Members

Primary	Alternate
Councilmember Jeffrey Cristina Campbell Jeffc@cityofcampbell.com	Mayor Liz Gibbons Campbell LizG@cityofcampbell.com
Mayor Savita Vaidhyanathan Cupertino svaidhyanathan@cupertino.org	Councilmember Steven Scharf Cupertino sscharf@cupertino.org
Vice Mayor Jean Mordo Los Altos jmordo@losaltosca.gov	Councilmember Lynette Lee Eng Los Altos lleeeng@losaltosca.gov
Mayor Gary Waldeck Los Altos Hills GCWaldeck@losaltoshills.ca.gov	
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Primary	Alternate
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Councilmember Raul Peralez San José District3@sanjoseca.gov	
Vice Mayor Kathy Watanabe City of Santa Clara kwatanabe@santaclaraca.gov	Councilmember Teresa O’Neill City of Santa Clara toneill@santaclaraca.gov
Mayor Glenn Hendricks Sunnyvale HendricksCouncil@sunnyvale.ca.gov	Councilmember Larry Klein Sunnyvale KleinCouncil@sunnyvale.ca.gov

Ad Hoc Advisory Committee Workplan

I. **The South Flow Procedure Presentation**: Why south flow procedure is used, how it works, the conditions requiring its use, and the air traffic environment over the South Bay, with Q&A from the Committee.

II. **Committee Identification of Possible Noise Impact Reduction Measures** – What are possible measures to reduce the noise impacts of the south flow procedure without reducing safety and efficiency of FAA air traffic control management? Possible measures raised in discussions include:

a) Bringing aircraft in at higher altitudes;
b) Greater dispersal of arriving aircraft;
c) Bringing aircraft in over the east of San José instead of over the west of San José.
d) Other possible solutions?

III. **Committee Discussion of Identified Noise Impact Reduction Measures** – An evaluation of what measures should be advanced for consideration to the FAA, given FAA direction on feasibility, safety, and efficiency.

IV. **Adopting Preliminary Recommendation(s)** – After Committee discussion of, and FAA comments on, all identified noise reduction options, preliminary adoption of recommended measures for FAA consideration.

V. **Adoption of Final Report and Committee Recommendations**

Ad Hoc Advisory Committee on South Flow Arrivals
Requests, Questions, and Next Steps
February 28, 2018

Requests for the FAA - Questions

1. Review and determine if the "Track" of the South Flow path has moved or changed since the implementation of NextGen?
2. Can we determine if Hand Flying by Pilots verses computer control - causes more ground noise?
    a. What assumptions about ground noise does the FAA computer simulations or models use?
3. What are the specific questions we would like address that are in the Holbrock wrote-up?
    a. How have south flow flight procedures changed around ZORSA, JESEN, and PUCKK from pre-NextGen (2011) to post-NextGen (2016)? Did planes shift slightly west? Are more planes using the ZORSA instead of PUCKK?
    b. Did the minimum altitude for ZORSA change from 3200' to 3000'? Did ZORSA move? If it did decrease, what was the reason for the altitude change? Is it possible to return this minimum altitude back to 3200'?
    c. It seems that planes are flying slightly faster on the south flow approach than in the past. Is this true? Does it matter? Are the planes flying faster because of a steeper decent? How does the modeling predict this impact on noise?
4. How would the Committee push for GBAS?
    a. How close to operational is it?
    Airport: According to an FAA report dated September 2017 Honeywell has an operational CAT I GBAS system available at Newark and Houston as Non-Federal systems (airport sponsored). Current airlines utilizing this system at these two airports which also operate at SJC are United, Delta, Lufthansa and British Airways. However, only select planes have the necessary equipment to utilize the system.
    Are places still experimenting with it or is it operational at some airports?
    Airport: yes it's still very much in development and testing. CAT II/III systems are not yet operational. Boeing is also testing a GBAS system.

    b. How do we get more facts to see if GBAS would improve or make worse the ground noise issues we have?
    Airport: Yet to be determined, initial reports are that it probably lowers overall noise impacts in some communities due to the steeper approach. It appears to be more advantageous long-term to the FAA as ground based navigational equipment are phased out as well as perhaps a way to reduce congestion delays.
    If GBAS allows a steeper approach does this create more noise for communities near the airport?
    Airport: Yet to be determined. It's probably important to understand that the

installations currently using GBAS or piloting GBAS are all large hub airports, which serve as a hub for a commercial airlines or are participating as part of R&D. As an example EWR and IAH are both hubs for United Airlines, as is SFO, which is currently conducting a pilot program. Since this is a non-federal program the airlines and airports are paying not only for the installation but also the maintenance of GBAS. These costs may be prohibitive for a medium hub airport, especially one without an airline hub.

5. Can we get a copy (or link) to any FAA Environmental reports that have been done related to SJC, since 2011?
6. Something about 1050.1f Environmental report
    a. Airport: Environmental Impacts: Policies and Procedures is available at: https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.current/documentNumber/1050.1
7. Can we get a Horizontal view altitude map for the South Flow Path?
    a. And for the "Normal" approach flow to SJC?
8. What does the FAA use as Baseline information in its simulations and modeling for south flow into SJC?
9. Does the FAA take noise into consideration when creating flight procedures?
10. Re-asking the question. If SFO needs airspace as far down as Sunnyvale during their normal landing pattern - why can't SJC use some of the airspace when SFO changes their landing direction?
    a. FAA said something about SFO aircraft needing that airspace when they depart SFO. But, aren't the departing aircraft much higher, by the time they get to the South Bay? Can't SJC get even an additional 1,000 feet of altitude during these configurations?
    b. Related question, if SFO routes over Santa Clara County were slightly higher (or less concentrated near MENLO), could this allow SJC south flow flights to be higher?

Questions to the Committee from the FAA

11. Where do we want aircraft to fly over our cities? Can we agree to a preferred path for aircraft as part of south flow to SJC?
    Next Steps: To discuss at the next meeting.
12. The FAA said they could get us more details about particular South Flow flights into SJC.
    a. Request to the Committee. Need to get these from our residents. Request was to compare 2 flights: 1 'louder' and 1 'quieter' with both on the same flight path (ideally with the same type of airplane) to try to determine how the plane flew differently

Questions to the SJC from the Committee

13. Can we get some Pilots perspective on this?
    a. Can we get some knowledgeable Pilots at a meeting?
       Airport: SJC is looking into finding an appropriate pilot who understands the approach and issues. It would be helpful to have a list of the type of questions the committee is interested in.

14. What is the role of the Airport in Procedures and Noise Control, in a post NextGen world?
    Airport: Currently airports are not involved in the development of aircraft flight procedures. SJC does not have the technical expertise, breadth of staffing, or jurisdiction to assist in the development of aircraft flight procedures. Airports can assist in the development of an FAA/Community forum such as the Ad Hoc Advisory Committee when issues are identified.

15. Can you re-post the links to your reports that show monthly flight numbers and percentage of flights using South Flow?
    a. Airport: Noise reports from SJC are available at:
       http://flysanjose.com/noise

Possible Mitigations to be Ranked for Investigation

16. Limit planes to a maximum of 200 knots once the planes are under 4,000 feet
    a. Given the discussion on Friday, it sounds like speed limits don't work as certain planes require a certain speed for safety purposes.
17. Increase recommended altitude of ZORSA waypoint back to 3,200 feet
    a. Make this a minimum altitude
    b. Are there other waypoint as part of the South Flow path to SJC that should be modified to be minimums?
18. On Airbus 320 Aircraft, request the installation of an air deflector to quiet the whining noise.
    a. Airport: The Select Committee made a recommendation that the FAA require operators of the A320 family to install "wake vortex generators", however the FAA response was that this was outside their area of authority. SJC estimates that roughly 6.7% of south flow flights are from this family of aircraft.
19. Create a procedure or mechanism to disperse the south flow traffic into SJC over a wider area
    a. Relax the Positional criteria of waypoints? i.e. create ranges that could be used?
    b. Revert the waypoint on the STAR of ZORSA
    c. Create Charted Visual Flight Procedures
    d. Create a specific procedure to disperse traffic.
20. Are there procedures that would be relevant to south flow SJC that are quieter than other types of procedures without impacting safety? Any special procedures that could reduce ground level noise?
21. Expand Northern Loop

DRAFT

22. Use of GBAS
23. Can we modify the trigger point of wind speed (5 knots) that initiates South Flow to SJC?
24. Create an east side south flow procedure in to SJC
    a. Even if it is used only a portion of the time?
25. OPD (Have planes gradually descend along a smooth decent flight pattern to limit stepping and the need for engine changes to maintain altitude)
    a. Do more of this?
    b. Is it quieter?

Disclaimer: Airport comments are based on information available to Airport staff to assist the Committee in the research of south flow arrivals. It is not the definitive source of information about flight paths. The FAA has the sole mandate by Congress to determine safe and efficient flight paths for the nation's airports.

Brainstorming List – SJC Southflow Mitigations

Sunnyvale / Cupertino Airplane Noise Groups

Overall Suggestions:

1. **Full dispersion to the pre-2012 levels (Phase 1), or designation of multiple published flight paths that will accomplish similar dispersion.**
   - Sunnyvale group has possible suggestions that could provide "calculated" dispersion.

2. **The tight turn (RNP path) needs to be optimized or eliminated.**
   - Preliminary decibel meter testing is indicating that the RNP flight path (tight loop) is generating excessive noise
   - RNP needs to be optimized to reduce noise impact

3. ***FAA recommended*** - **EAST approach flight paths**
   - Planes already fly these routes, but the number of planes using these routes is reducing
   - Increasing this approach leads to significantly less residential noise impact

4. **Examine North approach into SJC from the bay**
   - Current published flight path exists, but is no longer frequently used
   - Increasing this approach leads to significantly less residential noise impact

5. **Discourage narrow concentrated (single line) flight paths**
   - These single line flight paths are causing large spikes in noise for residents
   - Discretionary paths currently being flown into San Jose Airport are being eliminated
   - This elimination needs to be stopped

6. **Stop disproportionally impacting residents**
   - Changes should consider historical use, and account for all parties involved
   - Changes should not affect any one resident over another

7. **Limit flights between 10PM and 6:30AM over high density residential**
   - Taper/alter flights prior to curfew
   - Reduce planes overhead during hours that residents are at home most

8. **Modify procedures**
   - Gliding in without power (reduces engine noise)
   - Reduce air speed (reduces airframe noise)
   - Utilize wake vortex generators (reduces engine whine)
   - Dropping/remove waypoints (creates dispersion)
   - Verify if wind speed trigger for South flow can be increased (reduces South flow flights)
   - Raising altitudes (alleviates noise)

Brainstorming List – SJC Southflow Mitigations (continued)

Strategic Suggestions:

- **Make sure the South flow flight path and any proposed changes do not disproportionally impact any one resident**

- **Initiate Technical working group**
  - Due to limited technical expertise and time, it is advised that a technical working group be created to study each of the proposals along with the FAA
  - Recommend that an aviation expert and all affected parties will be invited to participate in the working group; Sessions to be open to the public
  - The technical group will then present its' findings & recommendations during adhoc committee meetings for full discussion, findings, and final decision(s)

- **All changes should be FAA computer modelled prior to implementation in order to minimize excessive impact to single residents**
  - If forecasted impact does not match expected result, then the change may need to be rolled back and alternate mitigations considered

- **Analysis of proposed change should continue after implementation**
  - Because of time constraints, no noise studies will likely be completed before recommendations are implemented.
  - If the changes result in little or no improvement, then re-evaluation of the changes needs to take place & further mitigations will be necessary
  - Our team would like to see a marked improvement in this flight path; preserving quality of life and impacting no single resident disproportionally
  - Historical flight tracks need to be preserved.

Administrative Suggestions

- **SJC to increase fines for curfew violators**

- **Establish landing fees based on flight noise generated by the plane(s) during arrival procedures**

This AdHoc Committee has the power to really improve the South flow noise issue.

Together community leaders and residents can solve this problem.

Brainstorming list from the AdHoc Committee (in no special order): (Based on AdHoc meeting of February 23, 2018)

1. Limit planes to a maximum of 200 knots once they get to an altitude under 4000 feet
2. Increase the recommended altitude at waypoint ZORSA back to 3200 feet altitude (from the current 3000 feet)
3. Define some minimum altitudes at waypoints over the cities
4. For Airbus 320 aircraft - recommend product installation of "wake vortex generators" to quiet the whining noise
5. Somehow disperse the flights into a wider flight path or multiple flight paths
6. Have planes glide along descending paths to reduce engine noise (smooth descent to limit noise)
7. Look into modifications of the current procedures that could make them quieter without impacting safety. (Are there flight procedures that are quieter than other procedures without impacting safety?)
8. Could SFO airspace be modified, so there is more room to change the San Jose Airport flight paths
9. Move the south flow turn out over the water/bay (rather than over land) in order to reduce noise and potentially raise the altitude of the planes while over land
10. Evaluate the use of GBAS - Would it be helpful or or would it create more noise?
11. Give latitude to the pilots so they can fly with more discretion in order to minimize noise
12. Can the trigger for South flow operations be raised to 6 or 7 knots from the current 5 knot trigger?
13. Can any new flight standard take noise into consideration?
14. Move the waypoint back from ZORSA to JESEN, which might allow some dispersion again
15. Relax some efficiency standard to keep safety but potentially reduce noise
16. Financial incentives for airlines to fly quieter
17. Optimize the RNP path for noise
18. Ask for a chartered visual flight procedure, so potentially some possible dispersion can be built into the system
19. Possibility of an East approach that can be used to disperse some of the flights
20. Possibility of an East approach that can be used once a certain threshold of flights is reached over Sunnyvale

Robert Holbrook
March 8, 2018

Proposals for Relieving Noise Complaints for South Flow Arrivals to SJC

Background

South flow flights arriving to SJC have exhibited three phases of concentration. Phase I, before March 2012, dispersed flights fairly evenly over an east-west line across Sunnyvale almost two and a half miles wide. Phase II (March 2012-March 2015) concentrated flights into a narrower corridor, anticipating the Phase III 'rail' laid down in March 2015. If the fleet mix has not changed much since 2012, aircraft should be capable of reverting to traffic patterns that existed before March 2012. The question is how to do it.

Guiding Principle

People need the ability to plan, especially when making big decisions. People who aren't bothered by airplane noise can choose to live near it, perhaps getting a better house price. People who don't like airplane noise can avoid it. Public officials should not break faith with the homeowners and residents who made housing decisions over the years based on long-standing air traffic patterns.

Priorities

- First priority: Disperse noise over the historic flight corridor - as it existed before March 2012.
- Second priority: Minimize single-flight noise.

Suggestions

The suggestions below are discussed in the next section. Many of these suggestions could be used together. The Appendix contains a map with the waypoints named.

First Priority: Disperse Noise Over the Historic Flight Corridor (roughly in priority order):

- Create a Charted Visual Approach.
- Dispersion to the East: Recast ZORSA as a 'fly-by' waypoint…
    - … and relocate HITIR to be as close to JESEN as possible to re-enable Phase I dispersion.
- Dispersion to the West: Vector airplanes by varying their course headings to the Bay.
- Define different approach paths for large and medium-to-small airplanes.
- Pivot the flow of traffic to overlay its historic pattern of flow.
- Develop two sets of procedures: one set for when efficiency is demanded, another for when it is not.
- Revert the final waypoint on the STAR procedure to PUCKK.
- Revert the final waypoint on the STAR procedure to JESEN. Also,
    - Remove HITIR and ZORSA from airplanes' Flight Management Systems for approaches other than RNP;
    - Encourage Air Traffic Control (ATC) to disperse airplanes as in Phase I.
- Define multiple flight paths across the historic corridor and rotate airplanes between them.

Second Priority: Minimize Single-Flight Noise (roughly in priority order):

- Minimize 'level-flight' segments.
    - Enable pilots to arrive HITIR at altitudes and speeds that allow them to reach the Bay without flying dirty or using thrust.
    - Relax the altitude requirement at HITIR from exactly 4000' to at or above 4000'.
    - Enable pilots of vectored flights to optimize their descent profile by telling them where they will turn early enough so that they can choose the best altitude at HITIR.
- Defer noisy maneuvers until overflying compatible land adjacent to the Bay (Moffet Field, industrial parks).
- Optimize all approach procedures for noise. Bring focus to the 75% of flights that do not fly the RNP approach.
- Other things being equal, encourage airplanes to fly slower and cleaner.
- Other things being equal, raise altitudes.

Other Suggestions

- Fine-tune the trigger for South Flow.
- SJC to persuade airlines to install vortex generators on planes that emit a 'whine', perhaps in consideration of other benefits.
- For flights that will arrive after the curfew, require pilots to state online what has caused them to violate the curfew - in advance of landing.
- Revisit arrival procedures in the future as noise modeling tools improve.

Discussion

First Priority: Disperse Noise Over the Historic Flight Corridor

Create a Charted Visual Approach

This suggestion was made by Ms. Thann McLeod of TRACON at the last meeting of the Ad Hoc Advisory Committee. The Committee was told that a Charted Visual Approach is more likely to be endorsed by airlines and used by pilots. Pilots have more discretion when flying a visual approach than when flying RNAV approaches, so this should contribute dispersion.

This approach could better align with the historic flight corridor because, if I understand correctly, an RNAV visual approach permits a sharper 'turn to final' than precision RNP does (30° vs 15°). I will say more about this later.

Dispersion to the East: Recast ZORSA as a 'fly-by' waypoint

A 'fly-over' waypoint requires airplanes to overfly that waypoint before they begin their turn, forcing concentration at the waypoint, as with ZORSA today. The location of ZORSA can accommodate the turning radius of the largest airplanes that can land at SJC. A 'fly-by' waypoint permits airplanes with smaller turning radiuses to turn before reaching it, 'cutting the corner'. This change would reintroduce dispersion by optimizing for each airplane's turning radius, which varies across the fleet mix. The timing of the turn is driven by the flight management system of each airplane, based on its capabilities, so this should be compatible with Nextgen. The location of HITIR might need to be moved closer to JESEN, or eliminated, to reintroduce the maximum amount of dispersion after JESEN.

Dispersion to the West: Vector airplanes by varying their course headings to the Bay

Vectoring is used to adjust the spacing between airplanes approaching the airport. Today, arrivals to SJC are vectored by flying further along a fixed rail, creating a 'trombone' effect after ZORSA. Instead, airplanes could be vectored by pointing them at different locations along the Bayshore, introducing dispersion. (Arrivals to SFO using SERFR STAR are dispersed by this latter sort of vectoring.) Ideally, airplanes would begin their turns as close to compatible land use as possible, hopefully after crossing Highway 101.

Define different approach paths for large and medium-to-small airplanes

As noted above, smaller aircraft can execute narrower turns. An approach path could be created after JESEN suitable for small- and medium-sized aircraft, with the approach path crossing ZORSA reserved for the largest aircraft. Such an approach path would better align with the historic corridor over Sunnyvale. Notice the narrow turning radius of the Boeing 738 in the following vector map and where this positions the airplane relative to PUCKK, shown in figures 2 and 3.

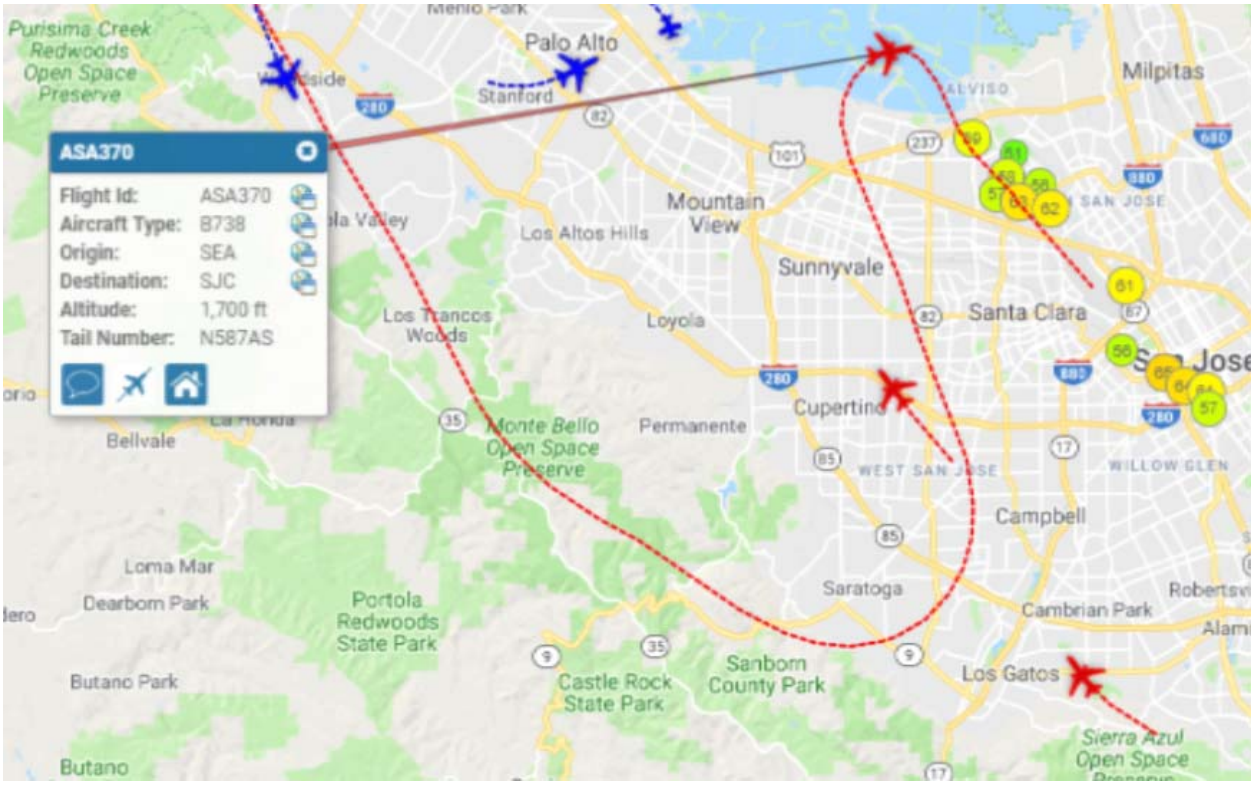


Figure 1. Approach path taken by a Boeing 738 (March 2, 2018 10:49:45am)
Note the narrow turning radius and the slight turn to the final approach

Pivot the flow of traffic to overlay its historic pattern of flow

This idea is meant to complement the three suggestions for introducing dispersion mentioned above: dispersion to the East, dispersion to the West and multiple flight paths based on aircraft size. The transition from Phase I to Phase II pivoted the flow of traffic counter-clockwise several degrees, on average, and the transition from Phase II to Phase III pushed the Phase II center of flow still further west. This suggestion is to pivot traffic back over its historic path of flow, dispersing it with the techniques described above. See the chart below for the flow immediately before Phase II ended, noting how the dotted white line, which approximates the center of flow, is pivoted from the solid and dashed yellow lines.

This clockwise pivot could be achieved by requiring airplanes to turn less than 180° to reach the final approach. If, for some reason, planes must make a 180° turn, they could compensate by turning the other way just before the final approach, as the plane in Figure 1 did.

I have been told that allowances for ‘turn-to-final’ are 15° for precision RNP and 30° for RNAV. If this is correct, the 'rail’ over Cupertino, Sunnyvale, Mountain View and Palo Alto could pivot clockwise by 15° or 30°, toward its historical center, enabling dispersion to the west using varying course headings.

While this idea might not be workable for the largest aircraft, it might be workable for medium-to-small aircraft.

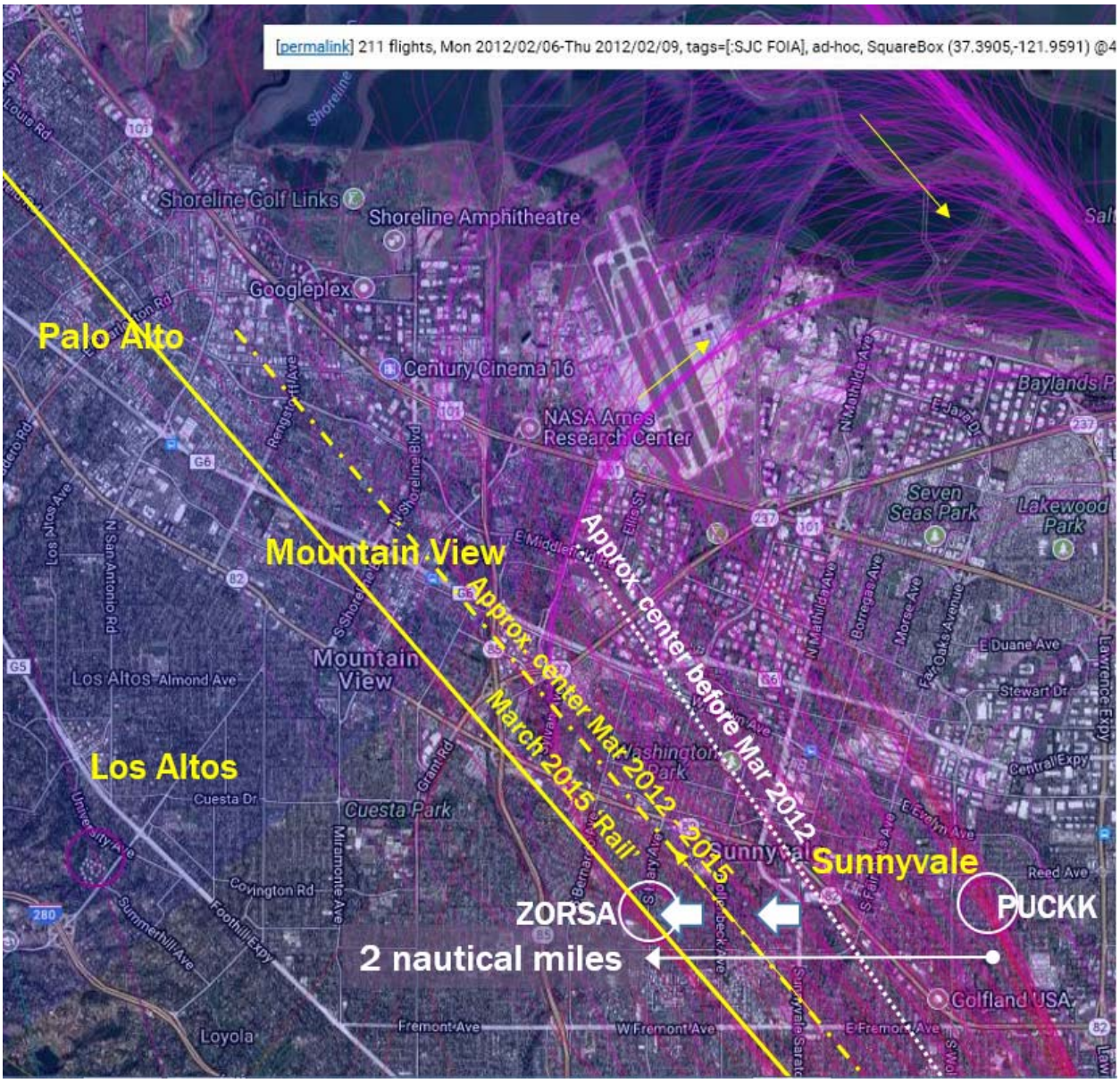


Figure 2. Flow of traffic just before Phase I ended in March 2012. Note the broad dispersion. (2/6/12 to 2/9/12 – 211 flights)

Develop two sets of procedures: one set for when efficiency is demanded, another for when it is not

During non-peak hours, noise-optimized procedures would be used.

Revert the final waypoint on the STAR procedure to PUCKK

Before March 2012, PUCKK was the final waypoint on the STAR procedure. As can be seen in Figure 2 (unless you're looking at a black and white printout!), arriving flights missed this waypoint far more than they hit it, perhaps because some airplanes needed to make a wider turn. But that was good, because

this procedure created considerable dispersion in practice. Vectoring flights can be a good way to reintroduce dispersion, as discussed above.

The intent of this suggestion is to provide a way to recreate the Phase I distribution, not to concentrate flights over PUCKK.

Revert the final waypoint on the STAR procedure to JESEN

During Phase II, the final waypoint on the STAR arrival procedure (JAWWS THREE) that brought airplanes to the vicinity of SJC was JESEN. With Phase III, the final waypoints for the STAR procedures (ROBIE and SILCN) that superseded the Phase II procedure was extended five miles past JESEN to ZORSA.

For this solution to work, the HITIR and ZORSA waypoints must be removed from the flight management systems guiding airplanes past JESEN or else the concentration will remain. The dispersion of Phase II arose because pilots had to make a slight turn after JESEN and the timing of their turns varied.

The dispersion during Phase II was broader than during Phase III, but it was not nearly as broad as Phase I. Could ATC enable and encourage more dispersion than offered by Phase II if this solution were to be adopted?

The solutions offered in this paper are presented in priority order, and reversion to PUCKK is preferred to this solution because it led to more dispersion in the past.

Define multiple flight paths over the historic corridor and rotate airplanes between them

This approach is prioritized lower than the others because it could allow the concept of 'rails' to persist. If airplanes could be 'dealt out' to the rails on a per plane basis, this becomes a poor man's form of dispersion. However, if all airplanes are routed to one corridor or another based on time of day then noise is being distributed, not dispersed. No one is going to want a flight every two to three minutes, even for a few hours, but that is what the sum of traffic to SJC is likely bring in ten years without dispersion.

Second Priority: Minimize Single-Flight Noise

Minimize 'level-flight' segments

I was told by a commercial pilot that flying level requires lift devices, like flaps and slats, and often jet thrust as well, all of which are very noisy. He also said that an airplane generally requires an extra 1000' of altitude for every 3nm to the runway to avoid using lift devices.

If all airplanes are forced arrive at HITIR at the same altitude, as they are today, and the RNP approach is optimized for noise, vectored airplanes not taking the RNP approach will need more lift because they have to fly further. Currently, 75% of airplanes reaching ZORSA do not take the RNP approach, and these flights should be optimized for sound. A data point: flights over ZORSA that continue on to Mountain View City Hall have already flown 2.17nm past ZORSA, which, per the pilot's rule, should require a drop of 725' to avoid noisy lift devices, but, in fact, during 2016 and 2017 they dropped only 230' on average in that segment.

Two procedural changes could help minimize level-flying segments. First, enable pilots flying aircraft that are to be vectored to arrive at HITIR at higher altitudes. This means eliminating the exact altitude requirement of 4000' for HITIR. Second, provide pilots with better predictability for their course well in advance of HITIR (and JESEN for that matter). Perhaps this could be done by ATC providing a course heading to the Bay that the pilot can target, as suggested earlier. Doing so would provide a double benefit: in addition to the dispersion discussed earlier, airplanes could fly quieter.

Defer noisy maneuvers until overflying compatible land adjacent to the Bay (Moffett Field, industrial parks)

Optimize all approach procedures for noise. Bring focus to the 75% of flights that do not fly the RNP approach

Other things being equal, encourage airplanes to fly slower and cleaner

Sound energy increases with the fifth power of the velocity of the airplane, so speed is important. Noise from lift devices (flaps and slats), which generate still more sound, is often the dominant source of noise on the ground. With advances in quieter engines, airframe noise is often a bigger factor in arrivals than jet noise. Use of jet thrust should also be minimized.

Other things being equal, raise altitudes

This is prioritized last because altitude, by itself, is not likely to buy us much. At a conference on airplane noise held in Long Beach last week, I learned that eight miles from the airport (FRA and LHR), planes arriving at a relatively steep 3.2° angle of descent were only 0.7dB quieter on average, with the best aircraft being 1.4dB quieter. That's not much. (ZORSA is 10 miles from SJC along the RNP path.) Whereas sound energy drops off with the fifth power of velocity and perhaps the sixth power of the speed of the exhaust, it drops off at only a bit more than the second power of altitude.

Higher altitudes can be especially helpful when they enable airplanes to fly cleaner or with less jet thrust (see the discussion of level-flight segments), however.

Other Suggestions

Fine-tune the trigger for South Flow

Airlines prefer North Flow to South Flow for SJC, so an attractive solution would be to increase the trigger used to declare South Flow conditions. A 5-knot windspeed trigger is currently used. Airports with longer runways use a 10-knot trigger. We have been told that a 10-knot trigger is not feasible at SJC. But 5- and 10-knots are very round numbers and perhaps an intermediate value would be possible. We should ask if a 6-knot trigger is feasible.

SJC to persuade airlines to install vortex generators on planes that emit a 'whine', perhaps in consideration of other benefits

SFO is about to send letters to airlines asking for their plans to install vortex generators. At the SFO Roundtable, SFO staff suggested that they would consider 'other options' if the response is lax. SJC

should consider taking similar measures, even if the percentage of planes requiring vortex generators is relatively low.

For flights that will arrive after the curfew, require pilots to state online what has caused them to violate the curfew - in advance of landing

A speaker at the Airplane Noise and Emissions Conference in Long Beach last week stated that this system reduced curfew incursions at one airport. Curfew incursions rose at SJC last year.

Revisit arrival procedures in the future as noise modeling tools improve

The tradeoffs between altitude, angle of descent, speed and whether an airplane is flying dirty are complex and interrelated. It is difficult to understand the net effects on noise without modeling. The FAA and academia are working to develop and improve tools to model aircraft noise. The FAA's noise modeling tool (AEDT) is being enhanced to better capture some of these effects, but those improvements are not yet available. We should encourage the FAA to revisit procedures that are developed as their modeling tools improve.

Currently, the FAA is shipping AEDT version 2d. AEDT version 3a will ship this fall and will offer enhanced modeling for noise levels below 65 DNL (the contour that defines who qualifies for noise remediation for their houses), which includes us. AEDT4 will incorporate airframe noise and engine noise, which could be a significant enhancement.

Appendix

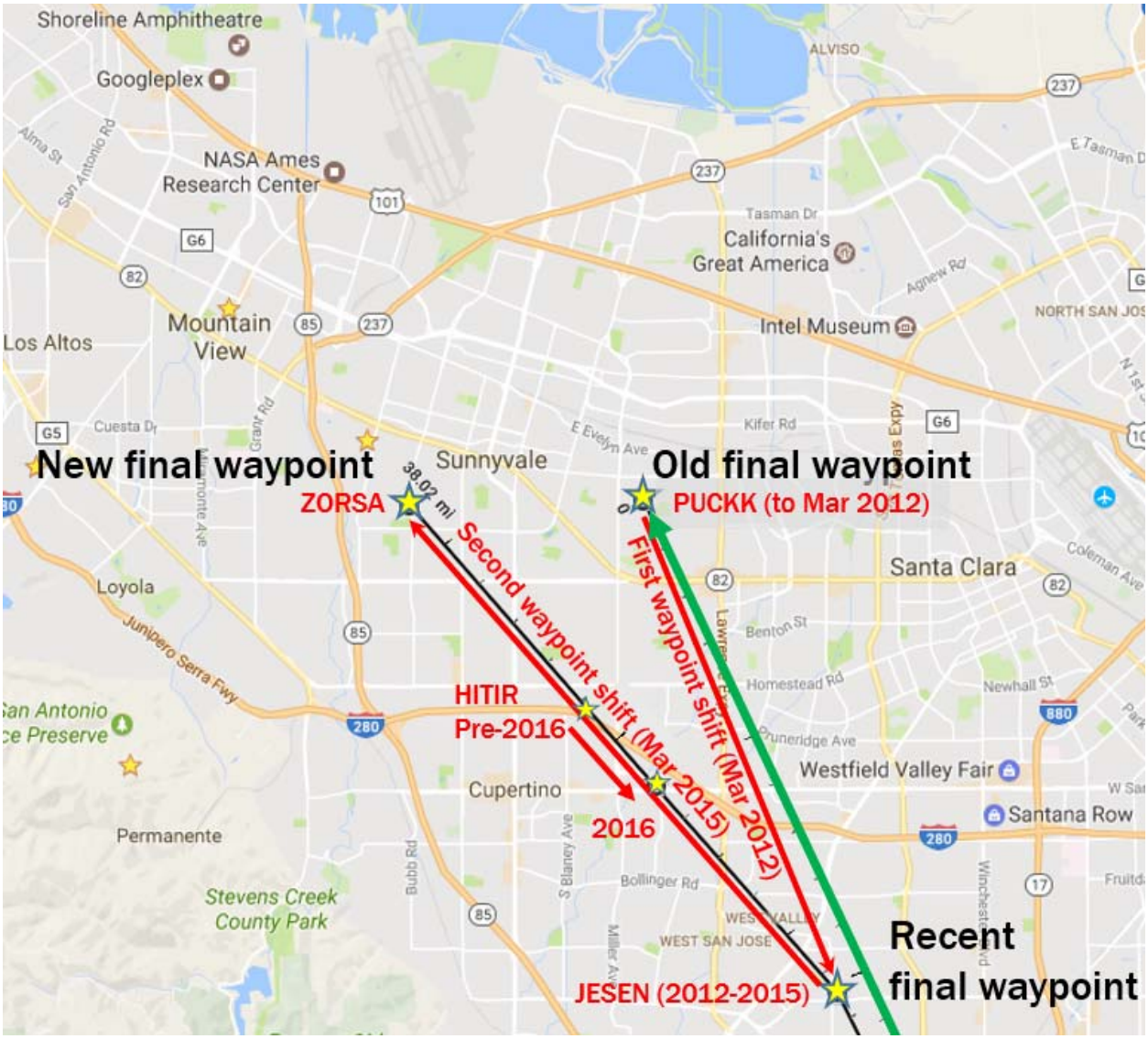


Figure 3. Evolution of waypoints on the STAR arrival procedures:

Disclaimer: The author is a layman. The statements in this paper are believed to be true but errors are possible.

Kazmierczak, Matthew

From: Robert Holbrook <>
Sent: Friday, March 09, 2018 10:50 AM
To: Glenn Hendricks; Kazmierczak, Matthew
Cc:
Subject: Ad Hoc Committee: Questions for a pilot
Attachments: RNP Z plates Evolution 2013-2016 (rnavz 20132016).pdf; JAWWS Evolution to RAZRR SILCN 2008-2017.pdf

Mayor Hendricks, Mr. Kazmierczak,

In its response to the "Requests, Questions and Next Steps" document posted for today's meeting, SJC staff said it would be helpful to know the kind of questions that might be asked of a pilot (item 13). In order to inform the discussion of this topic today, should it come up, I have prepared a list of questions. To answer some of these questions, I believe the pilot might want to refer to the attached documents, which show flight plates for earlier procedures. I have found that these are difficult to come by. I think the pilot might also want to refer to the vector maps in my document, "The Evolution of South Flow Traffic into SJC" posted at the Committee web site.

In addition, I expect the Committee would want to get the pilot's take on any other suggestions that are in play at the time he comes before the Committee.

Regards,
Robert Holbrook

Questions for a Pilot

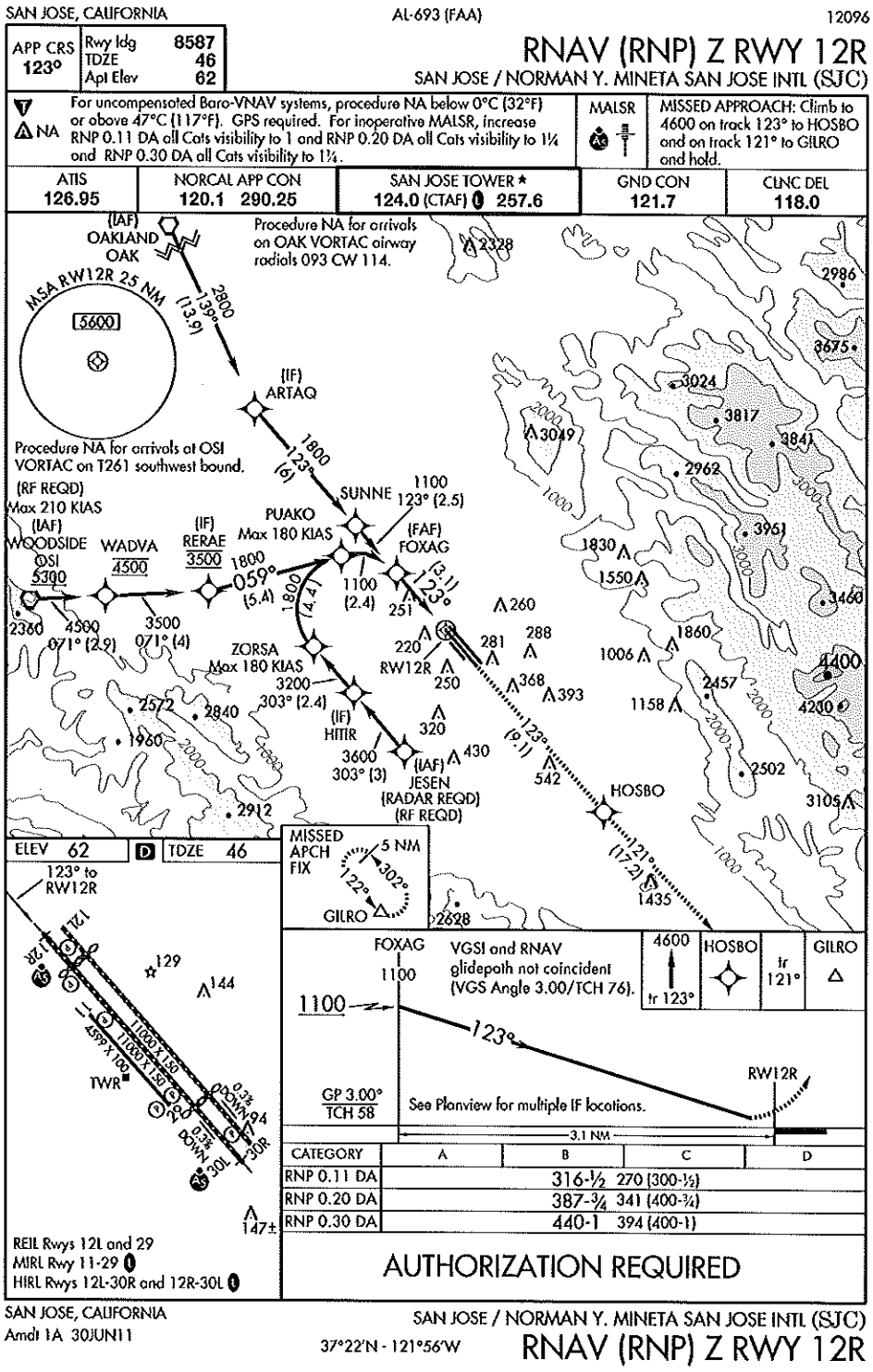
- Choice of Approach (past HITIR):
    - What drives your choice of approach after the STAR procedure is completed? Please discuss RNP, RNAV, Visual, Charted Visual, and vectored approaches.
    - Do different airlines use different approaches? Why?
    - To what extent do airlines define the approaches they use?
- Where along the arrival and approach paths would you expect single-flight noise to increase for reasons other than altitude?
- The Flight Management Controller (autopilot)
    - To what extent is the altitude you arrive at a waypoint driven by the Flight Management Controller (FMC)?
    - To what extent is the speed you arrive at a waypoint driven by the Flight Management Controller?
    - To what extent is deployment of flaps and slats driven by the Flight Management Controller?
    - Under what circumstances do you override the Flight Management Controller?
- RNP AR Z approach
    - Velocity
        - The RNP AR Z flight plate showed a maximum velocity of 180 knots at ZORSA prior to 2015. In 2016, the maximum velocity was increased to 210 knots. (Velocity is expressed as KIAS = knots indicated air speed, which is the airplane's speed relative to the wind.)
        - Why might this increase have occurred?
        - To what extent would you think this increase would be reflected in operations?
        - Since 2015 some data suggests that there has been an increase in average ground velocity at ZORSA, please comment.
    - Altitude

        - The Minimum Enroute Altitude (MEA) leading to ZORSA was 3200' prior to 2015 and 3000' in 2016
        - Why might this change have occurred?
        - To what extent would you think this reduction would be reflected in operations?
    - Would you expect lift (flaps and slats) and thrust to be required to execute the RNP AR Z turn after ZORSA?
    - Do planes make more noise when they turn? Is thrust required? Flaps?
    - How might the RNP AR Z turn be executed to create less noise?
- Level-flight segments for RNAV flights passing ZORSA over Mountain View and Palo Alto
    - HITIR specifies an exact altitude of 4000'. Is lift and thrust required to fly past ZORSA over Mountain View to Palo Alto?
    - Would arriving at HITIR at a higher altitude allow you to reduce the use of flaps/slats and thrust required to get to the Bay?
    - If so, what altitude window would you like to see to minimize noise while permitting vectoring?
- Noise and vectoring
    - From your perspective, would it be feasible for you to be vectored by ATC varying your course heading (from JESEN or HITIR) so that planes can be fanned out across Mountain View and Palo Alto as they approach their turn over the Bay?
    - Could you adjust the altitude you arrive at HITIR to fly more quietly to the Bay if ATC were to provide specific guidance of where you should turn long enough in advance?
    - When would you need that guidance for you to arrive HITIR at the best altitude for noise?
- Please discuss how changing ZORSA from a 'fly-over' fix to a 'fly-by' fix might affect where airplanes would turn. Would you expect this to increase dispersion across flights?
- From 2012 to 2015, the final waypoint on the JAWWS THREE STAR procedure was JESEN. Vector maps of flights during that period indicate more dispersion after JESEN than we have with the current procedures. How would the turn after JESEN have been driven during that period?
- Before 2012, the final waypoint on the JAWWS TWO STAR procedure was PUCKK. Vector maps of flights during that period show a great deal of dispersion. They also show that most airplanes were unable to reach PUCKK. Why and how might airplanes have left the STAR procedure before PUCKK?
- Would it be possible to prolong flying quieter over residential areas by 'catching up' and making more noise once industrial areas or the Bay have been reached?
- Do you have other ideas to increase dispersion?
- Do you have other ideas to reduce per-flight noise?

