SFO

San Francisco International Airport

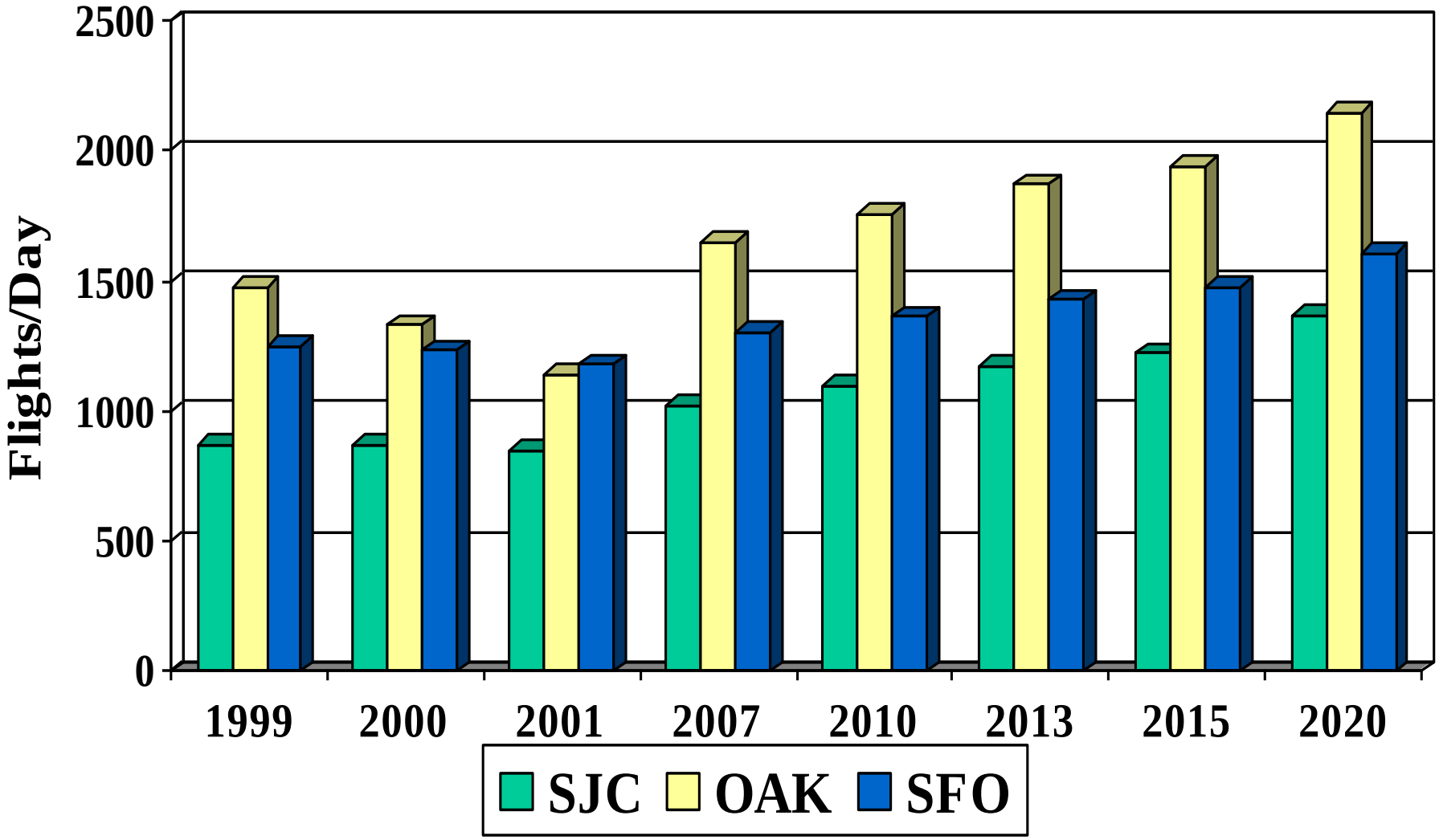
Airfield Development Planning Summary

October 4, 2002

What are the Objectives?

- Reduce aircraft delays--especially during poor weather conditions
- Reduce human exposure to noise
- Modify SFO to accommodate New Large Aircraft (NLA)