The first posting of RNP Z on Flightaware occurred between June 25, 2008 and Feb 3, 2009 per the Wayback Machine.

https://web.archive.org/web/20090501000000*/http://flightaware.com/resources/airport/KSJC

2013



2015

KSJC/SJC MINETA SAN JOSE INTL

JEPPESEN

27 FEB 15 Eff 5 Mar

(12-21)

SAN JOSE, CALIF RNAV (RNP) Z Rwy 12R

D-ATIS (ASOS when Twr inop)	NORCAL Approach (R)	*SAN JOSE Tower	*Ground
126.95	120.1	CTAF 124.0	121.7

BRIEFING STRIP™

RNAV	Final Apch Crs	Minimum Alt	RNP 0.15 DA(H)	Apt Elev 62′
	123°	FOXAG 1100′ (1054′)	380′ (334′)	TDZE 46′

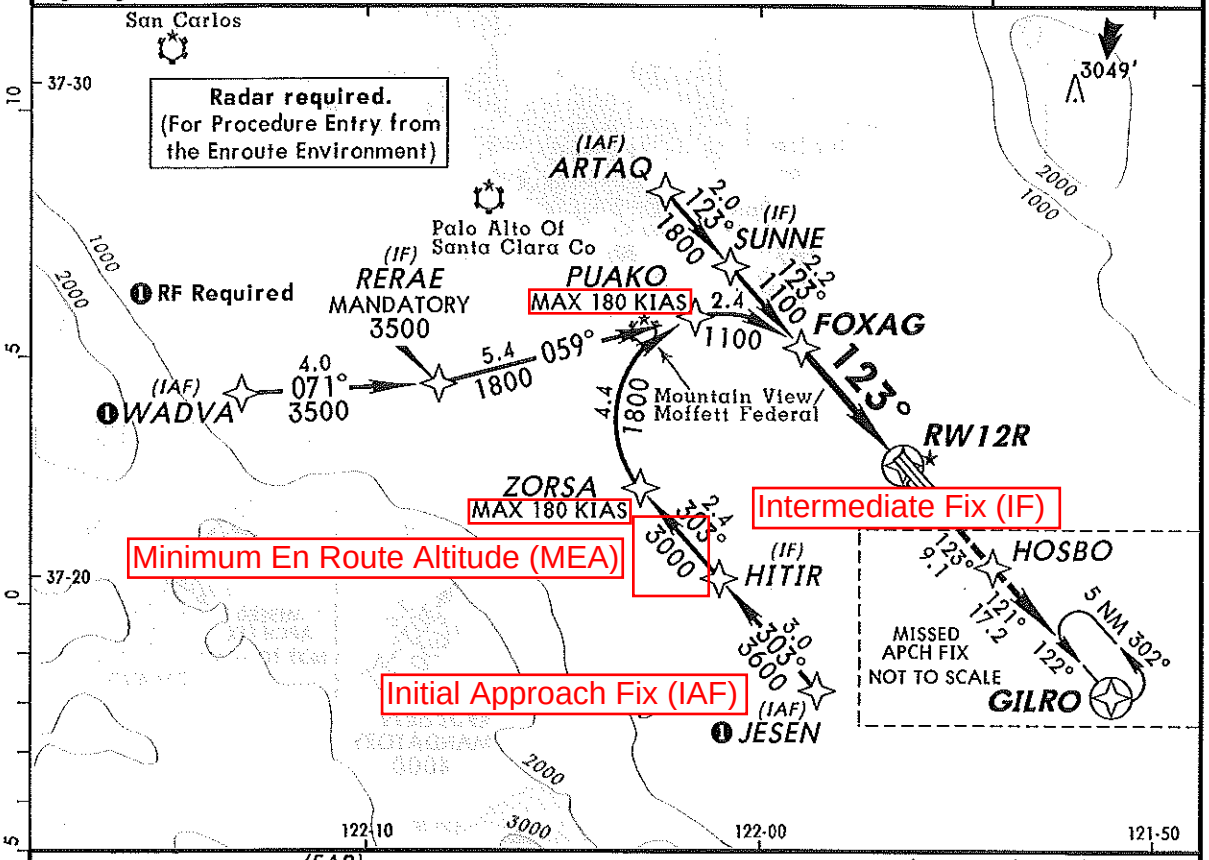
MISSED APCH: Climb to 4600′ on track 123° to HOSBO and on track 121° to GILRO and hold.

Alt Set: INCHES Trans level: FL 180 Trans alt: 18000′

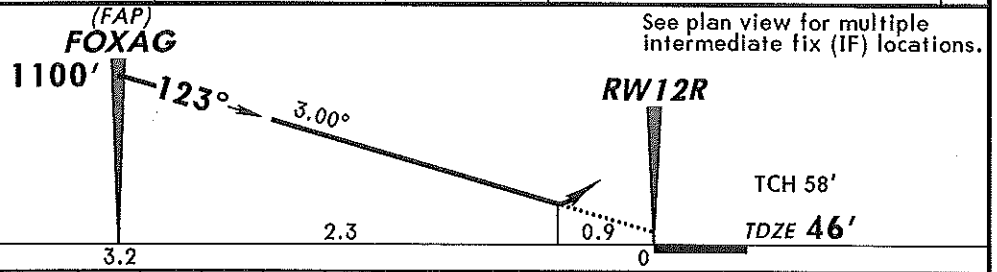
1. AUTHORIZATION REQUIRED. 2. GPS required.
3. For uncompensated Baro-VNAV systems, procedure not authorized below -1°C (31°F) or above 54°C (130°F). 4. VGSI and RNAV glidepath not coincident. 5. Pilot controlled lighting 124.0.

5600′

MSA RW12R



1 in=5 NM



See plan view for multiple intermediate fix (IF) locations.

Gnd speed-Kts	70	90	100	120	140	160
Glide Path Angle 3.00°	372	478	531	637	743	849
MAP at DA						

MALSR PAPI 4600′ on 123° HOSBO

TERPS

STRAIGHT-IN LANDING RWY 12R

	RNP 0.15 DA(H) 380′ (334′)		RNP 0.30 DA(H) 486′ (440′)	
	RAIL out	ALS out	RAIL out	ALS out
A	5/8	3/4	1	1 3/8
B				
C				
D				

TERPS AMEND 2 5 MAR 2015

CHANGES: Procedure.

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SAN JOSE, CALIFORNIA | AL-693 (FAA) | 15232

RNAV (RNP) Z RWY 12R

NORMAN Y MINETA SAN JOSE INTL (SJC)

APP CRS	Rwy Idg	8587
123°	TDZE	46
	Apt Elev	62

For uncompensated Baro-VNAV systems, procedure NA below 0°C (32°F) or above 54°C (130°F). GPS required.

MALSR

MISSED APPROACH: Climb to 4600 on track 123° to HOSBO and on track 121° to GILRO and hold.

ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL
126.95	120.1 290.25	124.0 (CTAF) 257.6	121.7	118.0

RADAR REQUIRED

MSA RW12R 25 NM 5700

(IAF) ARTAQ 1800 123° (2)

PUAKO Max 210 KIAS

(IF) SUNNE 1100 123° (2.2)

(IAF) WADVA 4500 (RF REQD)

(IF) RERAE 1800 059° (5.3)

(FAF) FOXAG 123° (3.2)

1100 (2.4)

1800 (4.4)

3500 071° (4)

ZORSA Max 210 KIAS

3000 303° (3.1)

RW12R

(IF) HITIR 4000 (RF REQD)

123° (9.1)

HOSBO

121° (17.2)

ELEV 62 D TDZE 46

123° to RW12R

MISSED APCH FIX 5 NM 122° 302° GILRO

FOXAG 1100

VGSI and RNAV glidepath not coincident (VGSI Angle 3.00/TCH 75).

4600 fr 123° HOSBO fr 121° GILRO

1100

123°

RW12R

GP 3.00° TCH 58

See plonview for multiple IF locations.

3.2 NM

CATEGORY	A	B	C	D
RNP 0.15 DA	380-⅝ 334 (400-⅛)			
RNP 0.30 DA	486-1 440 (500-1)			

AUTHORIZATION REQUIRED

REIL Rwy 12L

HIRL Rwys 12L-30R and 12R-30L

SAN JOSE, CALIFORNIA

Amdt 3 20AUG15

37°22'N-121°56'W

NORMAN Y MINETA SAN JOSE INTL (SJC)

RNAV (RNP) Z RWY 12R

SW-2, 31 MAR 2016 to 28 APR 2016

SW-2, 31 MAR 2016 to 28 APR 2016

SAN JOSE, CALIFORNIA | AL-693 (FAA) | 15232

RNAV (RNP) Z RWY 12R

NORMAN Y MINETA SAN JOSE INTL (SJC)

APP CRS		
123°	Rwy Idg	8587
	TDZE	46
	Apt Elev	62

For uncompensated Baro-VNAV systems, procedure NA below 0°C (32°F) or above 54°C (130°F). GPS required.

MALSR

MISSED APPROACH: Climb to 4600 on track 123° to HOSBO and on track 121° to GILRO and hold.

ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL
126.95	120.1 290.25	124.0 (CTAF) 257.6	121.7	118.0

RADAR REQUIRED

MSA RW12R 25 NM 5700

(IAF) ARTAQ 1800 123° (2)

PUAKO Max 210 KIAS

(IF) SUNNE 1100 123° (2.2)

(IAF) WADVA 4500 (RF REQD)

(IF) RERAE 1800 059° (5.3)

(FAF) FOXAG 123° (3.2)

1100 (2.4)

1800 (4.4)

3500 071° (4)

ZORSA Max 210 KIAS

3000 303° (3.1)

(IF) HITIR 4000 (RF REQD)

RW12R

123° (9.1)

HOSBO

121° (17.2)

1435

GILRO

MISSED APCH FIX 5 NM 122° 302°

ELEV 62 | D | TDZE 46

123° to RW12R

TWR

REIL Rwy 12L

HIRL Rwys 12L-30R and 12R-30L

FOXAG 1100

VGSI and RNAV glidepath not coincident (VGSI Angle 3.00/TCH 75).

4600 tr 123° | HOSBO | tr 121° | GILRO

GP 3.00° TCH 58

See planview for multiple IF locations.

3.2 NM

CATEGORY	A	B	C	D
RNP 0.15 DA	380-⅝ 334 (400-⅛)			
RNP 0.30 DA	486-1 440 (500-1)			

AUTHORIZATION REQUIRED

SAN JOSE, CALIFORNIA
Amdt 3 20AUG15

37°22'N-121°56'W

NORMAN Y MINETA SAN JOSE INTL (SJC)

RNAV (RNP) Z RWY 12R

SW-2, 28 APR 2016 to 26 MAY 2016

SW-2, 28 APR 2016 to 26 MAY 2016

RNAV (RNP) Z RWY 12R

NORMAN Y MINETA SAN JOSE INTL (SJC)

APP CRS	Rwy ldg	8587
123°	TDZE	46
	Apt Elev	62

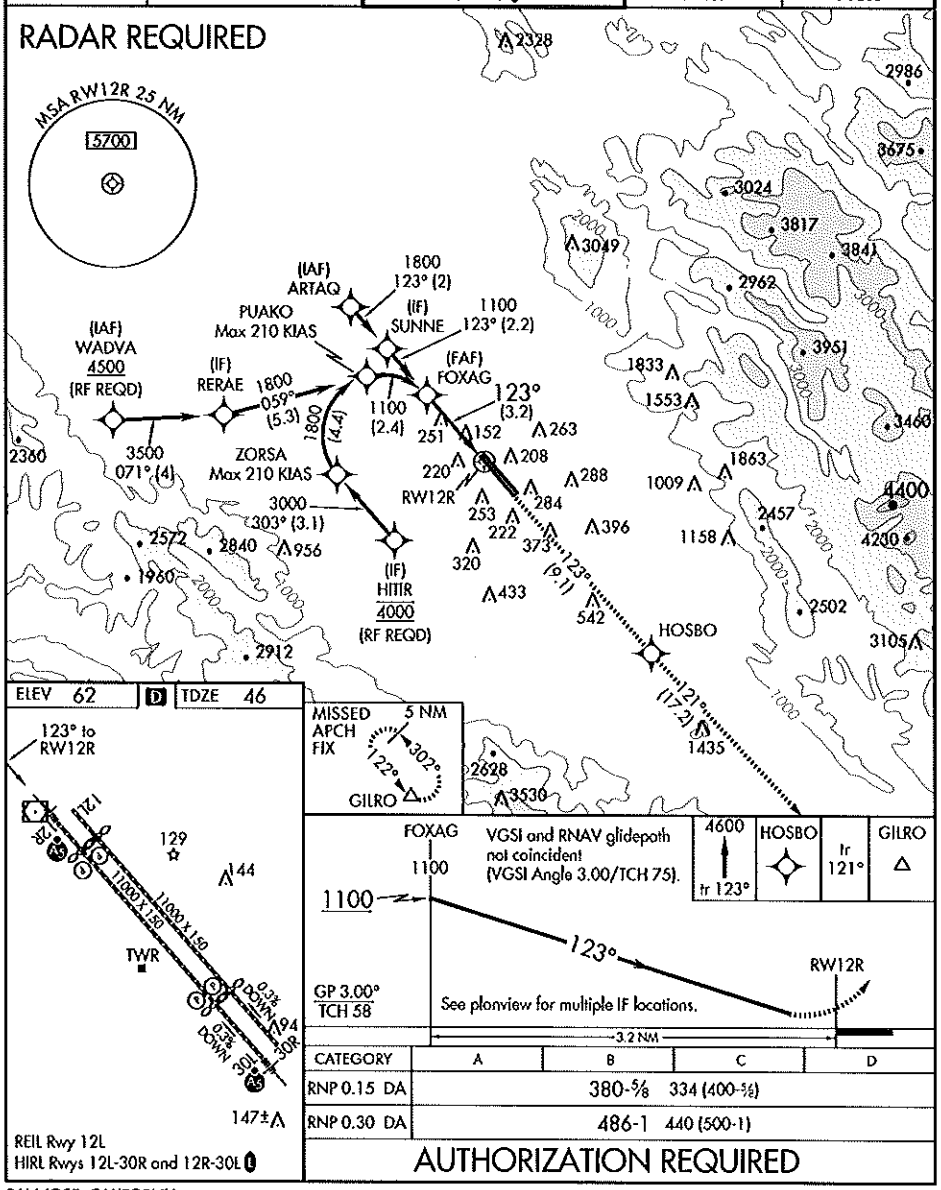
For uncompensated Baro-VNAV systems, procedure NA below 0°C (32°F) or above 54°C (130°F). GPS required.

MALSR

MISSED APPROACH: Climb to 4600 on track 123° to HOSBO and on track 121° to GILRO and hold.

ATIS	NORCAL APP CON	SAN JOSE TOWER *	GND CON	CLNC DEL
126.95	120.1 290.25	124.0 (CTAF) 257.6	121.7	118.0

RADAR REQUIRED



ELEV 62	D	TDZE 46

CATEGORY	A	B	C	D
RNP 0.15 DA	380-⅝ 334 (400-½)			
RNP 0.30 DA	486-1 440 (500-1)			

AUTHORIZATION REQUIRED

SAN JOSE, CALIFORNIA
Amdt 3 20AUG15

37°22'N-121°56'W

NORMAN Y MINETA SAN JOSE INTL (SJC)

RNAV (RNP) Z RWY 12R

SW-2, 26 MAY 2016 to 23 JUN 2016

SW-2, 26 MAY 2016 to 23 JUN 2016

APP CRS	Rwy ldg	8587
123°	TDZE	46
	Apt Elev	62

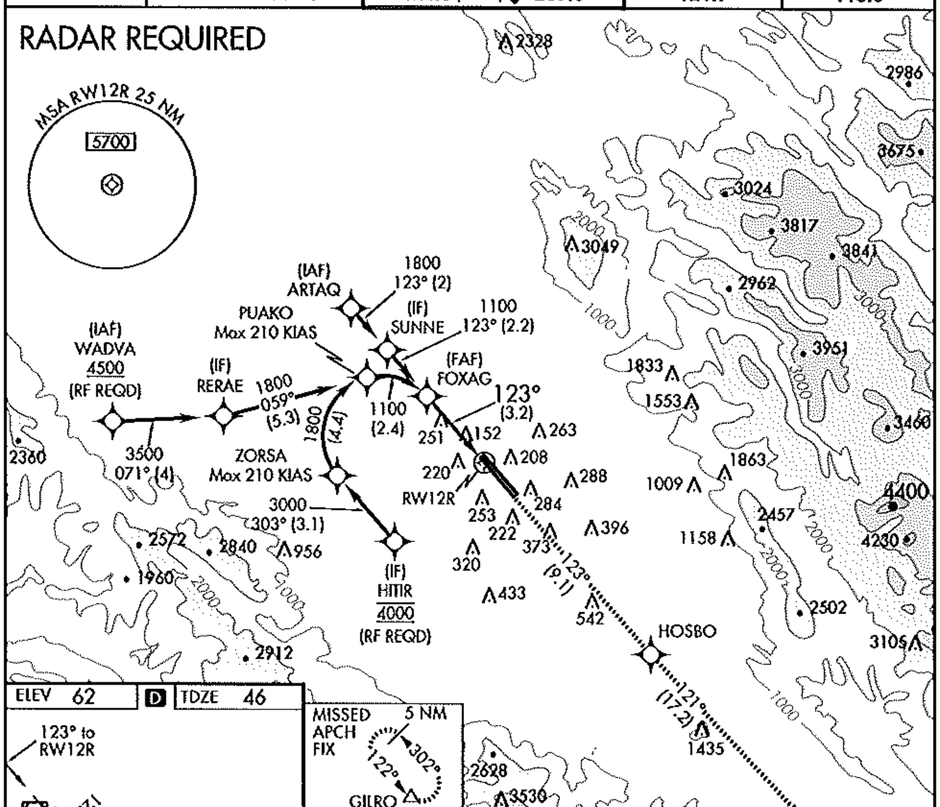
RNAV (RNP) Z RWY 12R
NORMAN Y MINETA SAN JOSE INTL (SJC)

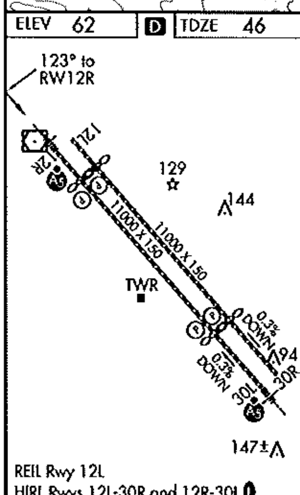
For uncompensated Baro-VNAV systems, procedure NA below 0°C (32°F) or above 54°C (130°F). GPS required.

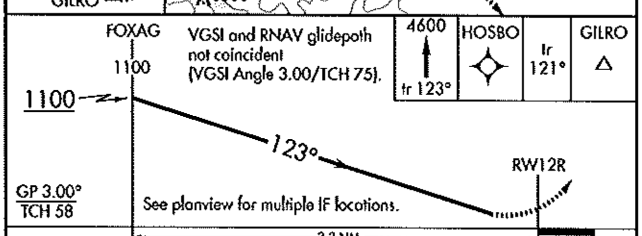
MALSR

MISSED APPROACH: Climb to 4600 on track 123° to HOSBO and on track 121° to GILRO and hold.

ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL
126.95	120.1 290.25	124.0 (CTAF) 257.6	121.7	118.0







CATEGORY	A	B	C	D
RNP 0.15 DA	380-⅝ 334 (400-⅝)			
RNP 0.30 DA	486-1 440 (500-1)			

AUTHORIZATION REQUIRED

RNAV (RNP) Z RWY 12R

NORMAN Y MINETA SAN JOSE INTL (SJC)

APP CRS	Rwy ldg	8587
126°	TDZE	46
	Apt Elev	62

For uncompensated Baro-VNAV systems, procedure NA below 0°C (32°F) or above 54°C (130°F). GPS required.

MALSR

MISSED APPROACH: Climb to 4600 on track 126° to HOSBO and on track 124° to GILRO and hold.

ATIS	NORCAL APP CON	SAN JOSE TOWER *	GND CON	CLNC DEL	CPDLC
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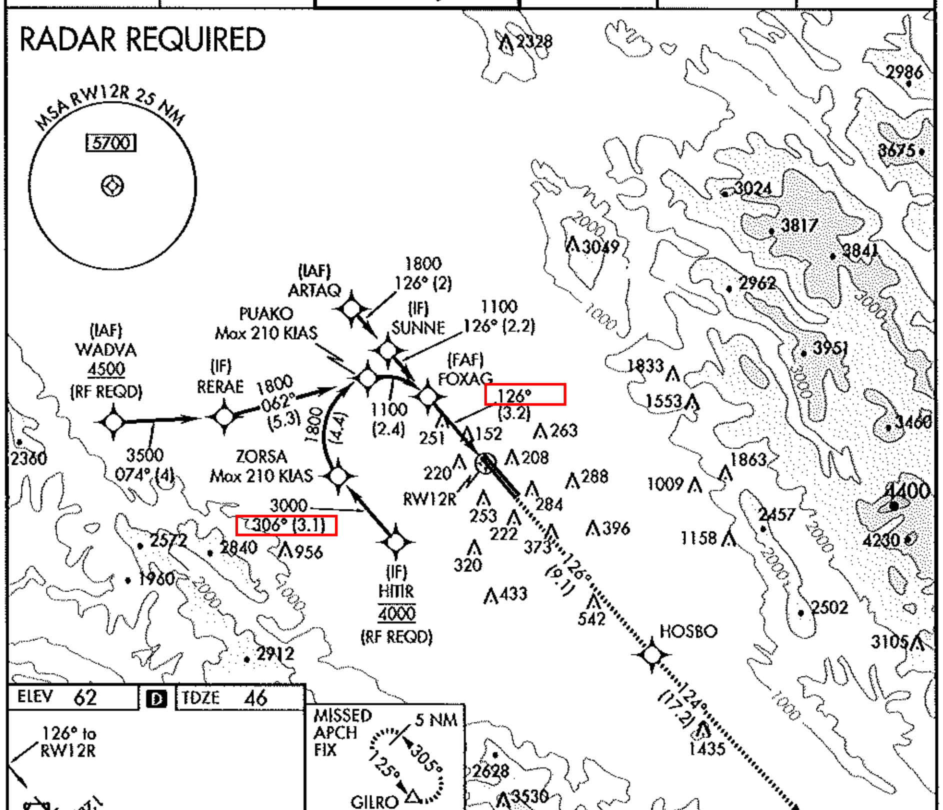
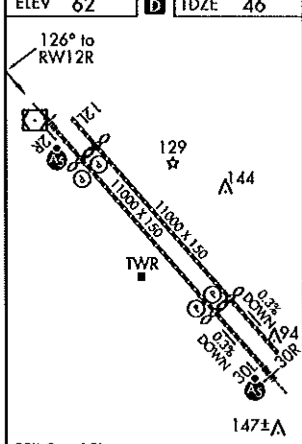
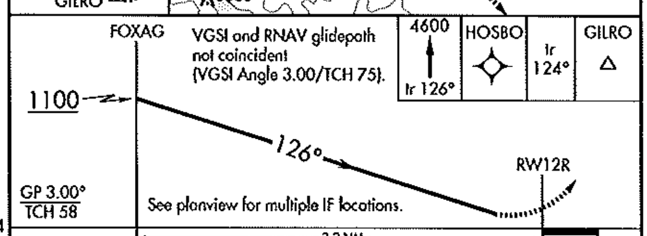
RADAR REQUIRED





REIL Rwy 12L
HIRL Rwys 12L-30R and 12R-30L

FOXAG	4600 ↑ tr 126°	HOSBO	tr 124°	GILRO



CATEGORY	A	B	C	D
RNP 0.15 DA	380-⅝ 334 (400-⅝)			
RNP 0.30 DA	486-1 440 (500-1)			

AUTHORIZATION REQUIRED

2016

SAN JOSE, CALIFORNIA

AL-693 (FAA)

16203

RNAV (RNP) Z RWY 12R

NORMAN Y MINETA SAN JOSE INTL (SJC)

APP CRS		
126°	Rwy ldg	8587
	TDZE	46
	Apt Elev	62

For uncompensated Baro-VNAV systems, procedure NA below 0°C (32°F) or above 54°C (130°F). GPS required.

MALSR

MISSED APPROACH: Climb to 4600 on track 126° to HOSBO and on track 124° to GILRO and hold.

ATIS	NORCAL APP CON	SAN JOSE TOWER*	GND CON	CLNC DEL	CPDLC
126.95	120.1 290.25	124.0 (CTAF) 257.6	121.7	118.0	

RADAR REQUIRED

MSA RW12R 25 NM 5700

(IAF) ARTAQ 1800 126° (2)

PUAKO Max 210 KIAS

(IF) SUNNE 1100 126° (2.2)

(IAF) WADVA 4500 (RF REQD)

(IF) RERAE 1800 062° (5.3)

(FAF) FOXAG 126° (3.2)

1100 (2.4)

1800 (4.4)

3500 074° (4)

ZORSA Max 210 KIAS

3000 306° (3.1)

RW12R

(IF) HITTR 4000 (RF REQD)

126° (9.1)

HOSBO

124° (17.2)

1435

ELEV 62 | D | TDZE 46

126° to RW12R

MISSED APCH FIX 5 NM 125° 305° GILRO

FOXAG

VGSI and RNAV glidepath not coincident (VGSI Angle 3.00/TCH 75).

4600 ↑ tr 126° | HOSBO | tr 124° | GILRO

1100

126°

RW12R

GP 3.00° TCH 58

See planview for multiple IF locations.

3.2 NM

CATEGORY	A	B	C	D
RNP 0.15 DA	380-⅝ 334 (400-⅝)			
RNP 0.30 DA	486-1 440 (500-1)			

AUTHORIZATION REQUIRED

TWR

REIL Rwy 12L

HIRL Rwys 12L-30R and 12R-30L

SAN JOSE, CALIFORNIA

Amdt 3A 21JUL16

37°22'N-121°56'W

NORMAN Y MINETA SAN JOSE INTL (SJC)

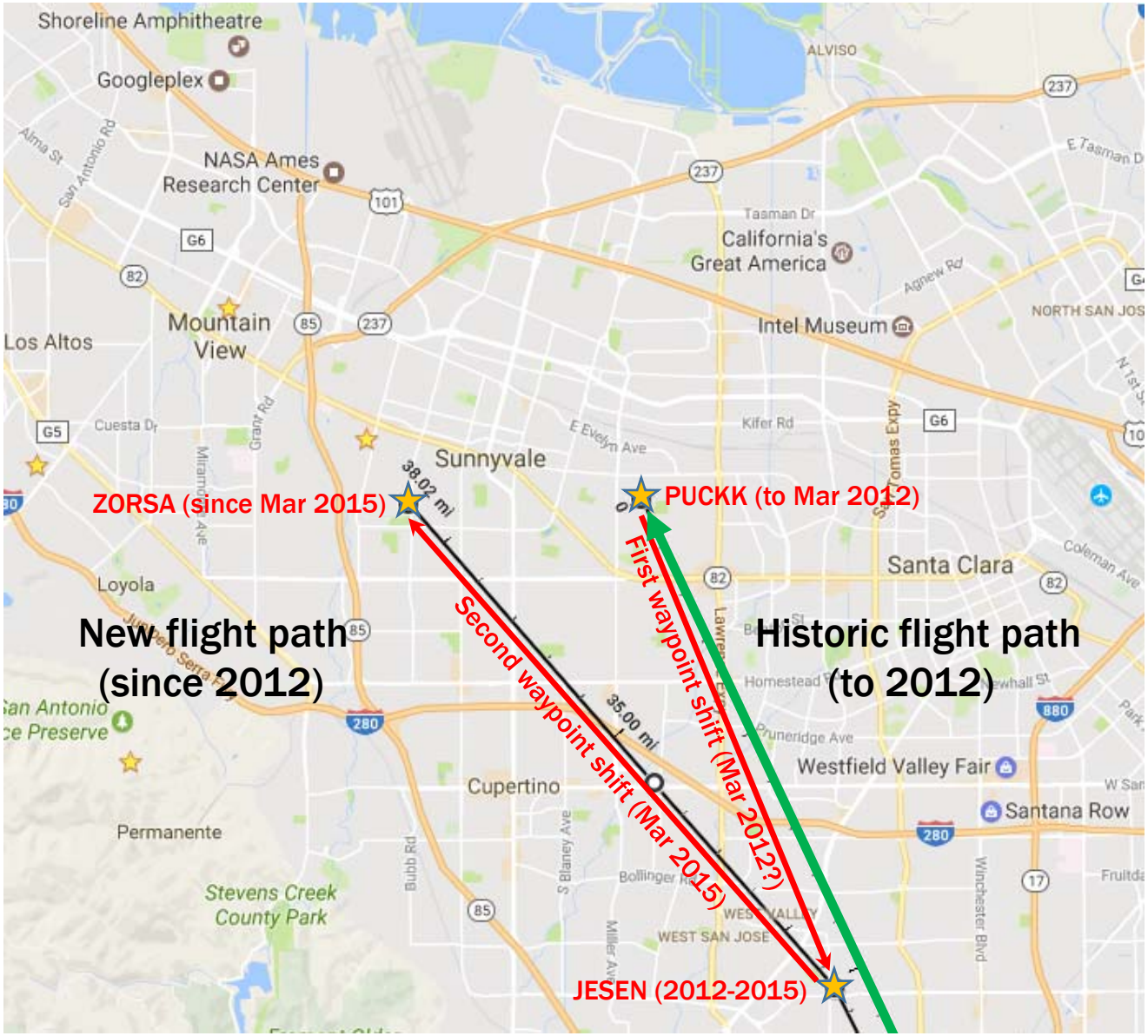
RNAV (RNP) Z RWY 12R

SW-2, 18 AUG 2016 to 15 SEP 2016

SW-2, 18 AUG 2016 to 15 SEP 2016

Flight path shifted in two stages

Final waypoints for arrivals: 2012 to 2015



SW-2, 03 JUL 2008 to 31 JUL 2008

NORCAL APP CON
124.525 348.675
ATIS 126.95

JAWWS 2 was used in Feb 2005: https://web.archive.org/web/20050217032821/http://www.airnav.com/airport/ksjc

MUSTANG

FL180 167° (111)

COALDALE
117.7 OAL
Chan 124
N38°00.20'-W117°46.23'
L-9, H-3

OAKLAND
116.8 OAK
Chan 115

EL NIDO
114.2 HYP
Chan 89
N37°13.16'-W120°24.02'
L-3, H-3

SAN JOSE
114.1 SJC
Chan 88

65 94

ELCAP
N37°41.17'
W119°46.10'
TURBOJET VERTICAL NAVIGATION PLANNING INFORMATION
Expect clearance to cross at or below FL 240.

PAPEE
N37°08.38' - W120°46.17'
TURBOJET VERTICAL NAVIGATION PLANNING INFORMATION
Expect clearance to cross at or below 11000'.

R-138 24
300°
R-242
318° (29) 53
PLUCKK
N37°21.81'
W122°00.58'

FL180 212° (41) 48
R-032
12000 247° (29)
8000 240° (18)
R-067
FL210 216° (611)
FL180 247° (49)
CANDA
N37°23.38'
W118°47.03'

JAWWS
N36°55.50'
W121°45.24'
TURBOJET VERTICAL NAVIGATION PLANNING INFORMATION
Expect clearance to cross below 8000'.

240° (49)
8000 318° (17)
R-345
PANOCHE
112.6 PXN
Chan 73
R-348
KNOLS
N37°17.17' - W119°47.50'
TURBOJET VERTICAL NAVIGATION PLANNING INFORMATION
Expect clearance to cross at or below FL 240.

R-128
12000 308° (50)
R-212
CLOVIS
112.9 CZQ
Chan 76

SALINAS
117.3 SNS
Chan 120
N36°39.83'
W121°36.19'

ROBIE
N35°58.89'
W121°00.57'

J6
FL180 276° (54)
71
86
AVENAL
117.1 AVE
Chan 118
N35°38.82'
W119°58.72'
L-3-7, H-4

J88-126
FL180 312° (107)
SAN MARCUS
114.9 RZS
Chan 96
N34°30.57'-W119°46.26'
L-3-4-7, H-4

NOTE: Radar required.
NOTE: Procedure authorized for runway 12 only.

(NARRATIVE ON FOLLOWING PAGE)

NOTE: Chart not to scale.

SW-2, 03 JUL 2008 to 31 JUL 2008

https://web.archive.org/web/20120106030336/http://flightaware.com/resources/airport/KSJC/procedures

ksjc arrival

Inbox Drive Most Visited Calendar Getting Started Az

INTERNET ARCHIVE WayBackMachine

http://flightaware.com/resources/airport/KSJC/procedures Go

49 captures
3 Aug 09 - 2 Feb 17

NOV JAN APR
2011 6 2012 2013

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- Buy KSJC Excel Flight History
- KSJC Statistics and Graphs
- National and Regional Weather Maps

RESERVATIONS

Reserve Avis Car AVIS

Reserve Enterprise Car

For pick-up on the ramp at KSJC.

Reserve Hotel

Reserve hotel rooms in San Jose, CA now.

LIVE FLIGHT TRACKER

PRIVATE FLIGHT TRACKER:
Flight/Tail# e.g. N123AB
TRACK FLIGHT

AIRLINE FLIGHT TRACKER:
Airline e.g. United
Flight # e.g. 450
TRACK FLIGHT

FORGOT THE FLIGHT NUMBER?

AIRPORT TRACKER/INFO
Airport Code KSJC
-or-
Airport City e.g. New York
VIEW ACTIVITY
VIEW INFO

Bundled Procedure ("Plates") Download

(right click to save)

- All Departures (DPs)
- All Arrivals (STARs)
- All Approaches (IAPs)
- Special Minimums
- All KSJC Procedures (with diagram)

Terminal Procedures

Type	Name
APD	AIRPORT DIAGRAM
DP	MOONY THREE
DP	LOUPE ONE
DP	SUNOL SIX
DP	DANVILLE TWO
DP	ALTAM SEVEN
DP	SAN JOSE NINE
HOT	HOT SPOT
IAP	RNAV (GPS) Y RWY 30R
IAP	RNAV (RNP) Z RWY 12L
IAP	RNAV (RNP) Z RWY 12R
IAP	RNAV (RNP) Z RWY 30L

Terminal Procedures

Type	Name
IAP	RNAV (RNP) Z RWY 30R
IAP	VOR/DME RWY 30L
IAP	VOR/DME RWY 30R
IAP	VOR RWY 12R
IAP	FAIRGROUNDS VISUAL RWY 30L/R
IAP	ILS OR LOC RWY 12R
IAP	ILS OR LOC/DME RWY 30L
IAP	RNAV (GPS) RWY 11
IAP	RNAV (GPS) RWY 29
IAP	RNAV (GPS) Y RWY 12L
IAP	RNAV (GPS) Y RWY 12R

Terminal Procedures

Type	Name
MIN	TAKE-OFF MINIMUMS
MIN	ALTERNATE MINIMUMS
STAR	ROBIE THREE
STAR	GOLDEN GATE SIX
STAR	EL NIDO FIVE
STAR	JAWWS TWO
STAR	CAPITOL THREE
STAR	BRINY ONE
STAR	POINT REYES ONE

Instrument Procedures

https://web.archive.org/web/20120401155514/http://www.airnav.com/airport/KSJC

From earlier on this page: "FAA Information Effective 09 February 2012"

NOTE: All procedures below are presented as PDF files. If you need a reader for these files, you should download the free Adobe Reader.

NOT FOR NAVIGATION. Please procure official charts for flight.
FAA instrument procedures published for use between 8 March 2012 at 0901Z and 5 April 2012 at 0900Z.

STARs - Standard Terminal Arrivals

BRINY ONE **CHANGED**	download (217KB)
CAPITOL THREE	download (107KB)
EL NIDO FIVE **CHANGED**	download (261KB)
GOLDEN GATE SIX **CHANGED**	download (403KB)
JAWWS THREE **NEW**	2 pages: [1] [2] (427KB)
POINT REYES ONE **CHANGED**	2 pages: [1] [2] (331KB)
ROBIE THREE	download (227KB)

This plate might never have been used. JAWWS 2 was used until 8 Mar 2012.

© Navtech - ksjc05aaorg0

THIS CHART IS A PART OF NAVIGRAPH NDAC AND IS INTENDED FOR FLIGHT SIMULATION USE ONLY

Change: Designator, Routeing

Norcal APP			San Jose TWR	GND	ATIS (D)
120.1	125.35	134.5	124.0	121.7	126.95
133.95	126.475	124.525			
TL ATC	AD Elev 62				

Oakland D116.8 OAK
N37 43.6 W122 13.4

Oakland KOAK

San Francisco KSFO

Moffett Field KNUQ

San Jose D114.1 SJC
N37 22.5 W121 56.7

Reid Hillview KRHV

R138

300°

R242

JESEN
D24 OAK
N37 21.8 W122 00.6

16

13

JAWWS 3

SHRRK
D40 OAK
N37 07.3 W121 52.1

HYP

EL NIDO TR

49

Expect to cross:
MAX FL200

El Nido D114.2 HYP
N37 13.2 W120 24.0

240° 18 8000

212° 41

MUSTANG TR

FMG

99 94 111 167° FL180

Mustang D117.9 FMG
N39 31.9 W119 39.4

ELCAP
D48 CZQ
N37 41.2 W119 46.1

CANDA TR

247° 49 FL180

CANDA
N37 23.4 W118 47.0

29 12000

KNOLS
N37 17.2 W119 47.5

R348

R345

JAWWS
Expect to cross:
MAX 8000
D53 OAK
N36 55.5 W121 45.2

138°

318° 17 8000

Salinas D117.3 SNS
N36 39.8 W121 36.2

PAPEE
Expect to cross:
MAX 11000
N37 08.4 W120 46.2

Clovis D112.9 CZQ
N36 53.1 W119 48.9

GOALI
Expect to cross:
MAX FL200
N36 27.6 W121 25.4

308° 15

Panoche D112.6 PXN
N36 42.9 W120 46.7

R212

308° 12000 35

❷ RZS
SAN MARCUS TR

❸ ROBIE
N35 58.9 W121 00.6

312° 107 FL180 ❷

J88-126

AVENAL TR

276° 54 FL180

J6

Avenal D117.1 AVE
N35 38.8 W119 58.7

San Marcus D114.9 RZS
N34 30.6 W119 46.3

❸
ROBIE
127°
307°

COM FAIL
Proceed direct SJC and execute ILS RWY 12R

❶ PROC authorised for RWY 12 only

SPEED
MAX 250kt below 10000ft

RADAR required

Expect RADAR vectors to final APP course

56
SJC

0 5 10 15 20nm

STAR JAWWS 3 ❶

WEF 09 FEB 12

40 - 5 | 11 JAN 12

USA (CA) - KSJC / SJC

Norman Y Mineta INTL SAN JOSE

NORCAL APP CON
120.1 290.25
ATIS 126.95

MUSTANG
117.9 FMG
Chan 126
N39°31.88′-W119°39.36′
L-9, H-3

FL180
167°
(111)

65
94

TURBOJET VERTICAL NAVIGATION PLANNING INFORMATION
Expect FL200

EL NIDO
114.2 HYP
Chan 89
N37°13.17′-W120°24.01′
L-3, H-3

OAKLAND
116.8 OAK
Chan 115

SAN JOSE
114.1 SJC
Chan 88

ELCAP
N37°41.16′
W119°46.10′

COALDALE
117.7 OAL
Chan 124

PAPEE
N37°08.54′ - W120°45.78′
TURBOJET VERTICAL NAVIGATION PLANNING INFORMATION
Expect 11000

R-138
300°
28
JESEN
N37°17.69′
W121°58.53′
40
12
R-181
SHRRK
N37°07.30′
W121°52.09′
53
(13)
6100
318°
8000
(17)
JAWWS
N36°55.50′
W121°45.24′
TURBOJET VERTICAL NAVIGATION PLANNING INFORMATION
Expect 8000

8000
240°
(49)
8000
240°
(18)
R-032
FL180
212°
(41)
48
12000
247°
(29)
R-067
FL180
247°
(49)
R-216
CANDA
N37°23.38′
W118°47.03′
H-3
KNOLS
N37°17.17′
W119°47.50′
R-348

SALINAS
117.3 SNS
Chan 120
N36°39.83′
W121°36.19′
R-346
PANOCHE
112.6 PXN
Chan 73

CLOVIS
112.9 CZQ
Chan 76

R-228
12000
308°
(15)
R-128
12000
308°
(35)
R-212

GOALI
N36°27.57′
W121°25.44′
TURBOJET VERTICAL NAVIGATION PLANNING INFORMATION
Expect FL 200

50
ROBIE
N35°58.89′
W121°00.57′
308°
71
86
FL180
276°
(54)
FL180
312°
(107)

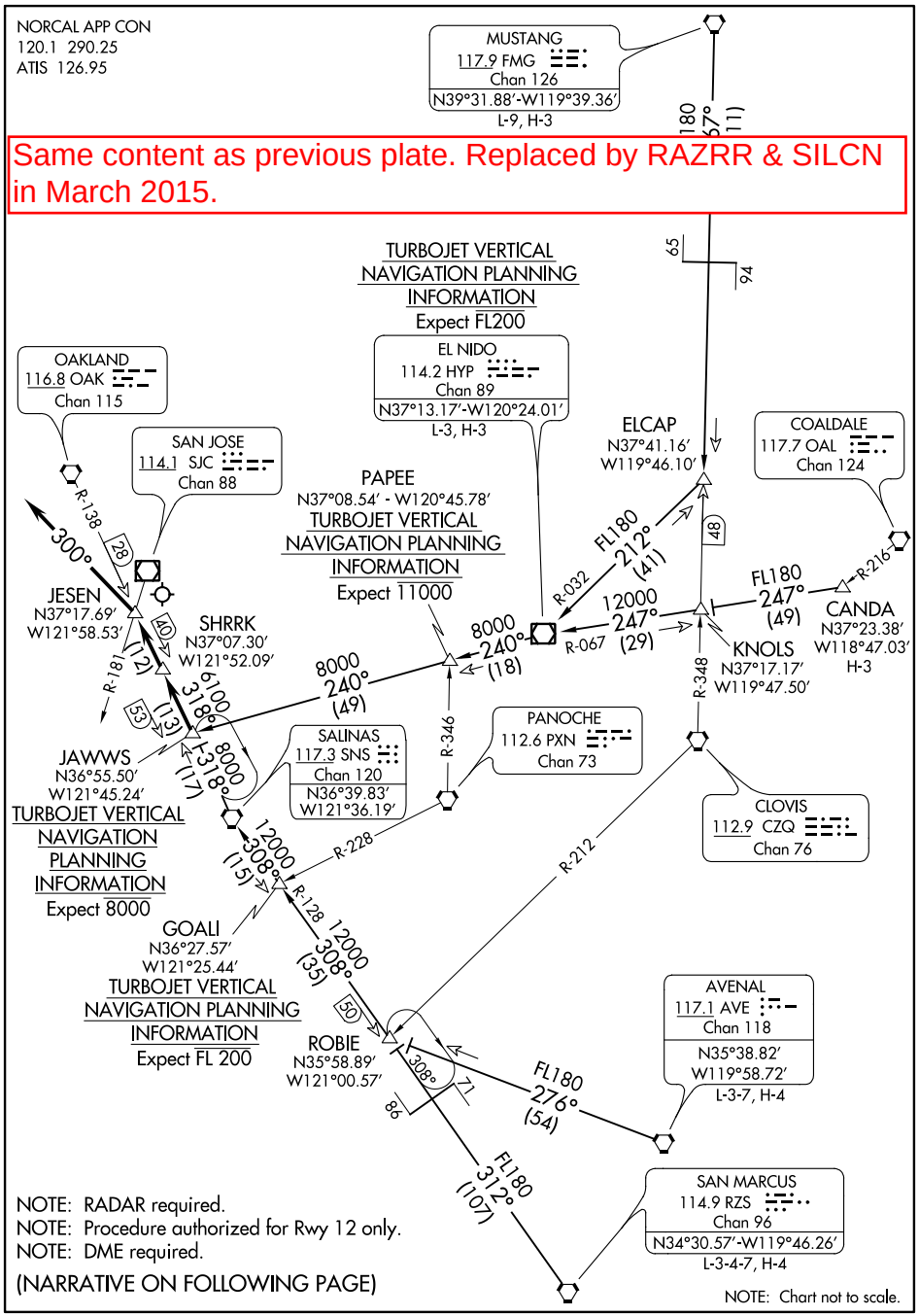
AVENAL
117.1 AVE
Chan 118
N35°38.82′
W119°58.72′
L-3-7, H-4

SAN MARCUS
114.9 RZS
Chan 96
N34°30.57′-W119°46.26′
L-3-4-7, H-4

NOTE: Radar required.
NOTE: Procedure authorized for Rwy 12 only.
NOTE: DME required.
(NARRATIVE ON FOLLOWING PAGE)

NOTE: Chart not to scale.

SW-2, 26 JUN 2014 to 24 JUL 2014



SW-2, 26 MAY 2016 to 23 JUN 2016
SW-2, 26 MAY 2016 to 23 JUN 2016

ARRIVAL DESCRIPTION

AVENAL TRANSTION (AVE.JAWWS3): From over AVE VORTAC via AVE R-276 to ROBIE INT, then via SNS R-128 to SNS VORTAC, then via SNS R-318 to JAWWS INT. Thence . . . .

CANDA TRANSITION (CANDA.JAWWS3): From over CANDA INT via HYP R-067 to HYP VOR/DME, then via HYP R-240 to JAWWS INT. Thence . . . .

EL NIDO TRANSITION (HYP.JAWWS3): From over HYP VOR/DME via HYP R-240 to JAWWS INT. Thence . . . .

MUSTANG TRANSITION (FMG.JAWWS3): From over FMG VORTAC via FMG R-167 and CZQ R-348 to ELCAP INT, then via HYP R-032 to HYP VOR/DME, then via HYP R-240 to JAWWS INT. Thence . . . .

SAN MARCUS TRANSITION (RZS.JAWWS3): From over RZS VORTAC via RZS R-312 and SNS R-128 to SNS VORTAC, then via SNS R-318 to JAWWS INT. Thence . . . .

. . . . From over JAWWS INT on OAK R-138 to JESEN INT then on heading 300°, expect RADAR vectors to the final approach course.

LOST COMMUNICATIONS: Proceed direct SJC VOR/DME and execute the ILS or LOC Rwy 12R approach.

SW-2, 28 APR 2016 to 26 MAY 2016

RAZRR FOUR ARRIVAL (RNAV) Arrival Routes

(STUBL.RAZRR4) 21JUL16

NORMAN Y MINETA SAN JOSE INTL (SJC)

SAN JOSE, CALIFORNIA

OAKLAND CENTER
121.25 327.0
NORCAL APP CON
126.475 317.775
ATIS
126.95
SAN JO
124.0 2
GND CO
121.7

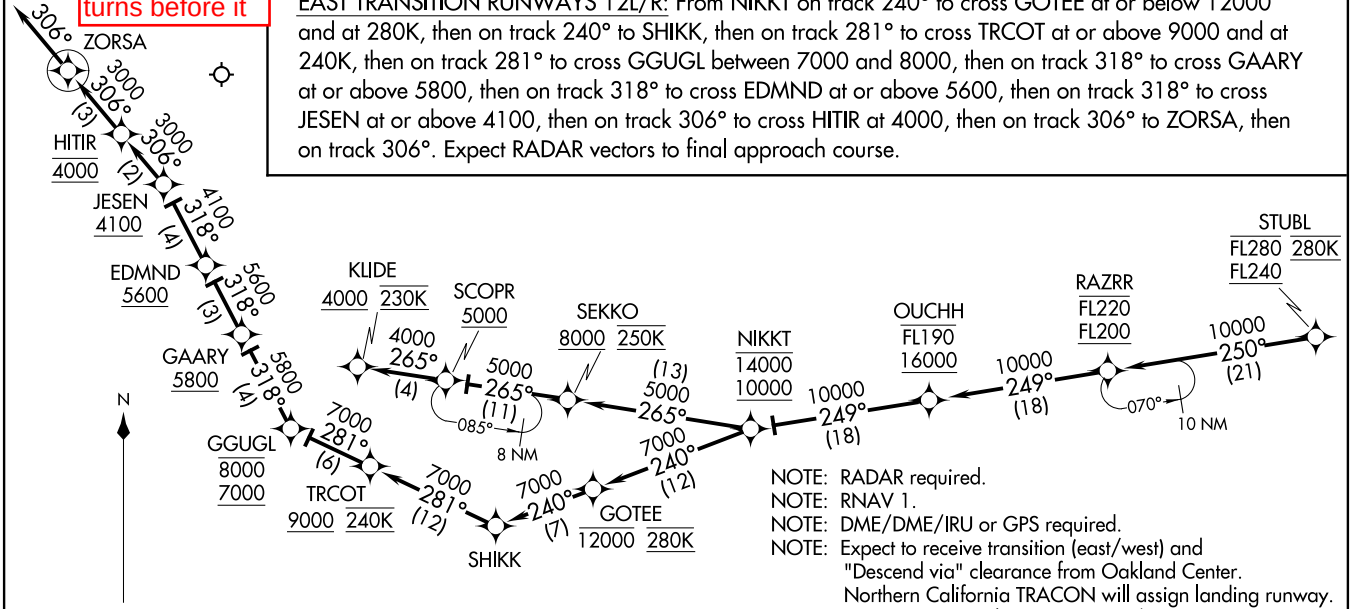
Circle indicates 'Fly-Over Fix', precluding turns before it

ARRIVAL ROUTE DESCRIPTION

From STUBL on track 250° to cross RAZRR between FL200 and FL220, then on track 249° to cross OUCHH between 16000 and FL190, then on track 249° to cross NIKKT between 10000 and 14000.

WEST TRANSITION RUNWAYS 30L/R: From NIKKT on track 265° to cross SEKKO at or above 8000 and at 250K, then on track 265° to cross SCOPR at or above 5000, then on track 265° to cross KLIDE at or above 4000 and at 230K. Expect assigned instrument approach procedure.

EAST TRANSITION RUNWAYS 12L/R: From NIKKT on track 240° to cross GOTEE at or below 12000 and at 280K, then on track 240° to SHIKK, then on track 281° to cross TRCOT at or above 9000 and at 240K, then on track 281° to cross GGUGL between 7000 and 8000, then on track 318° to cross GAARY at or above 5800, then on track 318° to cross EDMND at or above 5600, then on track 318° to cross JESEN at or above 4100, then on track 306° to cross HITIR at 4000, then on track 306° to ZORSA, then on track 306°. Expect RADAR vectors to final approach course.



NOTE: RADAR required.
NOTE: RNAV 1.
NOTE: DME/DME/IRU or GPS required.
NOTE: Expect to receive transition (east/west) and "Descend via" clearance from Oakland Center. Northern California TRACON will assign landing runway.
NOTE: West transition indicates Rwys 30L/R.
NOTE: East transition indicates Rwys 12L/R.
NOTE: Expect west transition unless otherwise advised.

NOTE: Chart not to scale.

(STUBL.RAZRR4) 16203

RAZRR FOUR ARRIVAL (RNAV) Arrival Routes

ST-693 (FAA)

NORMAN Y MINETA SAN JOSE INTL (SJC)

SAN JOSE, CALIFORNIA

This procedure had too steep of a descent, probably between EDMND and JESEN and was replaced by late April.

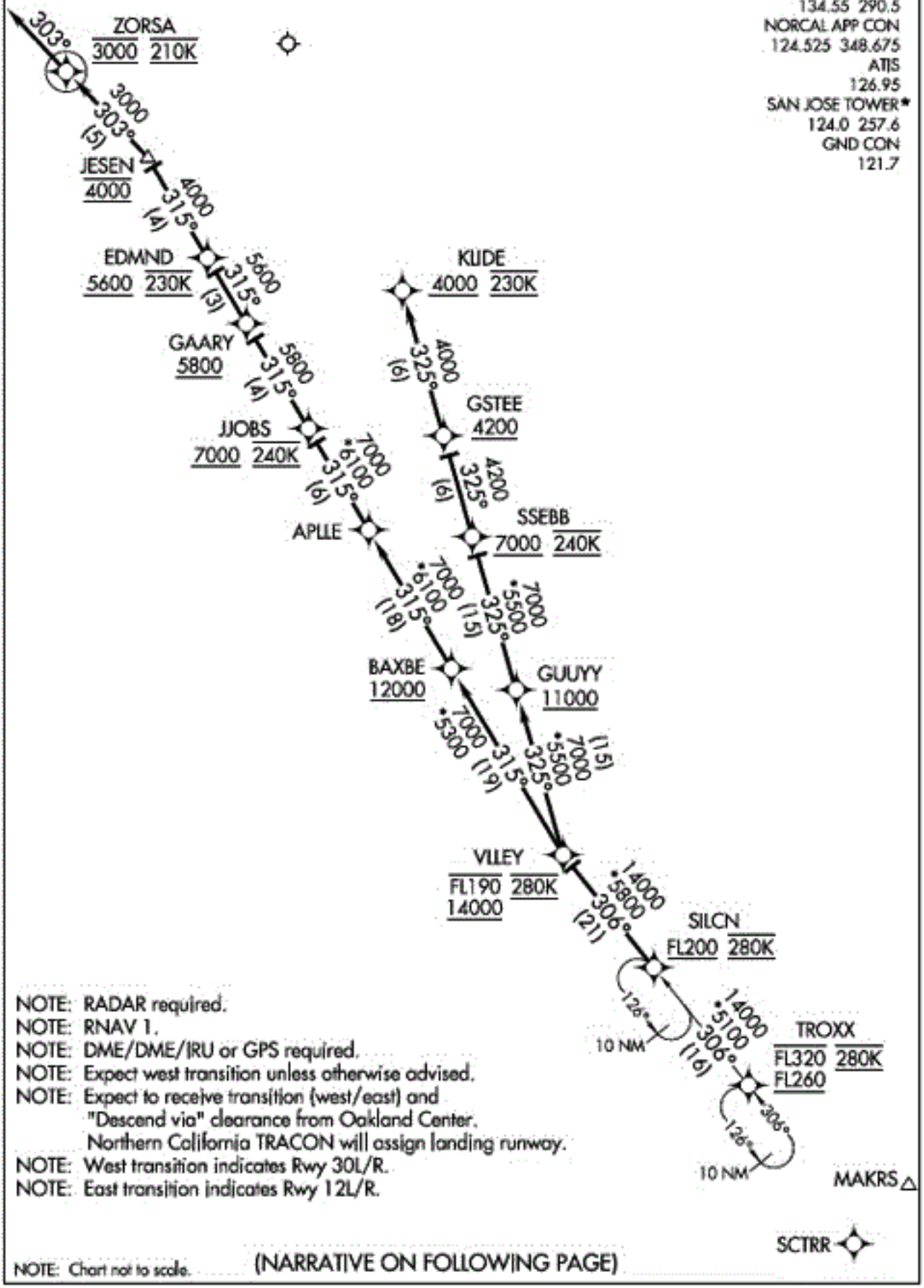
(SILCN.SILCN1)

SILCN ONE ARRIVAL (RNAV)

ST-693 (FAA)

NORMAN Y MINETA SAN JOSE INTL (SJC)
SAN JOSE, CALIFORNIA

OAKLAND CENTER
134.55 290.5
NORCAL APP CON
124.525 348.675
ATIS
126.95
SAN JOSE TOWER*
124.0 257.6
GND CON
121.7



NOTE: RADAR required.
NOTE: RNAV 1.
NOTE: DME/DME/IRU or GPS required.
NOTE: Expect west transition unless otherwise advised.
NOTE: Expect to receive transition (west/east) and "Descend via" clearance from Oakland Center. Northern California TRACON will assign landing runway.
NOTE: West transition indicates Rwy 30L/R.
NOTE: East transition indicates Rwy 12L/R.

NOTE: Chart not to scale.

(NARRATIVE ON FOLLOWING PAGE)

SILCN ONE ARRIVAL (RNAV)
(SILCN.SILCN1) 15064

SAN JOSE, CALIFORNIA
NORMAN Y MINETA SAN JOSE INTL (SJC)

SW-2, 05 MAR 2015 to 02 APR 2015

SW-2, 05 MAR 2015 to 02 APR 2015

BUSINESS AVIATION

California Rnav Procedures Contain Errors

by Robert P. Mark - March 8, 2015, 1:18 PM

The FAA said it is aggressively working to correct a number of design problems in some Rnav procedures released last week for San Jose Norman Y. Mineta International airport (SJC) and Sacramento International Airport (SMF). Two standard terminal arrival routes (Stars) into SJC (SILCN and RAZZR) Runway 12L/R contain descent angles that are too steep for most aircraft to fly—losing 1,600 feet in 4.2 miles. ATC will instead issue standard descend-and-maintain clearance until the problem is corrected. The Rnav/RNP approaches to Runway 12L/R will be unusable because of mismatched altitudes and speeds.

Issues also exist with Stars published for SMF's Runway 16L/R, both the transitions and the ILS approaches. ATC should be issuing an altitude to cross TENCO for aircraft given the ILS approach. Pilots are urged to be sure they don't lose the procedure's altitude restrictions when linking these Stars to the ILS 16L/R approaches at TENCO. Altitudes and speeds on the approaches to 34L/R do not match the Stars, the agency said.

AIRPORTS ATC

There are no comments yet, please Login or Register to begin a discussion.

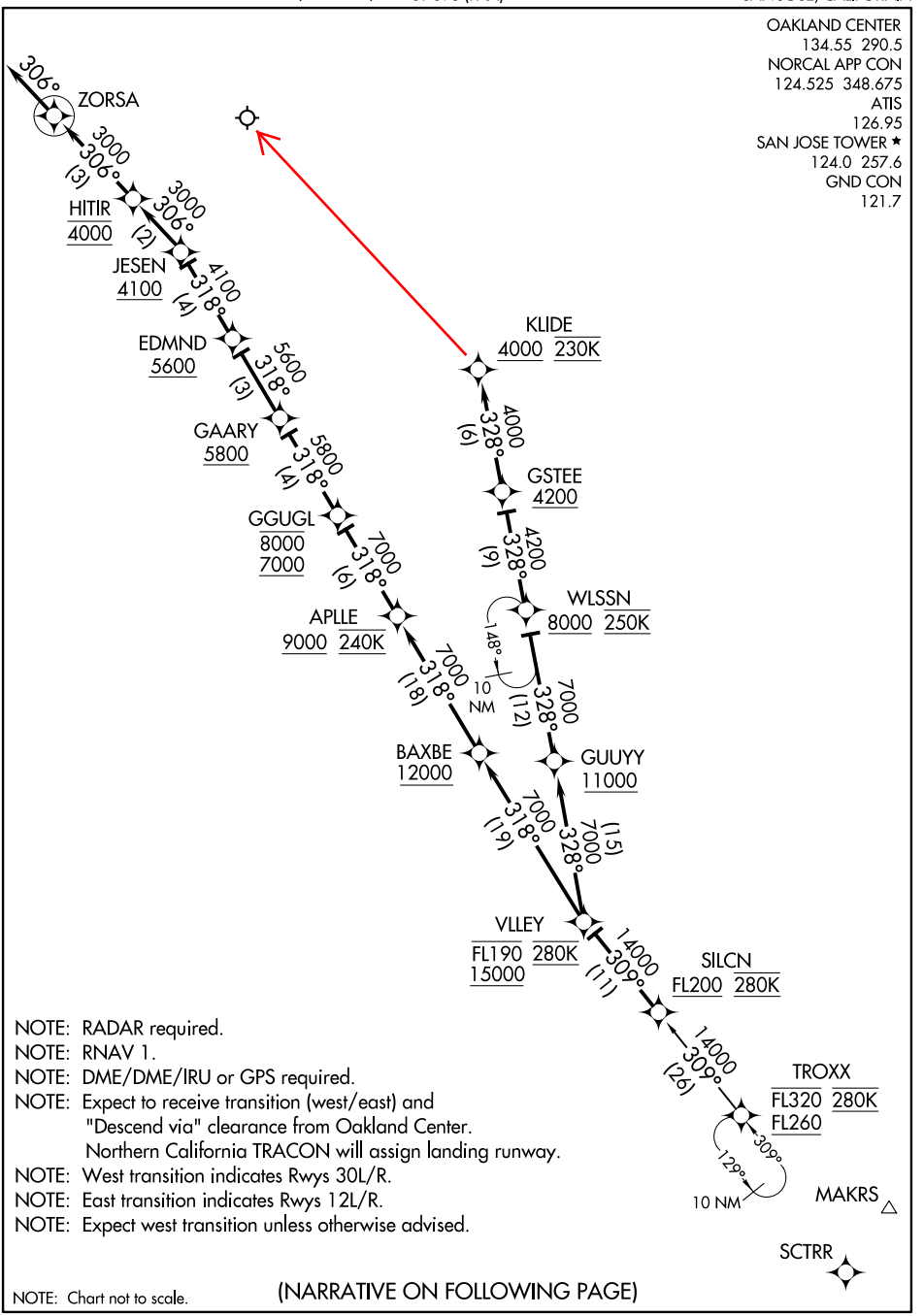
KLIDE is the final waypoint for normal flow

(SILCN.SILCN4) 16203

SILCN FOUR ARRIVAL (RNAV)

ST-693 (FAA)

NORMAN Y MINETA SAN JOSE INTL (SJC)
SAN JOSE, CALIFORNIA



NOTE: RADAR required.
NOTE: RNAV 1.
NOTE: DME/DME/IRU or GPS required.
NOTE: Expect to receive transition (west/east) and "Descend via" clearance from Oakland Center. Northern California TRACON will assign landing runway.
NOTE: West transition indicates Rwys 30L/R.
NOTE: East transition indicates Rwys 12L/R.
NOTE: Expect west transition unless otherwise advised.

NOTE: Chart not to scale.

(NARRATIVE ON FOLLOWING PAGE)

SW-2, 05 JAN 2017 to 02 FEB 2017

SW-2, 05 JAN 2017 to 02 FEB 2017

SILCN FOUR ARRIVAL (RNAV)
(SILCN.SILCN4) 21JUL16

SAN JOSE, CALIFORNIA
NORMAN Y MINETA SAN JOSE INTL (SJC)

City of San José

AD HOC ADVISORY COMMITTEE ON SOUTH FLOW ARRIVALS

Meeting Minutes of the Ad Hoc Advisory Committee on South Flow Arrivals

FRIDAY **SAN JOSE, CALIFORNIA** **March 9, 2018**

The Ad Hoc Advisory Committee on South Flow Arrivals held a meeting on March 9, 2018 at 1:00 p.m. at the San José International Airport Administrative Offices in the McDonnell Douglas & Boeing Conference Rooms.

ATTENDEES:

COMMISSIONERS

Glenn Hendricks (Chair)	- Present 1:00-1:57pm
Chappie Jones (Vice-Chair)	- Present
Mary-Lynne Bernald	- Absent
Steven Scharf	- Present
Jean Mordo	- Present
Gary Waldeck	- Present
Bob Nuñez	- Absent
Rowena Turner	- Present
Rene Spring	- Present
Lydia Kou	- Present
Lisa Matichak	- Present
Raul Peralez	- Absent
Kathy Watanabe	- Present
Jeffrey Cristina	- Absent

AIRPORT STAFF PRESENT
Judy Ross
Curt Eikerman
Matthew Kazmierczak
Janelle Adams

FAA STAFF:
Tony DiBernardo
Tonya Patterson

I. Call to Order and Orders of the Day

The meeting was called to order at 1:03 p.m. by Chair Hendricks with ten Committee members in attendance and four absent.

II. Consent Calendar

A. Approve the Minutes for the February 23, 2018 meeting

Action: Upon motion by Committee Member Mordo, seconded by Committee Member Waldeck, to approve the meeting minutes, the motion passed 10-0, 4 absent.

III. Chair/Vice Chair Remarks

Committee Chair, Glenn Hendricks, suggested compiling a list into a spreadsheet with all mitigation recommendations prior to asking the FAA questions.

IV. Old Business

A. Items on the Ad Hoc Advisory Committee Workplan

Tony DiBernardo advised the Committee that the questions from the February 23, 2018 meeting are under review and that some would be addressed at the next meeting.

Curt Eikerman provided an update on the invitation for the Southwest Airlines pilot to attend a future meeting for the group to gain insight on his perspective but the meeting time would need to change to noon to accommodate the pilot.

Documents Filed: Ad Hoc Advisory Committee on South Flow Arrivals - Requests, Questions, and Next Steps

B. Identification of Possible Noise Impact Reduction Measures

Each Committee member was asked to provide any additional suggestions to the noise abatement solution list. The Committee also extended this request for additional suggestions to the public. The FAA recommended having a staff member review the Committee's list to deliberate on the best option with the highest impact.

C. Discussion of Possible Noise Mitigation Measures

D. Adopting Recommendations

To find a solution in the next two months, it was suggested for a subcommittee to be formed to help facilitate the list of proposals. The committee will consist of Committee Member Waldeck and Matichak.

Action: Upon motion by Committee Member Mordo, seconded by Committee Member Spring, to form a subcommittee, the motion passed 9-0, 5 absent.

E. Adoption of Final Report and Committee Recommendations

The noise mitigation spreadsheet and subcommittee date should be submitted to Tony DiBernardo from the FAA prior to the next meeting. Mr. DiBernardo will coordinate availability with staff for the next brainstorming session.

V. Public Comment

Members of the public were invited to speak on noise mitigation suggestions for the Committee and the FAA.

Speakers include: Jennifer Landesmann, Robert Holbrook, Mary Shefveland, and Toni Rath.

Documents Filed: Robert Holbrook proposals, Sunnyvale/Cupertino Brainstorm List, Sunnyvale Suggestions from 2/23/18 Meeting

VI. Future Meeting Schedule and Agenda Items

The next meeting will be at the San José International Airport Administrative Offices on Friday, March 23, 2018. All further suggestions from the Committee members and the public should be sent to Matthew Kazmierczak and the subcommittee. The subcommittee will then present their top suggestions to the rest of the Committee members.

VII. Adjournment

The meeting was adjourned at 3:25 pm.

ATTEST:

Glenn Hendricks
Chairperson

Matthew Kazmierczak
Manager of Strategy & Policy

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Ad Hoc Advisory Committee on South Flow Arrivals

Councilmember Jeffrey Cristina – Campbell	Vice Mayor Lisa Matichak — Mountain View
Mayor Savita Vaidhyanathan— Cupertino	Councilmember Lydia Kou — Palo Alto
Vice Mayor Jean (John) Mordo — Los Altos	Mayor Mary-Lynne Bernald — Saratoga
Mayor Gary Waldeck — Los Altos Hills	Councilmember Charles "Chappie" Jones — San José
Councilmember Bob Nuñez – Milpitas	Councilmember Raul Peralez — San José
Councilmember Rowena Turner — Monte Sereno	Vice Mayor Kathy Watanabe — Santa Clara
Councilmember Rene Spring — Morgan Hill	Mayor Glenn Hendricks — Sunnyvale

1:00 P.M. February 23, 2018 San José Airport
Boeing/McDonnell Douglas
Conference Room
1701 Airport Boulevard, Suite B-1130
San José, CA 95110

MEETING AGENDA

I. Call to Order and Orders of the Day

NOTICE OF PARTICIPATION OF COMMITTEE MEMBERS BY TELEPHONE IN THE COMMITTEE MEETING OF FEBRUARY 23, 2018

Committee Member Mary-Lynne Bernald intends to participate via telephone from the following location:

14398 Evans Lane
Saratoga, CA 95070

II. Consent Calendar
   A. Approve the Minutes for the January 26, 2018

III. Chair/Vice Chair Remarks

IV. Old Business

   A. Items on the Ad Hoc Advisory Committee Workplan
      1) Informational Briefing about South Flow
      2) Identification of Possible Noise Impact Reduction Measures
      3) Discussion of Noise Reducation Measures
      4) Adopting Recommendations
      5) Adoption of Final Report and Committee Recommendations

V. Public Comments (on items not on the agenda but within the subject matter responsibility of the Committee)

VI. Future Meeting Schedule and Agenda Items

Schedule of Upcoming Committee Meetings:

Date	Location	Time
Friday, February 23, 2018	San José Airport Boeing Conference Room	1:00 pm
Friday, March 9, 2018	Tentative - San José Committee Room	1:00 pm
Friday, March 23, 2018	Tentative - San José Council Chamber	1:00 pm
Friday, April 13, 2018	Tentative - San José Council Chamber	1:00 pm
Friday, April 27, 2018	Tentative - San José Committee Room	1:00 pm
Friday, May 18, 2018	Tentative - San José Committee Room	1:00 pm

Agenda Items:
The Committee Agenda is set based on the workplan. The Committee will work through the workplan, which shall roll over from one meeting to the other.

Copies of the meeting minutes, agendas, and other material are available online at: http://www.flysanjose.com/Ad_Hoc_Advisory_Committee

VII. Adjournment

OPEN FORUM: You may speak to the Committee about any item that is on the agenda, and you may also speak during Open Forum on items that are not on the agenda and are within the subject matter jurisdiction of the Committee. If you wish to speak to the Committee, please refer to the following guidelines:

- **Fill out a blue Speaker's Card and submit it to the Airport staff seated at the front table. Do this before the meeting or before the item is heard.** This will ensure that your name is called for the item(s) that you wish to address, and it will help ensure the meeting runs smoothly for all participants.
- When the Committee reaches your item on the agenda, the Chair will open the public hearing and call your name.
- Each speaker generally has two minutes to speak per item. The amount of time allotted to speakers may vary at the Chair's discretion, depending on the number of speakers or the length of the agenda.

Please be advised that, by law, the Committee is unable to discuss or take action on issues presented during Open Forum. According to State Law (the Brown Act) items must first be noticed on the agenda before any discussion or action.

Agendas, staff reports and some associated documents for the Committee items may be viewed on the Internet at http://flysanjose.com/Ad_Hoc_Advisory_Committee

To request an accommodation or alternative format under the Americans with Disabilities Act for City-sponsored meetings, events, or printed materials, please call (408) 392-3640 as soon as possible, but at least three business days before the meeting.

Please direct correspondence and questions to:

City of San José
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1701 Airport Boulevard, Suite B-1130
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Email: MKazmierczak@sjc.org

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Mayor Glenn Hendricks Sunnyvale HendricksCouncil@sunnyvale.ca.gov	Councilmember Larry Klein Sunnyvale KleinCouncil@sunnyvale.ca.gov

Jurisdictions Outside the County of Santa Clara and Original Parameters

Mayor Alan L Nagy
Newark
alan.nagy@newark.org

Ad Hoc Advisory Committee Workplan

I. The South Flow Procedure Presentation: Why south flow procedure is used, how it works, the conditions requiring its use, and the air traffic environment over the South Bay, with Q&A from the Committee.

II. Committee Identification of Possible Noise Impact Reduction Measures – What are possible measures to reduce the noise impacts of the south flow procedure without reducing safety and efficiency of FAA air traffic control management? Possible measures raised in discussions include:

a) Bringing aircraft in at higher altitudes;
b) Greater dispersal of arriving aircraft;
c) Bringing aircraft in over the east of San José instead of over the west of San José.
d) Other possible solutions?

III. Committee Discussion of Identified Noise Impact Reduction Measures – An evaluation of what measures should be advanced for consideration to the FAA, given FAA direction on feasibility, safety, and efficiency.

IV. **Adopting Preliminary Recommendation(s)** – After Committee discussion of, and FAA comments on, all identified noise reduction options, preliminary adoption of recommended measures for FAA consideration.

V. **Adoption of Final Report and Committee Recommendations**

EVOLUTION OF SOUTH FLOW TRAFFIC TO SJC

2006 to 2017

Since 2012, air traffic into Mineta San Jose International Airport during 'south flow' conditions has undergone significant changes. Air traffic that was once evenly dispersed across most of Sunnyvale has been 'put on a rail' about a mile west of the earlier center of traffic. A new semicircular 'rail' has emerged over Mountain View and its traffic is rapidly growing. Since 2016, aircraft have been flying faster and making steeper descents. Noise complaints have soared.

This paper documents these changes and quantifies some of their effects. Establishing what has happened can only aid in finding solutions to the surge in noise complaints.

Robert Holbrook
r@holbrook1.com
v1.1 2/16/18

Contents

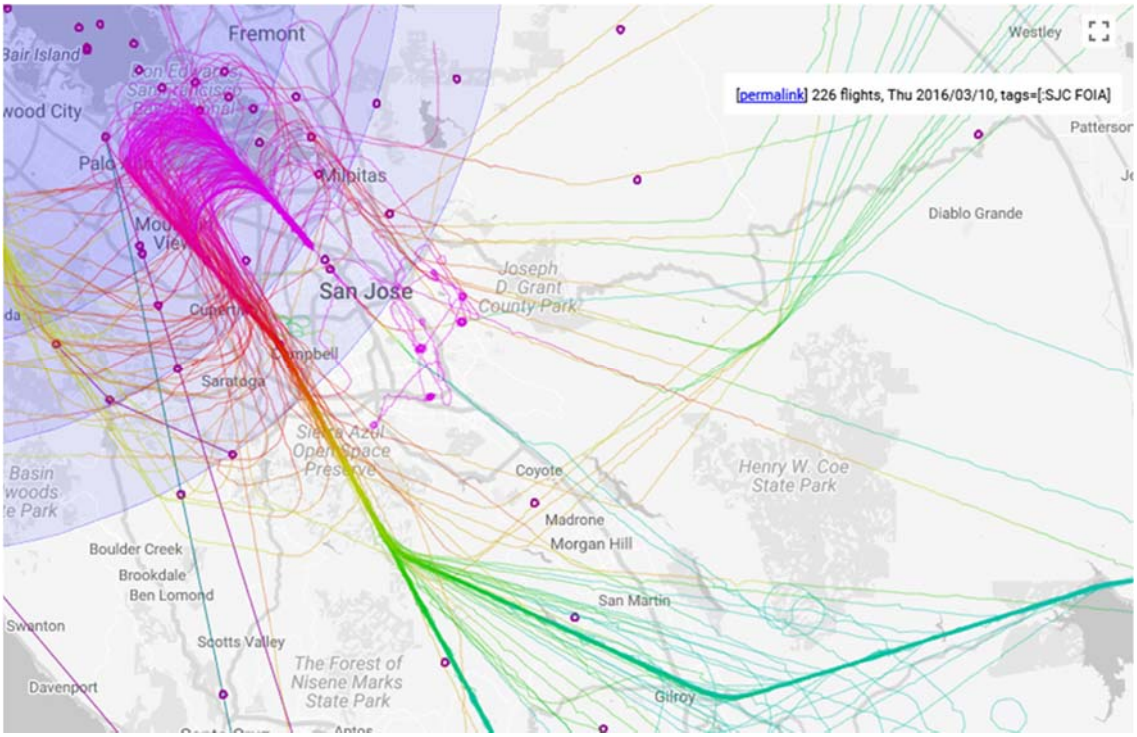
This paper documents changes to south flow air traffic into Mineta San Jose International Airport (SJC). These changes have significantly impacted communities on the ground and noise complaints have soared. To address the problem, it is important to agree on what changed, and why complaints for flights to SJC went from fewer than 1000 in 2012 to 180,000 in 2017.

> This document synthesizes data from multiple sources. Flight information for SJC was obtained from the FAA and is used extensively for maps, charts and graphs. The data stretches from 1/1/2006 to 7/31/2107, but is not perfect. A few dates are missing data, but the months of November and December of 2016 are so incomplete as to render FAA data for those months meaningless. All figures in this document based on FAA data share this limitation.

Introduction to South Flow Traffic

South flow conditions are determined by weather. Physics requires airplanes to land and take off into the wind. Typically, airplanes make their final descent into SJC from the southeast, but when southeasterly winds are expected to exceed 5 knots (5 nautical miles per hour – a nautical mile is 6076.12 feet), a south flow condition is declared and arrivals to SJC are routed to the Bay to make their final descent into the airport. Over 90% of airplanes arrive at the Bay from south of the airport, executing a 180-degree clockwise turn to land. These aircraft overfly Campbell, Cupertino, Sunnyvale and Mountain View. Many continue on to Palo Alto or East Palo Alto before making their turn.

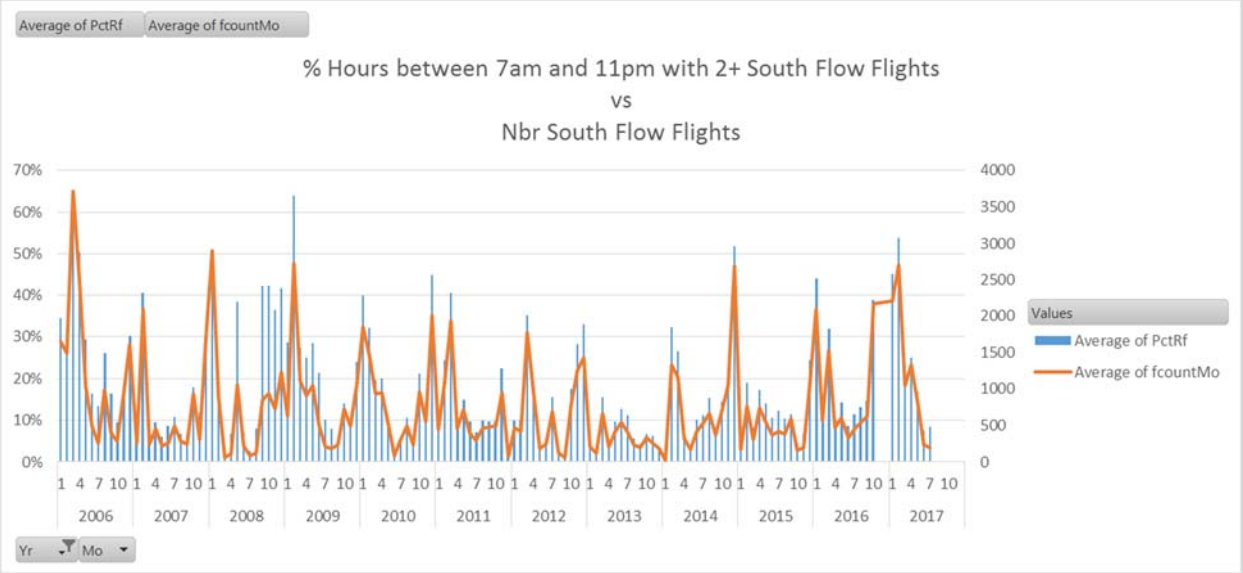
The typical approach path over the south bay can be seen in Figure 1.



Source: Derived from FAA data

Figure 1. Airplanes fly northwest to the Bay, make a 180 degree turn and fly southeast to land at the airport

Not surprisingly, if there are more hours of south flow conditions, more arrivals are likely to be affected, and Figure 2 shows this. The blue bars show the percent of hours between 7am and 11pm with two or more south flow flights. The orange line shows the number of south flow flights per month, with the scale on the right axis.



Source: Derived from data. Data for November and December 2016 is missing

Figure 2. Percent of Hours from 7am to 11pm with Two or More South Flow Flights vs. Number of South Flow Flights per Month

As SJC grows, we can expect the number of south flow flights per hour to increase. Today, we are once again reaching levels of south flow traffic not seen since 2006. Below is a list of the top 40 days of south flow arrivals since 2006. All the peak days are in the years around 2006 and 2017.

Year	Month	Day	South Flow Arrivals
2006	3	16	281
2006	11	2	272
2006	2	1	265
2006	3	2	264
2008	1	21	259
2007	4	19	259
2006	3	24	256
2006	11	26	255
2006	5	22	251
2008	1	24	250
2006	12	8	247
2006	3	30	247
2006	4	7	247
2006	4	4	245
2007	2	9	244
2006	12	12	244
2017	5	25	243
2008	1	25	243
2007	2	8	243
2006	4	11	243
2006	2	26	243

2017	4	6	242
2017	2	2	242
2016	9	13	241
2006	12	11	241
2017	3	24	240
2007	2	21	240
2006	12	26	240
2017	4	12	239
2015	9	14	239
2006	3	29	239
2007	10	9	238
2006	3	27	238
2006	2	27	238
2016	10	24	237
2006	3	13	237
2017	4	11	236
2017	2	3	236
2007	2	7	236

Source: derived from FAA data

Table 1. Peak South Flow Days Since 2006

SJC is projected to double in capacity between 2015 and 2027, from 74,954 to 151,300 air carrier operations for major airlines.[1]

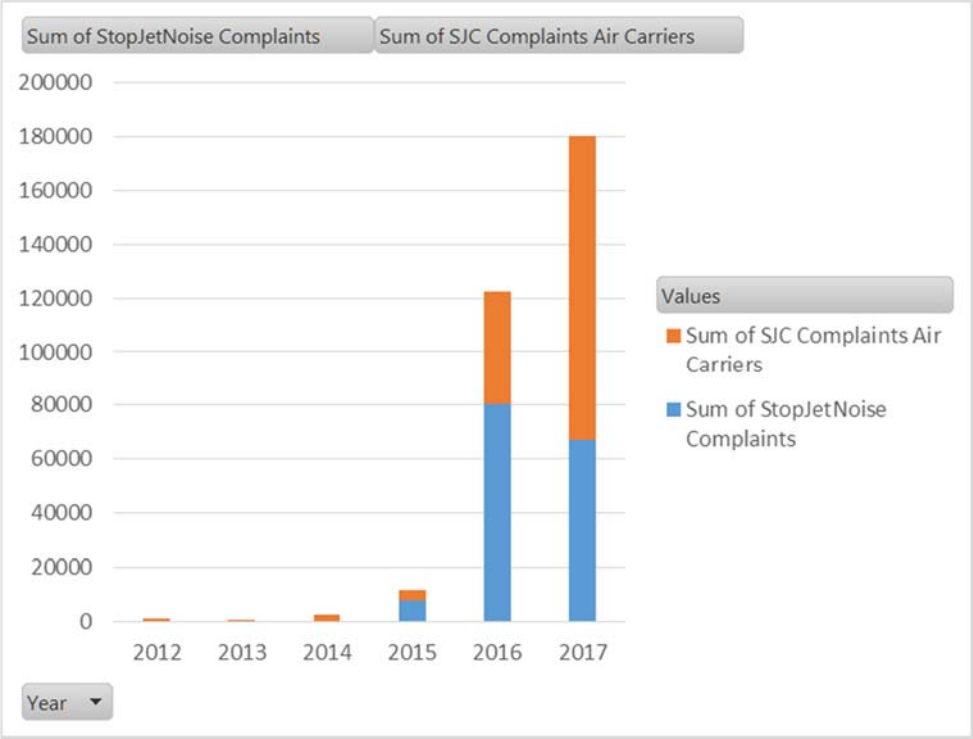
Weather Alone Does Not Explain the Dramatic Increase in Noise Complaints

Some have suggested that noise complaints increased in recent years because of an unusually high number of south flow days during this period. Figure 2, above, helps to put this argument into perspective. While it's true that the winters of 2015-6 and 2016-7 had many south flow days, those years are hardly unique. December 2014 was a particularly bad month as were the early months in 2006, when traffic into SJC was at its peak for the period covered by our data. The worst period of all was the winter of 2008-9.

SJC staff have kindly shared noise complaint data going back to 2012. This data tracks complaints entered at the SJC web site. Registering complaints at that site is not difficult, but it is not easy, either – it requires a fair amount of typing, making it inconvenient for frequent use. It is far easier to register complaints with an interface designed for usability. The most popular such interface in the Bay Area is www.stop.jetnoise.net. Bert Ganoung of the SFO Noise office recently claimed, perhaps imprecisely, that 98% of the noise complaints SFO receives come from that program. And, while SFO accepts input from stop.jetnoise.net for its analysis, SJC does not. The charts below show complaint data from both sources. Stop.jetnoise.net is relatively new, so its data begins in August 2015.

Figure 3 below shows that noise complaints of the past two years dwarf recent history. A deeper look would show that the complaints started rising after procedural changes introduced in March 2015.

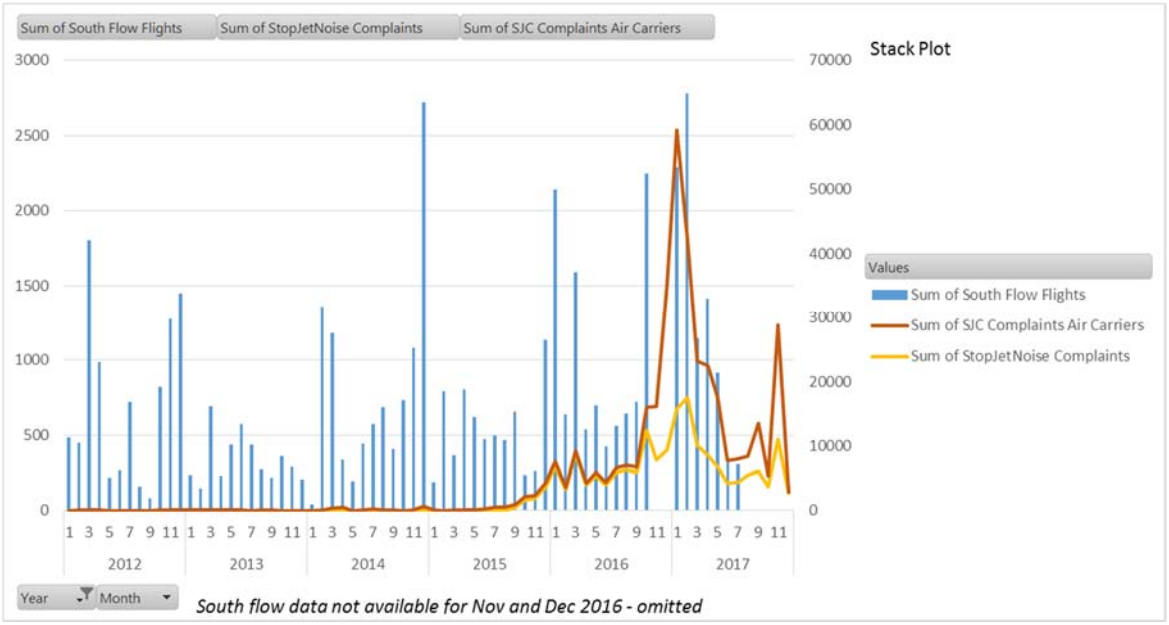
[1] Memorandum from Kimberly J. Becker, Director of Aviation to San Jose Mayor Sam Liccardo and City Council, *Annual Status Report on the Airport Master Plan* for the year 2015, May 3, 2016.



Sources: SJC Noise Office and StopJetNoise.net database

Figure 3. Noise Complaints: SJC Data for Air Carriers Only (arrivals and departures) Plus StopJetNoise.net Data for SJC Arrivals Only

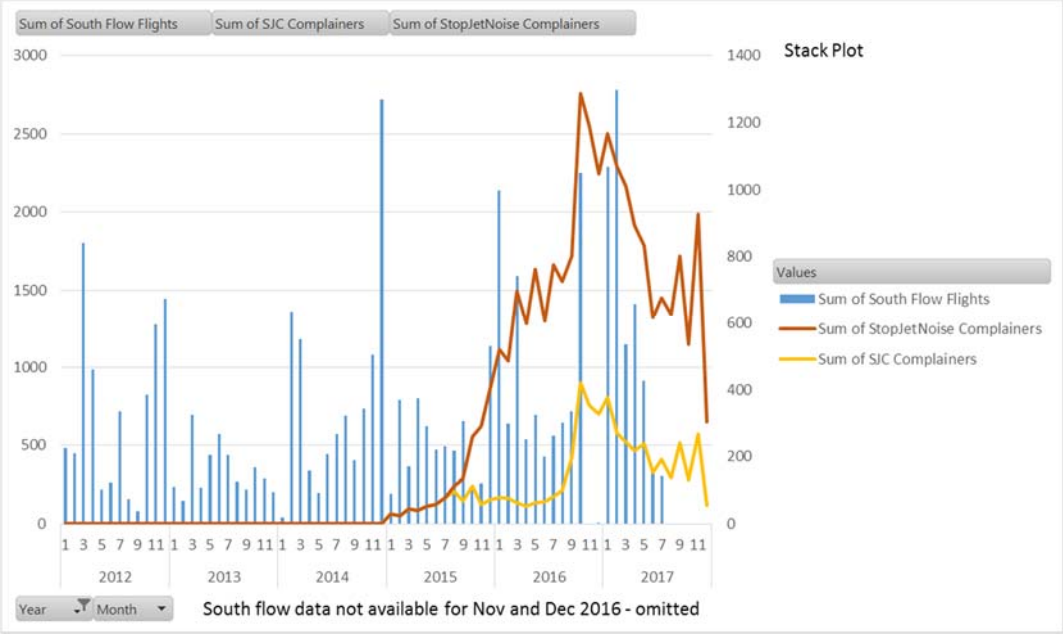
Graphing the number of complaints versus the number of south flow arrivals shows people are upset about something more than operational changes due to weather, because similar levels of south flow arrivals prior to 2015 generated few complaints.



Sources: Derived from FAA data, SJC Noise Office and StopJetNoise.net database

Figure 4. Number of Complaints per Month (right axis) vs. Number of South Flow Flights per Month (left axis)

Looking at the number of people complaining, rather than the number of complaints, tells a similar story.



Sources: Derived from FAA data, SJC Noise Office and StopJetNoise.net database

Figure 5. Number of Complainers per Month (right axis)
vs Number of South Flow Flights per Month (left axis)

Why, then, has the number of complaints skyrocketed?

Concentration of South Flow Traffic Has Increased Over Time

Traffic patterns can be divided into three phases:

- **Phase I - Before March 2012: Even Dispersal**. Before March 2012, traffic was more or less evenly dispersed across a 2.25m-wide band crossing Sunnyvale (between the PUCKK and ZORSA waypoints – see Figure 9).
- **Phase II - March 2012 to March 2015: Mile-wide Corridor East of ZORSA.** Between March 2012 and March 2015, concentration increased with most traffic shifting to a channel roughly a mile wide with its western edge at ZORSA. This change coincided with a shift in the final waypoint for the relevant STAR procedure from PUCKK to JESEN, five miles earlier.
- **Phase III - After March 2015: 'Rail' over ZORSA.** After March 2015[2], concentration sharply increased, with flights directly precisely at ZORSA. Perhaps ZORSA was included in the Flight Management System database loaded into aircraft at that time. As we shall learn later, this coincided with a shift in the final waypoint for the arrival procedures used by pilots from JESEN

[2] New RAZRR STAR and SILCN STAR procedures were introduced in March 2015 along with an updated RNP AR Z procedure. Errors in all these procedures made them unsafe, so ATC intervention was required until the errors were corrected. See AIN Online, March 8, 2015, "California RNAV Procedures Contain Errors", Robert P. Mark.