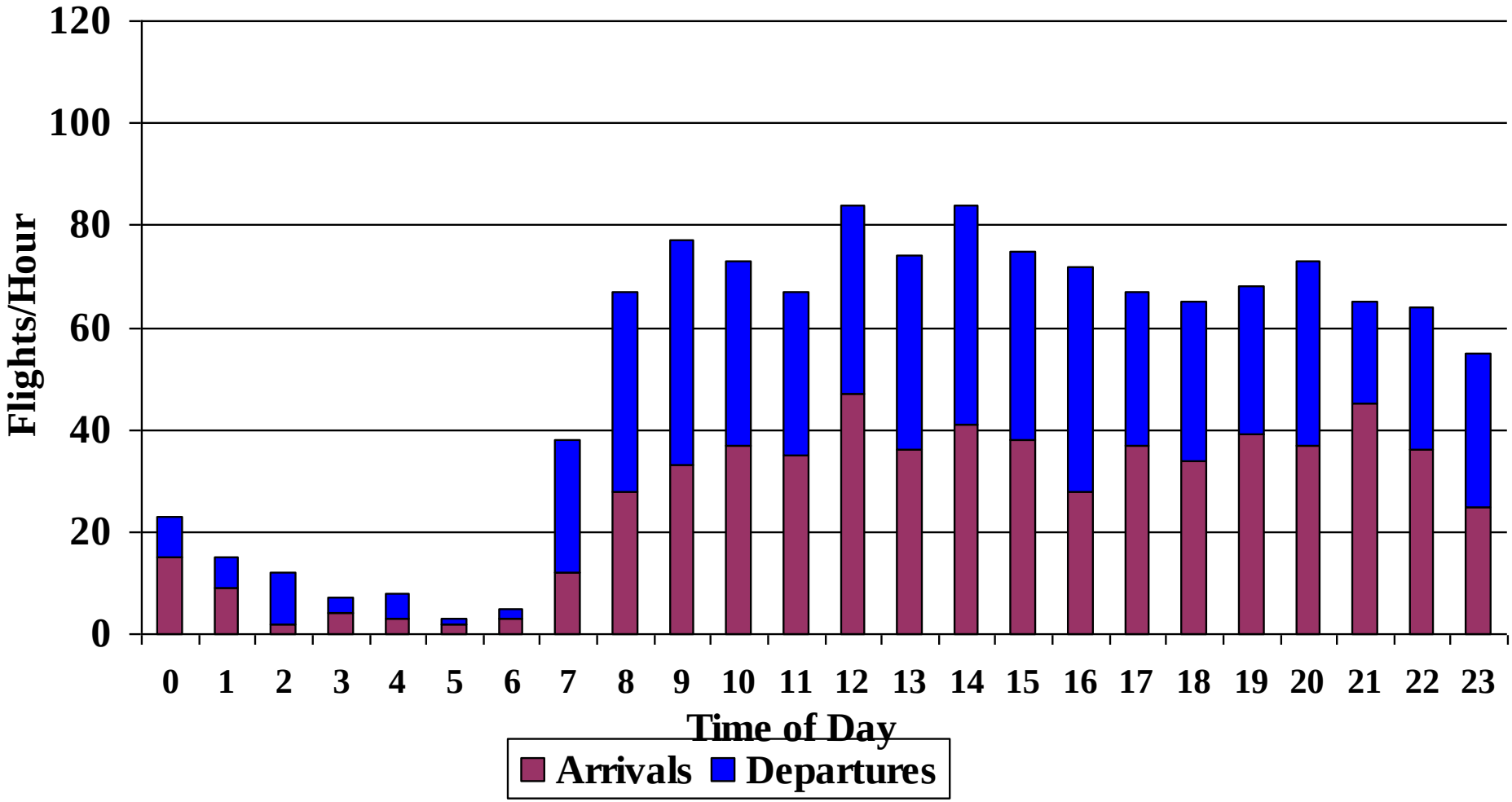
Bay Area Airport Operations



SFO Forecast based on Average Daily Peak Month Flights 2002 forecast

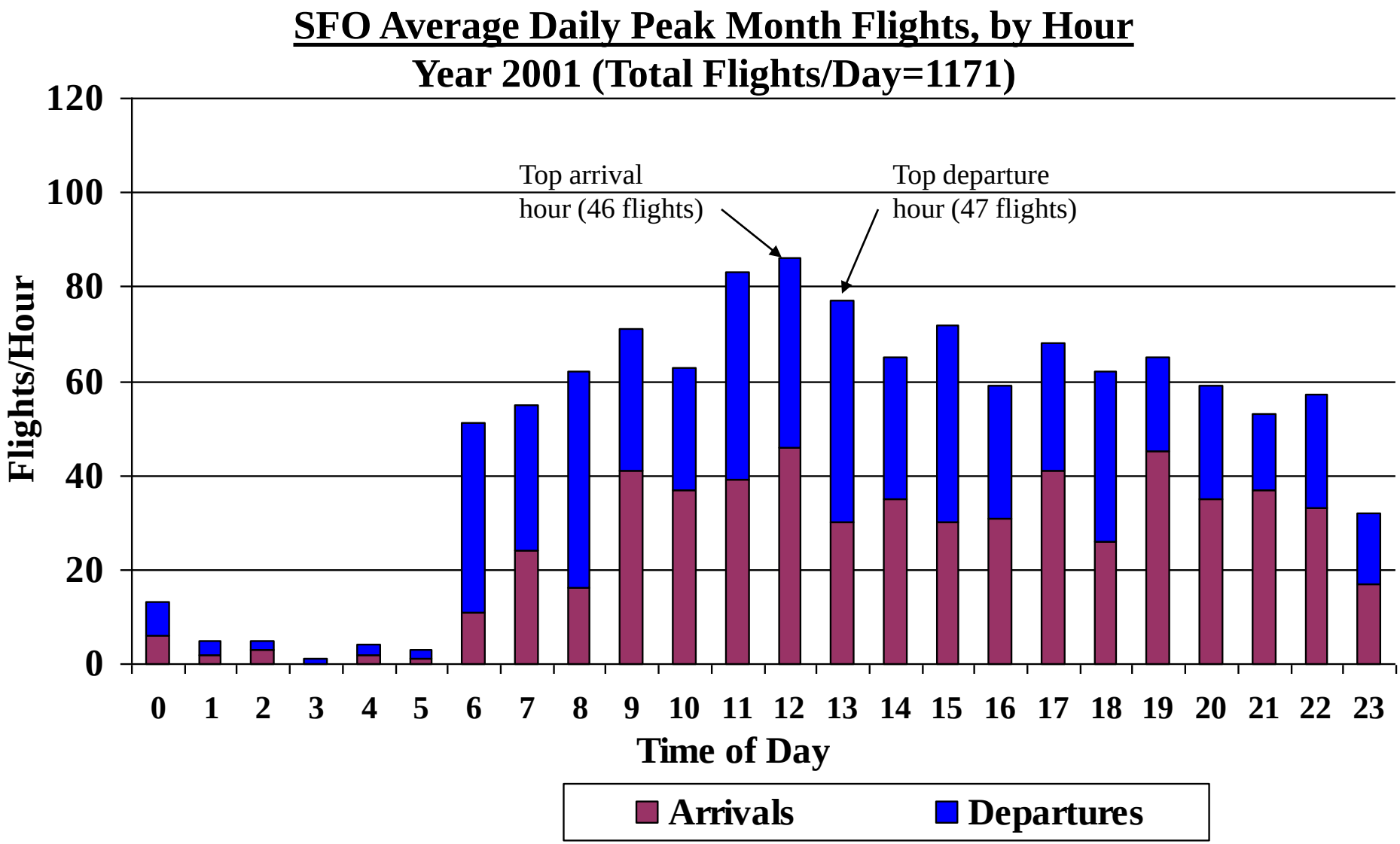
SFO Hourly Flights Year 1999: 1241 Flights/Day