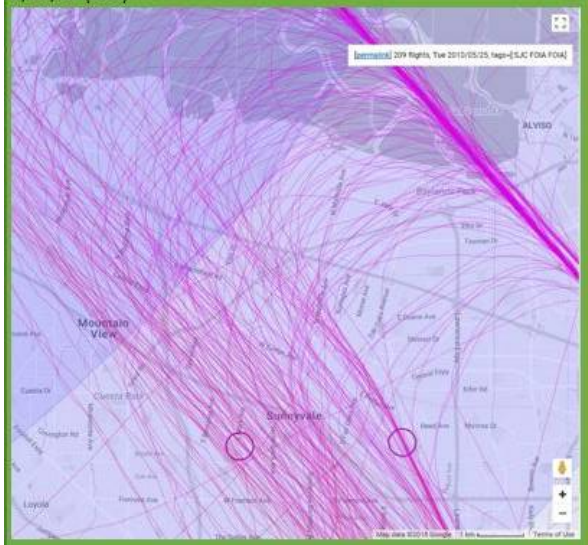
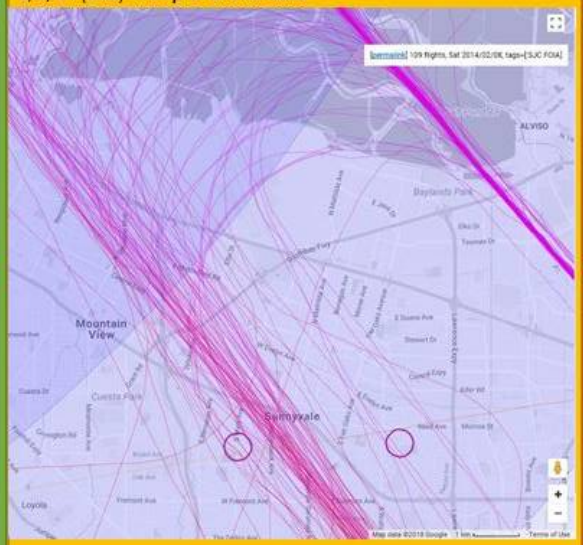
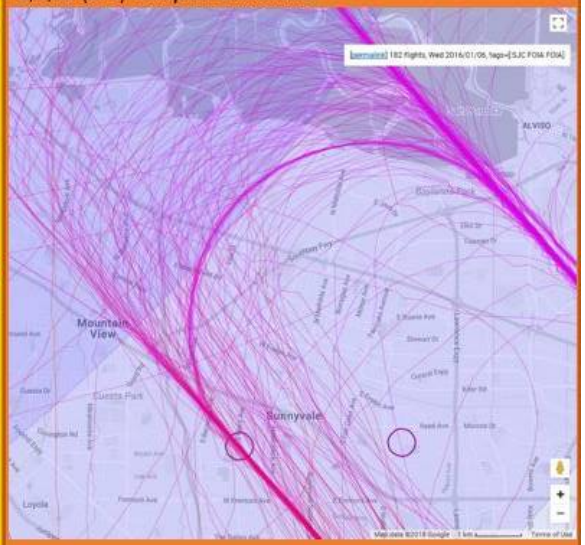
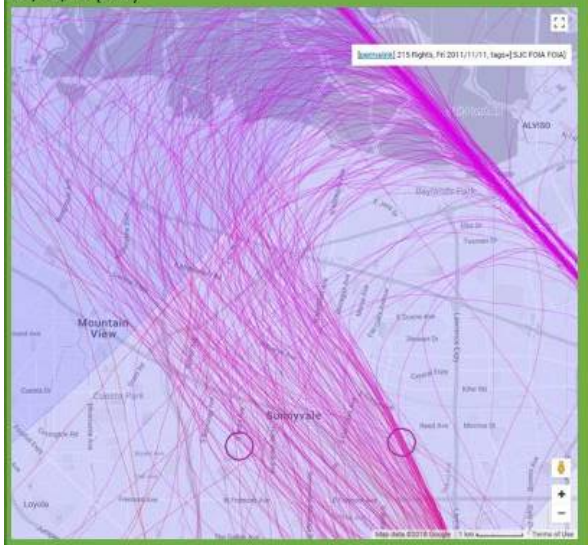
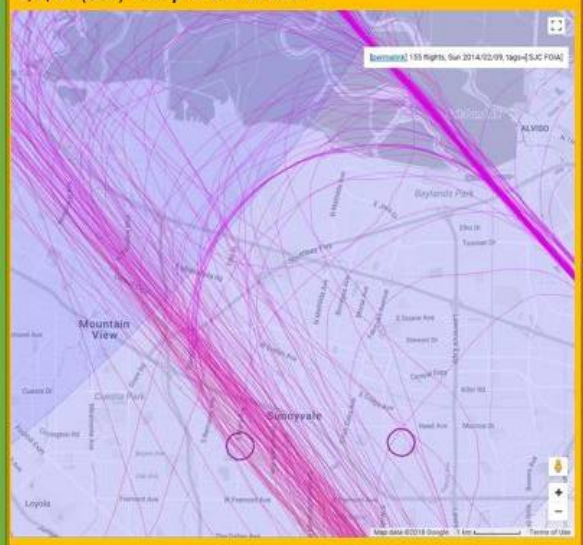
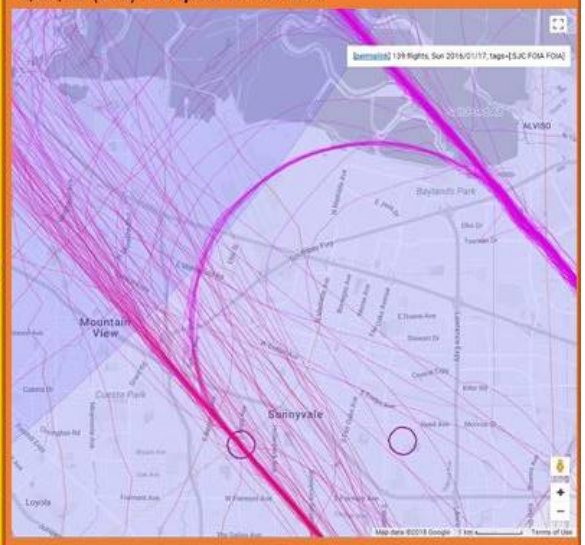
to ZORSA (the newly introduced RAZRR and SILCN STAR procedures replaced JAWWS for most aircraft). ZORSA is two nautical miles west of PUCKK.

Future: All planes on 'Rail'? The community is concerned that if nothing is done, Nextgen will drive all planes in the area to the 'rail', further increasing concentration. This will magnify the effect of the planned doubling in operations to SJC.

The following five pages illustrate these three phases. These 'vector maps' are all constructed from data provided by the FAA. Each page has a green column showing traffic patterns from Phase I, an amber column showing traffic patterns from Phase II and an orange column showing traffic patterns from Phase III.

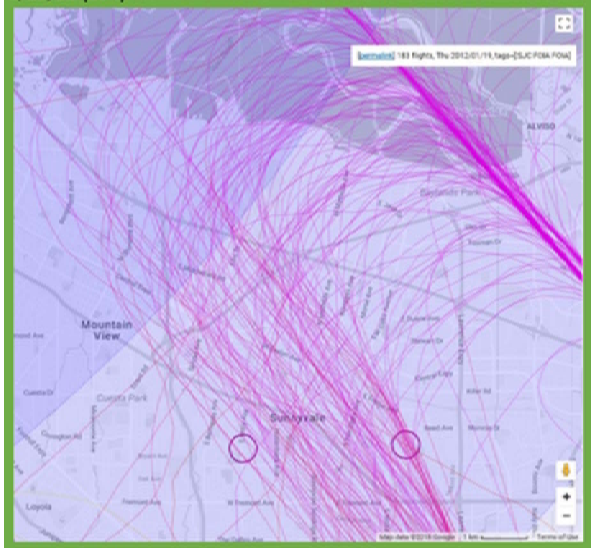
- The first three slides examine the ten dates chosen by the FAA for their presentation to the Ad Hoc Committee on January 26. Because the FAA's two slides comparing traffic patterns before and after Nextgen (aka 'OAPM changes') adopted a high altitude perspective and also combined data for five days into a single graph, the increase in concentration was not visible. The vector maps below, with traffic broken out by day and perspectives closer to the ground, clearly show the increase in concentration. In addition, a green column has been added that shows traffic during five days in Phase I.
- The bottom row of the third slide provides evidence that Phase II was implemented between February 6 and March 1, 2012.
- The fourth and fifth slides show the impact of concentration on different communities:
    - Sunnyvale, Mountain View, Palo Alto and East Palo Alto
    - West Valley Cities
    - Sunnyvale detail
    - Mountain View detail
- In the vector maps that follow, the numbers in parentheses following the dates show the number of south flow arrivals on each day.

Figures 6 (following pages). Vector Maps for Phases I, II and III

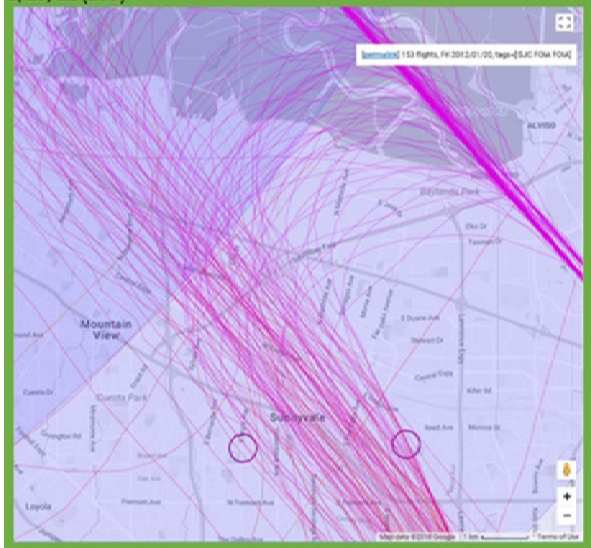
Phase I Before March 2012 – Even Dispersion	Phase II March 2012 to March 2015 – Mile wide Corridor	Phase III After March 2015 – 'Rail' over ZORSA
5/25/10 (209)	2/8/14 (108) *FAA pre-OAPM date*	1/6/16 (179) *FAA post-OAPM date*
		
11/11/11 (210)	2/9/14 (153) *FAA pre-OAPM date*	1/17/16 (138) *FAA post-OAPM date*
		

Phase I
Before March 2012 – Even Dispersion

1/19/12 (154)

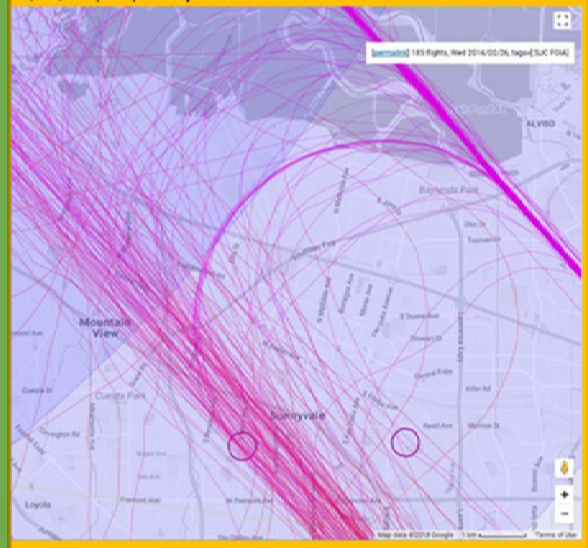


1/20/12 (153)

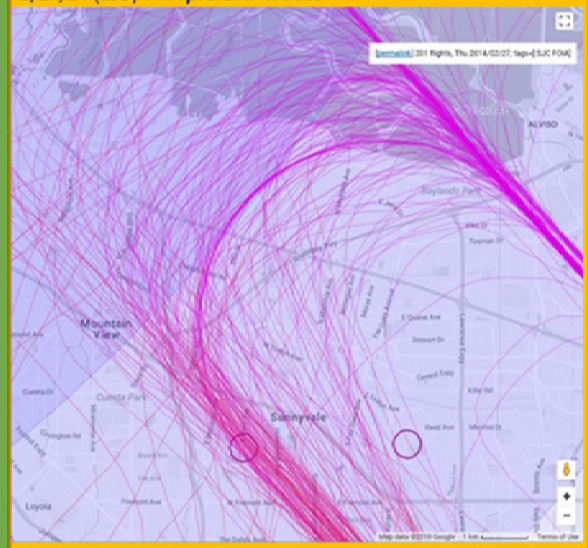


Phase II
March 2012 to March 2015 – Mile wide Corridor

2/26/14 (183) *FAA pre-OAPM date*

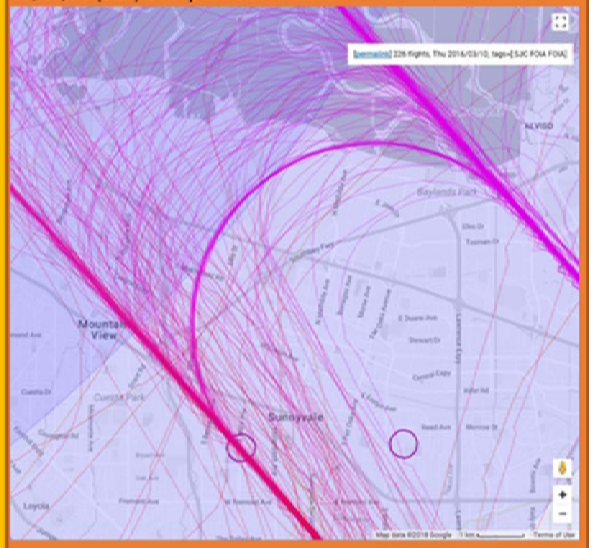


2/27/14 (199) *FAA pre-OAPM date*

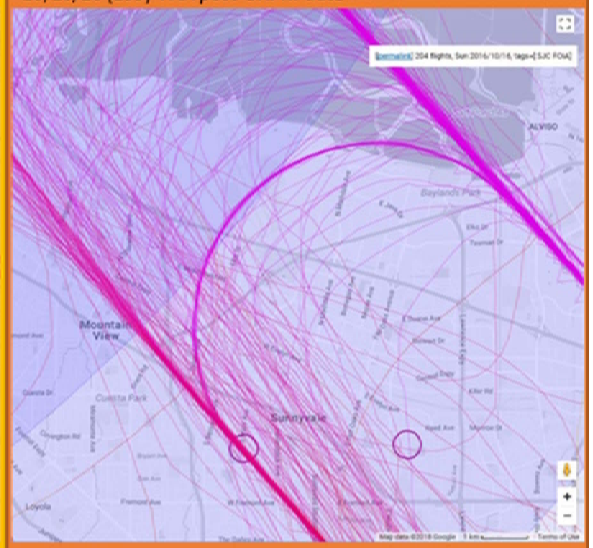


Phase III
After March 2015 – 'Rail' over ZORSA

3/10/16 (224) *FAA post-OAPM date*

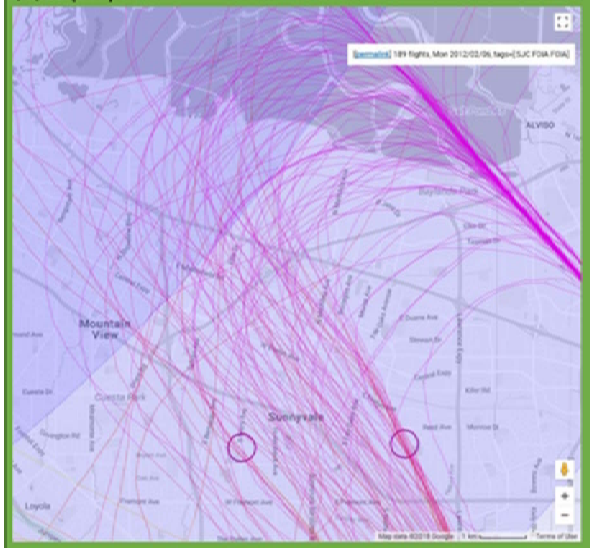


10/16/16 (199) *FAA post-OAPM date*

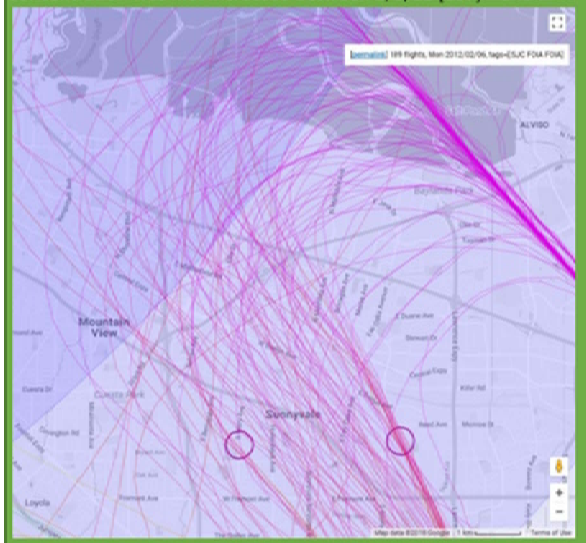


Phase I
Before March 2012 – Even Dispersion

2/6/12 (107)

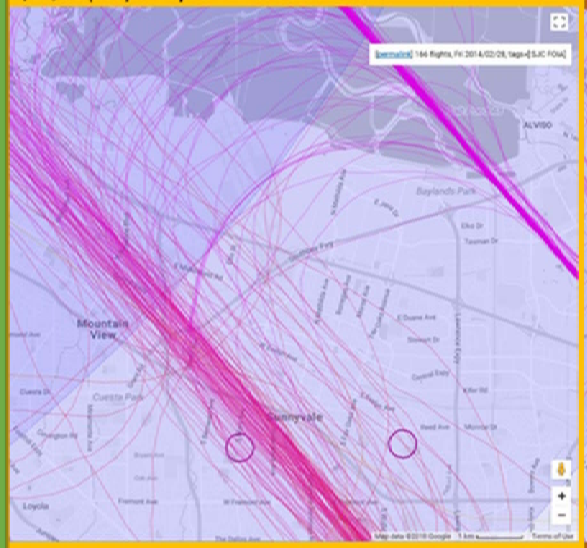


Concentration was first increased between 2/6/12 (107) and ...

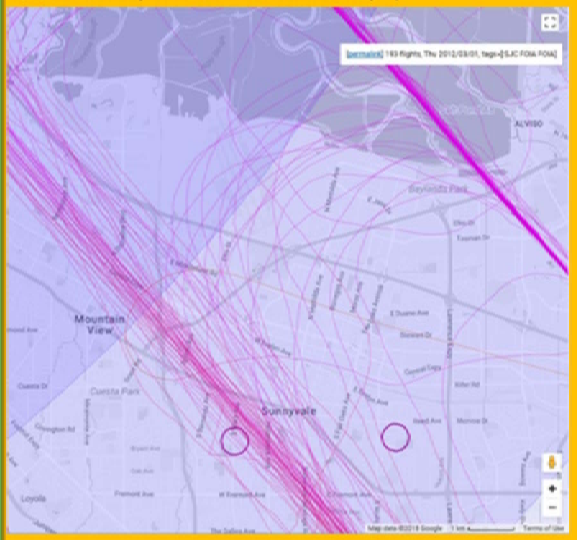


Phase II
March 2012 to March 2015 – Mile wide Corridor

2/28/14 (165) *FAA pre-OAPM date*

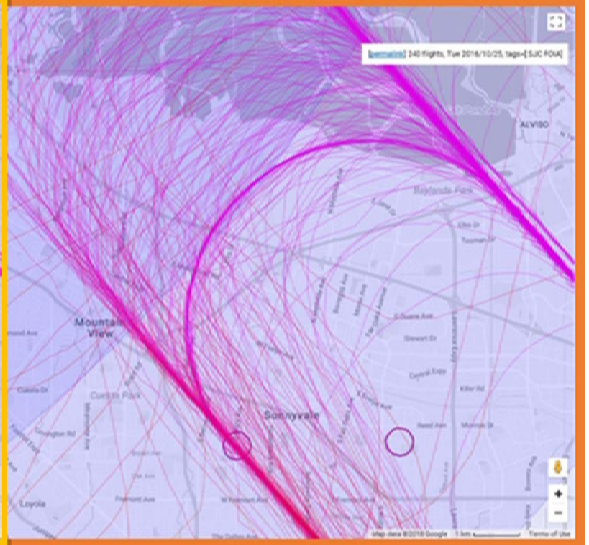


3/1/12 First day of Phase II concentration (78)



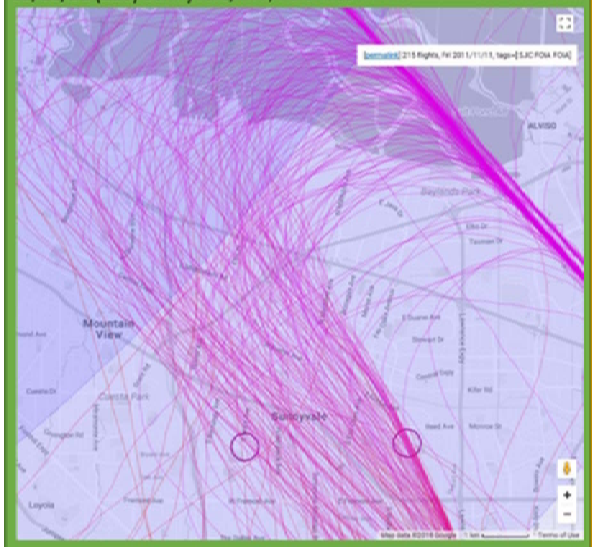
Phase III
After March 2015 – 'Rail' over ZORSA

10/25/16 (235) *FAA post-OAPM date*

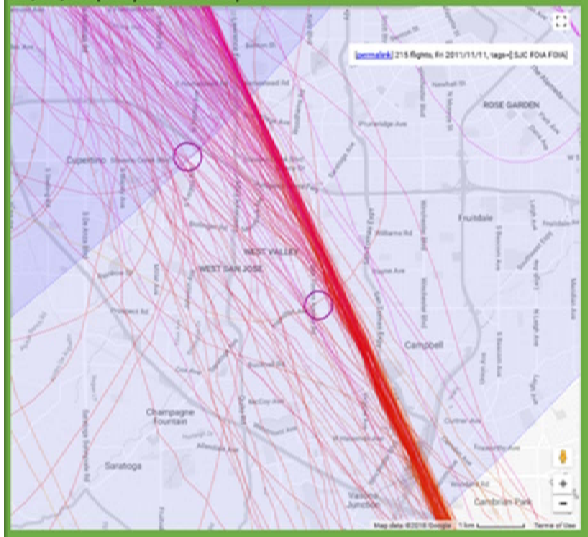


Phase I
Before March 2012 – Even Dispersion

11/11/11 (210) Sunnyvale, MV, Palo Alto

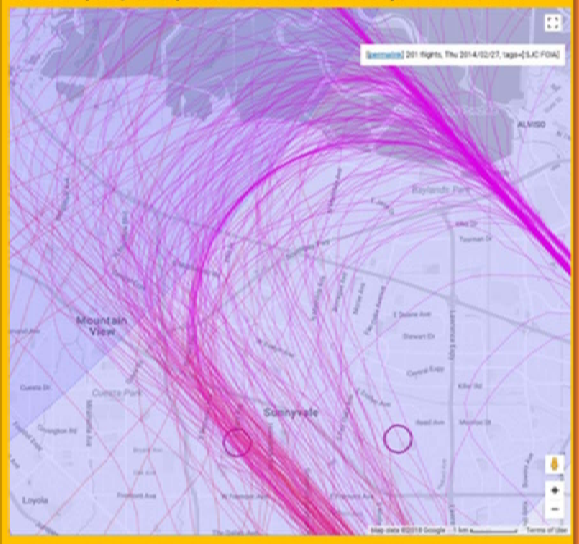


11/11/11 (210) West Valley Cities

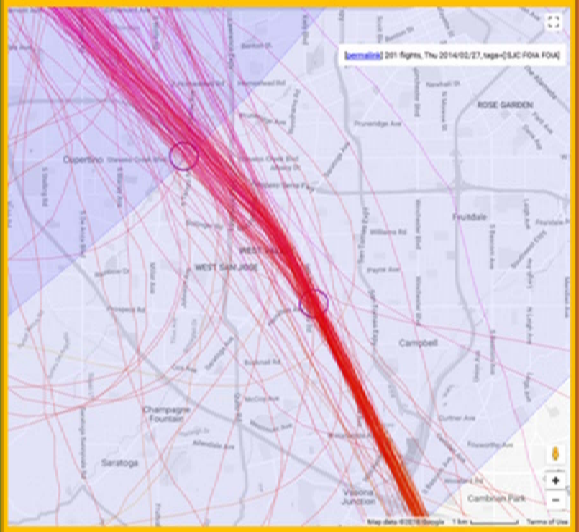


Phase II
March 2012 to March 2015 – Mile wide Corridor

2/27/14 (199) Sunnyvale, MV, Palo Alto ***FAA pre-OAPM date***

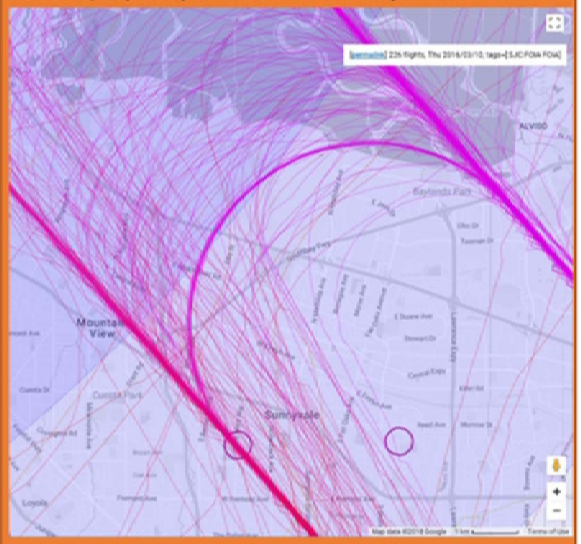


2/27/14 (199) West Valley Cities ***FAA pre-OAPM date***

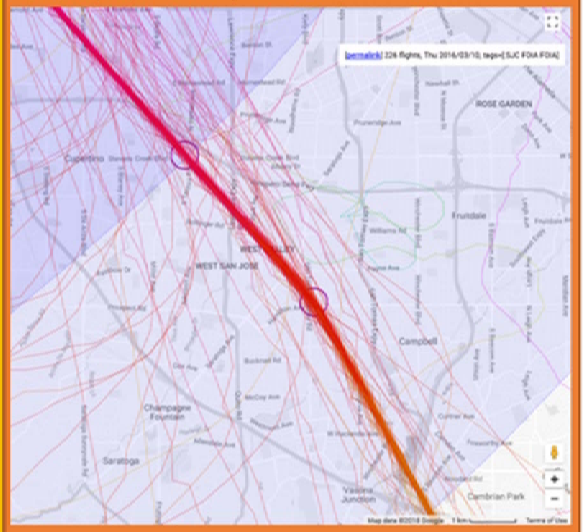


Phase III
After March 2015 – 'Rail' over ZORSA

3/10/16 (224) Sunnyvale, MV, Palo Alto ***FAA post-OAPM date***

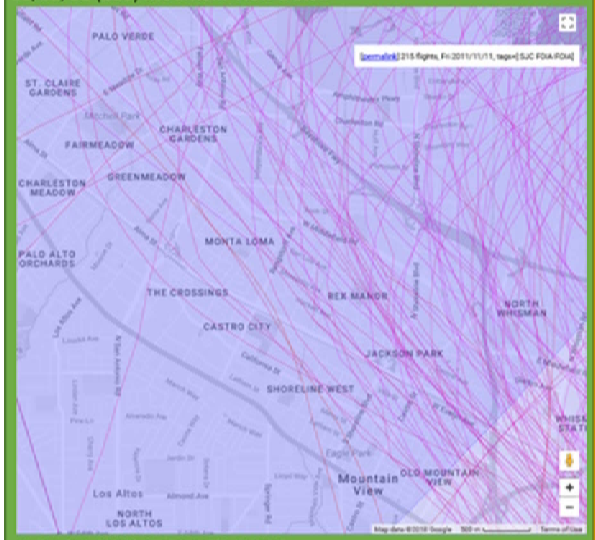


3/10/16 (224) West Valley Cities ***FAA post-OAPM date***

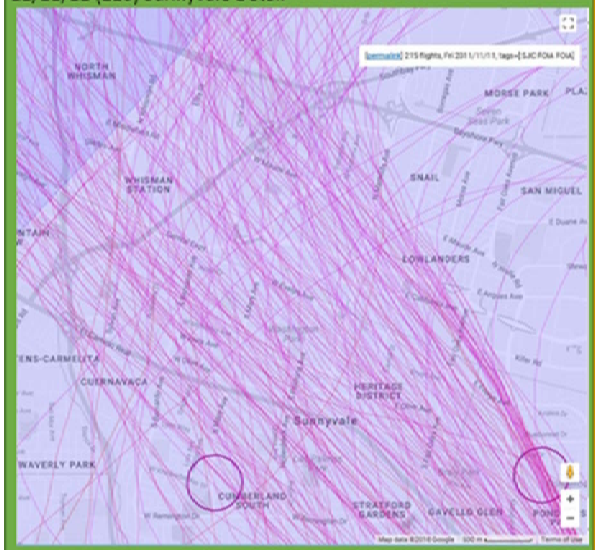


Phase I
Before March 2012 – Even Dispersion

11/11/11 (210) Mountain View Detail

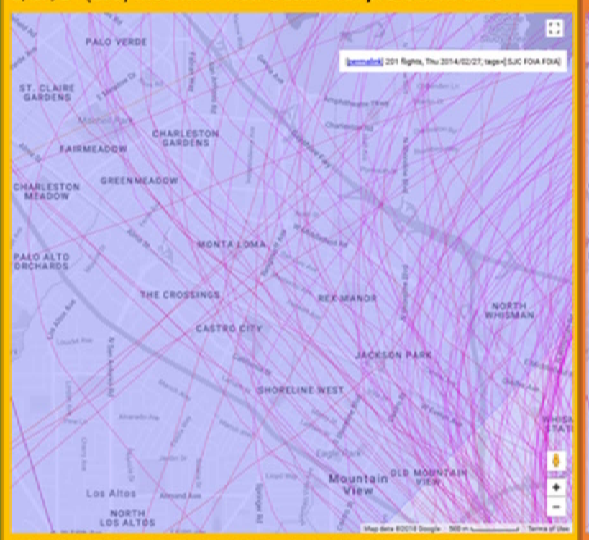


11/11/11 (210) Sunnyvale Detail

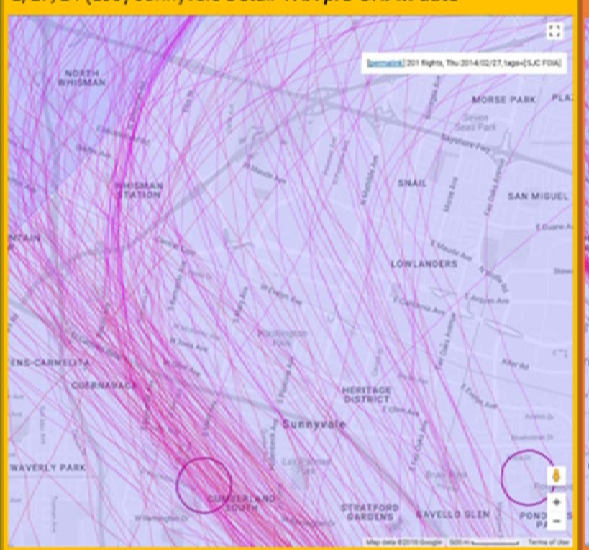


Phase II
March 2012 to March 2015 – Mile wide Corridor

2/27/14 (199) Mountain View Detail *FAA pre-OAPM date*

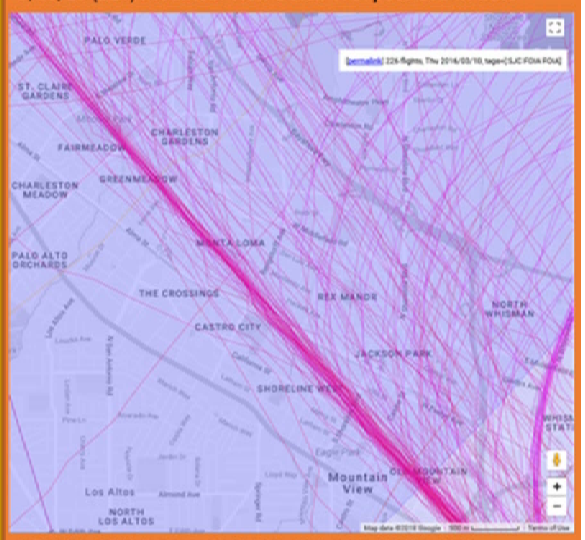


2/27/14 (199) Sunnyvale Detail *FAA pre-OAPM date*

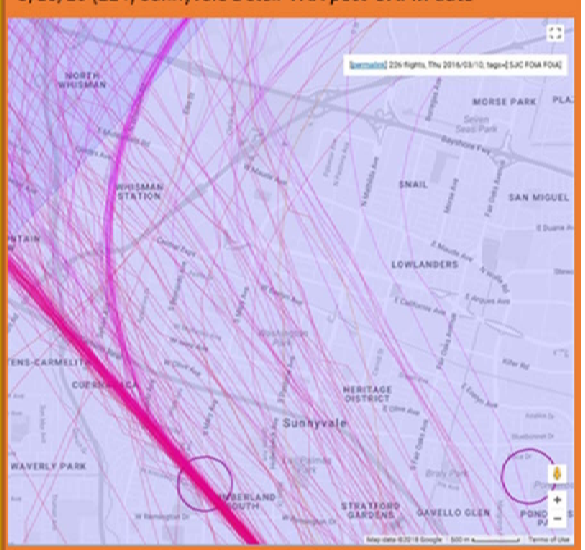


Phase III
After March 2015 – 'Rail' over ZORSA

3/10/16 (224) Mountain View Detail *FAA post-OAPM date*



3/10/16 (224) Sunnyvale Detail *FAA post-OAPM date*

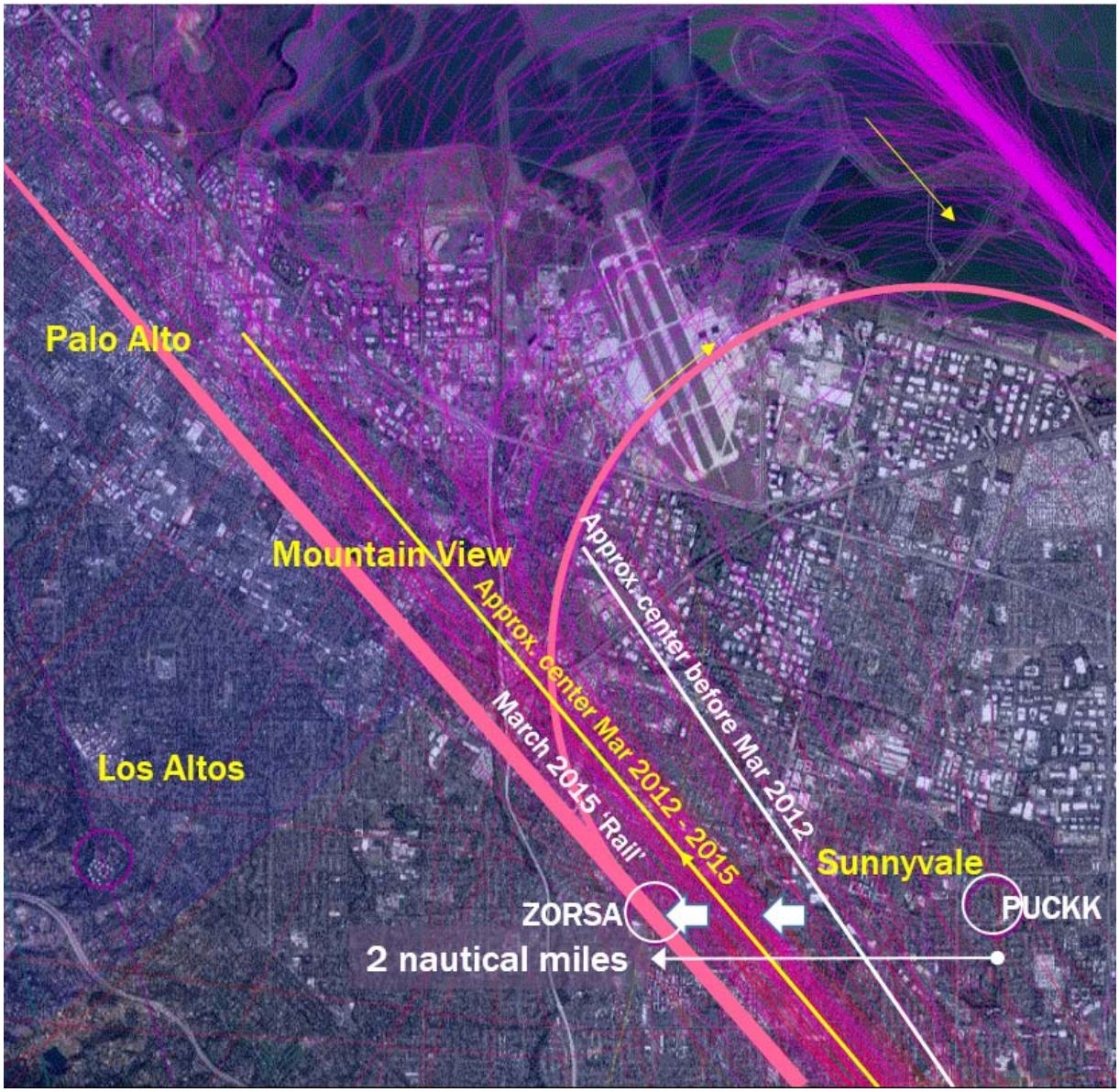


The Center of Traffic Has Been Shifted West Twice Since 2012

- **Phase I - Before March 2012**, the center of traffic was about a mile east of ZORSA, about midway between ZORSA and PUCKK.
- **Phase II - March 2012 to March 2015**, the center of traffic was shifted to a line perhaps a half mile east of ZORSA.
- **Phase III - March 2015**, a 'rail' of concentration was established precisely at ZORSA – about a mile west of the center of traffic before March 2012.

Future: All planes to the 'Rail' over ZORSA? Again, the community is concerned that if nothing is done, Nextgen will drive <u>all</u> planes to the 'rail' over ZORSA, shifting still more flights west.

2012 and 2016 lines are superimposed on a vector map of traffic for 12/5/14



Source: Author's estimates of flight centers based on maps derived from FAA data

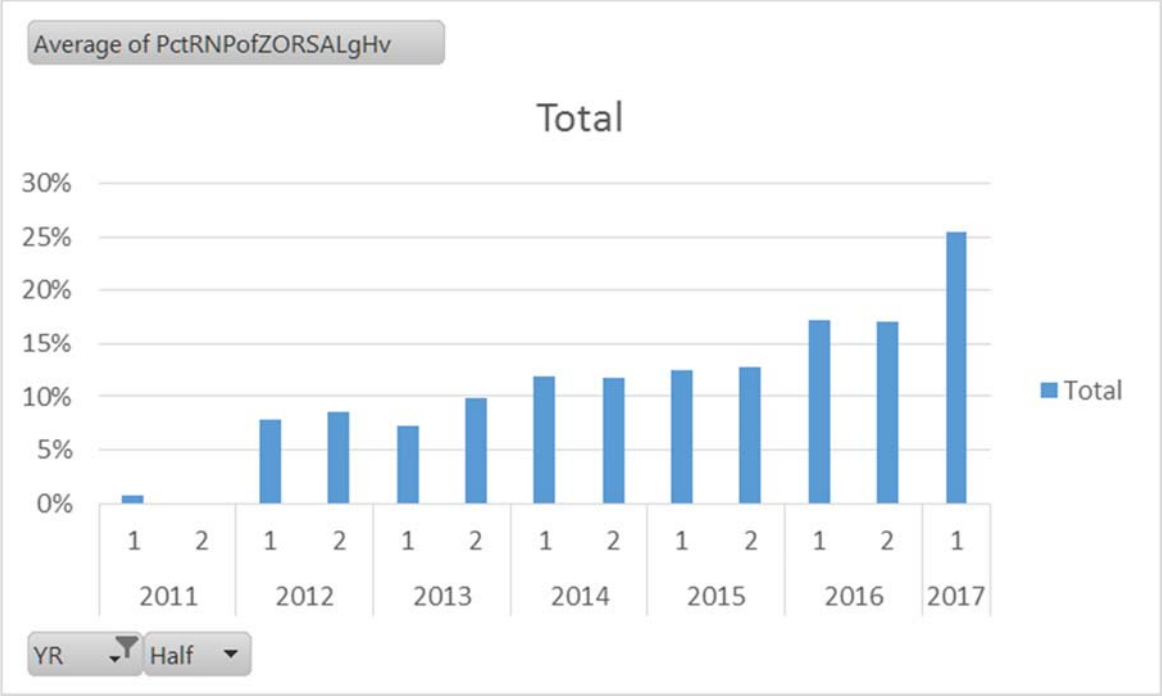
Figure 7. The Westward Shift of Traffic from Phase I to Phase II to Phase III

An Entirely New Flight Path Has Been Established over Mountain View – Its Use is Growing Rapidly

The pink semicircle in Figure 7 on the previous page describes a relatively new approach to SJC. The vector maps above show use of that path emerging in Phase II and well-defined in Phase III.

- The approach is called the 'RNP AR Z' approach. That stands for 'Required Navigation Performance – Approval Required'. The procedure requires more advanced flight management systems. Crews must file to fly this approach and they must have special training.
- Most airplanes taking this approach seem to stay within a corridor that is extremely narrow – often a few streets wide. The aircraft navigation systems required to fly this approach must be able to calculate aircraft position to within 0.15 or 0.30 nautical miles, laterally.
- The RNP AR Z approach was defined by 2009 but it was rarely if ever used before 2012. Since then, its use has increased rapidly. Figure 8 shows that in 2017, 25% of large or heavy flights arriving ZORSA continued on to this approach.

The community is concerned that going forward, use of the RNP approach will be mandated for SJC arrivals, per the general direction stated in a 2006 strategy document from the FAA.[3]



Source: Derived from FAA data

Figure 8. Percentage of Large/Heavy Flights taking the RNP Approach

for flights with 1m of ZORSA

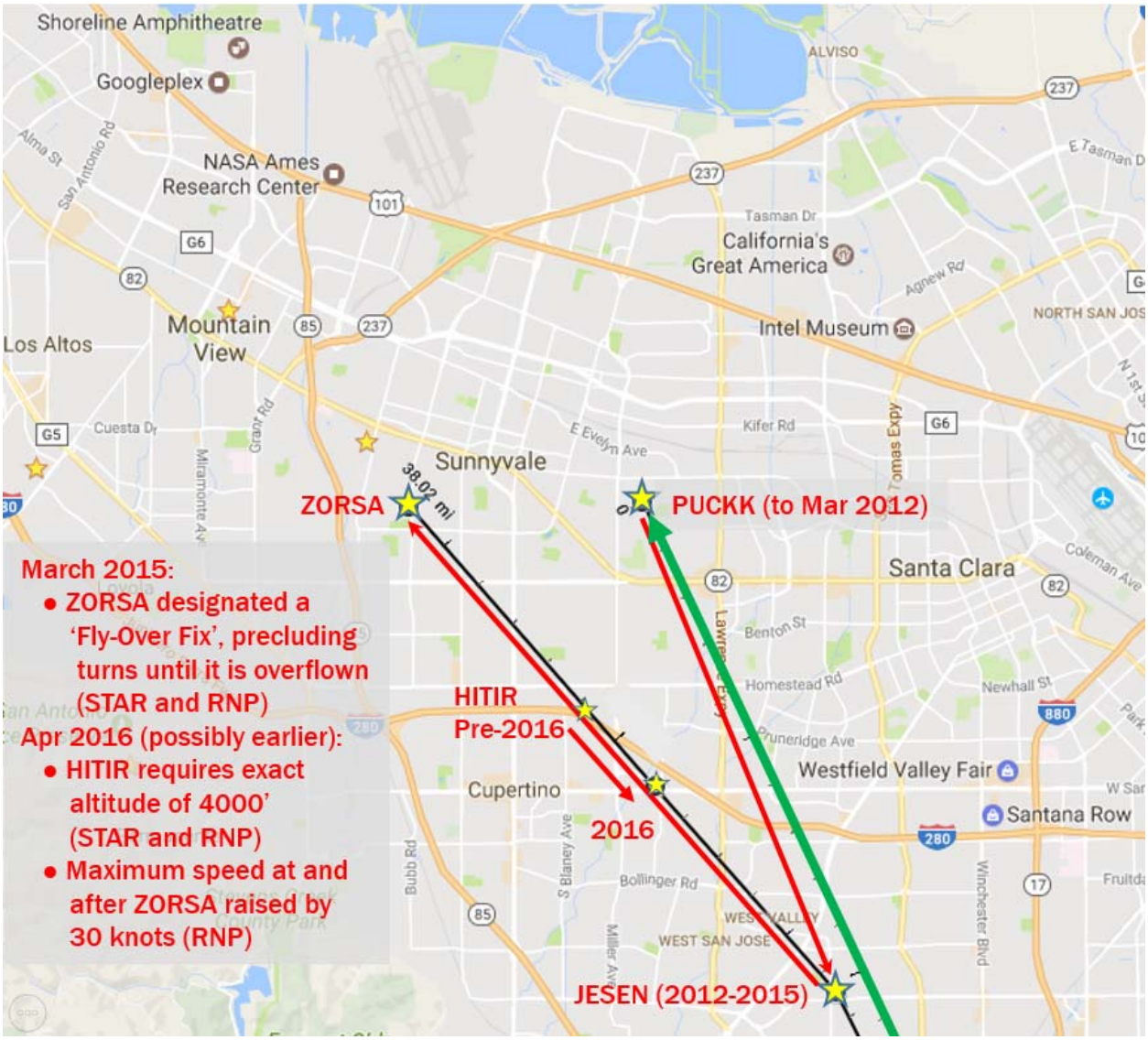
[3] FAA, Roadmap for Performance-Based Navigation, July 2006, Version 2.0, p11. From the document: "Far Term (2016-2025): Mandate RNP in busy en route and terminal airspace."

The Flight Plates For South Flow Arrivals and Approaches Have Been Altered Significantly

Flight plates are annotated maps that describe procedures used to guide pilots through each phase of flight, including departure from the airport of origin, 'en route' at altitude, and final approach to the destination airport. A Standard Terminal Arrival Route or 'STAR' procedure provides pilots in the 'en route' phase with instructions for arriving to a point near the destination airport. Near the airport, congestion becomes an important consideration and Air Traffic Control (ATC) becomes critically important, often specifying approach procedures to be used by arriving aircraft. ATC might require 'vectoring' which is used to delay an arriving flight to better allow it to 'zipper in' with other flights that are queued for the same airport. 'Approach' procedures specify how to get from a point near the airport to the runway itself. The last point targeted by the STAR procedure is often the initial approach fix (IAF) for an approach procedure. Per Wikipedia, "STARs can be very detailed (as is often the case in Europe), allowing pilots to go from descent to approach entirely on their own once ATC has cleared them for the arrival, or they can be more general (as is often the case in the United States), providing guidance to the pilot, which is then supplemented by instructions from ATC."

Pilots use 'flight plates' for STAR procedures and approach procedures (such as the RNP AR Z approach) to understand details that they must comply with. These flight plates include guidance about the path of travel, air speed and altitude requirements, among other things. Flight plates are published frequently and are redesigned or updated as procedures evolve.

The following map describes significant changes that can be found by comparing flight plates impacting south flow traffic over the past six years.



Source: Derived from FAA flight plates

Figure 9. Significant Changes to Flight Plates Since 2012

In Phase I, until March 2012, aircraft approached the PUCKK waypoint along the green line (see the vector map for West Valley Cites – 11/11/11) using the JAWWS TWO STAR procedure. Many flights initiated a slight turn after reaching a point just east of JESEN, with most flights having turned before reaching PUCKK. This introduced considerable dispersion.

In Phase II, beginning in March 2012, the final waypoint on the STAR procedure (now JAWWS THREE) was moved back five miles to JESEN, above Hamilton Avenue in Campbell. It appears that ATC gave pilots instructions to turn at JESEN, causing air traffic to shift toward the ZORSA waypoint (which was not at that time on the STAR procedure, but existed on the RNP approach). Vector maps show that the

timing of this turn varied very slightly, but still retained some dispersion, albeit less than existed during Phase I.

2012 also saw the first regular use of the RNP procedure, which always targets ZORSA.

In Phase III, beginning in March 2015, the JAWWS procedure was mainly superseded by the RAZRR and SILCN RNAV procedures as part of the rollout of Nextgen. RNAV or 'area navigation' uses GPS technology to guide airplanes. On these new RNAV procedures, ZORSA was designated as a 'fly-over fix', which prevents aircraft from turning before that fix is overflown unless they have alternate instructions from ATC. (Although many planes still bleed off to the east slightly before reaching ZORSA.)

In addition, sometime between March of 2015 and March of 2016, the RNAV and RNP procedures assigned a required absolute altitude of 4000' at HITIR. The coordinates for HITIR were also shifted 4400' to the southeast, toward JESEN.

Comparing the flight plates, two other things are worth noting:

- The Minimum Enroute Altitude (MEA) for ZORSA was adjusted, probably in March 2015, from 3200' to 3000', allowing planes above ZORSA to fly 200' lower. (ZORSA was only on the RNP plate before 2015.) This is the lowest altitude at which it is safe to fly.
- The maximum permissible speed at ZORSA was increased from 180 KIAS (knots indicated air speed) to 210 KIAS sometime between March 2015 and March 2016, per the RNP plates. Because aircraft are now routinely directed to ZORSA whether or not they are flying the RNP approach, it seems likely that if aircraft flying the RNP approach are, in fact, flying faster, then aircraft not flying the RNP approach, but also flying to ZORSA, would need to fly faster as well. It doesn't seem safe to have two different speed limits for one lane of traffic.[4]

Ground Speed – Airplanes Have Been Flying Faster Since 2016

Data from the FAA seems to show that since 2016, airplanes have approached JESEN faster on average, and that they have been continuing faster through Sunnyvale, into Mountain View and perhaps beyond.

Even a small increase in speed can cause significant noise – other things being equal. Technical papers, some of them old, suggest that the sound energy produced by the airframe increases at somewhere between the 4.5 and 6th powers of aircraft velocity.[5][6][7][8] Sound energy from the airframe is often the largest component of noise on approach.

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[4] The RNAV STAR plates don't indicate speed guidance for ZORSA, although the very first such plate, SILCN ONE, specified a precise speed of 210 KIAS and a precise altitude of 3000' for ZORSA. It was immediately discontinued for safety reasons, but those reasons did not cite the changes at ZORSA.

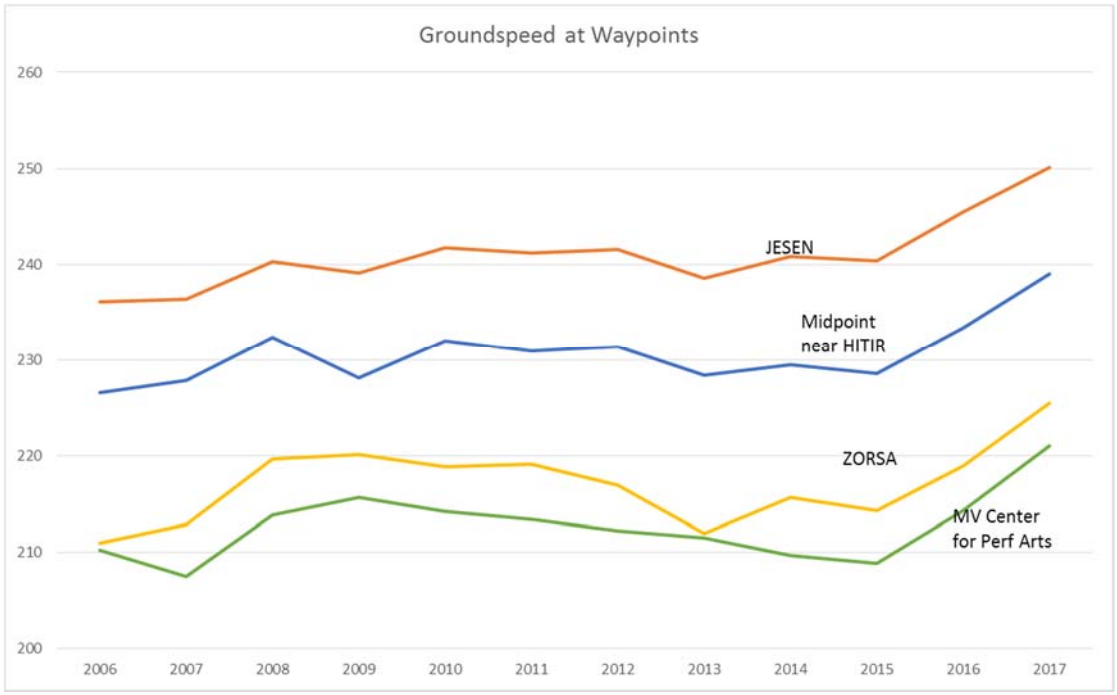
[5] Fink, Martin R., Approximate Prediction of Airframe Noise, J. Aircraft, Vol 13, No. 11, November 1986, p833

[6] Heller, H.H. and Dobrzynski, W.M., A Comprehensive Review of Airplane Noise Research, Proceedings of the 11th Congress of ICAS, Lisboa, Portugal, 1978, p42

[7] Kanjere, Kondwani (2013) Aeroacoustic investigation of aircraft spoiler during steep approach *University of Southampton, Engineering and the Environment, Doctoral Thesis* , 183pp.

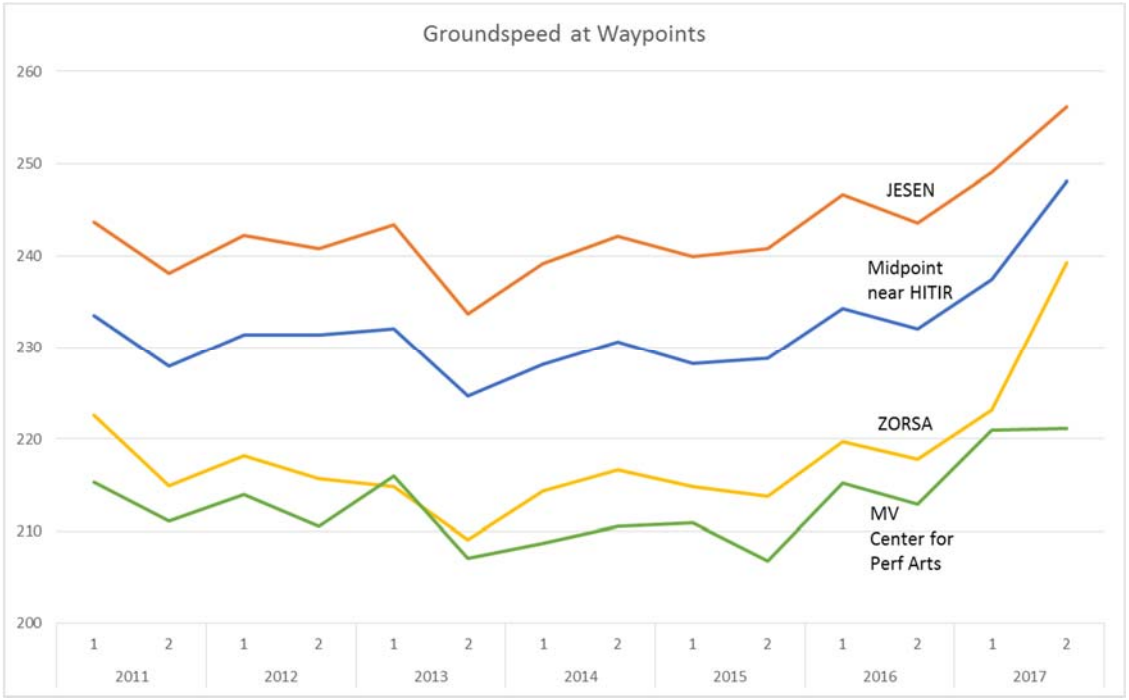
[8] Caveat: these papers are very technical and the author is not an acoustic engineer.

In the graphs below, note that average ground speeds are now at their highest levels ever, while they were at their lowest in 2006 when the number of south flow flights per day was at a peak that has not been attained since.



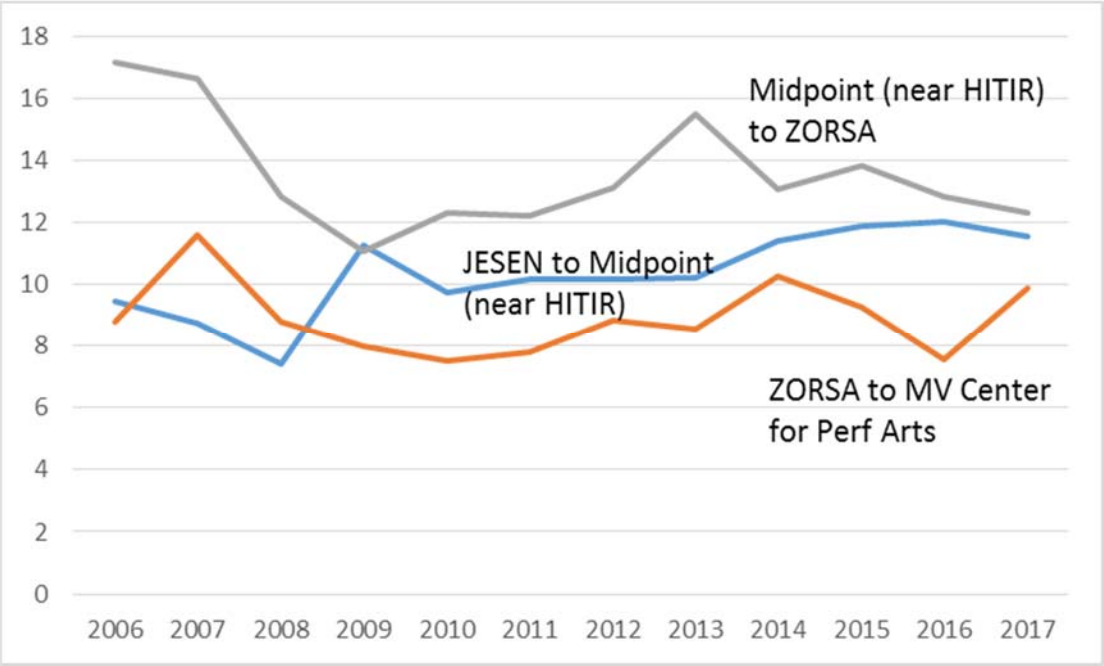
Source: Derived from FAA data. Speed approximations are imprecise.

Figure 10. Average Groundspeed – 2006 through July 2017 by Year



Source: Derived from FAA data. 2H17 data only includes July. Speed approximations are imprecise.

Figure 11. Average Groundspeed – 2011 through July 2017 by Half Year



Source: Derived from FAA data. 2H17 data only includes July. Speed approximations are imprecise.

Figure 12. Average Loss of Groundspeed – 2006 through July 2017 by year

Figure 11 suggests that airplanes are, on average, decelerating somewhat more as they approach ZORSA, although the effect doesn't appear to be large. (The 'Midpoint near HITIR' is equidistant from ZORSA and JESEN.) This could signal use of noisy air surfaces. More analysis could answer whether airplanes preparing to make the RNP turn decelerate faster than airplanes continuing on the straight 'rail' over Mountain View.

Note: Ground speed data should be considered with some caution. Speeds in the graphs above are calculated by the difference in distance and time between adjacent 'track points', which capture data that is emitted by airplanes, typically every five seconds. Speed is not reported, but must be derived. For planes traveling at high speeds, this means that any individual groundspeed reading is suspect due to the 'jitter' in the derived measurement. With a large enough number of readings, the effects of jitter should cancel out. The author calculated ground speed using a second technique that considers the difference in time over a distance of miles and patterns similar to those seen above emerged.

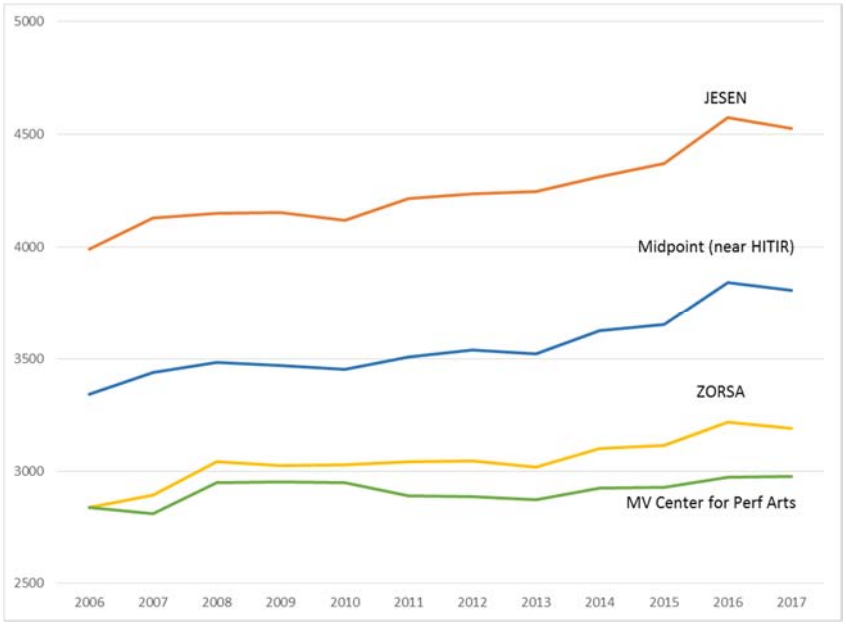
Another caution is that ground speed is not the same as air speed, which is what pilots really need to optimize. Ground speed does not account for ambient wind. The KIAS guidance on flight plates (knots indicated air speed) instructs pilots to fly at a speed relative to the prevailing winds. KIAS would be a better indicator of noise than ground speed. Still, the author believes that the broad trend indicated in the above graphs indeed represents faster flights, on average, and – potentially – a source of increased noise.

Altitudes - Airplanes are Higher, on Average, with Steeper Descents

As noted above, the Minimum Enroute Altitude at ZORSA was lowered 200' around 2015, however, that is only a minimum safety clearance and data suggests that airplanes are actually flying at higher

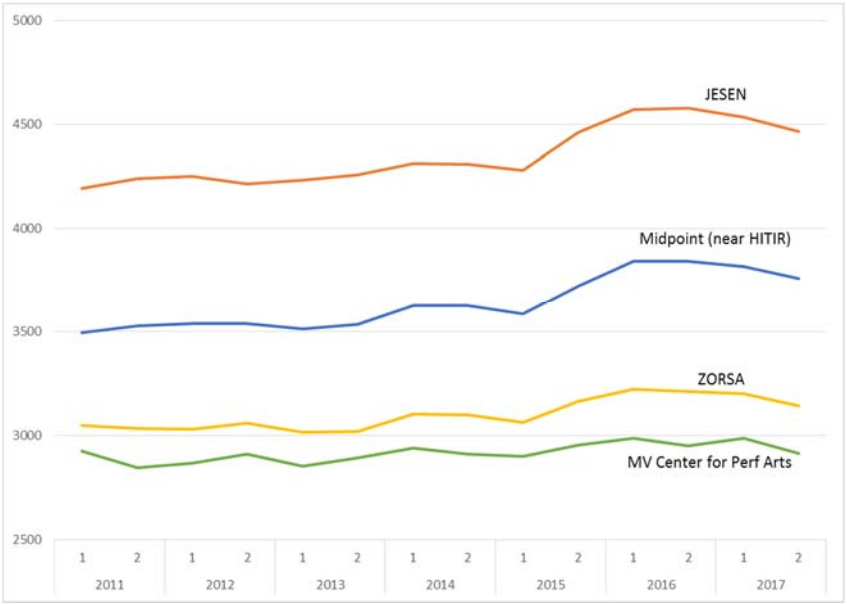
altitudes on average than they did during Phases I and II. It is possible that these averages mask the fact that some aircraft are flying at lower altitudes than before, but this preliminary analysis does not bolster the suggestion that the increase in noise complaints is due to planes flying at lower altitudes.

Another factor is at play: the increase in altitude is most pronounced at JESEN and least at the Mountain View Center for Performing Arts, meaning that the angle of descent has increased on average. Figure 15 below shows that the increase in angle of descent has mainly affected the path between the Midpoint (of JESEN and ZORSA, near HITIR) to ZORSA. How this might have affected noise is unclear.



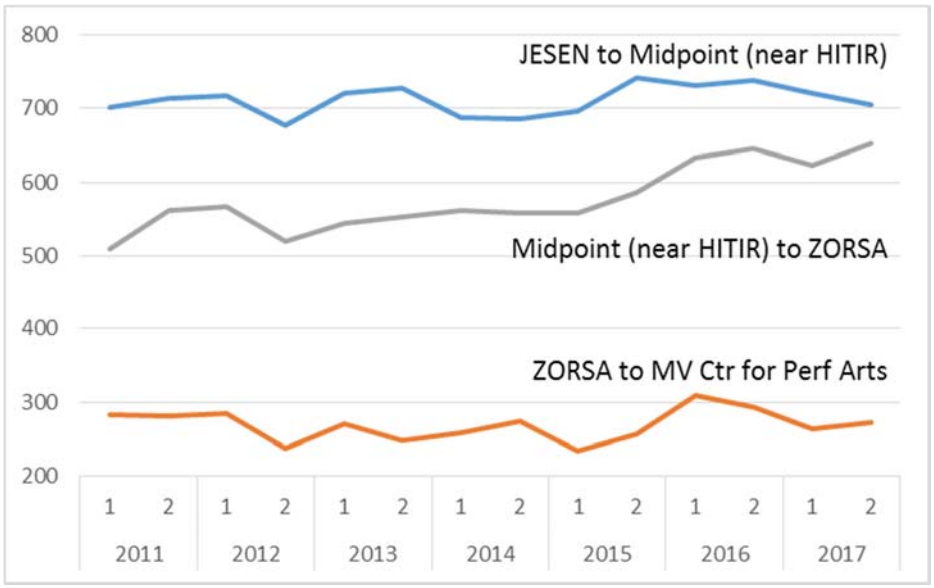
Source: Derived from FAA data. 2H17 data only includes July.

Figure 13. Average Altitude 2006 through July 2017 by Year



Source: Derived from FAA data. 2H17 data only includes July.

Figure 14. Average Altitude 2011 through July 2017 by Half Year



Source: Derived from FAA data. 2H17 data only includes July.

Figure 15. Average Drop in Altitude 2011 through July 2017 by Half Year

Night Time Air Carrier Operations Have Increased Recently as a Percentage of All Operations

Finally, there has been an uptick in air carrier operations between the hours of 11pm and 7am recently, as a percent of all operations. While the numbers are small, this bears watching. Unlike the other charts in this document, this data is not specific to South Flow flights.

Source: Derived from data provided by San Jose International Airport

Figure 16. Increase in Night Operations of Air Carriers as a Percent of Total

Conclusion

Noise complaints have skyrocketed for reasons that have little to do with weather. Rather, the increase in complaints dovetails with a dramatic increase in concentration of south flow traffic. South flow traffic has seen three phases of concentration in the past six years. Airplanes that were once evenly dispersed across a 2.25 mile band over Sunnyvale (Phase I) have been put on a narrow 'rail' (Phase III), and the center of this new rail is about a mile west of the old (Phase I) center of traffic. In addition, a new RNP approach has emerged over the last six years, with 25% of flights now using that approach. There is reason to believe that the FAA will increase concentration still further along these two rails if nothing is done.

Other factors contributing to noise complaints should be explored. FAA data suggests that airplanes are flying faster, which can contribute significantly to noise. Aircraft are also making steeper descents, on average, than in the past. Whether that was good or bad for noise is unclear. On the other hand, airplanes are flying at higher altitudes, on average, than they did before the 2015 changes, which suggests (but does not prove) that the cause of the noise complaints is not likely to be found in altitude.

Causes for each of these effects can be found in changes to the flight plates used by pilots for south flow arrivals, which have been significantly altered since 2012.

About the Author

Robert Holbrook is a resident of Mountain View who has been affected by changes to south flow traffic procedures into SJC.

Disclaimer: Mr. Holbrook is a layman. He is not an acoustic engineer, a pilot, an attorney or any other professional with regard to the topics discussed in this paper. The statements made in this document are believed to be accurate, but errors are possible.

City of San José
AD HOC ADVISORY COMMITTEE ON SOUTH FLOW ARRIVALS

Meeting Minutes of the Ad Hoc Advisory Committee on South Flow Arrivals

FRIDAY **SAN JOSE, CALIFORNIA** **February 23, 2018**

The Ad Hoc Advisory Committee on South Flow Arrivals held an organizational meeting on Friday, February 23, 2018 at 1:00 p.m. at the San José International Airport Administrative Offices in the McDonnell Douglas & Boeing Conference Rooms.

ATTENDEES:

COMMISSIONERS

Glenn Hendricks (Chair)	- Present
Chappie Jones (Vice-Chair)	- Present
Mary-Lynne Bernald	- Present via telephone conference
Savita Vaidhyanathan	- Present
Jean Mordo	- Present
Gary Waldeck	- Present
Bob Nuñez	- Present 1:06-4:07 p.m.
Rowena Turner	- Present 1:18- 3:21 p.m.
Rene Spring	- Present via telephone
Lydia Kou	- Present
Lisa Matichak	- Present
Johnny Khamis	- Present 1:00-2:41 p.m.
Kathy Watanabe	- Present
Jeffrey Cristina	- Absent

AIRPORT STAFF PRESENT

John Aitken
Judy Ross
Matthew Kazmierczak
Janelle Adams
Curt Eikerman

FAA STAFF:

Tony DiBernardo
Tonya Patterson
Thann McLeod

I. Call to Order and Orders of the Day

The meeting was called to order at 1:03 p.m. by Chair Hendricks with eleven Committee members in attendance and three absent.

II. Consent Calendar

A. Approve the Minutes for the January 26, 2018 meeting

Action: Upon motion by Committee Member Waldeck, seconded by Committee Member Watanabe, to approve the meeting minutes, the motion passed 11-0-1.

III. Chair/Vice Chair Remarks

Committee Chair, Glenn Hendricks, outlined the plan for the meeting.

IV. Old Business

A. Items on the Ad Hoc Advisory Committee Workplan

Chairman Hendricks introduced FAA staff and facilitated a dialogue among the Committee and FAA staff. The FAA brought Thann McLeod, Support Manager at Northern California TRACON, to the meeting to provide additional details about the current flight procedures for south flow arrivals. The discussion focused on the factors surrounding the current flight path and noise, which includes satellite based navigation, aircraft fleet, aircraft technology, flight path, weather, altitude, and speed.

Each Committee Member had an opportunity to ask the FAA staff questions. After the informational briefing from the FAA, the Committee started to identify possible ideas to mitigate noise during south flow arrivals. Ideas were solicited from the Committee and the general public.

The Committee will be providing the FAA with questions and requests.

V. Public Comment

Members of the public were invited to speak on south flow concerns and were asked to offer suggestions to the Committee members on possible noise mitigation ideas. The speakers were encouraged to provide verbal comments to the Committee as well as written suggestions to their induvial representatives.

Speakers include: Marie-Jo Fremont, Jennifer Landesmann, Jennifer Tasseff, Robert Holbrook, Mary Shefueland, Steven Scharf and Zachary Kaufman.

VI. Future Meeting Schedule and Agenda Items

The Committee discussed their preferences of future meetings. The Committee decided to hold all future meetings at the San José International Airport's Administrative Offices.

VII. Adjournment

The meeting was adjourned at 4:07 pm.

ATTEST:

Glen Hendricks
Chairperson

Matthew Kazmierczak
Manager of Strategy & Policy

Ad Hoc Advisory Committee on South Flow Arrivals

Councilmember Jeffrey Cristina – City of Campbell
Mayor Savita Vaidhyanathan— City of Cupertino
Vice Mayor Jean (John) Mordo — City of Los Altos
Mayor Gary Waldeck — City of Los Altos Hills
Councilmember Rowena Turner — City of Monte Sereno
Councilmember Rene Spring — City of Morgan Hill
Councilmember Lisa Matichak — City of Mountain View
Councilmember Lydia Kou — City of Palo Alto
Mayor Mary-Lynne Bernald — City of Saratoga
Councilmember Charles "Chappie" Jones — City of San José
Councilmember Raul Peralez — City of San José
Councilmember Kathy Watanabe — City of Santa Clara
Mayor Glenn Hendricks — City of Sunnyvale

1:00 P.M. January 26, 2018 Council Chambers
of San José City Hall
200 East Santa Clara Street
San José, CA 95113

MEETING AGENDA

I. Call to Order and Orders of the Day

NOTICE OF PARTICIPATION OF COMMITTEE MEMBERS BY TELEPHONE IN THE COMMITTEE MEETING OF JANUARY 26, 2018

Committee Member Mary-Lynne Bernald intends to participate via telephone from the following location:

14398 Evans Lane
Saratoga, CA 95070

Committee Member Jeffrey Cristina intends to participate via telephone from the following location:

73896 Desert Bloom Tr
Palm Desert, CA 92260

II. Consent Calendar
   A. Approve the Minutes for the November 17, 2017

III. Chair/Vice Chair Remarks

IV. New Business

   A. Status of San José Council Meeting
   B. South Flow Procedure Presentation from the FAA
   C. Items on the Ad Hoc Advisory Committee Workplan (*as time permits*)

V. Public Comments (on items not on the agenda but within the subject matter responsibility of the Committee)

VI. Future Meeting Schedule and Agenda Items

Tenative Schedule of Upcoming Committee Meetings:

Date	**Location**	**Time**
Friday, January 26, 2018	San José Council Chamber	1:00 pm
Friday, February 23, 2018	San José Airport Boeing Conference Room	1:00 pm
Friday, March 9, 2018	Tentative - San José Committee Room	1:00 pm
Friday, March 23, 2018	Tentative - San José Council Chamber	1:00 pm
Friday, April 13, 2018	Tentative - San José Council Chamber	1:00 pm
Friday, April 27, 2018	Tentative - San José Committee Room	1:00 pm
Friday, May 18, 2018	Tentative - San José Committee Room	1:00 pm

Agenda Items:
The Committee Agenda is set based on the workplan. The Committee will work through the workplan, which shall roll over from one meeting to the other.

VII. Adjournment

OPEN FORUM: You may speak to the Committee about any item that is on the agenda, and you may also speak during Open Forum on items that are not on the agenda and are within the subject matter jurisdiction of the Committee. If you wish to speak to the Committee, please refer to the following guidelines:

- **Fill out a blue Speaker's Card and submit it to the Airport staff seated at the front table. Do this before the meeting or before the item is heard.** This will ensure that your name is called for the item(s) that you wish to address, and it will help ensure the meeting runs smoothly for all participants.
- When the Committee reaches your item on the agenda, the Chair will open the public hearing and call your name.
- Each speaker generally has two minutes to speak per item. The amount of time allotted to speakers may vary at the Chair's discretion, depending on the number of speakers or the length of the agenda.

Please be advised that, by law, the Committee is unable to discuss or take action on issues presented during Open Forum. According to State Law (the Brown Act) items must first be noticed on the agenda before any discussion or action.

Agendas, staff reports and some associated documents for the Committee items may be viewed on the Internet at http://flysanjose.com/Ad_Hoc_Advisory_Committee

To request an accommodation or alternative format under the Americans with Disabilities Act for City-sponsored meetings, events, or printed materials, please call (408) 392-3640 as soon as possible, but at least three business days before the meeting.

Please direct correspondence and questions to:

City of San José
Attn: Matthew Kazmierczak.
1701 Airport Boulevard, Suite B-1130
San José, California 95110
Tel: (408) 392-3640 Fax: (408) 441-4589
Email: MKazmierczak@sjc.org

Committee Members

Primary	Alternate
Councilmember Jeffrey Cristina City of Campbell Jeffc@cityofcampbell.com	Mayor Liz Gibbons City of Campbell LizG@cityofcampbell.com
Mayor Savita Vaidhyanathan City of Cupertino svaidhyanathan@cupertino.org	Councilmember Steven Scharf City of Cupertino sscharf@cupertino.org
Vice Mayor Jean Mordo City of Los Altos jmordo@losaltosca.gov	Councilmember Lynette Lee Eng City of Los Altos lleeeng@losaltosca.gov
Mayor Gary Waldeck City of Los Altos Hills GCWaldeck@losaltoshills.ca.gov	
Councilmember Rowena Turner City of Monte Sereno rturner@cityofmontesereno.org	Vice Mayor Evert Wolsheimer City Monte Sereno ewolsheimer@cityofmontesereno.org
Councilmember Rene Spring City of Morgan Hill Rene.Spring@morganhill.ca.gov	Mayor Pro Tem Larry Carr City of Morgan Hill Larry.Carr@morganhill.ca.gov
Councilmember Lisa Matichak City of Mountain View Lisa.Matichak@mountainview.gov	Councilmember Lenny Siegel City of Mountain View Lenny.Siegel@mountainview.gov
Councilmember Lydia Kou City of Palo Alto Lydia.Kou@cityofpaloalto.org	Councilmember Eric Filseth City of Palo Alto Eric.Filseth@cityofpaloalto.org
Mayor Mary-Lynne Bernald City of Saratoga mlbernald@saratoga.ca.us	Councilmember Howard Miller City of Saratoga hmiller@saratoga.ca.us
Councilmember Charles “Chappie” Jones City of San José District1@sanjoseca.gov	Councilmember Johnny Khamis City of San José District10@sanjoseca.gov

Primary	Alternate
Councilmember Raul Peralez City of San José District3@sanjoseca.gov	
Councilmember Kathy Watanabe City of Santa Clara kwatanabe@santaclara.gov	Councilmember Teresa O'Neill City of Santa Clara toneill@santaclaraca.gov
Mayor Glenn Hendricks City of Sunnyvale HendricksCouncil@sunnyvale.ca.gov	Councilmember Larry Klein City of Sunnyvale KleinCouncil@sunnyvale.ca.gov

Jurisdictions Outside the County of Santa Clara and Original Parameters

Mayor Alan L Nagy
City of Newark
alan.nagy@newark.org

Ad Hoc Advisory Committee Workplan

I. The South Flow Procedure Presentation: Why south flow procedure is used, how it works, the conditions requiring its use, and the air traffic environment over the South Bay, with Q&A from the Committee.

II. Committee Identification of Possible Noise Impact Reduction Measures – What are possible measures to reduce the noise impacts of the south flow procedure without reducing safety and efficiency of FAA air traffic control management? Possible measures raised in discussions include:

a) Bringing aircraft in at higher altitudes;
b) Greater dispersal of arriving aircraft;
c) Bringing aircraft in over the east of San José instead of over the west of San José.
d) Other possible solutions?

III. Committee Discussion of Identified Noise Impact Reduction Measures – An evaluation of what measures should be advanced for consideration to the FAA, given FAA direction on feasibility, safety, and efficiency.

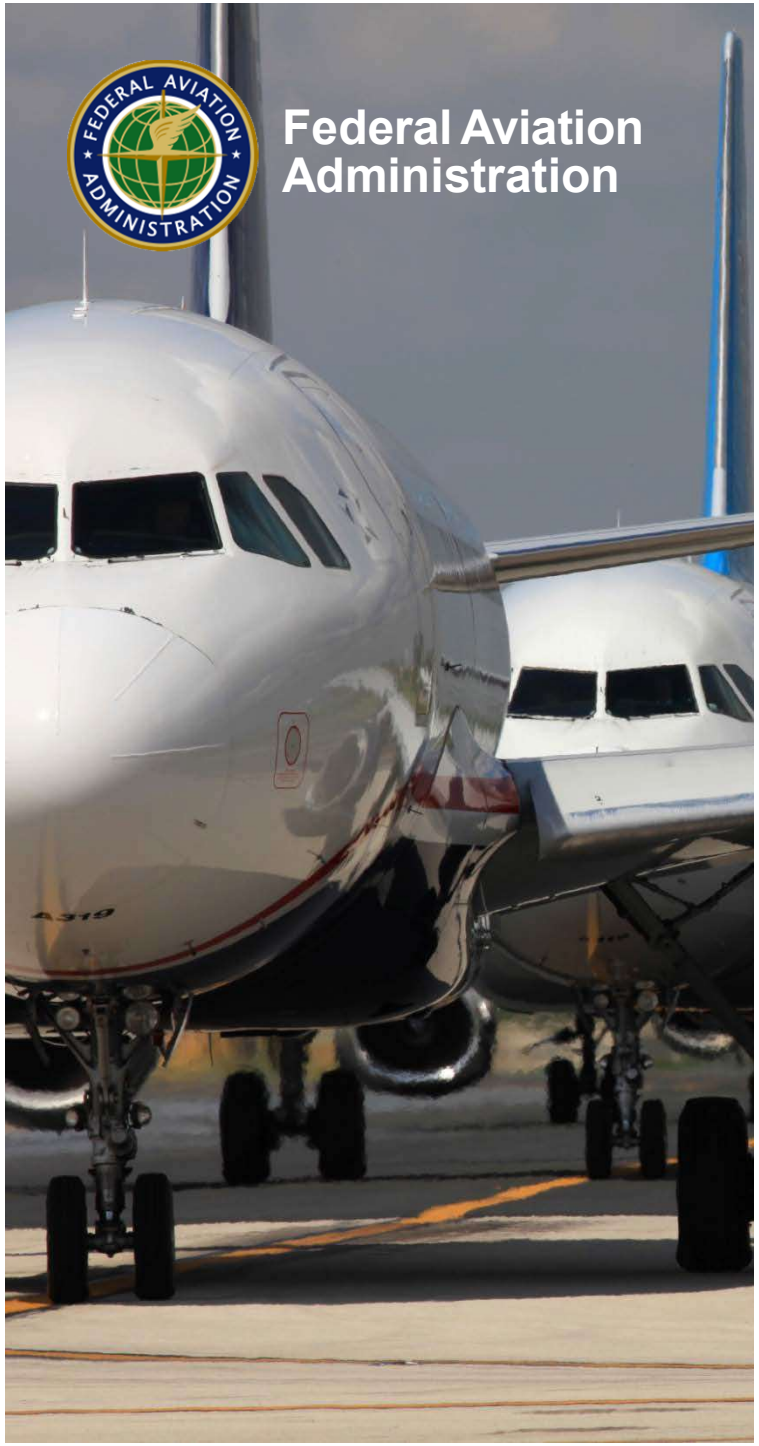
IV. **Adopting Preliminary Recommendation(s)** – After Committee discussion of, and FAA comments on, all identified noise reduction options, preliminary adoption of recommended measures for FAA consideration.

V. **Adoption of Final Report and Committee Recommendations**

SJC North and South Flow

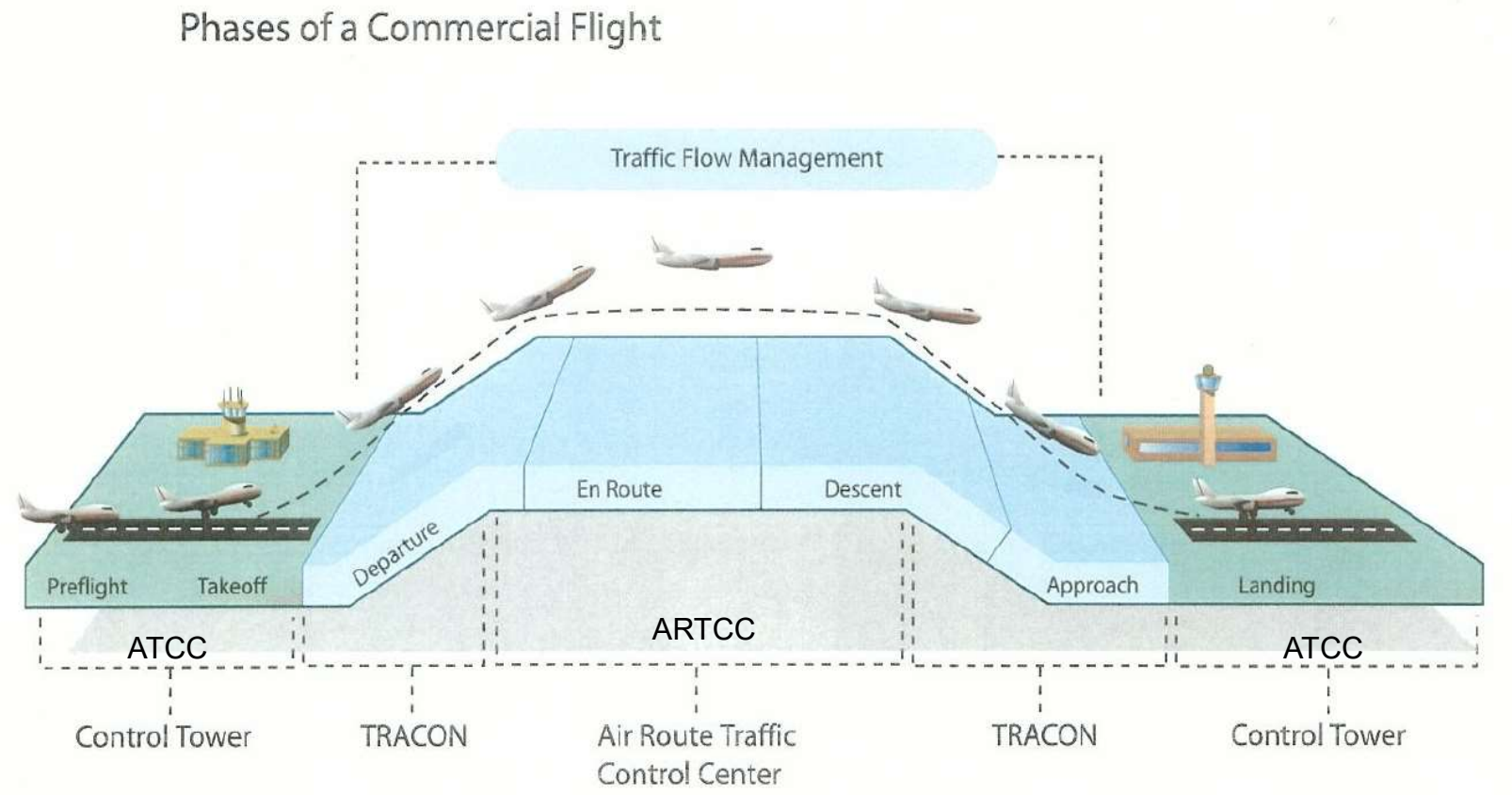
Pre and Post OAPM

Date: January 2018



Phases of Flight

FAA
Air Traffic Organization



AviationTerms

VFR- Visual Flight Rules. Pilots must maneuver to avoid clouds and are responsible for their own terrain separation.

IFR- Instrument Flight Rules. Air Traffic is responsible for both plane to plane and plane to terrain separation.

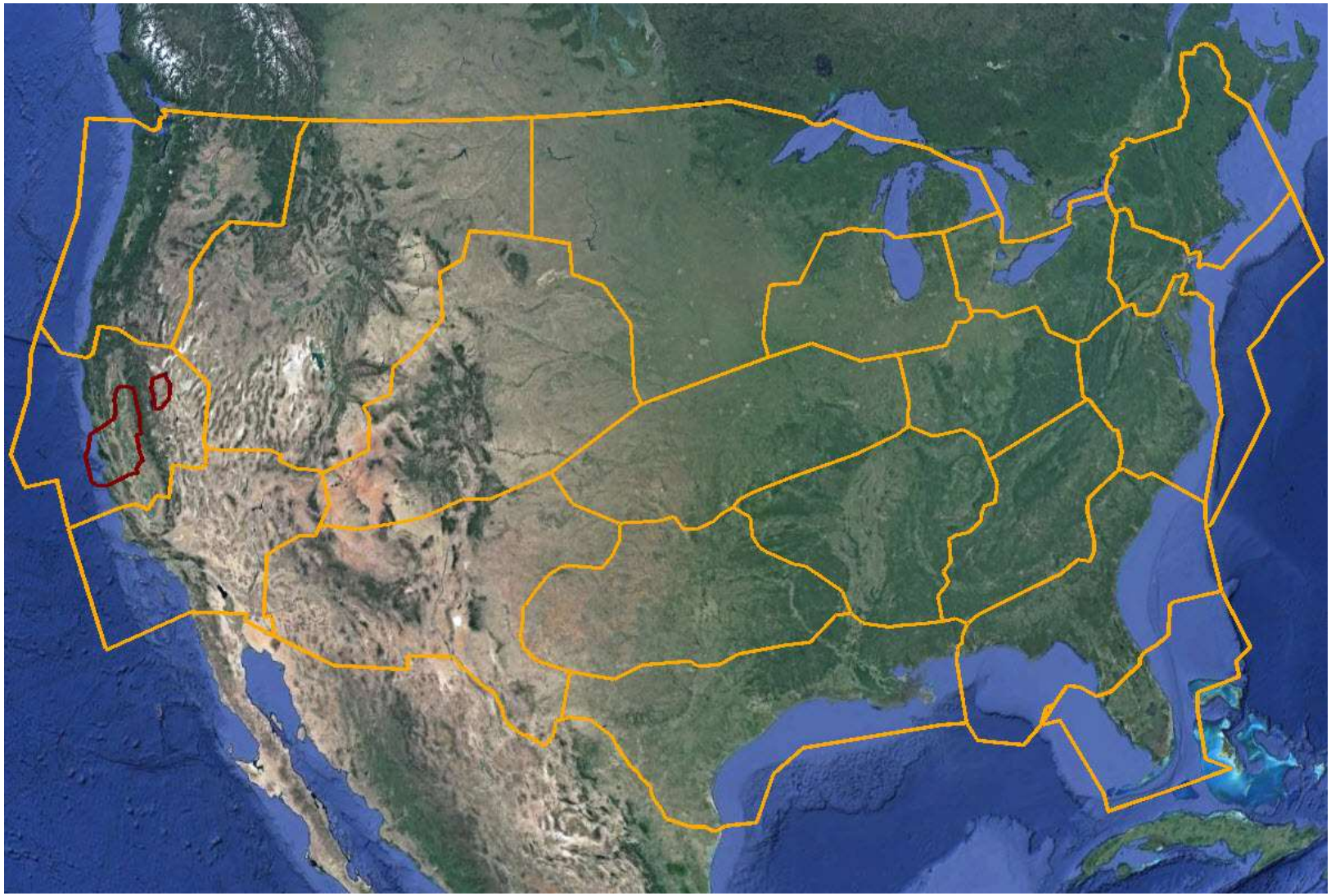
VMC- Visual meteorological conditions. Weather conditions that allow for VFR Flight.

IMC- Instrument meteorological conditions. Weather conditions that do not allow for VFR Flight.

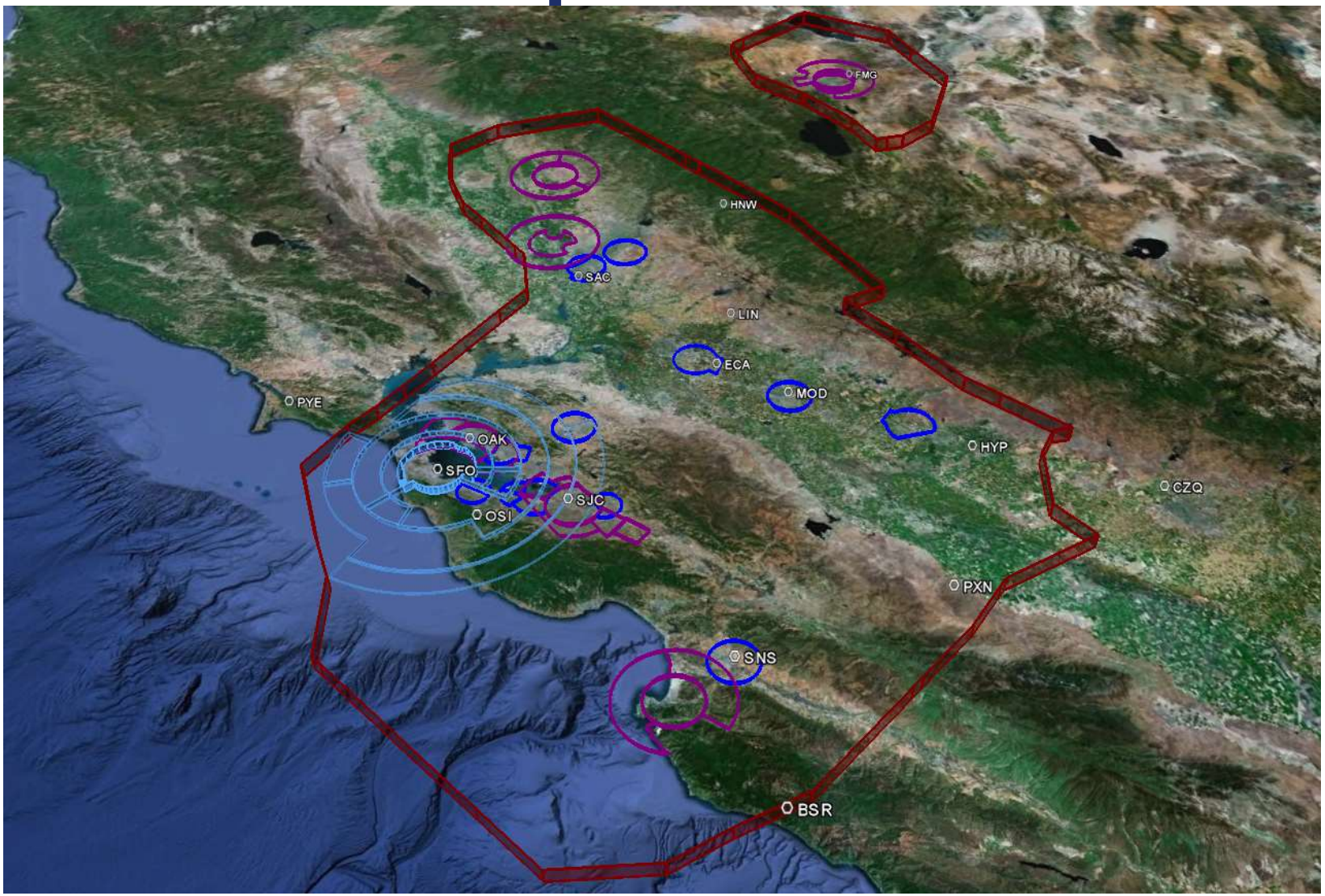
Instrument Approach – An IFR flight path that utilizes navigational aids to provide lateral and vertical guidance to the runway.

Charted Visual Approach – An IFR flight path that is made up of visual land markers and is hand flown by the pilot to the runway.