San Francisco International Airport
runway reconfiguration program



SFO Hourly Flights Year 2001

San Francisco International Airport
runway reconfiguration program



SFO Hourly Flights Year 2001 (Post 9-11): 934 Flights/Day

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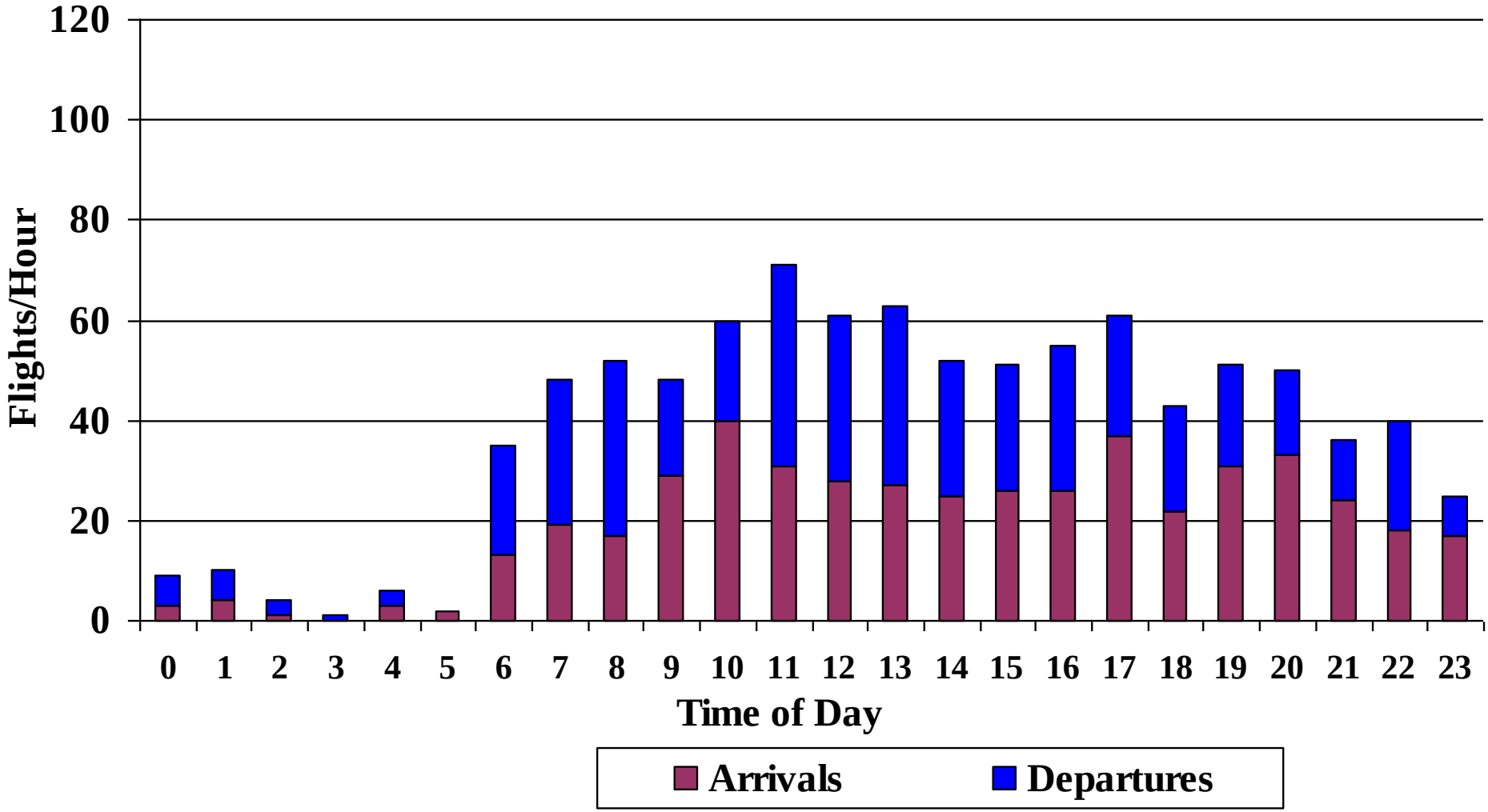
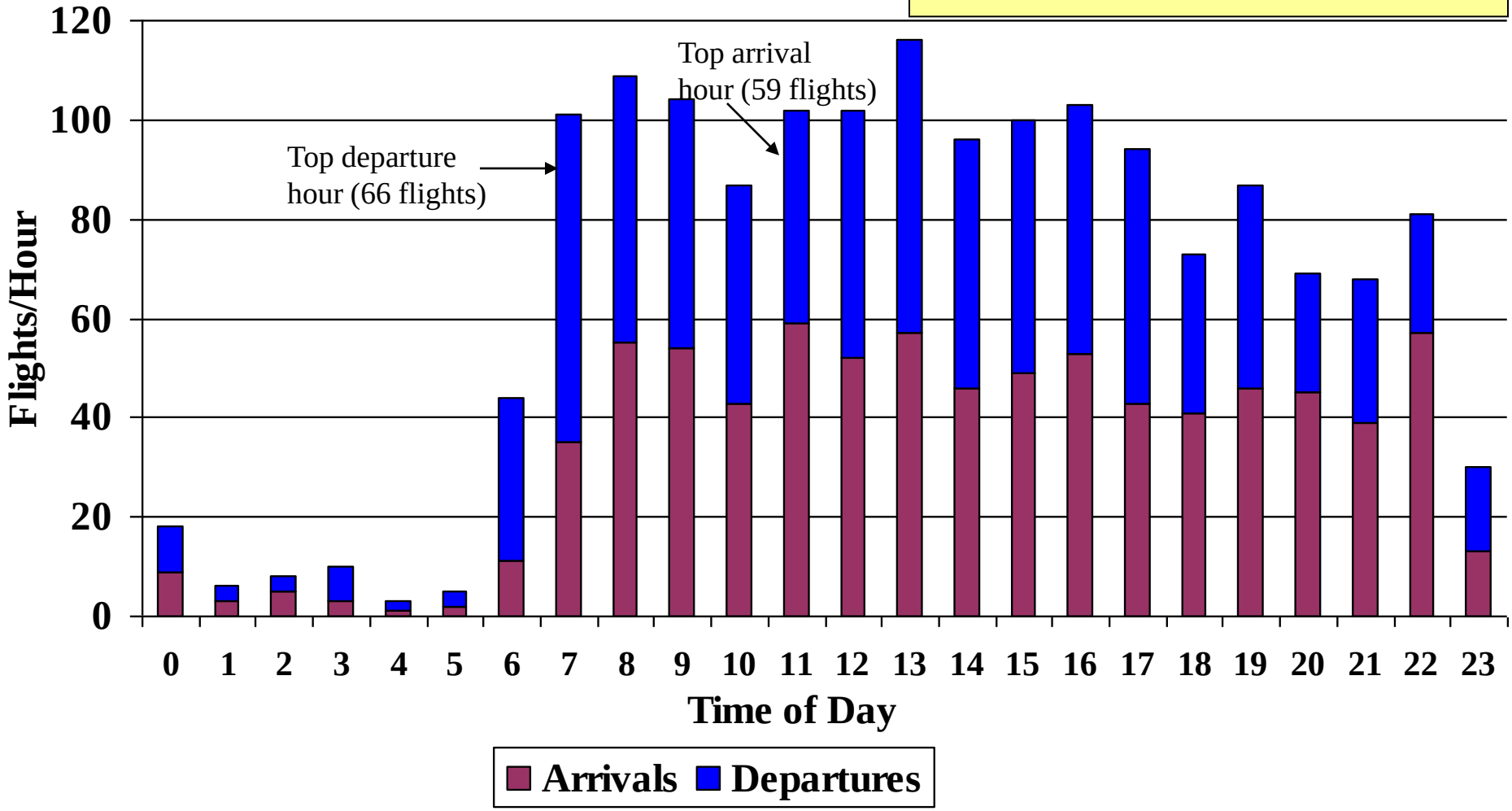
runway reconfiguration program



SFO Hourly Flights - Unconstrained Year 2020: 1605 Flights/Day

San Francisco International Airport
runway reconfiguration program

354 more flights than 1999



Bay Area Airports Year 2020

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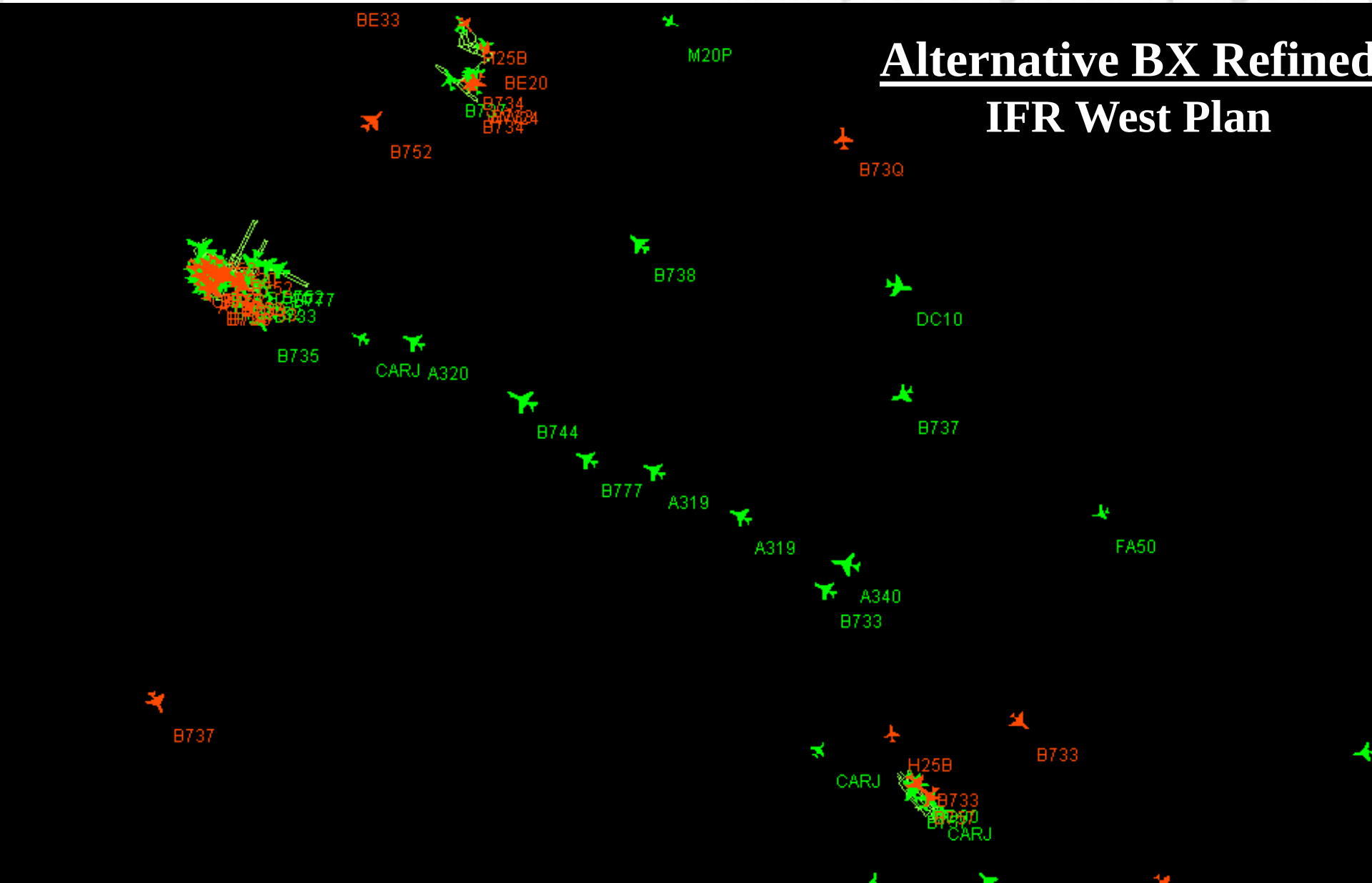
runway reconfiguration program