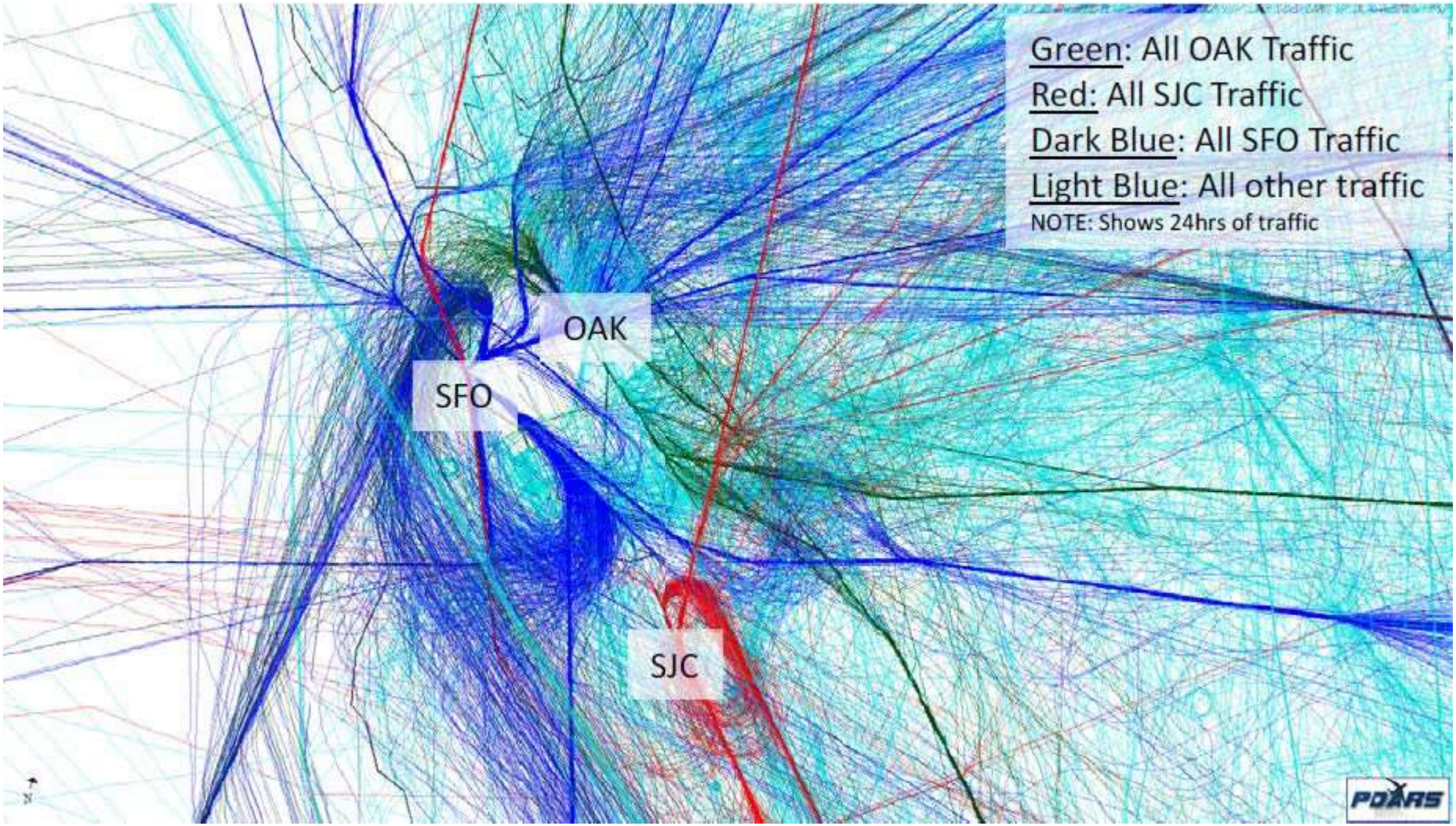
ARTCCs & NCT airspace



Over 200 Airports within NCT

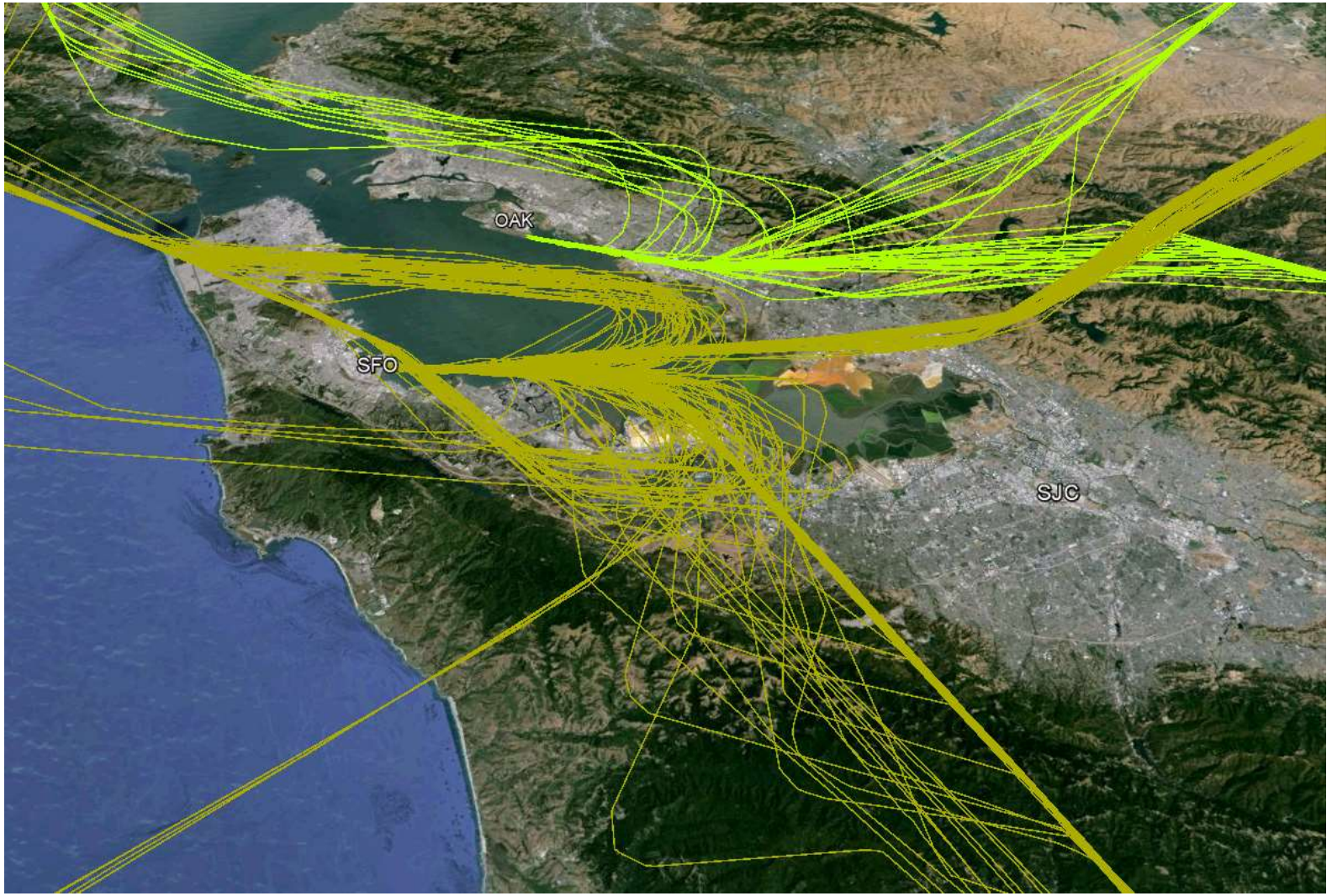


NCT Traffic – 24 Hours

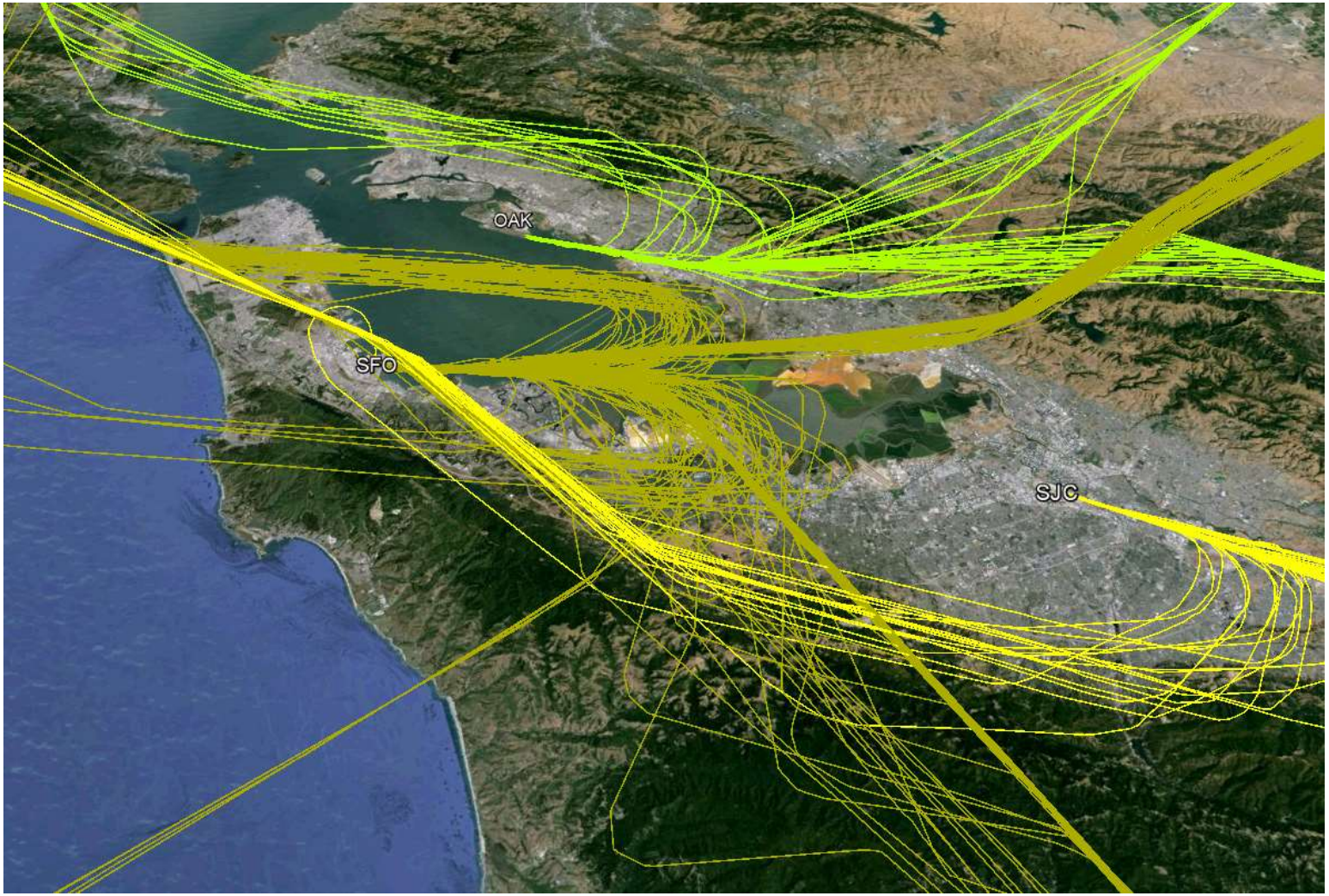


SFO Arrivals - Gold

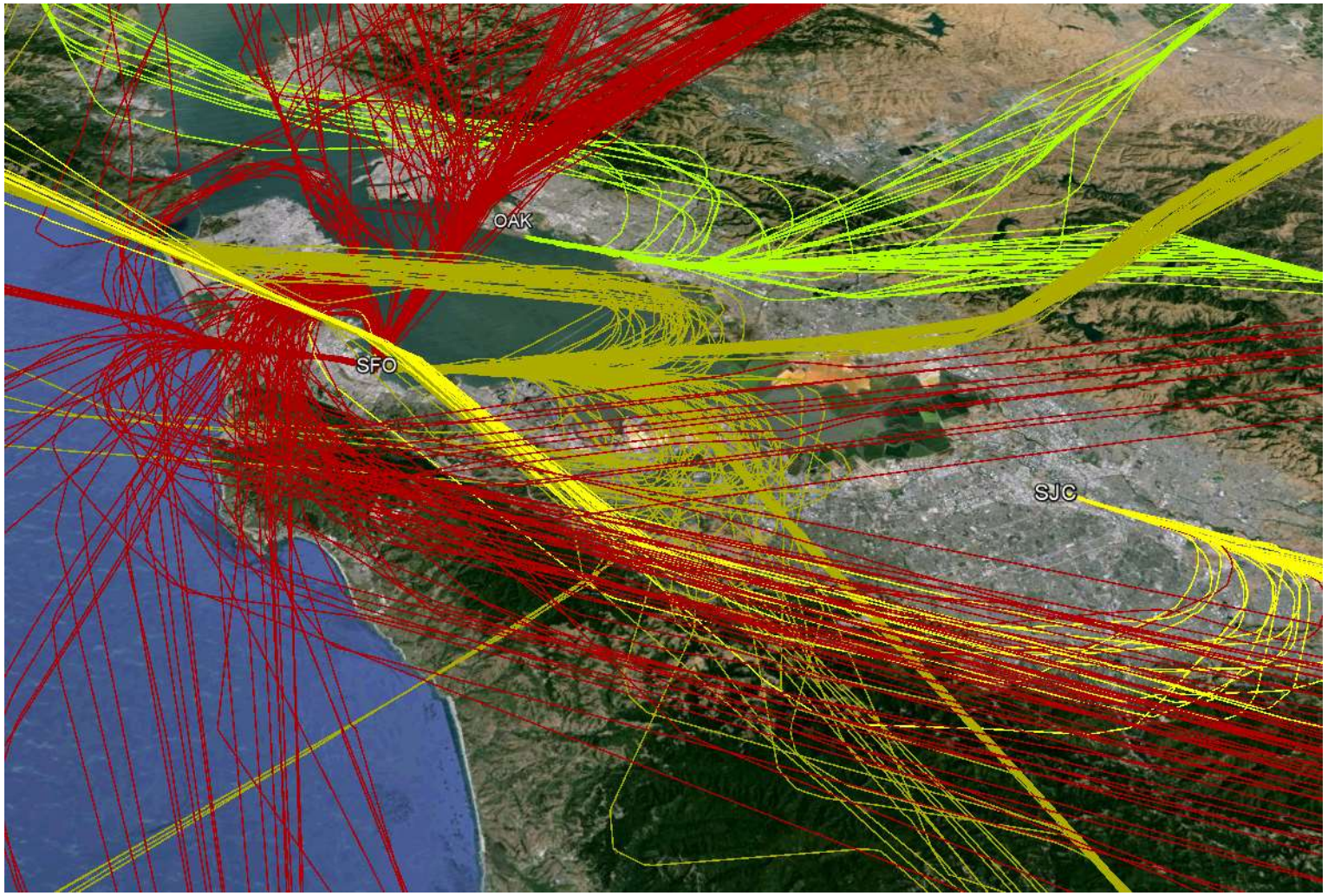
OAK Arrivals - Green



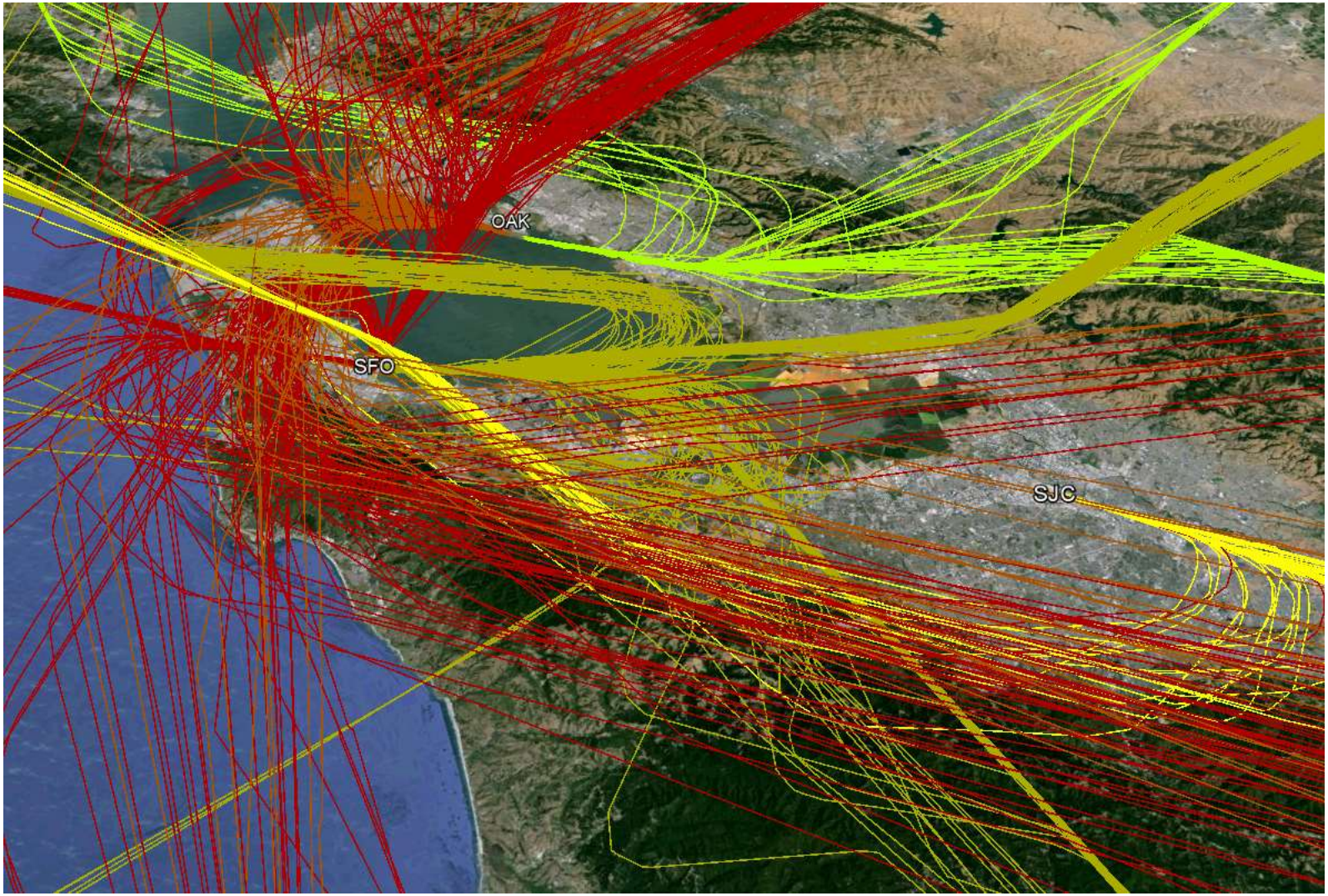
SJC Arrivals - Yellow



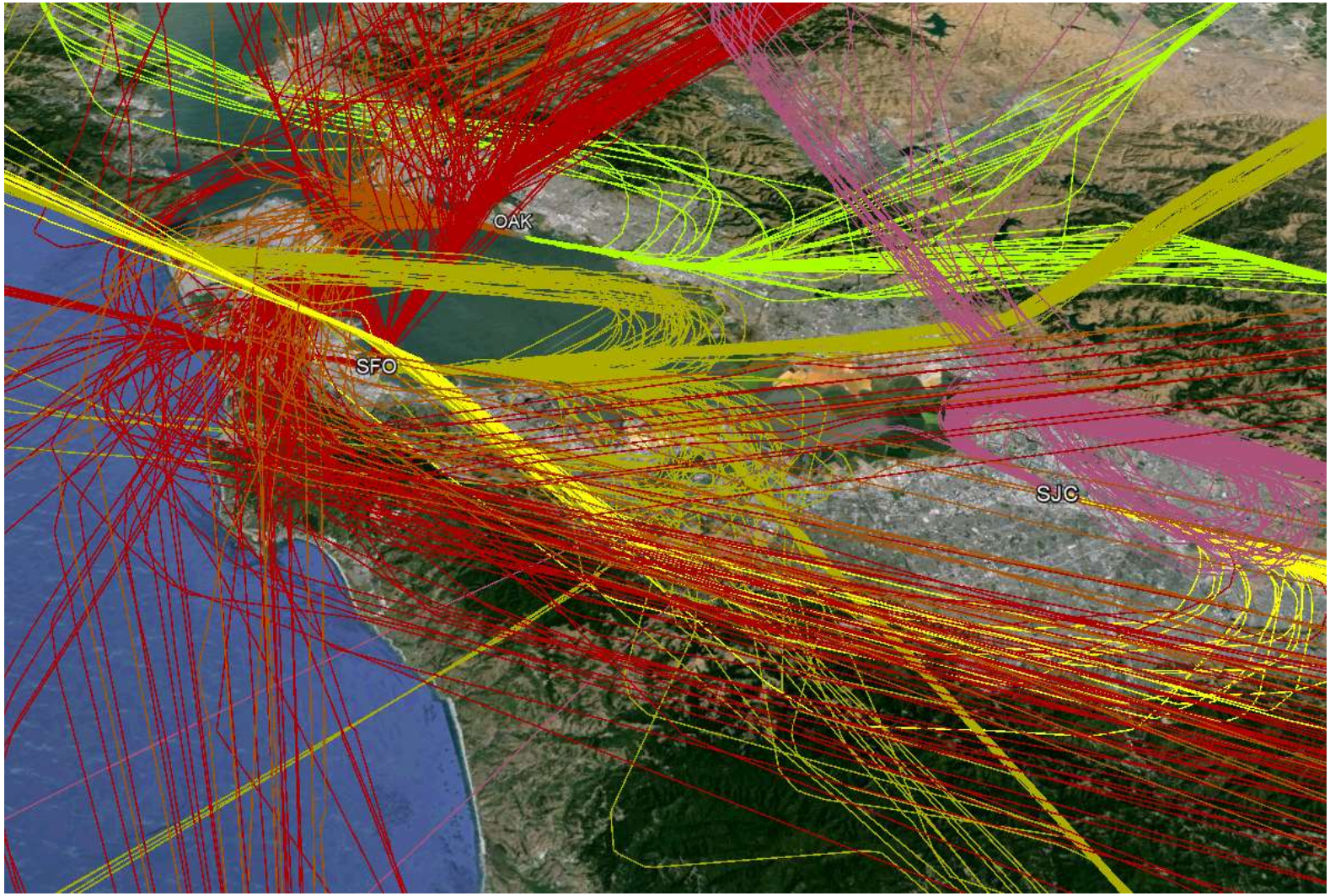
SFO Departures - Red



OAK Departures - Orange



SJC Departures - Pink



Data Analysis : Dates Utilized

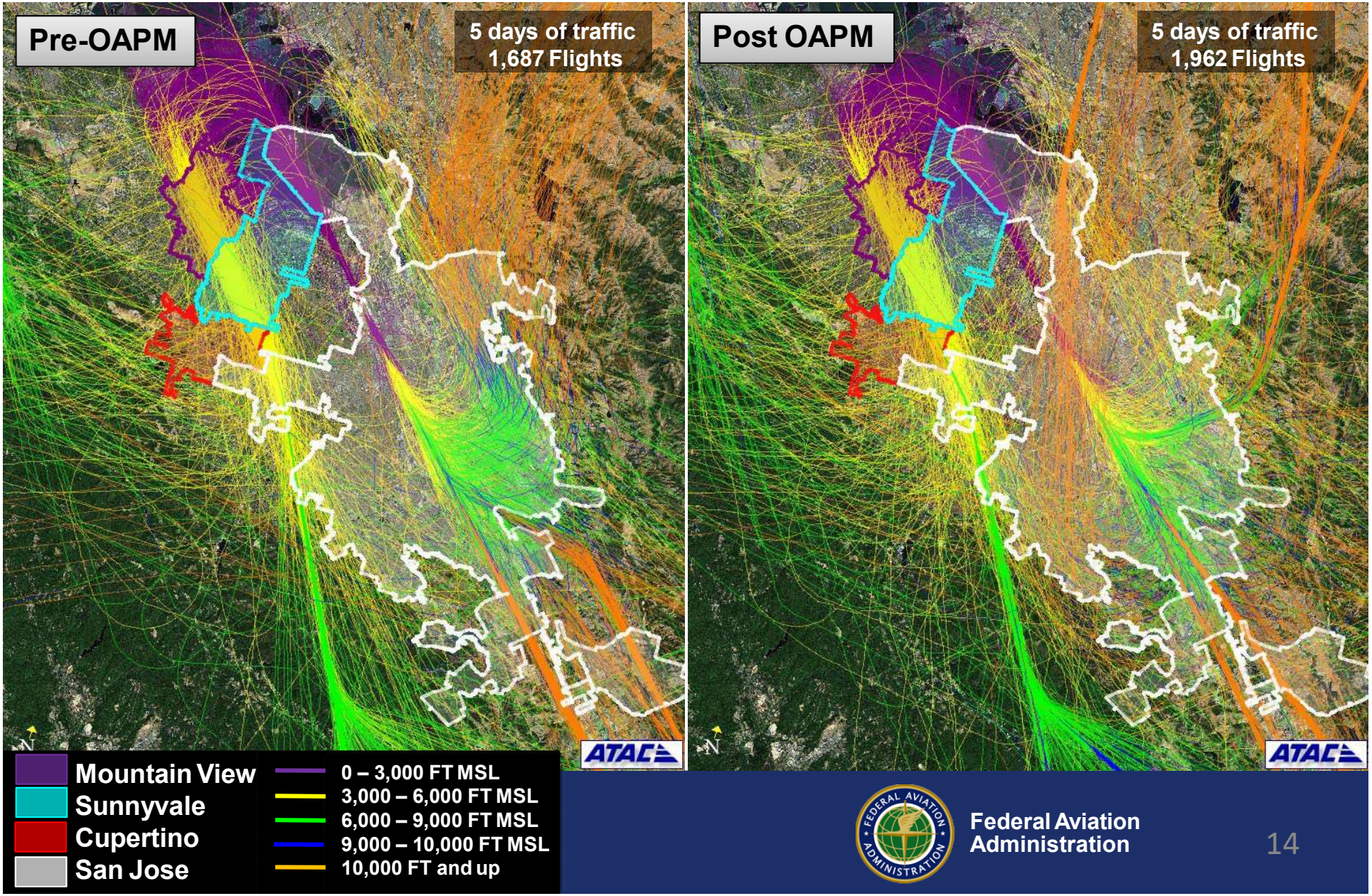
Pre-OAPM Dates

- **North Flow**
  - 2/23/2014
  - 2/21/2014
  - 2/20/2014
  - 2/19/2014
  - 2/17/2014
- **South Flow**
  - 2/8/2014
  - 2/9/2014
  - 2/26/2014
  - 2/27/2014
  - 2/28/2014

Post OAPM Dates

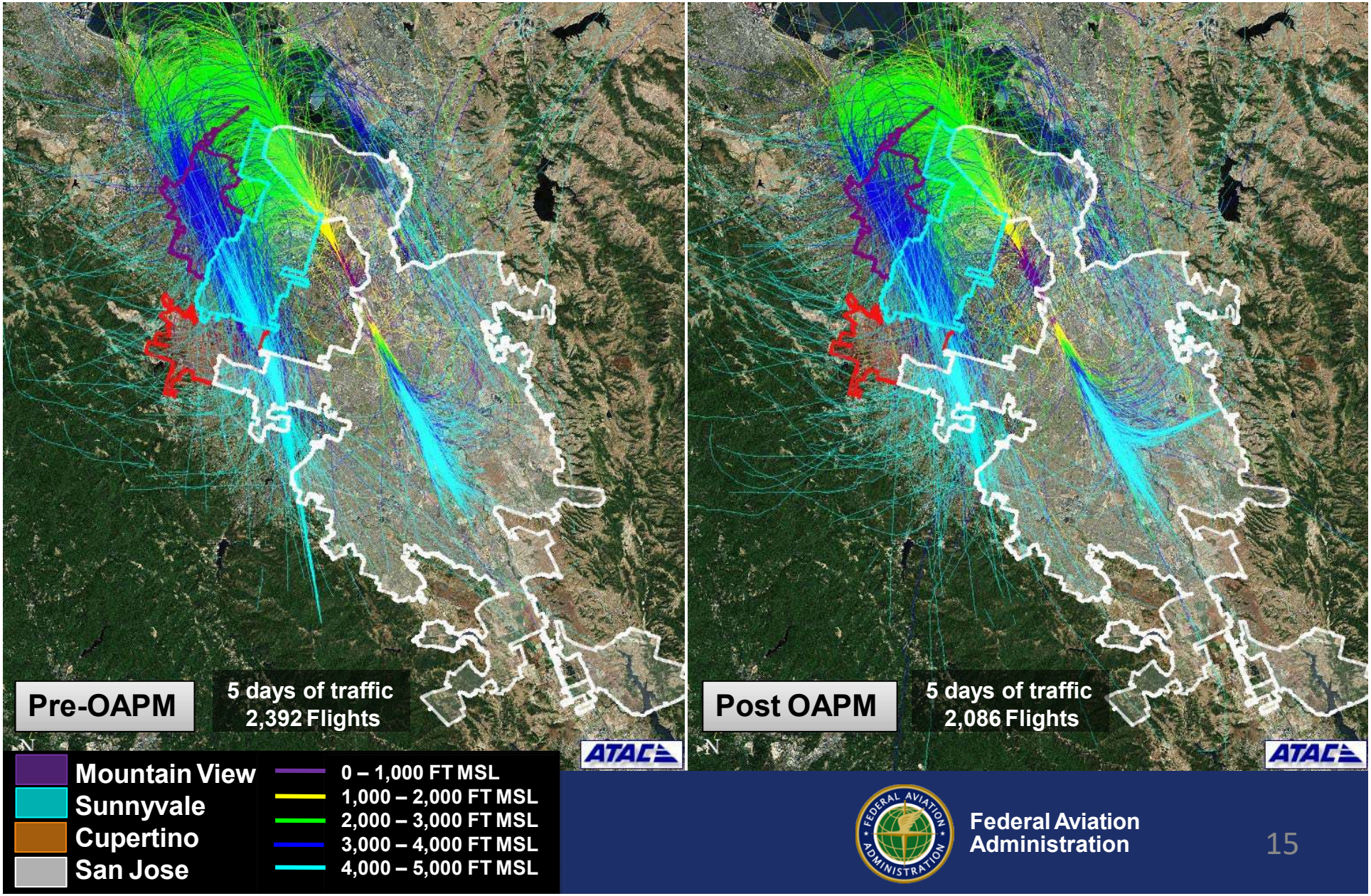
- **North Flow**
  - 11/24/2016
  - 11/29/2016
  - 12/01/2016
  - 12/02/2016
  - 12/29/2016
- **South Flow**
  - 1/6/2016
  - 1/17/2016
  - 3/10/2016
  - 10/16/2016
  - 10/25/2016

South Flow SJC Traffic



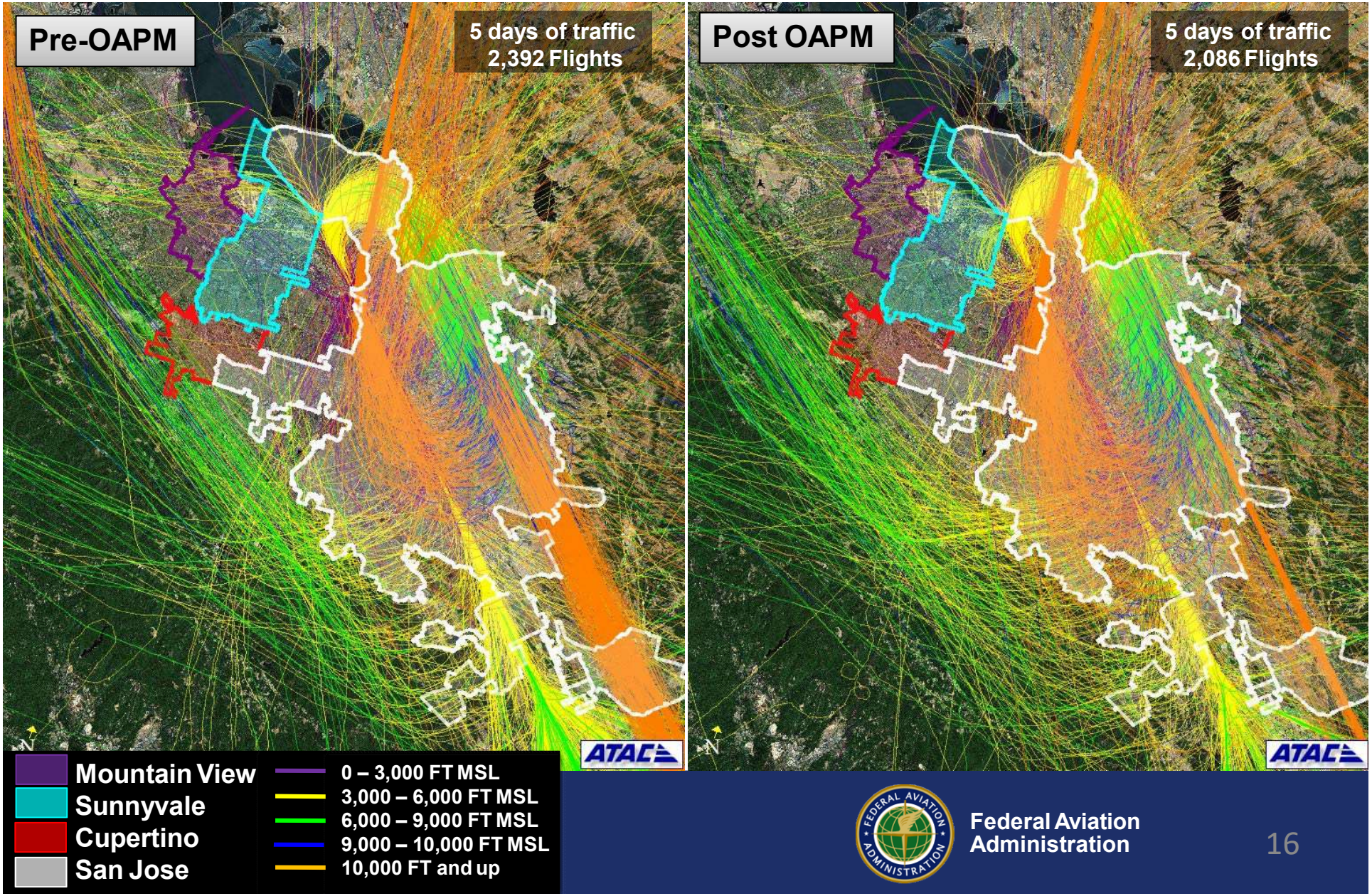
Federal Aviation Administration

South Flow SJC Traffic below 5,000 FT MSL

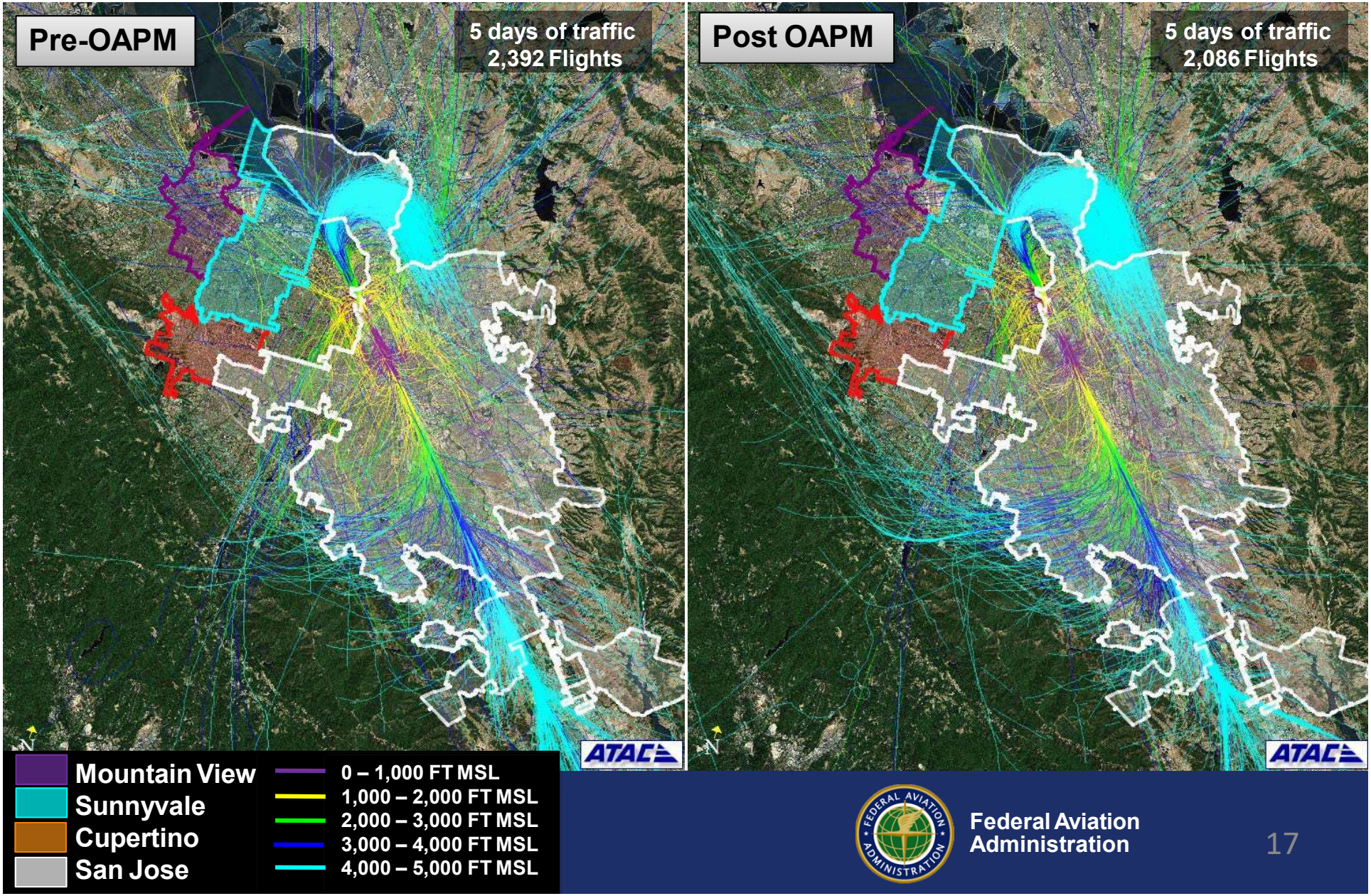


Federal Aviation Administration

North Flow SJC Traffic



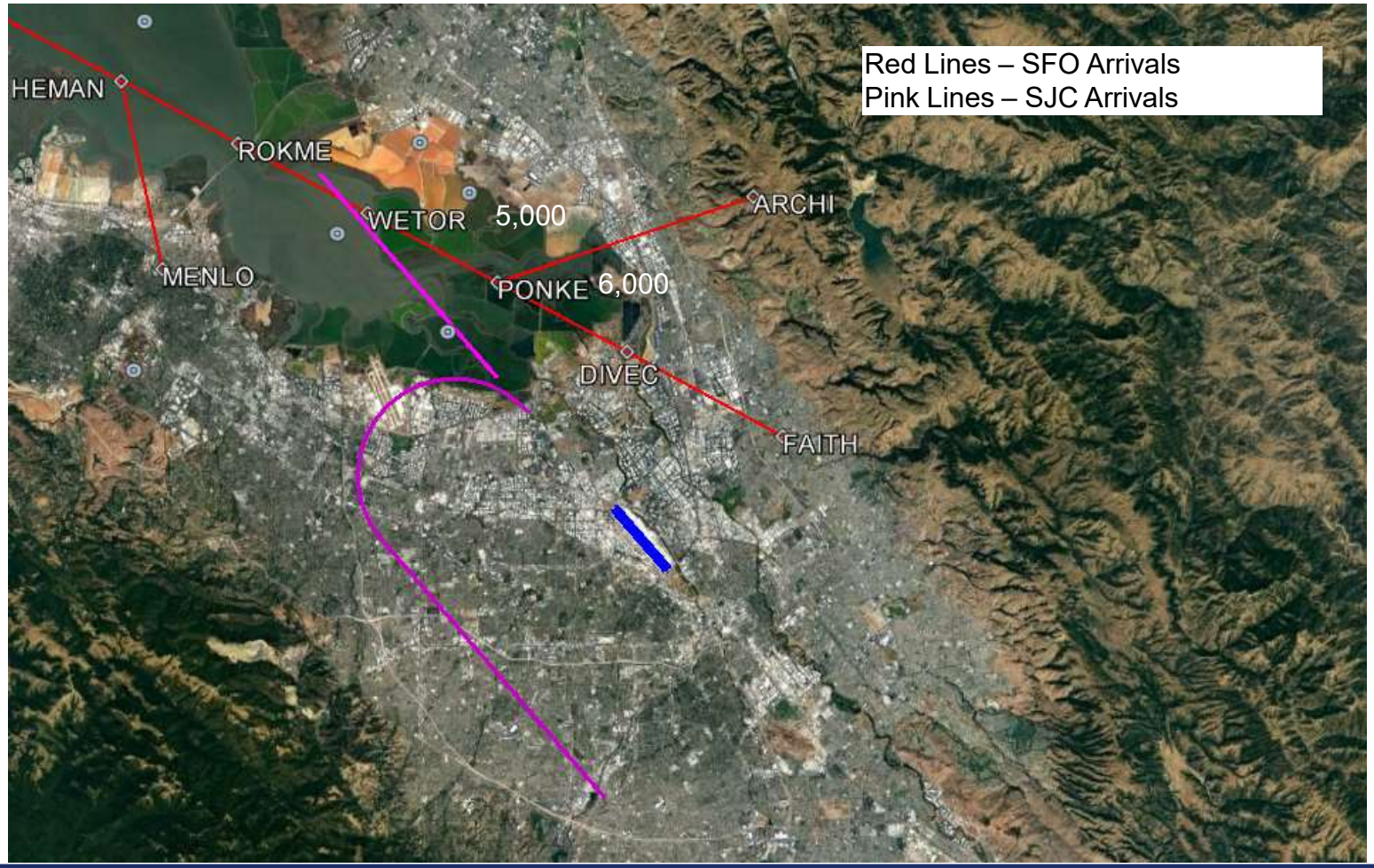
North Flow SJC Traffic below 5,000 FT MSL



Federal Aviation Administration

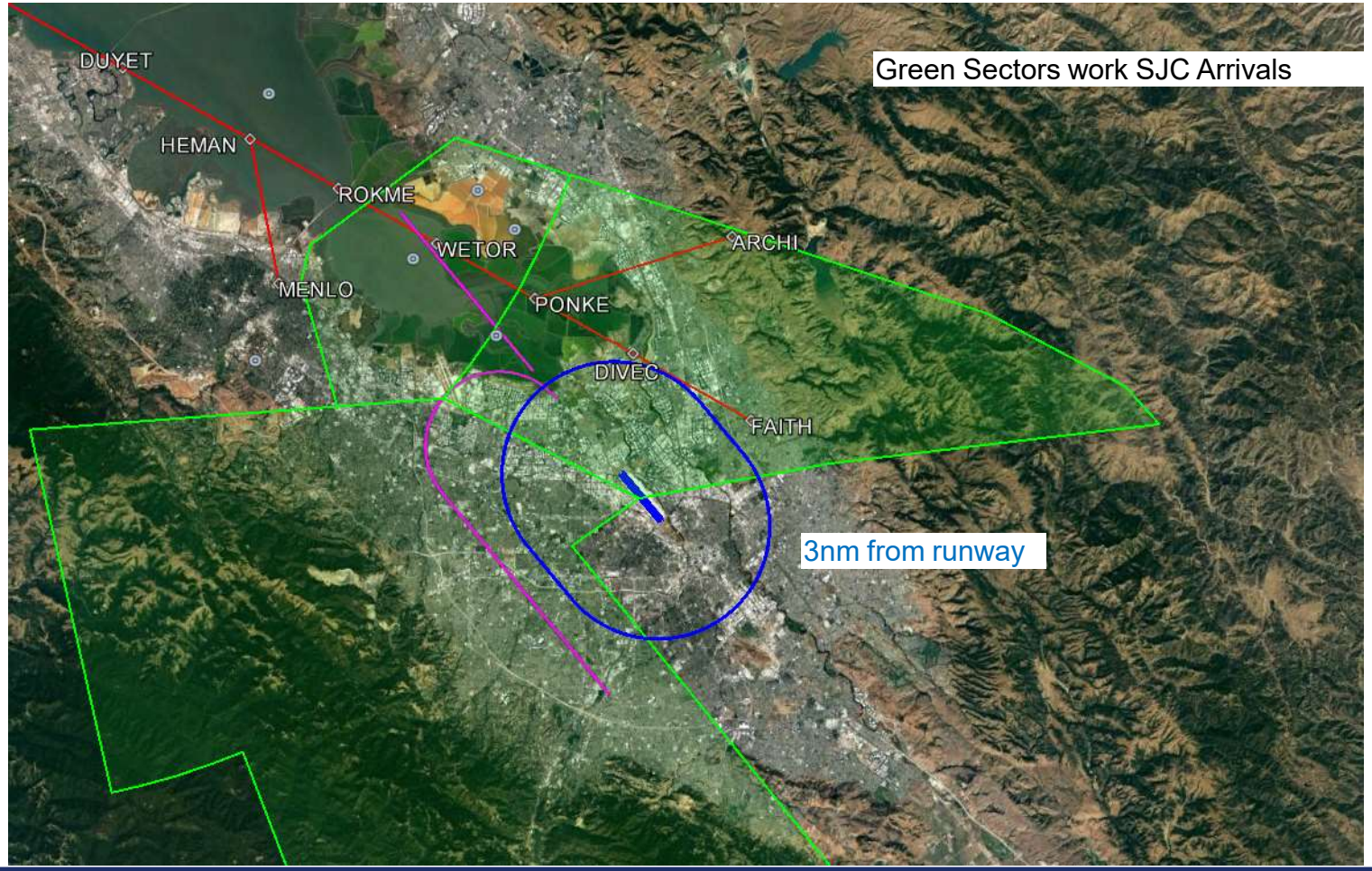
South Flow Airspace/Traffic Constraints

1. SJC is on South flow when SFO is on a West flow more than 95% of the time.
2. SJC arrivals must be kept below the SFO arrivals and inside of ROKME.