Taxiway Improvements

Required to Accommodate FAA Designed Grouped VI Aircraft

Arrives @ SFO 2006

virgin atlantic

SINGAPORE AIRLINES

Lufthansa

AIR FRANCE

earth

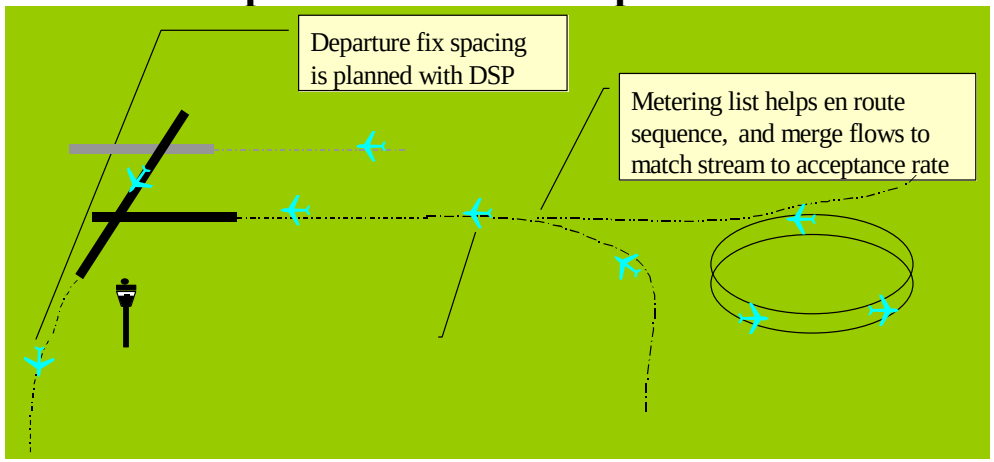
FedEx

50 feet longer and wider than today's largest aircraft

FAA
Ops Evolution Plan 5

San Francisco International Airport
runway reconfiguration program

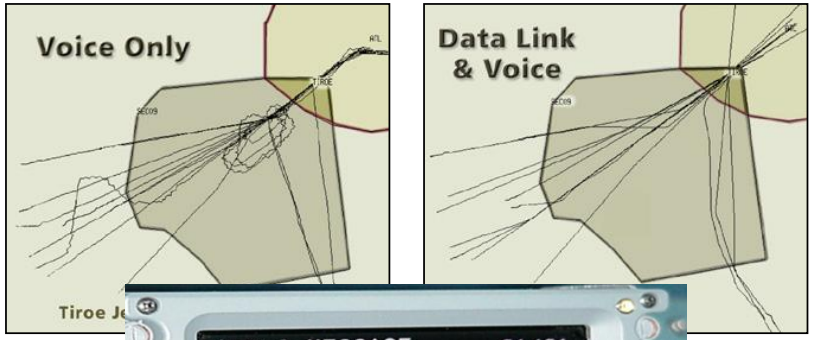
AD-4: Fill Gaps in Arrival and Departure Streams

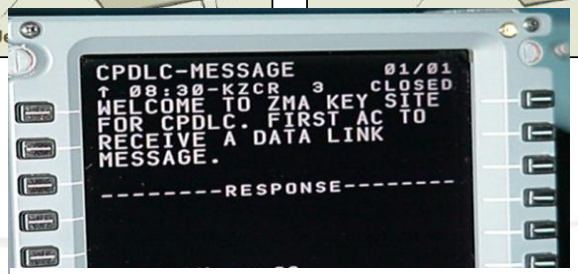


EW-2: Respond Effectively to Hazardous Weather

En Route

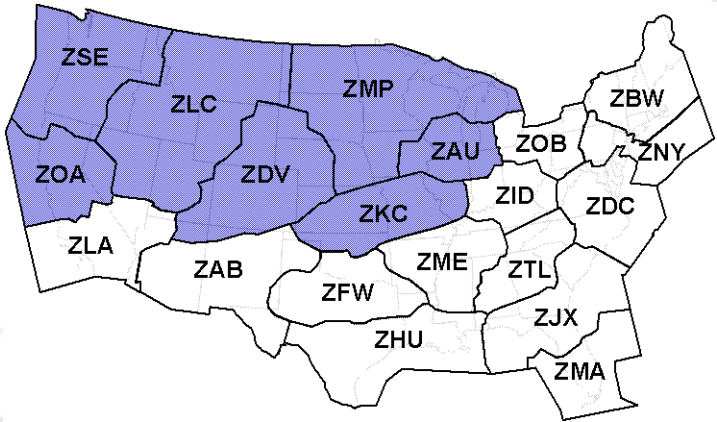
ER-3: Reduce Voice Communication





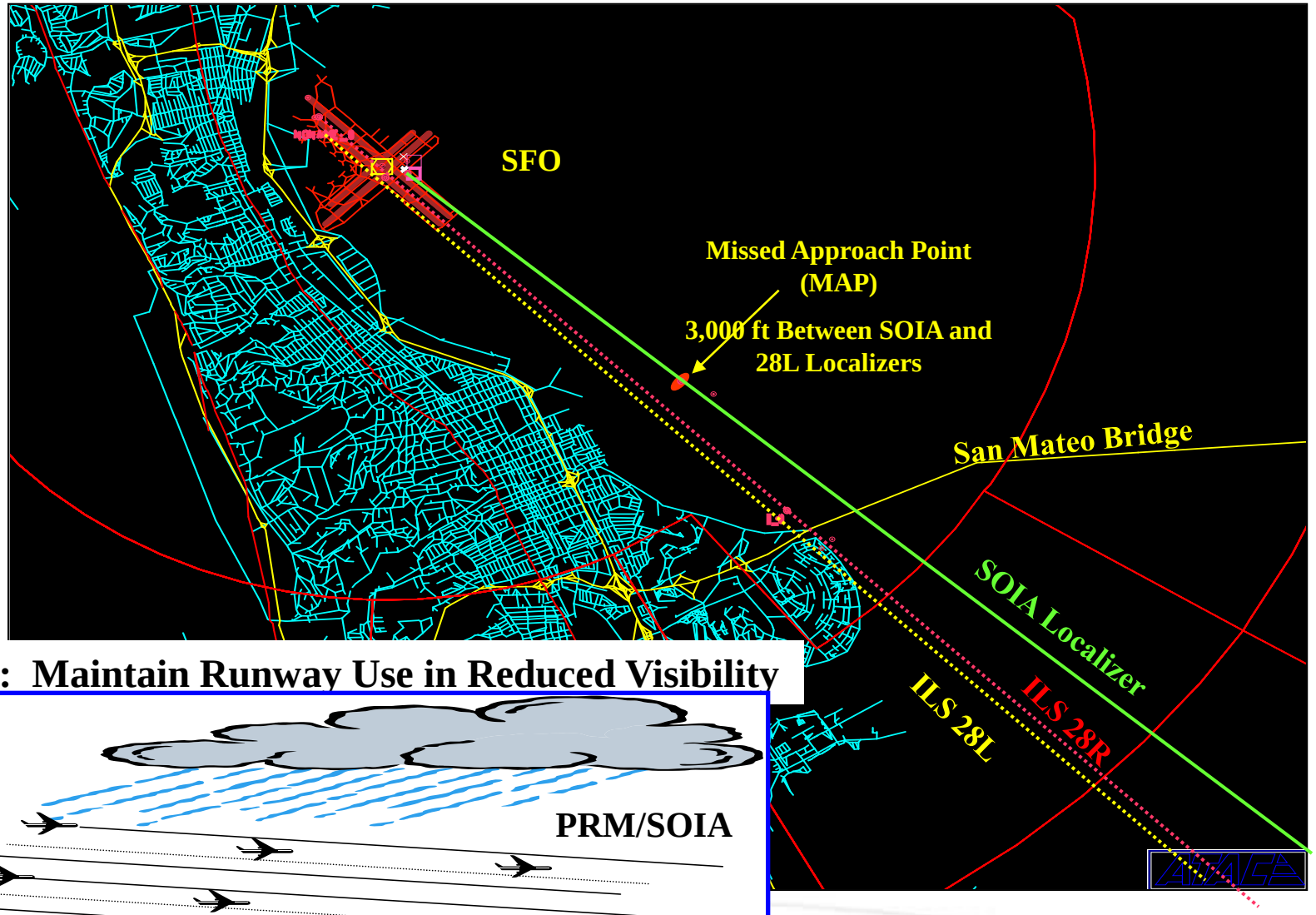
First CPDLC message sent from ground to aircraft

ER-1.2 Implement High Altitude Redesign

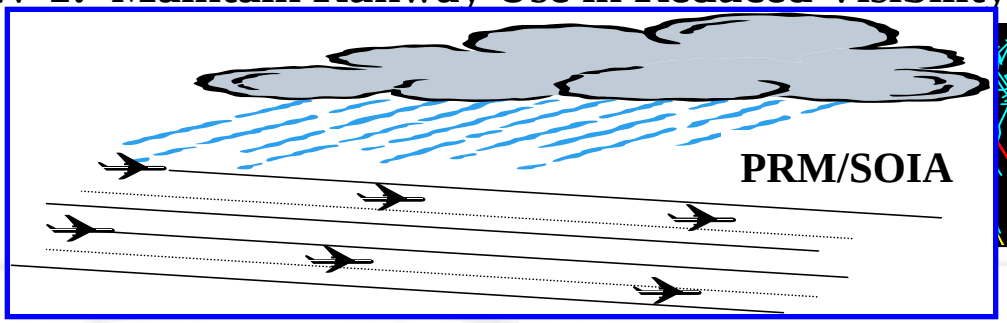


PRM / SOIA

San Francisco International Airport
runway reconfiguration program



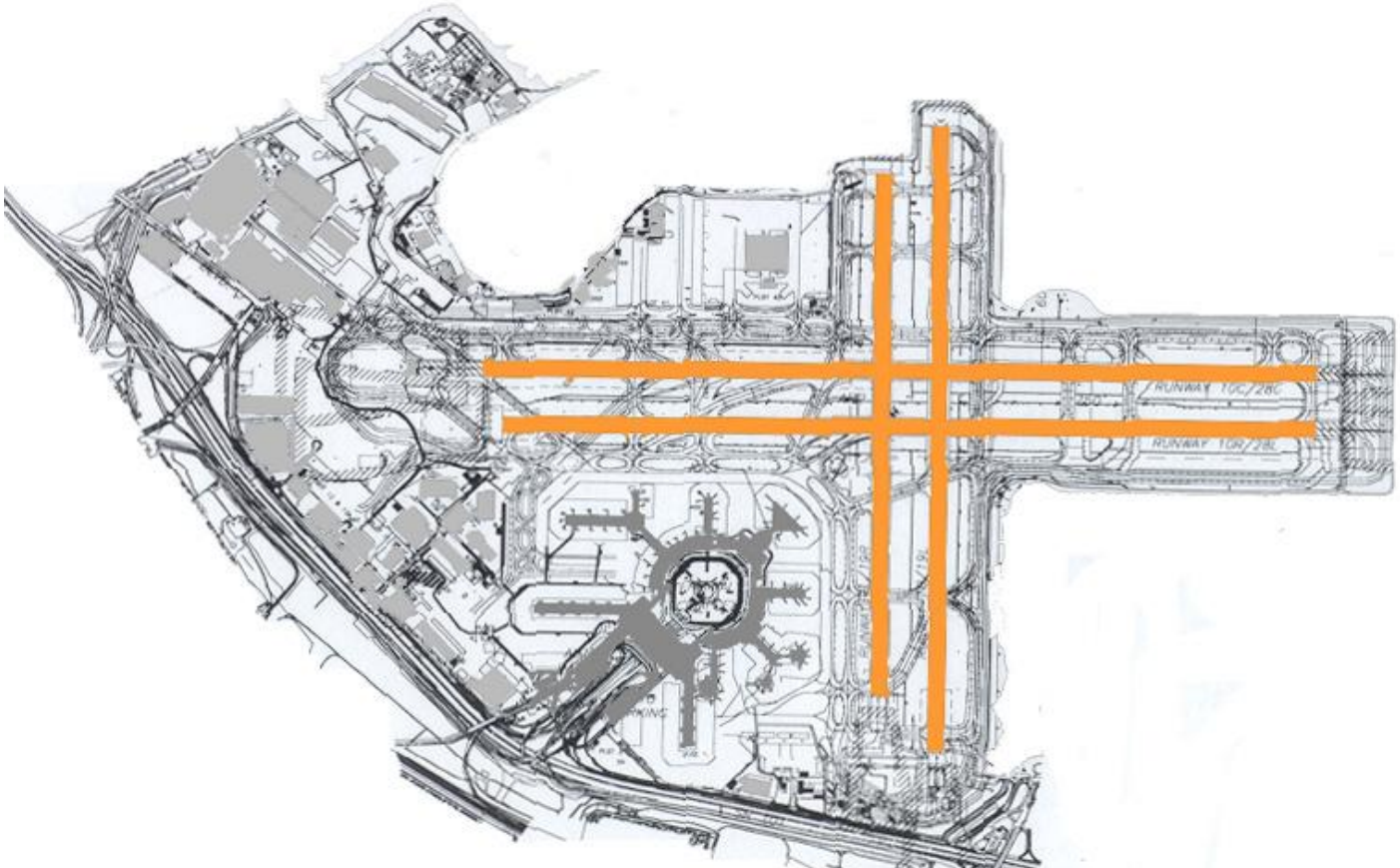
AW-1: Maintain Runway Use in Reduced Visibility