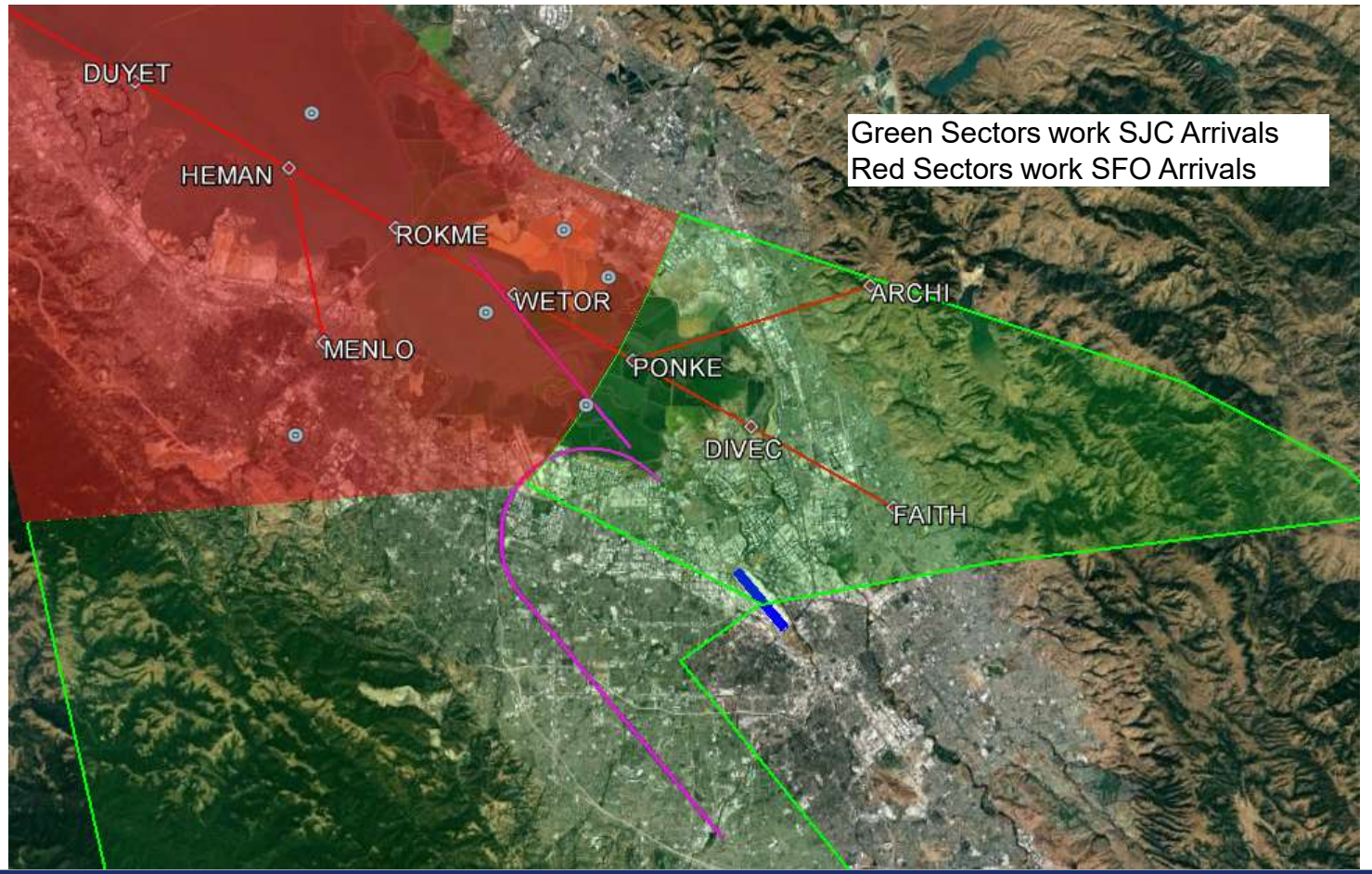
South Flow Airspace/Traffic Constraints

3. Traffic must remain 3nm from runways while on downwind
4. NCT sector airspace is designed around the procedures that the controller works. Aircraft must be kept within the airspace to protect it from aircraft that other controllers are working.



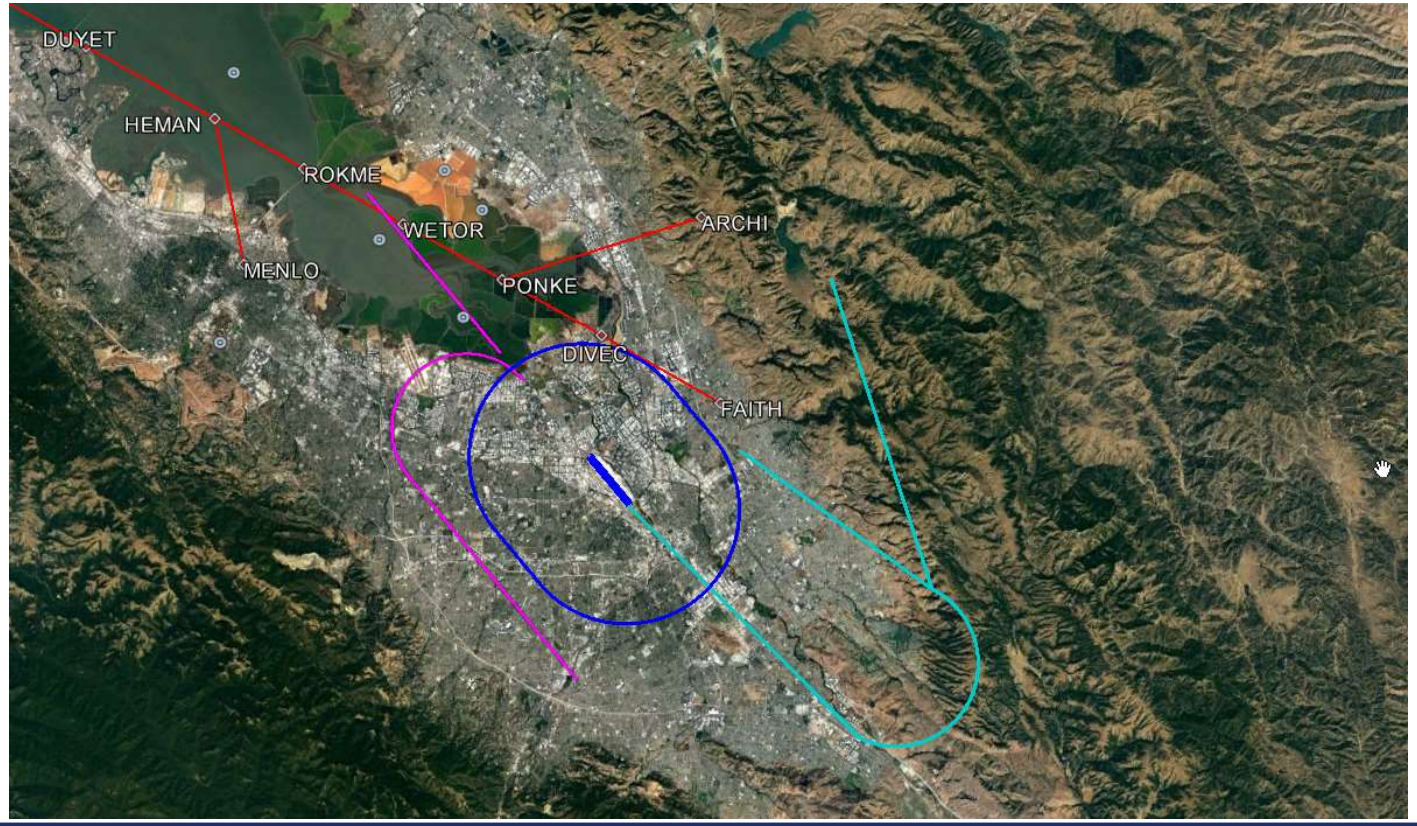
South Flow Airspace/Traffic Constraints

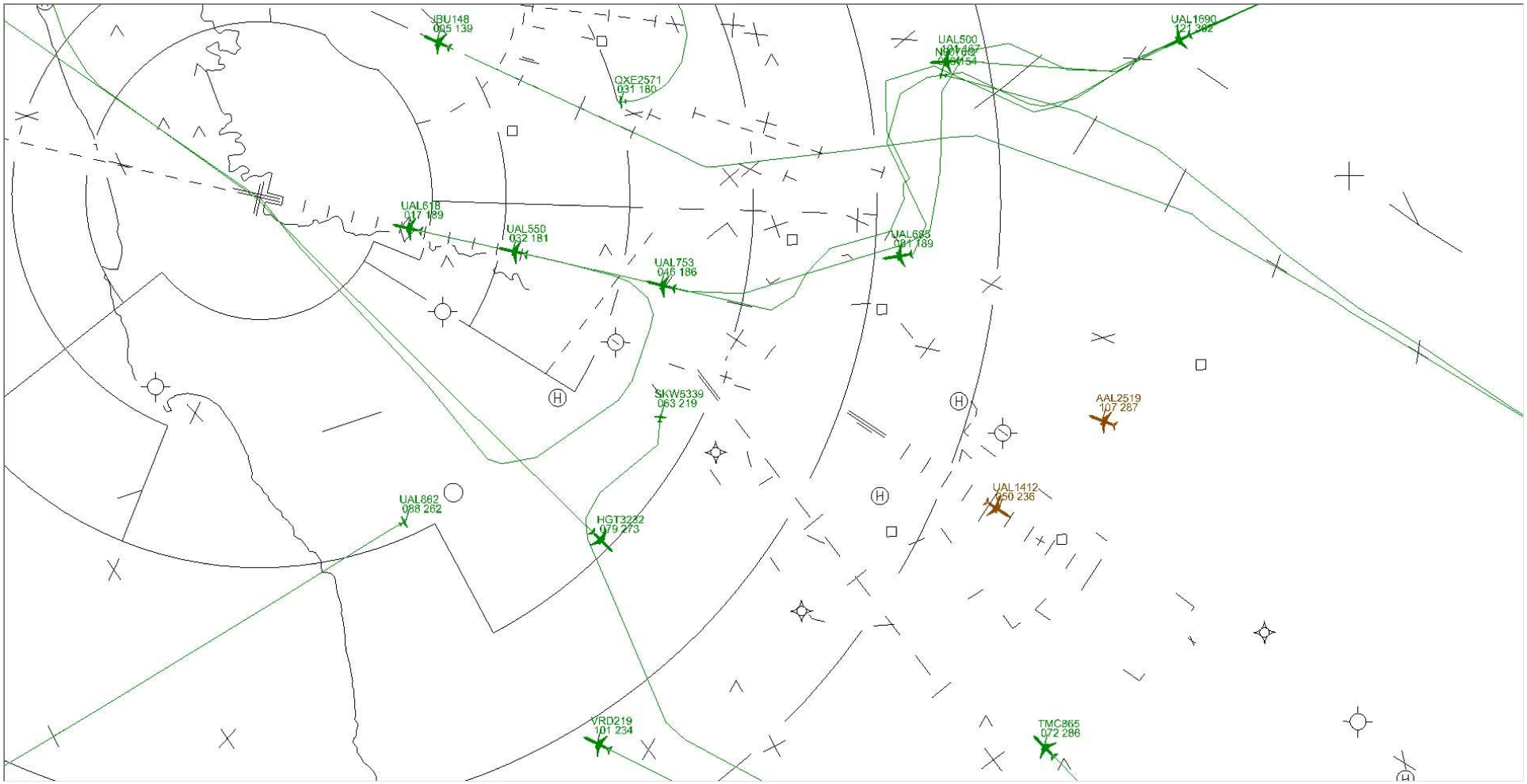
4. NCT sector airspace is designed around the procedures that the controller works. Aircraft must be kept within the airspace to protect it from aircraft that other controllers are working.



Constraints on an East Downwind

1. Traffic must remain 3nm from runways while on downwind
2. SJC is on South Flow when SFO is on a West Flow more than 95% of the time.
3. The SFO West final approach course is on the east side of SJC.
4. The mountains east of SJC force the aircraft to be higher.
5. Northbound SJC departures utilize the east side of the airport.
6. SJC Arrivals must be below SFO arrivals and below SJC Departures

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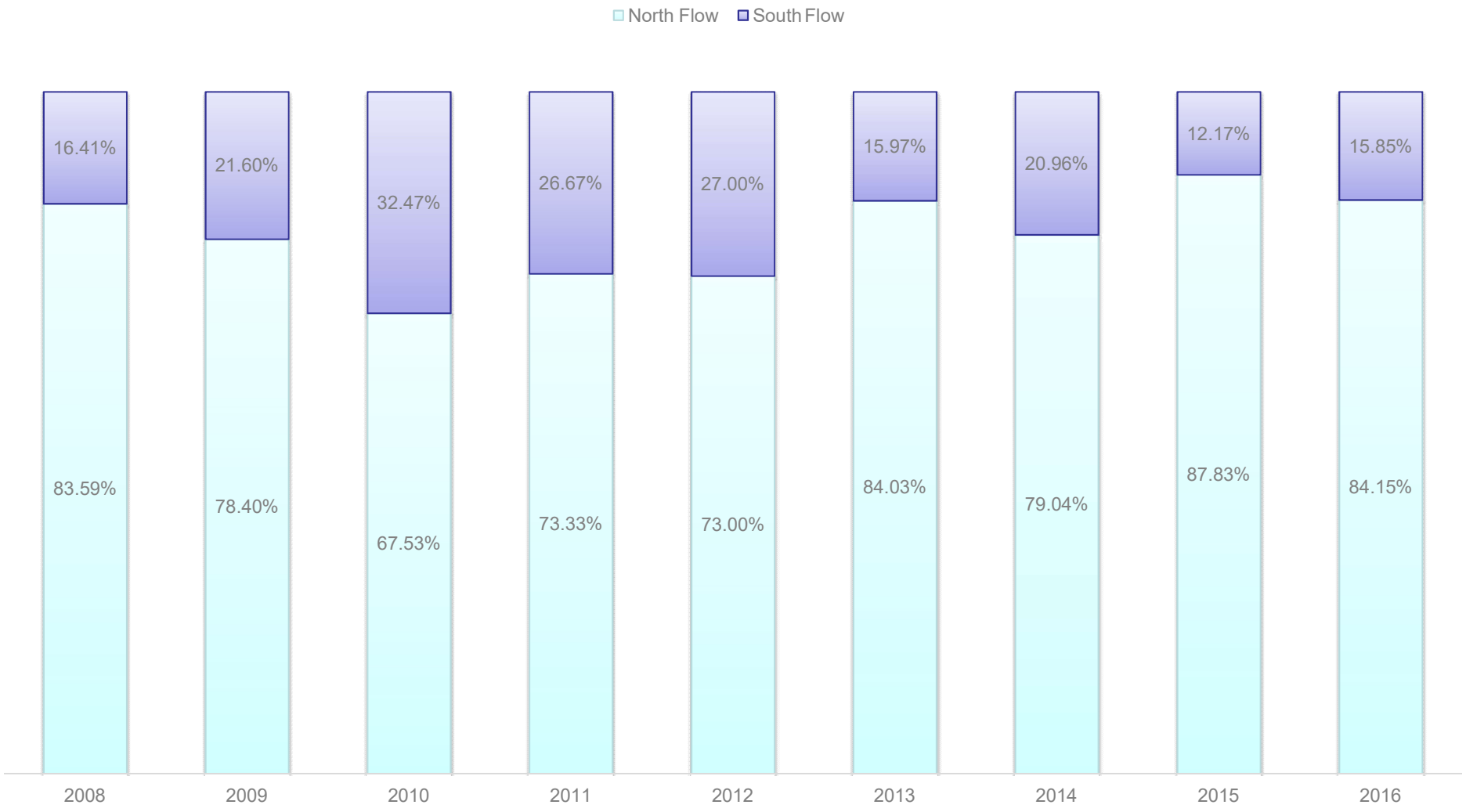
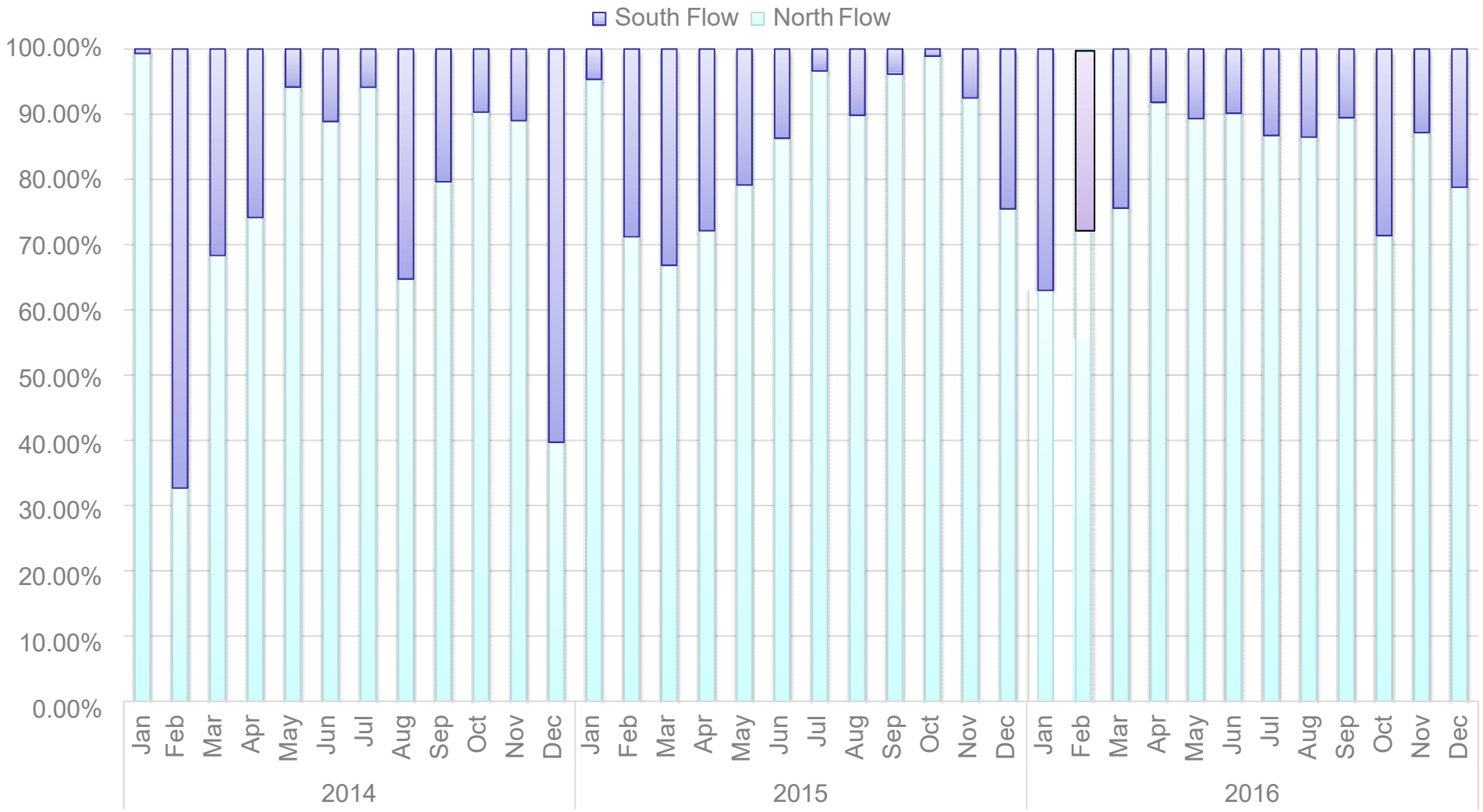
SKW5339
063 219
AAL2519
107 287
UAL1412
050 236
UAL862
088 262
HGT3222
079 273
VRD219
101 234
TMC865
072 286

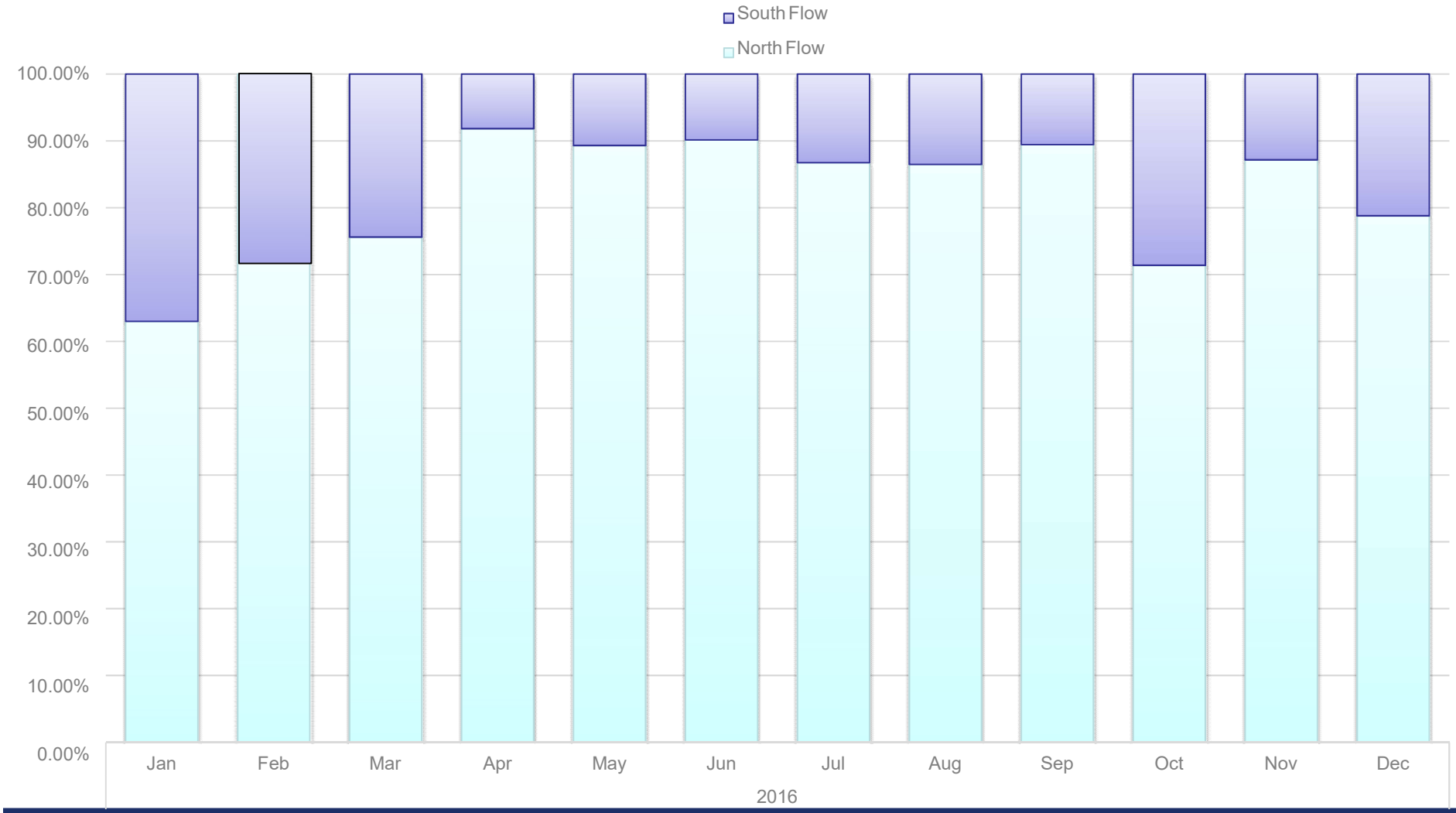
SJC Runway Usage 2008 - 2016

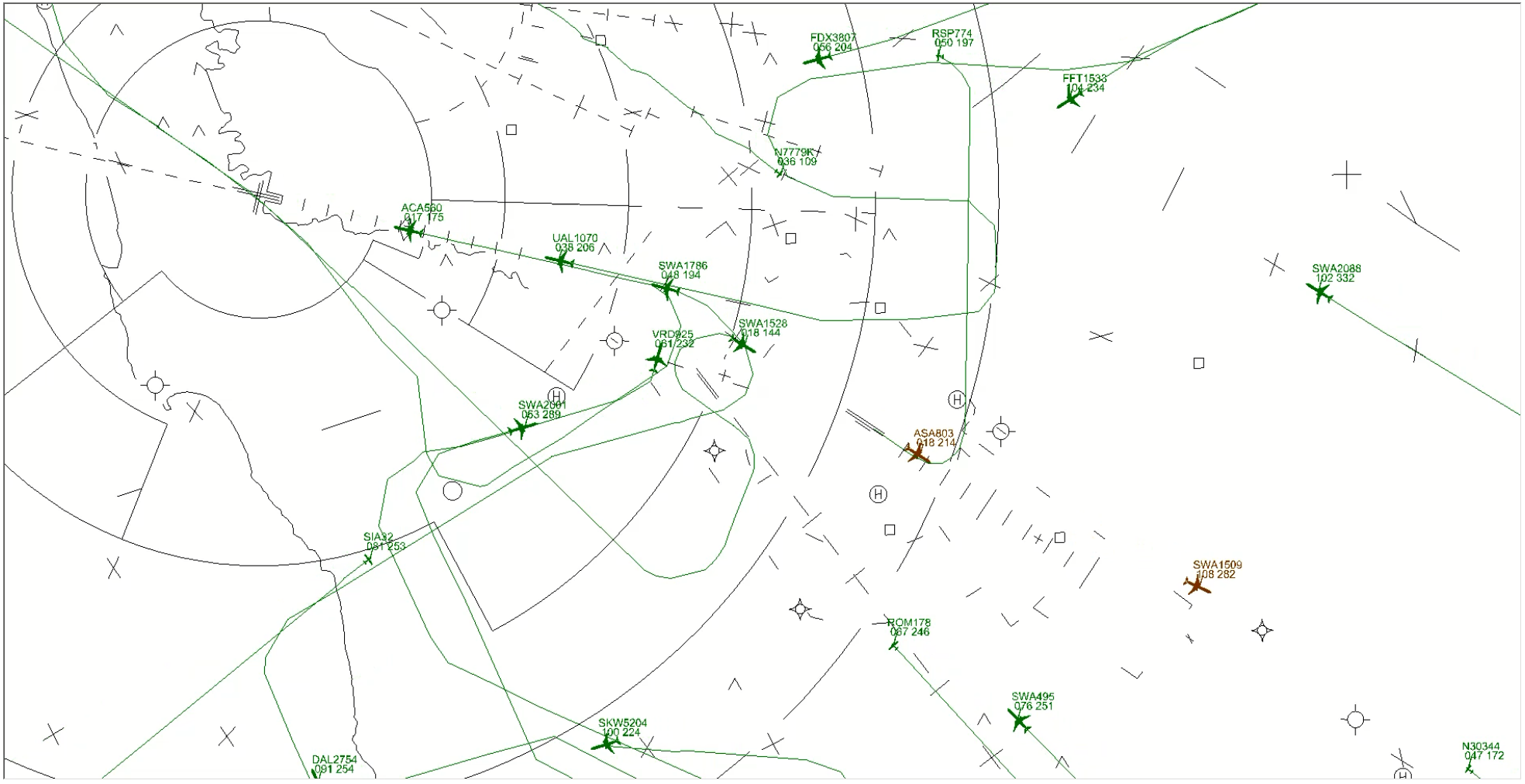


SJC Runway Usage 2014 - 2016



SJC Runway Usage - 2016

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SWA2088
102 332
SWA1528
018 144
VRD925
061 232
SWA2001
053 289
ASA803
018 214
SIA32
081 253
SWA1509
108 282
ROM178
067 246
SWA495
076 251
SKW5204
100 224
DAL2754
091 254
N30344
047 172

City of San José
AD HOC ADVISORY COMMITTEE ON SOUTH FLOW ARRIVALS

Meeting Minutes of the Ad Hoc Advisory Committee on South Flow Arrivals

FRIDAY **SAN JOSE, CALIFORNIA** **January 26, 2018**

The Ad Hoc Advisory Committee on South Flow Arrivals held an organizational meeting on Friday, January 26, 2018 at 1:00 p.m. in City Council Chambers located at 200 East Santa Clara Street, San José, CA 95113.

ATTENDEES

PRESENT: Committee Members Glenn Hendricks (Chair), Chappie Jones (Vice-Chair), Mary-Lynne Bernald (via phone), Jeffrey Cristina (via phone), Lydia Kou, Lisa Matichak, Jean Mordo, Savita Vaidhyanathan, Raul Peralez, Rowena Turner, Gary Waldeck, Bob Nuñez and Kathy Watanabe

ABSENT: Rene Spring

SJC STAFF: Director of Aviation John Aitken, Interim Assistant Director of Aviation Judy Ross, Manager of Strategy and Policy Matthew Kazmierczak, Director of Operations Bob Lockhart, Airside/Terminal Operations Manager Curt Eikerman and Administrative Assistant Janelle Adams

FAA STAFF: Terminal District Manager Sierra Pacific District Tony DiBernardo, Terminal Assistant District Manager Tonya Patterson, and San José International Terminal Manager Mike Galvan

I. Call to Order and Orders of the Day

The meeting was called to order at 1:02 p.m. by Chair Hendricks with thirteen Committee members in attendance and one absent.

II. Consent Calendar

A. Approve the Minutes for the November 17, 2017 Meeting

Action: Upon motion by Committee Member Bernald, seconded by Committee Member Jones, to approve the meeting minutes, the motion passed unanimously.

III. Chair/Vice Chair Remarks

It was asked for the FAA's PowerPoint presentation slides on Southflow to be posted on the website by Monday, January 29, 2018. Staff was able to upload the presentation to the website during the meeting.

IV. New Business

A. Status of San José Council Meeting

Matthew Kazmierczak provided an update on the findings of the January 23, 2018 San José City Council meeting. Council approved the committee's request that no recommendation be adopted that impacts a city *not invited* to participate. Council did not support adding East Palo Alto, Newark and Fremont to the committee. San José Council reiterated their policy stating "legislation, policies, regulations, guidelines or procedures that would result in an increase of aircraft noise impacts on San José residents without an increased benefit to the community."

B. South Flow Procedure Presentation from the FAA

FAA presented on the Southflow arrivals of air traffic at San José International Airport. Tony DiBernardo explained the phases of a flight and aviation terms. Slides compared air traffic, constraints, routes and runway usage in San Francisco, Oakland and San José Airport. The PowerPoint presentation displayed the difference in Southflow traffic Pre- OAPM and Post-OAPM. FAA staff fielded questions from the Committee.

C. Items on the Ad Hoc Advisory Committee Workplan (if time allows)

None

V. Public Comments

Members of the public spoke on Southflow concerns.

Speakers include: Marie-Jo Fremont, Ron Gilbert, Jennifer Landesmann, Jennifer Tasseff, Karen Porter and Robert Holbrook

VI. Future Meeting Schedule and Agenda Items

Future meeting dates, time and location were presented. Any additional comments or questions can be emailed to Matthew Kazmierczak, Committee Secretary, prior to the next meeting.

The next Ad Hoc Advisory Committee Meeting will be held at the San José International Airport Admin Offices in the Boeing Conference Room on February 23, 2018. A list of all future meetings was provided on the agenda.

VII. Adjournment

The meeting was adjourned at 4:30 pm.

ATTEST:

Glen Hendricks
Chairperson

Judy Ross
Assistant Director of Aviation (Interim)

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Ad Hoc Advisory Committee on South Flow Arrivals

Councilmember Charles "Chappie" Jones — City of San José
Councilmember Raul Peralez — City of San José
Councilmember Lisa Matichak — City of Mountain View
Mayor Gary Waldeck — City of Los Altos Hills
Councilmember Kathy Watanabe — City of Santa Clara
Councilmember Rowena Turner — City of Monte Sereno
Mayor Liz Gibbons – City of Campbell

Mayor Glenn Hendricks — City of Sunnyvale
Mayor Savita Vaidhyanathan— City of Cupertino
Councilmember Lydia Kou — City of Palo Alto
Councilmember Rene Spring — City of Morgan Hill
Vice Mayor Jean (John) Mordo — City of Los Altos
Vice Mayor Mary-Lynne Bernald — City of Saratoga

2:00 P.M. November 17, 2017 Committee Room 118/119/120
"Wing" of San José City Hall
200 East Santa Clara Street
San José, CA 95113

ORGANIZATIONAL MEETING AGENDA

I. Call to Order – John Aitken, Director of Aviation/Mineta San José International Airport

NOTICE OF PARTICIPATION OF COMMITTEE MEMBER LISA MATICHAK BY TELEPHONE IN THE COMMITTEE MEETING OF NOVEMBER 17, 2017
Committee Member Lisa Matichak intends to participate via telephone from the following location:

Tangent Meeting Room
Westin Charlotte
601 South College Street
Charlotte, NC, 28202

II. Host Welcome – John Aitken, Director of Aviation/Mineta San José International Airport

III. Self-Introductions – Appointees, Alternates and staff

IV. Brief Remarks – Councilmember Raul Peralez/Jones, City of San José

V. Brief Remarks – Dennis Roberts, Regional Administrator, Western-Pacific Region/ Federal Aviation Administration

VI. Call for Chair and Vice-Chair Nominations – John Aitken, Director of Aviation

VII. Ad Hoc Committee Organizational/Process Matters – Jim Webb, Assistant to the Director/Mineta San José International Airport
   a. Parameters Adopted by the San José City Council
      1. Scope/Charge
      2. Timeline
      3. Adopting Recommendations
      4. Invited Jurisdictions
      5. Voting
      6. Definition of Consensus
      7. Determining "Feasability" of Recommendations
      8. Final Report

b. Additional Proposed Parameter
    1. Length of Meetings
c. Meeting Minutes
d. Meeting Schedule and Location

VIII. Adoption of Draft Work Plan – Jim Webb, Assistant to the Director/Mineta San José International Airport

IX. Public Comments (on items not on the agenda but within the subject matter responsibility of the Committee)

X. Adjournment

OPEN FORUM: You may speak to the Committee about any item that is on the agenda, and you may also speak during Open Forum on items that are not on the agenda and are within the subject matter jurisdiction of the Committee. If you wish to speak to the Committee, please refer to the following guidelines:

- **Fill out a blue Speaker's Card and submit it to the Airport staff seated at the front table. Do this before the meeting or before the item is heard.** This will ensure that your name is called for the item(s) that you wish to address, and it will help ensure the meeting runs smoothly for all participants.
- When the Committee reaches your item on the agenda, the Chair will open the public hearing and call your name.
- Each speaker generally has two minutes to speak per item. The amount of time allotted to speakers may vary at the Chair's discretion, depending on the number of speakers or the length of the agenda.

Please be advised that, by law, the Committee is unable to discuss or take action on issues presented during Open Forum. According to State Law (the Brown Act) items must first be noticed on the agenda before any discussion or action.

Agendas, staff reports and some associated documents for the Committee items may be viewed on the Internet at http://flysanjose.com/Ad_Hoc_Advisory_Committee

To request an accommodation or alternative format under the Americans with Disabilities Act for City-sponsored meetings, events, or printed materials, please call (408) 392-3640 as soon as possible, but at least three business days before the meeting.

Please direct correspondence and questions to:

City of San José
Attn: Matthew Kazmierczak.
1701 Airport Boulevard, Suite B-1130
San José, California 95110
Tel: (408) 392-3640 Fax: (408) 441-4589
Email: MKazmierczak@sjc.org

Committee Members

Primary	Alternate
Councilmember Charles "Chappie" Jones City of San José District1@sanjoseca.gov	Councilmember Johnny Khamis City of San José District10@sanjoseca.gov
Councilmember Raul Peralez City of San José District3@sanjoseca.gov	
Councilmember Lisa Matichak City of Mountain View Lisa.Matichak@mountainview.gov	Councilmember Lenny Siegel City of Mountain View Lenny.Siegel@mountainview.gov
Councilmember Kathy Watanabe City of Santa Clara kwatanabe@santaclara.gov	Councilmember Teresa O'Neill City of Santa Clara toneill@santaclaraca.gov
Mayor Glenn Hendricks City of Sunnyvale HendricksCouncil@sunnyvale.ca.gov	Councilmember Larry Klein City of Sunnyvale KleinCouncil@sunnyvale.ca.gov
Mayor Savita Vaidhyanathan City of Cupertino svaidhyanathan@cupertino.org	Councilmember Steven Scharf City of Cupertino sscharf@cupertino.org
Councilmember Rowena Turner City of Monte Sereno rturner@cityofmontesereno.org	Councilmember Evert Wolsheimer City Monte Sereno ewolsheimer@cityofmontesereno.org
Vice Mayor Mary-Lynne Bernald City of Saratoga mlbernald@saratoga.ca.us	Councilmember Howard Miller City of Saratoga hmiller@saratoga.ca.us
Councilmember Rene Spring City of Morgan Hill Rene.Spring@morganhill.ca.gov	Mayor Pro Tem Larry Carr City of Morgan Hill Larry.Carr@morganhill.ca.gov

Primary	Alternate
Mayor Gary Waldeck City of Los Altos Hills GCWaldeck@losaltoshills.ca.gov	
Councilmember Lydia Kou City of Palo Alto Lydia.Kou@cityofpaloalto.org	Councilmember Eric Filseth City of Palo Alto Eric.Filseth@cityofpaloalto.org
Mayor Liz Gibbons City of Campbell LizG@cityofcampbell.com	
Vice Mayor Jean Mordo City of Los Altos jmordo@losaltosca.gov	Councilmember Lynette Lee Eng City of Los Altos lleeeng@losaltosca.gov

COUNCIL AGENDA: 10/3/2017
ITEM: 6.1 (17-156)

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: HONORABLE MAYOR AND CITY COUNCIL

FROM: Toni J. Taber, CMC
City Clerk

SUBJECT: **SEE BELOW**

DATE: September 21, 2017

SUBJECT: FORMATION OF THE AD HOC ADVISORY COMMITTEE ON SOUTH FLOW ARRIVALS

RECOMMENDATION: As recommended by the Transportation and Environment Committee on September 11, 2017, approve staff's report to allow staff to work with Santa Clara County cities and the County to form the Ad Hoc Advisory Committee on South Flow Arrivals.

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: TRANSPORTATION AND ENVIRONMENT COMMITTEE

FROM: John Aitken
Interim Director of Aviation

SUBJECT: FORMATION OF THE AD HOC ADVISORY COMMITTEE ON SOUTH FLOW ARRIVALS

DATE: August 21, 2017

Approved D.DSyC Date 8/31/17

RECOMMENDATION

Approve staff's report and forward to the full City Council a recommendation to allow staff to work with Santa Clara County cities and the County to form the Ad Hoc Advisory Committee on South Flow Arrivals.

OUTCOME

Approval of the recommendation would authorize Airport staff to work with Santa Clara County cities and the County of Santa Clara to form the Ad Hoc Advisory Committee on South Flow Arrivals. The Ad Hoc Advisory Committee would be an advisory body comprised of elected officials from several local jurisdictions and would review the south flow arrival procedure and present recommendations to the FAA for consideration in reducing south flow noise impacts on surrounding communities. The FAA would also be a participant in the discussions. The Committee would be expected to complete its work within 120 days of its first meeting.

EXECUTIVE SUMMARY

Aircraft normally land at Mineta San José International Airport (SJC) from the south (over downtown San José) and depart heading north. However, for safety reasons, weather conditions sometimes require arriving aircraft to land from the north. The northern landing procedure, known as "south flow," requires aircraft to descend over parts of several surrounding communities, including Cupertino, Sunnyvale and Mountain View as they approach SJC. The south flow arrival approach generates significantly more noise complaints than the northern flow arrival approach.

For much of the past year, weather conditions around the Airport have required a greater use of the south flow procedure. In addition, as the FAA has deployed new air traffic control technology and, as aircraft have incorporated new equipment to taken advantage of the FAA's technology, the arrival path has become increasingly more precise. This has reduced the noise impacts for some residents but dramatically increased it for those residents living directly under the flight path.

Over most of the past year, staff has seen a significant increase in the number of noise complaints from those residents living under the flight path in the most impacted communities. The number of monthly complaints received by the Airport rose from 716 complaints from 82 residents in July 2016 to more than 44,000 complaints from 376 residents in January 2017. About 96% of the January complaints originated in Sunnyvale and Cupertino. However, in recent months, the number of complaints has declined as weather conditions have not required the use of south flow procedures as frequently.

In November 2016 Sunnyvale residents attended the Airport Commission meeting to ask the Commission to address their noise concerns. The Commission requested staff to write the FAA to ask for solutions to address the south flow noise issue. While the FAA responded to staff's correspondence, the response offered no adjustments in the procedure.

Sunnyvale and Mountain View residents returned to the Commission in February 2017 to request the Commission's support for the formation of a roundtable noise committee to meet periodically with staff and FAA officials to discuss noise issues. In response, the Commission voted unanimously to recommend the formation of a roundtable noise committee that includes FAA participation.

In March, the Airport hosted a meeting organized by Congressman Ro Khanna's office. Elected officials from Sunnyvale, Mountain View, Cupertino, San José, the FAA and the Airport attended to discuss the south flow issue and possible solutions. There was consensus that it would be constructive to have public information and discussion forums to understand why the south flow procedure is used and to review possible solutions to reduce the noise for the most impacted residents. The FAA and the Airport would participate in the forums.

In response to the Commission's recommendation, staff reviewed the formation and structure of the Select Committee on South Bay Arrivals, which was an ad hoc noise committee formed in May 2016 by Congresswoman Anna Eshoo, Congresswoman Jackie Speier and former Congressman Sam Farr. The Select Committee brought together elected officials from the jurisdictions of three counties to look at the noise impacts of the FAA's 2015 implementation of its NextGen technology. The Committee ultimately made a series of consensus-based recommendations before disbanding in November 2016. The three Congressional offices endorsed and transmitted the Committee's recommendations to the FAA for review. The FAA is now studying those recommendations.

In reviewing the Select Committee model, staff concluded the ad hoc model is a good process for conducting a regional discussion on possible solutions to address the noise impacts of the south flow procedure. Staff is therefore requesting that Council approve the formation of the Ad Hoc Advisory Committee on South Flow Arrivals. The Committee would be an advisory body with no legal authority. Its purpose would be to provide potentially feasible and consensus-based recommendations to the FAA to reduce the noise impacts of the south flow procedure.

To encourage the maximum degree of inclusiveness and consensus, all Santa Clara County cities would be invited to participate on the Committee. FAA staff would also participate in the discussions. Airport staff would provide non-technical support.

It is anticipated that the FAA would conduct detailed analysis, including safety and environmental reviews and seeking industry (e.g., the Airport and airlines) and air traffic controller feedback, for those recommendations the FAA assesses as "preliminarily feasible" before considering whether to initiate a formal amendment process. The Committee's recommendation(s) would also be transmitted to the offices of Congressman Ro Khanna, Congresswoman Anna Eshoo, Congresswoman Zoe Lofgren and Congressman Jimmy Panetta for their information and review.

It is staff's belief that an ad hoc committee will be the best approach to secure the appropriate level of FAA support for a solution that has strong regional consensus.

BACKGROUND

Increasing Noise Complaints about South Flow Operations

In the summer of 2016, Airport staff began receiving a growing number of noise complaints about the use of "south flow operations" at the Airport.

What Are South Flow Operations?

Normally, aircraft at SJC land descending from the south (over parts of downtown San José) and take off heading north. However, under certain weather conditions (mostly increased wind speed from the south), for the sake of operational safety, the FAA requires pilots of arriving aircraft to follow an arrival procedure that can take descending aircraft over parts of Cupertino, Sunnyvale, Mountain View and other communities as they prepare to land at SJC. When that arrival procedure is used, air operations are in "south flow."

Recently, the use of the procedure has increased significantly as wind conditions that cause the need for south flow operations have started earlier in the day and have been lasting longer. In addition, since 2015, new air traffic control technology installed by the FAA and in aircraft have resulted in more precise and compacted arrival patterns, especially over Sunnyvale, Cupertino and Mountain View. While this has reduced noise for some residents, it has increased the noise for those residents living directly under the more precise arrival flight path. Attachments A-1 and A-2 show the flight path and how often it has been used over the last several years.

The greater use of south flow operations has resulted in a significant increase in noise complaints from the impacted residents, primarily in Sunnyvale and, to a lesser extent, Cupertino and Mountain View. For example, in July 2016, the Airport received 716 noise complaints from 82 residents in the region. However, in January 2017 more than 44,000 noise complaints were received from 376 residents. More than 96% of the January complaints originated in Sunnyvale and Cupertino. However, as weather conditions in recent months have required less use of the south flow procedure, there has been a notable decrease in the number of complaints and complainants.

Commission Response to South Flow Noise Concerns

Letter to the FAA

At the November 14, 2016 meeting of the Airport Commission, staff briefed the Commission about the growing number noise complaints related to the Airport's south flow operations. A number of Sunnyvale residents attended the meeting and requested the Commission to take action to address their noise concerns. Although the Airport has no jurisdiction over air traffic control procedures, in response to the residents' concerns, the Commission recommended that staff write to the FAA to request a review of the south flow operations procedures with a goal of identifying possible solutions to reduce the noise impact on residents. Staff prepared such a letter in November 2016. In January 2017, the FAA responded that changed weather conditions was causing the increased use of the south flow approach and that the approach "is the least favorable configuration" and "is not utilized more than necessary." However, the response offered no adjustments in the operation. Staff's November 2016 letter and the FAA's January 2017 response are contained in Attachments B and C.

Recommendation to Form a Noise Roundtable

Impacted residents attended the February 27, 2017 Commission meeting to again express their continued concerns about the south flow noise issue and to request the Commission support the formation of a noise roundtable, similar to the noise roundtable for SFO, to meet periodically to discuss noise issues. The SFO roundtable membership includes FAA participation and thus is a forum where the community, the FAA and the airport can discuss noise issues and possible solutions. The Commission voted unanimously (7-0) to recommend the formation of a noise roundtable that includes FAA participation.

In March 2017, staff participated in a meeting with Congressman Ro Khanna's staff, elected officials from Sunnyvale, Cupertino, Mountain View and San José (represented by Councilmember Chappie Jones), as well as FAA regional staff, to discuss the south flow issue and possible solutions. As part of the discussion, there was general agreement that it would be useful to have public information and discussion forums bringing the impacted communities and the FAA together to disseminate information on the issue and to reach consensus on possible solutions that the FAA would be willing to consider. The impacted communities want to communicate their concerns to the FAA and the FAA wants to discuss the issue with representatives who can speak for the impacted communities. These components are consistent with the basic function of a noise roundtable.

Given the number of complaints received by Airport staff and the specificity of the issue that has generated most of the complaints, staff looked to the 2016 Select Committee on South Bay Arrivals as the model process for conducting a regional discussion with the FAA on the south flow issue.

ANALYSIS

The Select Committee on South Bay Arrivals

In 2015 residents of communities in parts of Santa Cruz, Santa Clara and San Mateo counties voiced concerns about increased aircraft noise as a result of flight path changes related to the FAA's implementation of its NextGen technology. The focus of the NextGen program is to improve air traffic safety and efficiency. The implementation of the program resulted in the altering of flight paths into SFO and SJC that generated new noise impacts on the residents of communities in Santa Cruz, San Mateo and Santa Clara counties. To address the noise issue, Congressional representatives from the three counties (Congresswoman Anna Eshoo, Congresswoman Jackie Speier and former Congressman Sam Farr) worked together to form an ad hoc noise committee known as the Select Committee on South Bay Arrivals (the Select Committee). The Committee's overall charge was to:

1. Review proposals the FAA deemed feasible for addressing aircraft noise impacts related to its implementation of its NextGen program; and

2. Make consensus-based recommendations to the three Congressional offices to address the impacts. The Congressional offices would transmit the recommendations to the FAA for review.

"Feasible" was generally defined as solutions that would allow the FAA to meet its air safety and operational efficiency mandates.

The Select Committee consisted of twelve elected officials – four county supervisors and eight city councilmembers – representing all three counties. Alternates were also appointed. The Committee was chaired by Santa Clara County Supervisor Joe Simitian. Altogether, twenty jurisdictions (including one school district) were represented by the Committee. The FAA provided substantial technical support at each Committee meeting.