Runway Options

San Francisco International Airport
runway reconfiguration program

No Build



Slot Controls & Technology as a No-Build Solutions

Slot Controls

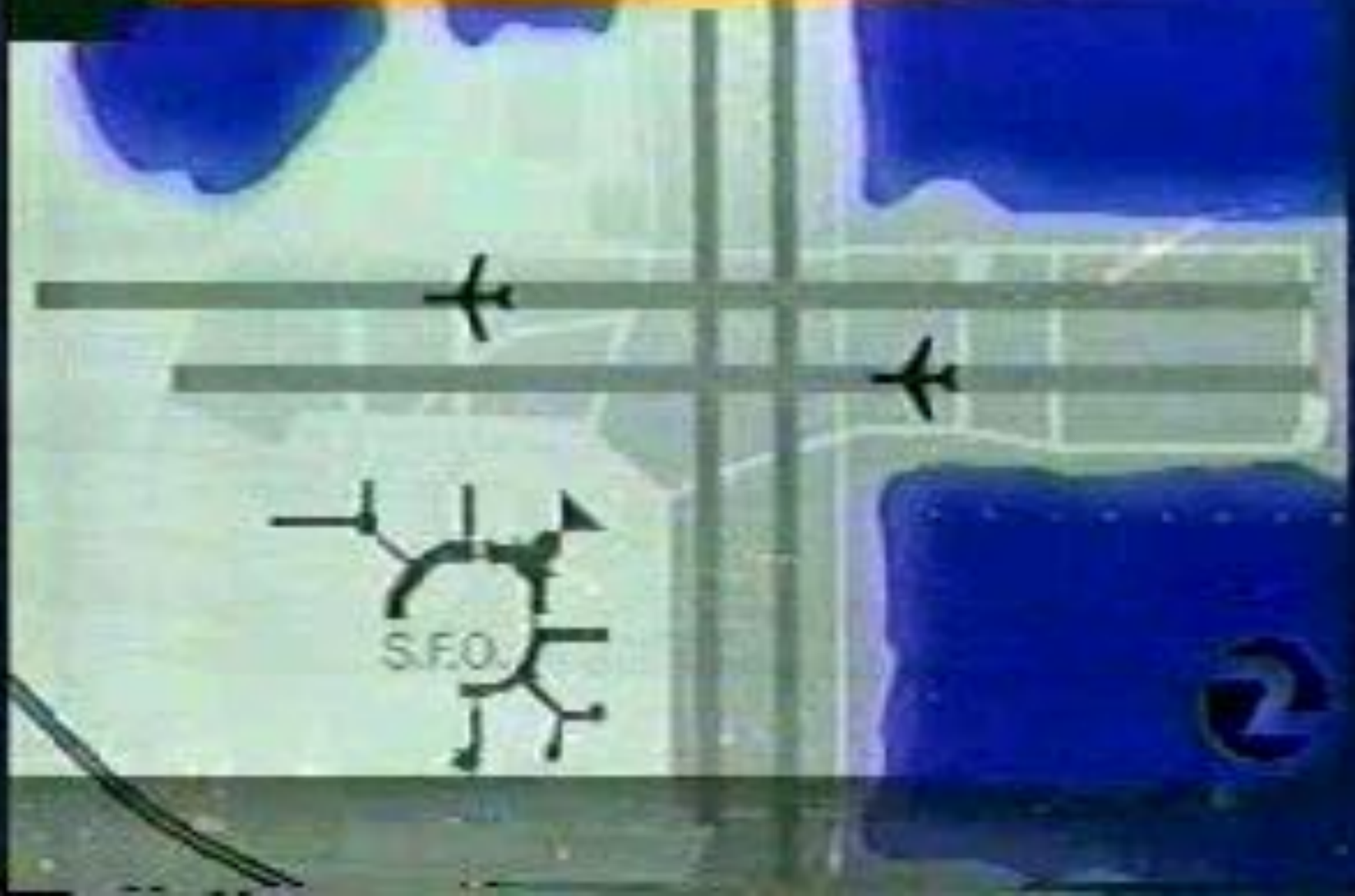
- Arrival capacity would be limited to 30 flights/hour
- Equivalent to post 9/11 operations for the future
  - Would limit jobs, revenues, local economy and travel options

Technology

- Could increase arrival capacity by 5-10 operations per hour


WAKE TURBULENCE

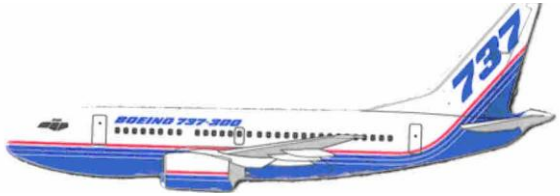
WAKE TURBULENCE



Aircraft In-Trail Spacing Requirements

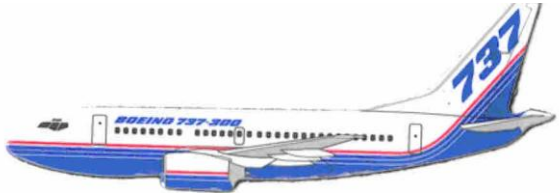
San Francisco International Airport
runway reconfiguration program