The Committee sought strong consensus among its membership on its recommendations as the FAA made it clear that it wanted regional consensus on recommendations. Therefore, early in its deliberation process, the Committee defined consensus as at least eight of twelve members with at least one vote from jurisdictions in each of the three Congressional districts represented on the Committee. In fact, a great majority of the Committee's 45+ recommendations were unanimous.

The Committee held an organizational meeting in early May 2016 to determine how they would operate. From late May to mid-November 2016, the Committee also had five technical briefings with the FAA (done mostly through conference calls). From mid-July through mid-November 2016 the Committee held ten working meetings. During the working meetings, there was robust discussion between Committee members and FAA staff. It was out of those discussions that the Committee made 45+ recommendations to the Congressional offices. The recommendations addressed not only the impacts of NextGen implementation but also other aircraft noise issues impacting the region, including the south flow issue. As part of its recommendations, Recommendation 2.13 of the Committee's final report contained the following comments:

"Under normal conditions, aircraft arriving at San Jose International Airport (SJC) arrive from the south and depart heading north. During inclement weather, or a significant change in wind direction over the San Jose area, the takeoff and landing approaches are temporarily reversed with aircraft arriving at SJC from the north and departing to the south. This "Reverse Flow" brings arriving aircraft in at lower altitudes to the west of SJC, over the communities of Palo Alto, Mountain View, and Sunnyvale. It has been suggested that the "Reverse Flow" approach could instead arrive from the east of SJC, using a "Normal Flow" departure procedure that is not used during "Reverse Flow" conditions.

The FAA has advised the Committee that this proposed solution, however, has the potential to move existing noise to another community (a community not represented by the congressional districts that established the Select Committee). For that reason, the Select Committee has not endorsed this proposed solution. The FAA may, however, wish to examine whether this proposed solution, or a variation thereof, could be effectively implemented without shifting noise."

The Committee adopted this recommendation by a unanimous vote of 12-0.

The Committee concluded its work on November 17, 2016 – just over six months after it began meeting. As of this writing, the FAA is reviewing the feasibility of the recommendations it accepted from the Committee. While the airports (SFO and SJC) and airlines were not represented on the Committee and were not asked to comment or to provide information to the Committee during its discussions, as key stakeholders, they will be consulted as part of the FAA's feasibility review.

Proposal: The Formation of the Ad Hoc Advisory Committee on South Flow Arrivals

Airport staff is recommending the Council authorize staff to work with Santa Clara cities and the County and the FAA to form the Ad Hoc Advisory Committee on South Flow Arrivals. Committee objectives would include:

1. hearing public concerns and comments on the south flow issue;
2. identifying and discussing possible options to address the procedure's noise impacts; and
3. adopting feasible recommendations for FAA consideration.

The Ad Hoc Advisory Committee would be an advisory body with no legal authority. The Committee's purpose would be to provide potentially feasible and consensus-based recommendations to the FAA to reduce the noise impacts of the south flow procedure.

Every city in Santa Clara County, as well as the County of Santa Clara, will be notified of the Committee's formation. *Any jurisdiction that believes its residents are impacted or could be impacted by south flow operations will be welcome to participate on the Committee.* Alternates should be appointed from each participating agency so that each member will be continuously represented on the Committee.

The Committee's sole focus would be the south flow issue only. It was the south flow issue, and only the south flow issue, that prompted resident calls for Commission support of some type of

public forum to address the issue. Accordingly, the Committee's focus would be solely on south flow issues.

While not all Santa Clara County cities are affected by south flow operations, and those that are may not be affected to the same degree, staff believes that any community who believes it is impacted or could be impacted in the future by south flow operations, regardless of the degree of impact, can participate on the Committee. *The Committee will be expandable.* Cities that elect not to participate at the beginning of the review process may participate in later meetings if they believe the discussion topics may impact their communities. *However, the Committee should not adopt any recommendation that will impact a community that is not represented on the Committee.*

FAA staff will be available to participate in the Committee's discussions to provide technical expertise on operational issues and air space procedure design, to provide preliminary comment on the feasibility of proposed solutions, etc. However, FAA staff will not be Committee members and will not vote on Committee actions, including any recommendations. Airport staff will provide non-technical support, as needed. While the City of San José may participate as a member of the Committee, Airport staff, in its support role, will not be part of the Committee, will not participate in Committee discussion unless specifically asked to provide information and will not vote on Committee actions or recommendations.

The Committee would be convened for a 120-day period to:1) hear public comments; 2) discuss and define the nature of the problem; 3) identify and discuss possible solutions to address/improve the problem; 4) reach consensus on possible solutions for FAA consideration; and 5) hear public comments on the recommended solution(s). The 120 days will begin at the first meeting after the initial organizational meeting.

Each participating jurisdiction will have one vote on the Committee. While there would ideally be unanimous consensus on any Committee recommendation, *staff recommends that at least a two-thirds vote of participating member jurisdictions would need to vote in the affirmative to adopt a recommendation.* For the sake of receiving FAA consideration, staff agrees with the FAA that the stronger consensus, the better. A primary objective of the Committee should be to find a high degree of consensus on recommendations that will encourage FAA consideration of those recommendations. In fact, the FAA has reaffirmed that it would like to see strong consensus on any adopted recommendation. Staff believes the FAA is less likely to consider recommendations that are adopted by only a slim majority of the Committee members.

Ideally, through discussions with the FAA, the Committee would develop consensus around one or more "preliminarily feasible" solutions. *The factors that would make a recommendation "preliminarily feasible" would be determined solely by the FAA* and outlined at the Committee's first meeting. Staff's assumption is that the FAA would provide feedback during the Committee's discussions on its assessment of the preliminary feasibility of any specific proposed solutions identified by the Committee so that the Committee does not invest an excess of time and effort on solutions the FAA would not assess as feasible.

It is important to note an FAA initial assessment of preliminary feasibility and adoption by the Committee does not ensure the recommendation will be implemented. If any solutions are

assessed as preliminarily feasible by the FAA and subsequently adopted by the Committee, the FAA would need to conduct detailed analysis to fully assess the feasibility of the recommendation. As part of this effort, the FAA will conduct formal environmental and safety reviews, and coordinate and seek feedback from affected members of the industry (e.g., the Airport and airlines) and the National Air Traffic Controllers Association (NATCA) before considering the initiation of a formal amendment process.

At the end of the Committee's review, its consensus-based recommendation(s) would also be transmitted to the Congressional offices for their information and review.

POLICY ALTERNATIVES

Alternative #1: *Do not form an Ad Hoc Advisory Committee on South Flow Arrivals.*

Pros: Air traffic control is a federal, not local, responsibility. Neither the Airport Commission – the Airport's current forum for addressing community noise concerns – nor the Airport staff have the personnel, expertise or authority to address the concerns of the public on the noise impacts of south flow operations.

Cons: Airport noise is a local issue for residents in the impacted areas. While the Airport has no authority for determining when the south flow procedure is utilized, the creation of an ad hoc advisory body of stakeholders could provide a mechanism to explore options for reducing noise.

Reason for not recommending: To be responsive to public concerns about the noise impacts of south flow procedure, staff believes an ad hoc advisory committee may be helpful in identifying possible solutions to reduce those impacts. In addition, staff believes an ad hoc advisory committee would be the best mechanism for hearing and addressing the concerns of the impacted communities and for providing recommendations to the FAA. Finally, staff believes that an ad hoc advisory committee has the highest potential for building a needed regional consensus on recommendations for consideration by the FAA.

PUBLIC OUTREACH

A copy of this report has been provided to several community groups interested in the issue, the mayors of each city in Santa Clara County, the Santa Clara County Board of Supervisors, the FAA and the Congressional offices representing Santa Clara County. Copies of the report were also shared with the Airport Commission as well as posted on the Airport's noise website for any interested member of the public to access.

In addition, should staff be authorized to work with the Santa Clara County's city mayors and to the Board of Supervisors to form the Committee, Mayor Liccardo would be asked to prepare a letter to encouraging them to participate and to identify primary and alternate members to serve on the Committee.

COORDINATION

This report was coordinated with the City Attorney's Office.

COMMISSION RECOMMENDATION

As noted earlier, the Airport Commission took public input on the south flow issue at its November 2016 and February 2017 meetings. At both meetings, some members of the public called for the formation of a roundtable to discuss the south flow issue. The public call for a roundtable was stronger at the February 2017 meeting than the November 2016 meeting. At the February meeting, by a vote of 7-0, the Commission voted to recommend the formation of a roundtable that includes FAA participation.

Although this report was not ready in time for the May 8 Commission meeting, staff provided a high-level outline of the direction of the report to provide the Commission with an idea of what staff would be recommending to the Transportations and Environment Committee and to encourage the Commission to express any comments on staff's proposed approach. The Commission expressed no concerns or objections to the direction outlined by staff.

COSTS

Staff anticipates that most of the cost would be limited to Airport staff's time and some potential costs associated with graphic layout and printing of the final report (estimated to be about $1,000). Staff's time will be spent working with the staffs of key stakeholders in organizing and supporting the Committee's meetings and supporting the drafting of the Committee's final report and recommendation(s).

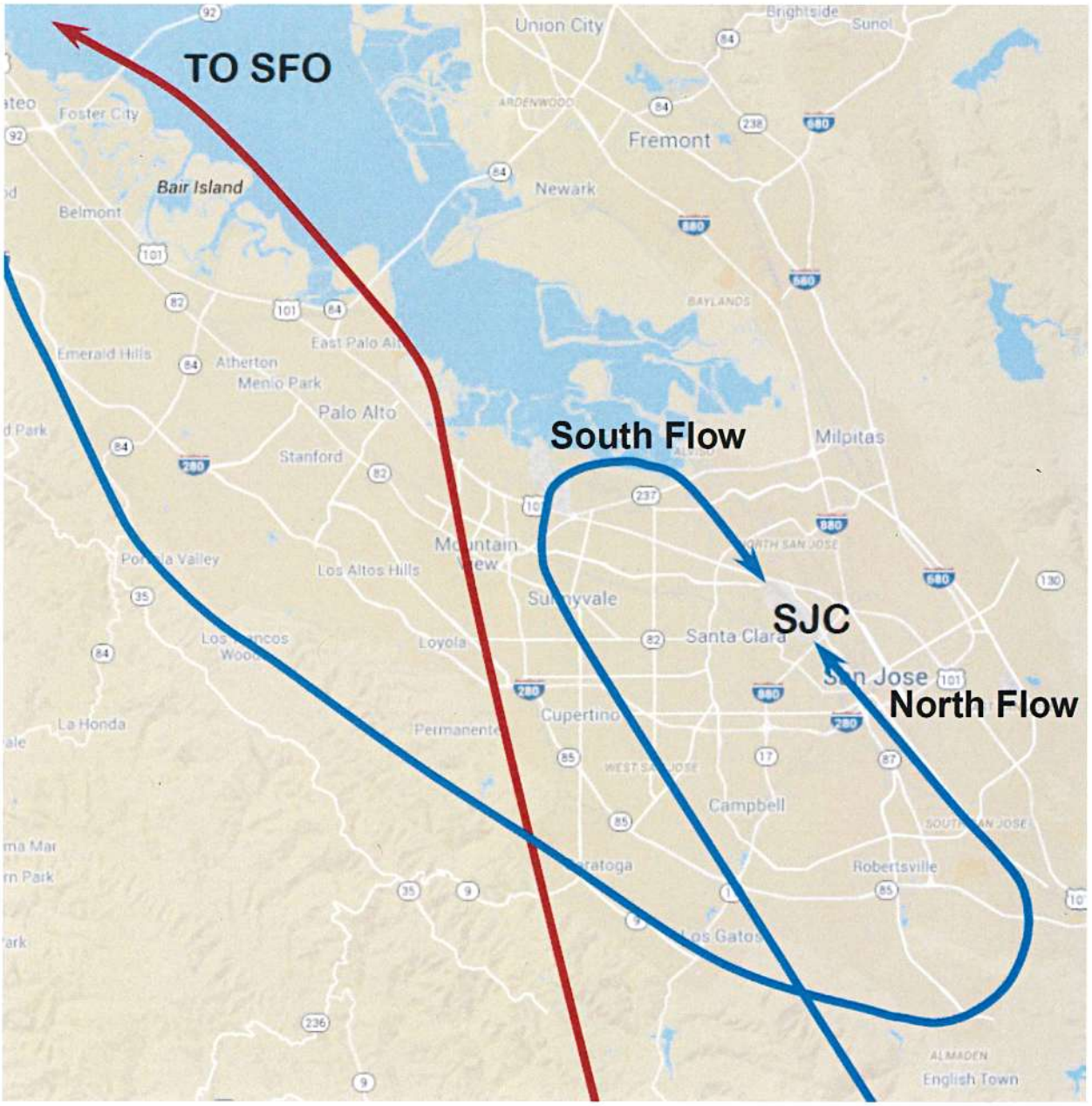
CEQA

Not a Project, PP10-069 (a), Staff Reports/Assessments/Annual Reports/Informational Memos that involve no approvals of any City actions.

/s/
JOHN AITKEN
Interim Director of Aviation

For questions, please contact Jim Webb, Assistant to the Director, at (408) 392-3609.

Attachment A-1: Diagram of South Flow Flight Path
Attachment A-2: Total Number of South Flow Operations Compared to Total Number of SJC Operations 2011-2016
Attachment B: November 2016 SJC letter to the FAA about south flow operational noise issues
Attachment C: January 2017 FAA response to SJC's November 2016 letter


TO SFO
South Flow
SJC
North Flow
Union City
Fremont
Newark
Bair Island
Belmont
Foster City
Emerald Hills
Atherton
Menlo Park
Palo Alto
Stanford
Los Altos Hills
Mountain View
Sunnyvale
Santa Clara
San Jose
Cupertino
Campbell
Milpitas
Robertsville
Los Gatos
Loyola
Permanente
La Honda
English Town

Total Number South Flow Operations Compared to Total Number of SJC Operations – 2011-2016

Year	Total Ops	South Flow Ops	% of Total Ops	Average Ops per South Flow Day
2016	153,419	24,033	15.7	139.7
2015	140,129	12,713	9.1	66.2
2014	135,872	21,473	15.8	117.3
2013	132,789	9,034	6.8	52.8
2012	127,181	18,639	14.7	90.0
2011	131,003	16,786	12.8	87.4

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

NORMAN Y. MINETA SAN JOSE INTERNATIONAL AIRPORT

NORMAN Y. MINETA
SAN JOSE
INTERNATIONAL
AIRPORT
SILICON VALLEY'S AIRPORT

ATTACHMENT B

November 30, 2016

Mr. Glen Martin
Regional Administrator
Western-Pacific Region
Federal Aviation Administration
P.O. Box 92007
Los Angeles, CA 90009

Subject: Noise Impacts of South Flow Landing Approach

Dear Mr. Martin:

Over the past several months the Norman Y. Mineta International Airport (SJC) staff has received a significant increase in concerns from Sunnyvale residents over the growing use and noise impacts of the south flow landing approach.

The most common concern expressed by Sunnyvale residents is the density of aircraft passing over their community. Specifically, the ZORSA waypoint on the RNAV Z approach is located directly over a residential neighborhood. Our analysis shows that, historically, when aircraft over the waypoint downwind of SJC runway 12R/L were dispersed over a wide area, there were few complaints from Sunnyvale residents. With the majority of aircraft now consistently passing within a narrow corridor over the waypoint, Sunnyvale residents are experiencing increased noise disturbance from the passing aircraft. Consequently, the number of complaints we are receiving from Sunnyvale is rapidly growing.

We have heard the complaints from multiple channels – directly from Sunnyvale officials, at a well-attended Sunnyvale town hall meeting, at our Airport Commission meeting and from numerous complaints received by the Airport's Noise Office.

Since air traffic procedures are within the sole jurisdiction the FAA, I am writing to ask if your staff could review south flow flight procedures with the goal of identifying possible solutions to reduce the noise impacts on Sunnyvale residents. We realize that safety cannot be compromised and that retaining operational efficiencies is critical. We also understand and support the FAA's policy of not simply shifting noise from one part of the region to another. However, within these parameters we would ask that the FAA identify possible solutions that work for all concerned parties and could bring some degree of noise relief to Sunnyvale residents.

As an airport that operates in a densely urban environment, we believe it is important to minimize the Airport's environmental impacts on surrounding communities to the extent allowed by safety and efficiency considerations. We are therefore encouraging the FAA to work with Sunnyvale officials, and other key stakeholders, to identify possible solutions. Towards that end, SJC stands ready to appropriately participate in any FAA review of this issue.

We appreciate your efforts to work with the region's cities on aircraft noise through the Select Committee on South Bay Arrivals. We hope you will be willing to undertake a similar approach on the south flow issue.

Sincerely,

Kimberly J. Becker
Director of Aviation

cc: Mayor and City Council – City of San José
Mayor Glen Hendricks – City of Sunnyvale

U.S. Department
of Transportation
Federal Aviation
Administration

Western-Pacific Region
Office of the Regional Administrator

P.O. Box 92007
Los Angeles, CA 90009-2007

JAN 06 2017

Ms. Kimberly J. Becker
Director of Aviation
Norman Y. Mineta
San Jose International Airport
1701 Airport Boulevard, Suite B-1130
San Jose, CA 95110-1206

Dear Ms. Becker:

Thank you for your letter dated November 30, 2016, regarding your concerns about growing use and noise impacts of the south flow landing approach.

Consistent with its statutory mission, the Federal Aviation Administration (FAA) continues to work to ensure the safe and efficient use of our national airspace system.

While safety remains the FAA's highest priority, the agency does attempt to address noise impacts by designing procedures over water and industrial areas when safety and efficiency permit. The FAA is also mindful that while changes to an approach may solve a noise issue in one area, they may simply shift the noise concern from one location to another.

ZORSA is on the Area Navigation (RNAV) Required Navigation Performance (RNP) Z to runway (RWY) 12 at San Jose International Airport (SJC) and is located over Sunnyvale. ZORSA is on the Radius to a Fix leg of the RNP approach and is used during RWY 12 operations. The location of ZORSA has not changed. The RWY 12 RNP approach was developed in 2011 and was not part of Metroplex. This RNP approach was modified in early 2016 by moving the fix HITIR approximately ¾ nautical miles to the southeast (away from Sunnyvale) and raising the altitude from 3,600 to 4,000 at HITIR.

Not all aircraft fly the RNP approach into SJC and the Northern California Terminal Radar Approach Control (TRACON) (NCT) does still vector many aircraft for the SJC RWY 12 RNAV or Instrument Landing System approaches. Usually these aircraft are descending to 3,000 feet on the downwind, which overflies Sunnyvale. This practice also has not changed in over 20 years and NCT is unable to keep these aircraft higher due to the conflict with other traffic, including the San Francisco final.

Weather has dictated the use of SJC South flow more heavily, recently. For September 2015 vs September 2016, 10 percent of SJC traffic landed on a South flow runway (12's). For October 2015, 2 percent of traffic landed on SJC South flow runways, while traffic in October 2016, had 33 percent of SJC traffic landing on the South flow runways. Due to this increase caused by the weather conditions, the FAA understands why the community has noticed a change.

The wind and FAA Order 7110.65 determine the active runway at SJC. In accordance with paragraph 3-5-1 of FAA Order 7110.65, when there is a tailwind of 5 knots or more, SJC Tower must utilize RWY 12. This is the least favorable configuration for both the Tower and the TRACON and it is not utilized more than is necessary. Runway changes are complicated, they increase noise due to delay vectoring and holding and more importantly, introduce risk in the National Airspace System if done too often. SJC Tower will utilize forecasted wind reports to avoid "chasing" the wind, which may result in SJC being on RWY 12 for periods when the tailwind is less than 5 knots if the wind is forecasted to remain out of the east/southeast and increase in velocity.

Thank you for this opportunity to answer your inquiry. If you have any questions, please contact me or Tamara A. Swann, Deputy Regional Administrator, at (310) 725-3550.

Sincerely,

Glen A. Martin
Regional Administrator

COUNCIL AGENDA: 10/03/17
ITEM: 6.1 (17-156)

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: HONORABLE MAYOR AND CITY COUNCIL

FROM: John Aitken

SUBJECT: **FORMATION OF THE AD HOC ADVISORY COMMITTEE ON SOUTH FLOW ARRIVALS**

DATE: September 25, 2017

Approved D.DSyL Date 9/26/17

SUPPLEMENTAL

REASON FOR SUPPLEMENTAL

To provide additional information requested by the Transportation and Environment Committee at its hearing of September 11, 2017, on staff's recommendation to form the Ad Hoc Advisory Committee on South Flow Arrivals and to recommend Council appoint a Councilmember and an alternate to serve on the recommended ad hoc committee.

RECOMMENDATION

If Council approves the formation of the Ad Hoc Advisory Committee on South Flow Arrivals, appoint a Councilmember and an alternate Councilmember to represent the City on the Committee.

BACKGROUND

While the Transportation and Environmental Committee unanimously adopted staff's recommendations for the formation of the Ad Hoc Committee, the Committee requested more information for Council on the following two questions:

1. Given that the Airport has operated in south flow configuration for many years, why has it recently become such a significant problem? What has led to the high number of south flow complaints in the past year?

2. What are some of the possible options to address the south flow noise issue the Ad Hoc Committee could review?

Providing more information on these questions is the primary purpose of this memo.

ANALYSIS

Why the Increase in Complaints Over the Past Year?

There are two interrelated primary reasons the Airport has seen an exponential increase in the number of noise complaints related to south flow operations:

1. ***The use of NextGen technology to guide aircraft.*** Following complaints, staff observed a higher proportion of aircraft utilizing existing GPS approaches developed in 2011. The option to utilize this approach is part of the FAA's nationwide Next Generation (NextGen) project to upgrade U.S. air traffic control from a ground-based radar system to a satellite-based radar system. The purpose of the nationwide upgrade is to increase efficiencies by enabling planes to fly prescribed paths into and out of congested air space. The U.S. air traffic system transported 720 million passengers in 2011 and is predicted to reach one billion passengers by 2024. Congress and the FAA believe that the air traffic control system must become more efficient to handle such an increase in passenger volume. NextGen technology and procedures are meant to address that concern.

   As a result, the concentration of flight paths over residential neighborhood during south flow operations has significantly increased as flights that were previously more dispersed are now more concentrated. Those residents not living directly under the flight path may actually be experiencing a drop in aircraft noise. However, those residents living directly under the flight path would be seeing more aircraft and therefore hearing more noise. Attachment A-1 and A-2 provide a graphic illustration of the increased concentration of flights for south flow arrivals with the use of NextGen technology and procedures.

2. ***A historical increase in the number of days and the amount of time requiring the use of south flow operations.*** South flow operations are initiated by the FAA when certain weather conditions exist. The primary weather conditions that causes south flow operations to be implemented are the direction and velocity of the wind.

   The prevailing wind over the airfield blows from north (off the bay) to south. As a general rule, aircraft want to land *into* the wind. However, when wind direction changes and the wind over the airfield blow from south to north and when the northern winds reach a certain velocity (five knots or more), for safety reasons, the FAA implements south flow operations so that aircraft are again landing into the wind because it can be harder – and therefore less safe – for an aircraft to takeoff and/or land with the wind at its tail. The airfield remains in south flow configuration until wind conditions change sufficiently to warrant returning to the airfield to north flow operations (landing from the south and departing towards the north). Winds are measured at the airfield and not at other locations in the region. Wind conditions around the Bay Area may differ from the Airport, such that the Airport may be in south flow, yet people in other areas may not perceive a change in wind direction.

In a January 6, 2017 response to then Airport Director Kim Becker (see Attachment C of the attached staff report of August 21, 2017), the FAA stated the use of the south flow configuration *"is the least favorable configuration for both the Tower and the TRACON* (Northern California Terminal Radar Approach Control) *and is not utilized more than is necessary. Runway changes are complicated. They increase noise due to delay vectoring and holding and more importantly, introduce risk in the National Airspace System if done too often."*

In the past year, the weather conditions creating the need for south flow operations have occurred more frequently and lasted longer. Anecdotal experience is that the southerly winds used to last from about 6:00 a.m. to 10:00 or 11:00 a.m. However, in the past year, the conditions have occurred with more frequency and are lasting longer into the day. In its January 6, 2017 correspondence to former Director Becker, the FAA states that in October 2015 only 2 percent of the Airport's traffic landed under south flow configuration. However, in October 2106 about 33 percent of the Airport's traffic landed under south flow configuration.

Attachment B shows the number of flight operations (takeoffs and landings) in south flow from 2011 to 2016. In 2015 there was an average of 66 south flow flight operations on days when the Airport was operating in south flow. In 2016 the average was 139 south flow take offs and landings per day while in operating in south flow configuration.

The two aforementioned factors (greater concentration of arriving flights and an increase in the number of days and length of time the Airport must operate in south flow configuration) are combining to result in an increase in the aircraft noise now heard in the Sunnyvale, Mountain View and Palo Alto areas (and to a lesser extent in other adjacent cities). Hence, the complaints to the Airport Commission from the impacted residents, the Commission's call for a noise roundtable and staff's recommendation to form the Ad Hoc Advisory Committee on South Flow Arrivals.

What are Some of the Options to Address South Flow Noise Impacts?

The Committee also asked what are some of the possible options that may be recommended to the FAA to address the south flow noise impacts on the impacted communities? Airport staff does not have any role in determining flight procedures and has no technical expertise to address this key question. Nor will staff be proposing any solutions to the Committee. Identifying possible options to address the concern will be the primary objective of the Ad Hoc Advisory Committee. However, some of the options staff has heard most commonly raised include:

1. have aircraft come in at higher altitudes;
2. have aircraft approach in south flow from east of San José instead from west of San José; and
3. increase the dispersal of approaching aircraft.

The three aforementioned solutions are not necessarily exhaustive nor feasible. Committee members may introduce other proposed solutions and/or develop other possible solutions

through the public discussions with the FAA. Members of the public may also propose solutions to the Committee or to individual Committee members through meetings in their communities. Thus, the range of possible solutions are not known at this time. In addition, the determination of feasibility for any proposed solution will rest solely with the FAA.

Ultimately, the Ad Hoc Advisory Committee is an opportunity to have a community discussion with the FAA to explore what feasible solutions may exist that will reduce the noise impacts on the impacted cities without adversely affecting the FAA's primary objective to manage air traffic in a safe and efficient manner.

Appointment of a San José Representative

Should the Council adopt the recommendation to form the Ad Hoc Advisory Committee, staff recommends Council simultaneously appoint a Councilmember to represent the City on the Committee. Council should also appoint an alternate representative in the event the primary representative is unable to attend a meeting. However, the alternate Council representative will be required to attend Committee meetings only when the primary representative is unable to do so. This will ensure the City is continuously represented at all the Committee's meetings.

COORDINATION

This memorandum was coordinated with the City Attorney's Office.

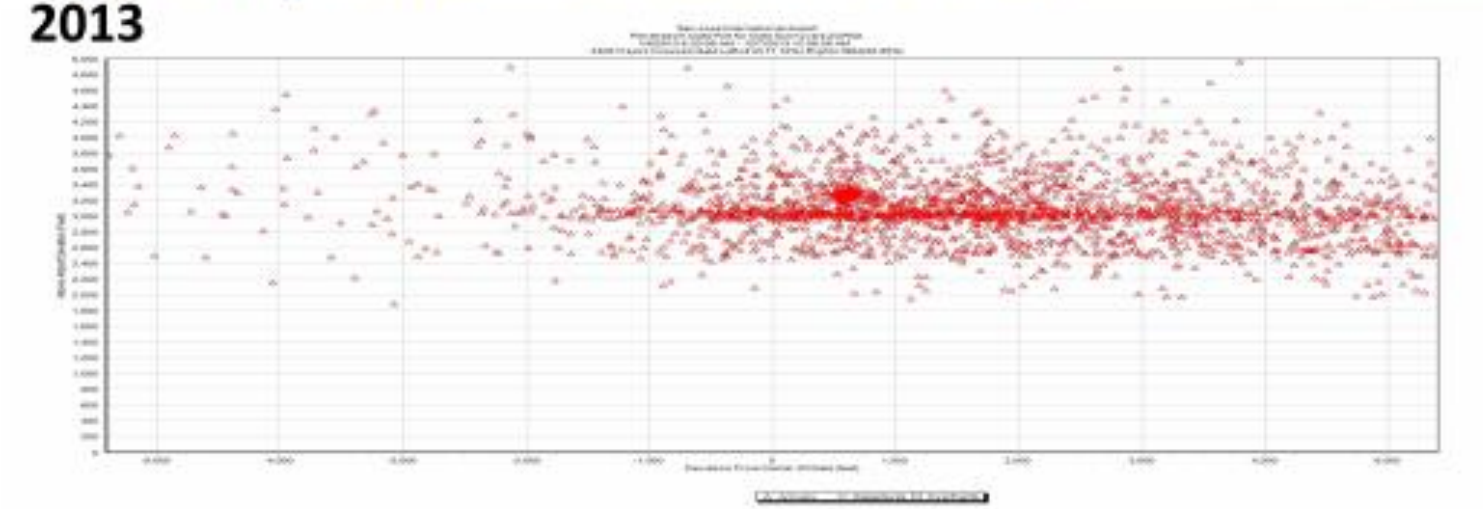
/s/
JOHN AITKEN
Director of Aviation

For questions please contact Jim Webb, Assistant to the Director, at 408-392-3609.

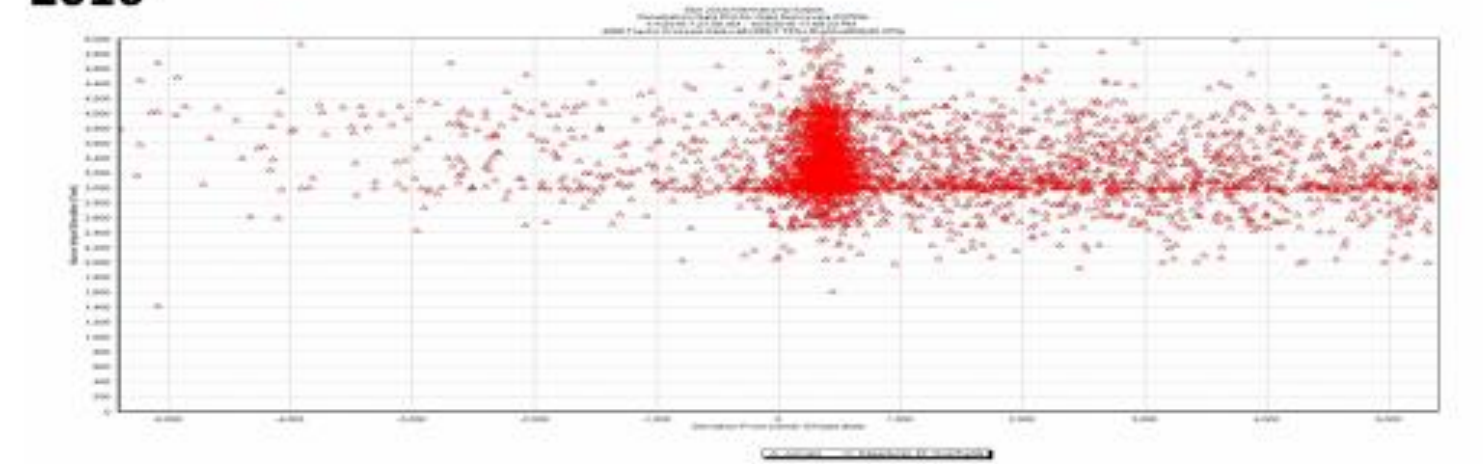
Attachments

SJC Flight Distribution Over Sunnyvale – 2013 vs 2016

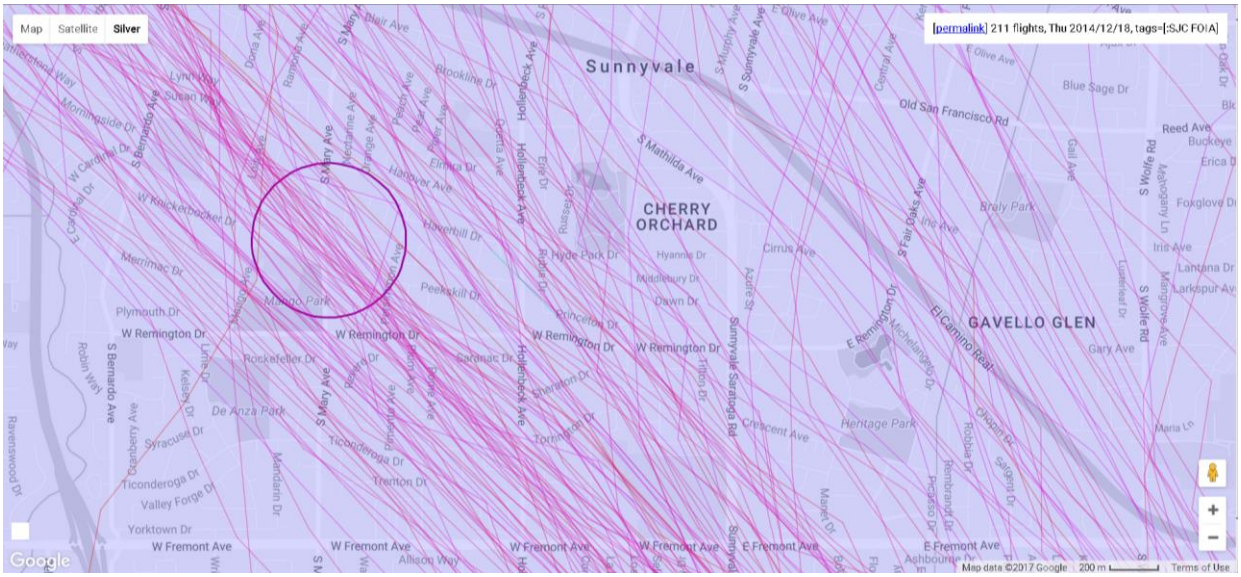
2013



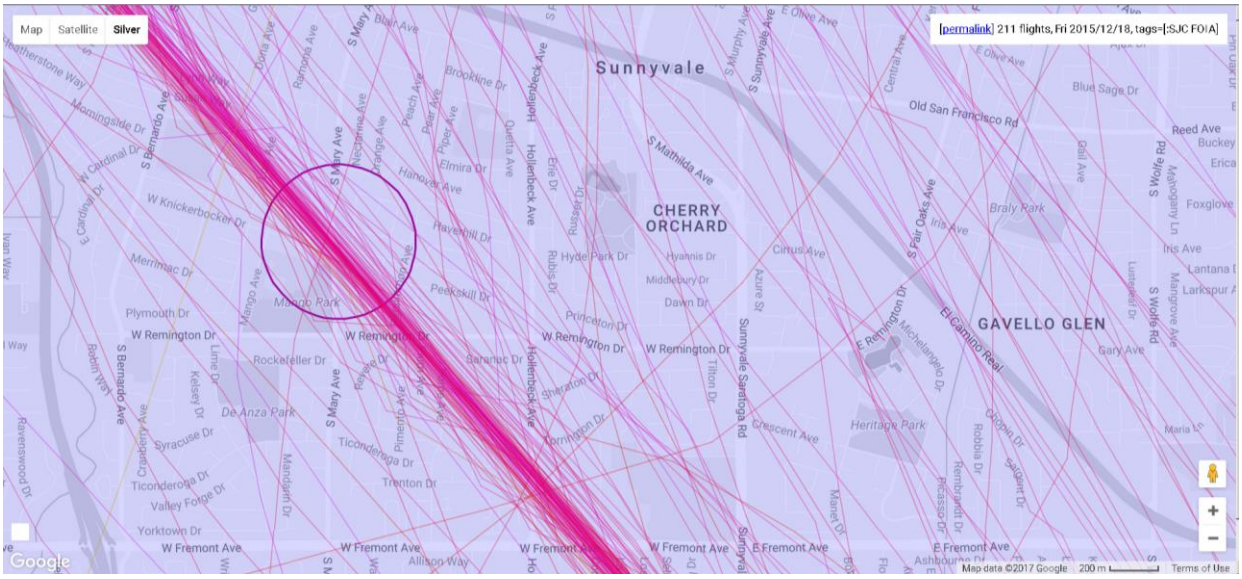
2016



South Flow Flight Paths Before and After NextGen



Flights over Sunnyvale on December 18, 2014, before NextGen (above) and after (below). Circle is Waypoint ZORSA, near Mary Avenue and Knickerbocker Drive.



Total Number South Flow Operations Compared to Total Number of SJC Operations – 2011-2016

Year	Total Ops	South Flow Ops	% of Total Ops	Average Ops per South Flow Day
2016	153,419	24,033	15.7	139.7
2015	140,129	12,713	9.1	66.2
2014	135,872	21,473	15.8	117.3
2013	132,789	9,034	6.8	52.8
2012	127,181	18,639	14.7	90.0
2011	131,003	16,786	12.8	87.4

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

NORMAN Y. MINETA SAN JOSE INTERNATIONAL AIRPORT

Ad Hoc Advisory Committee on South Flow Arrivals

Operating Parameters

Parameters Adopted by the San José City Council

- *Scope/Charge* – The scope/charge of the Committee is to:

  1. Gather input, concerns, and comments from the general public on the south flow issue.
  2. Identify and discuss possible measures to address the procedure's noise impacts.
  3. Recommend potentially "feasible" options for FAA consideration.

- *Timeline* – The Committee has 120 days to complete its review. The 120 days starts with the first working scheduled meeting.

- *Adopting Recommendations* – No recommendation can be adopted that impacts a city that is not represented on the Committee

- *Invited Jurisdictions* – All cities and the County of Santa Clara are welcome to participate. Partcipation is voluntary, not mandatory.

- *Voting* – Each jurisdication will have one vote, except the City of San José, which will have two votes. Votes will be cast by the jurisdiction's primary representative or, if the primary delegate is unable to attend, the jurisdiction's alternate representaitve.

- *Definition of Consensus* – Any recommendation to be advanced to the FAA will require a consensus. The support of at least two-thirds of the Committee membership will be needed to advance a recommendation to the FAA.

- *Determining "Feasability" of Recommendations* – The FAA has the sole authority to determine if a proposed measure is considered "feasible."

- *Final Report* – Airport staff will draft the final report for Committee approval.

Additional Proposed Guidelines

- *Length of Meetings* – To provide predictability of time allocation for the FAA staff, Committee members, and the public, Committee meetings should last no longer than three hours (including public comment). The meeting agenda/workplan shall roll over from one meeting to the other.

Draft Ad Hoc Advisory Committee Workplan

I. The South Flow Procedure Presentation: Why south flow procedure is used, how it works, the conditions requiring its use, and the air traffic environment over the South Bay, with Q&A from the Committee.

II. Committee Identification of Possible Noise Impact Reduction Measures – What are possible measures to reduce the noise impacts of the south flow procedure without reducing safety and efficiency of FAA air traffic control management? Possible measures raised in discussions include:

a) Bringing aircraft in at higher altitudes;
b) Greater dispersal of arriving aircraft;
c) Bringing aircraft in over the east of San José instead of over the west of San José.
d) Other possible solutions?

III. Committee Discussion of Identified Noise Impact Reduction Measures – An evaluation of what measures should be advanced for consideration to the FAA, given FAA direction on feasibility, safety, and efficiency.

IV. Adopting Preliminary Recommendation(s) – After Committee discussion of, and FAA comments on, all identified noise reduction options, preliminary adoption of recommended measures for FAA consideration.

V. Adoption of Final Report and Committee Recommendations

Note: Every effort will be made to schedule meetings every 2-3 weeks beginning January 2018

City of San José
AD HOC ADVISORY COMMITTEE ON SOUTH FLOW ARRIVALS

Meeting Minutes of the Ad Hoc Advisory Committee on South Flow Arrivals

FRIDAY SAN JOSE, CALIFORNIA November 17, 2017

The Ad Hoc Advisory Committee on South Flow Arrivals held an organizational meeting on Friday, November 17, 2017, at 2:00 p.m. in the Committee Room of the "Wing" of San José City Hall located at 200 East Santa Clara Street, Committee Rooms 118-120, Council Wing, San José, CA 95113.

ATTENDEES

PRESENT: Committee Members Glenn Hendricks (Chair), Chappie Jones (Vice-Chair), Mary-Lynne Bernald, Elizabeth Gibbons, Lydia Kou, Lisa Matichak (via phone at 2:07 p.m.), Jean Mordo, Raul Peralez, Rene Spring, Steven Scharf, Rowena Turner, Gary Waldeck, and Kathy Watanabe

ABSENT: All Present

STAFF: Interim Assistant Director of Aviation Judy Ross, Manager of Strategy and Policy Matthew Kazmierczak, and Assistant to the Director James Webb, Jr.

1. Call to Order

The meeting was called to order at 2:02 p.m. by Interim Assistant Director of Aviation Judy Ross with thirteen Committee members in attendance.

2. Host Welcome

Ms. Ross welcomed the Committee, attending FAA staff and the public.

3. Self-Introductions

The Committee members introduced themselves. Ms. Ross introduced the supporting Airport staff members.

4. **Brief Remarks – Committee member Raul Peralez, Councilmember, City of San José**

   Committee member Peralez offered welcoming remarks to the Committee on behalf of Mayor Sam Liccardo, who was unable to attend.

5. **Brief Remarks – Dennis Roberts, Regional Administrator, Western-Pacific Region/Federal Aviation Administration**

   Mr. Roberts made opening remarks, including outlining the FAA role in the Committee's discussions and the introduction FAA staff who will be working with the Committee.

6. **Call for Chair and Vice-Chair Nominations**

   Public Comments: Mr. Robert Holbrook provided comments and a recommendation.

   Ms. Ross called for nominations for Committee Chair. Mr. Hendricks stated he was interested in serving as Committee Chair. Mr. Hendricks was subsequently nominated by Mr. Spring. His nomination was seconded by Ms. Gibbons. No other nominations were offered.

   Action: By roll call vote, the Committee unanimously elected Mr. Hendricks as Committee Chair.

   Mr. Peralez nominated Mr. Jones for Committee Vice-Chair. His nomination was seconded by Ms. Kou. No other nominations were offered.

   Action: By roll call vote, the Committee unanimously elected Mr. Jones as Vice-Chair.

   Upon election, Mr. Hendricks immediately took responsibility for chairing the remainder of the meeting.

7. **Ad Hoc Committee Organizational/Process Matters**

   Airport staff presented each of the eight operating parameters adopted by the San José City Council in establishing the Committee and proposed an additional parameter to limit the length of the meetings three or four hours. Staff subsequently presented comments on the meeting minutes and when and where meetings were to be held.

Chair Hendricks opened the floor for public comment.

Public Comments: Providing public comments and/or suggestions on several of the parameters were Mary Shefveland, Robert Holbrook, Tony Rath, Marie-Jo Fremont, Jennifer Landesmann, Jennifer Tasseff, Darlene Yaplee, Zachary Kaufman, and Ron Gilbert.

Committee discussion followed. Mr. Waldeck said he understood from the Select Committee that the Airport could require aircraft to take mitigation measures and that such measures are being taken in Phoenix. He requested Airport staff to check and determine if the Airport can require aircraft to take mitigation measures and, if so, add that to the Committee's scope of work. Assistant Director Ross said the Airport would research Select Committee discussions and contact Phoenix Airport to see what mitigation measures it requires for the Airbus 320.

Ms. Bernald said should the BRIXX flight path be impacted by any adjustments made to the south flow arrival path, she would like those impacts included in the discussions.

Ms. Watanabe wanted to discuss issues related to takeoffs in a future discussion, if possible.

Mr. Waldeck requested the Committee Chair and Vice-Chair be incorporated in the drafting of the final report.

In response to a question from Chair Hendricks, Mr. Roberts said the FAA welcomes the opportunity to present "air traffic 101" that would provide information on how the air traffic system works, not only over San José but over the Bay Area, so the Committee could understand the parameters of the air traffic system and how it works.

Mr. Mordo said some consideration should be given to change the parameter from recommendation can be adopted that impacts a city not represented on the Committee to any city that was invited could be impacted, whether or not they elect to participate. Mr. Mordo said without this change some possible solutions could not be considered. Chair Hendricks said he will personally contact the City of Milpitas and invite Milpitas to attend the Committee meetings. If Milpitas still elects not to attend, the Committee could ask the San Jose City Council to change the parameter to allow a city that was invited to be impacted. Chair Hendricks will invite the City of Milpitas to attend the Committee meetings.

Ms. Gibbons suggested the cities of East Palo Alto, Newark and Fremont be copied on the meeting notes and agenda as well as invited to attend the Committee meetings so they are aware of the discussions taking place. Chair Hendricks agreed

that the three cities should be made aware of the meetings and encouraged to at least attend as members of the public.

Action: Mr. Mordo made a motion that the parameter on adopting recommendations be changed by the San José City Council to say no recommendation can be adopted that impacts a city that was *not invited* to participate on the Committee (instead of a city *not represented* on the Committee). The motion was seconded by Ms. Bernal. By roll call vote, the motion passed unanimously.

Action: Ms. Kou made a motion to request the San José City Council to include East Palo Alto, Newark, and Fremont on the Committee to have their input and vote on Committee decisions. The motion was seconded by Mr. Scharf. By roll call vote, the motion passed with an 11-2 vote with Hendricks and Jones dissenting.

Both adopted motions will be presented to the San José City Council together.

Under the "feasibility of recommendations" parameter, several members discussed the need to establish a baseline point to determine the feasibility of a recommendation. The baseline would be flight patterns prior to and after NextGen to understand what lessons had been learned because of the changes. Chair Hendricks suggested looking at routes and flight patterns twelve months before NextGen and then look at what was changed from a FAA flight control perspective would be beneficial. Mr. Scharf said it would be also good to know what noise abatement procedures are possible. Chair Hendricks said a discussion on pre and post NextGen flight patterns would relate to south flow or if there were outside parameters or constraints that may have impacted south flow.

The Committee discussed preferences and constraining factors for meetings. Chair Hendricks requested Airport staff to bring back a schedule of meetings for discussion at the next Committee meeting.

8. Adoption of Draft Work Plan

Airport staff presented the components of the draft work plan.

Public Comments: Comments on the work plan were presented by Chris Moylan, Jennifer Tasseff, and Jennifer Landesmann.

The Committee took no action to amend the work plan.

9. Public Comments

Comments were offered by Jennifer Landesmann, Marie-Jo Fremont, and Jennifer Tasseff.

10. Adjournment

The meeting was adjourned at 4:37 pm.

ATTEST:

Glen Hendricks
Chairperson

Judy Ross
Assistant Director of Aviation (Interim)