2 aircraft = 256 seats



128 seats

3 miles



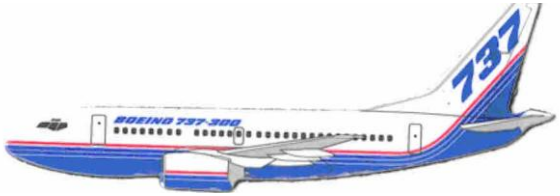
128 seats

2 aircraft = 314 seats
22% increase

186 seats
45% more seats

4 miles

33% more distance



128 seats

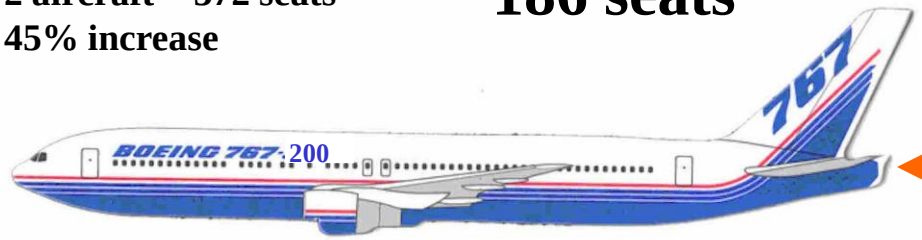
2 aircraft = 372 seats
45% increase

186 seats

4 miles

33% more distance

186 seats



2 aircraft = 334 seats
34% increase

216 seats
68% more seats

5 miles

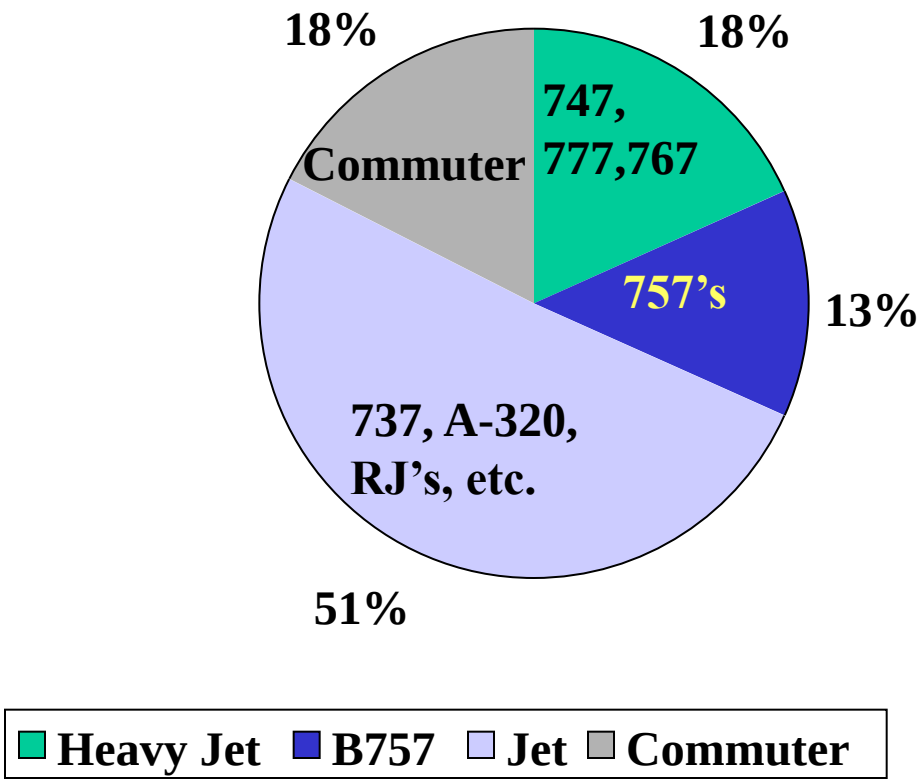
66% more distance

128 seats

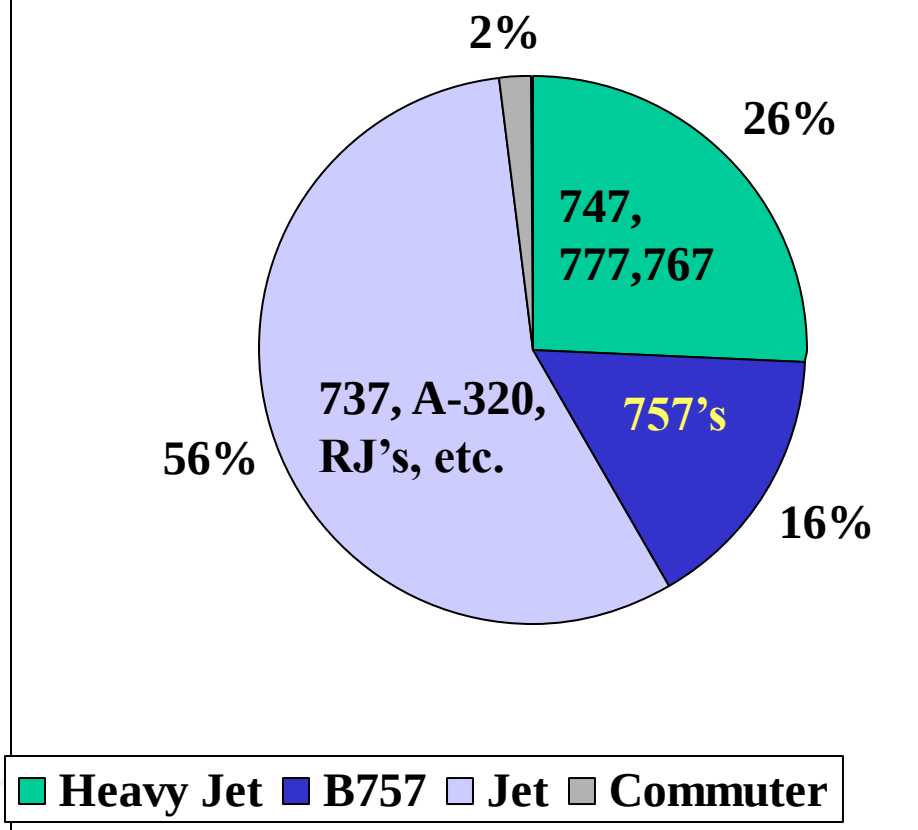
SFO Aircraft Fleet Mix

San Francisco International Airport
runway reconfiguration program

SFO 1999 Aircraft Fleet Mix



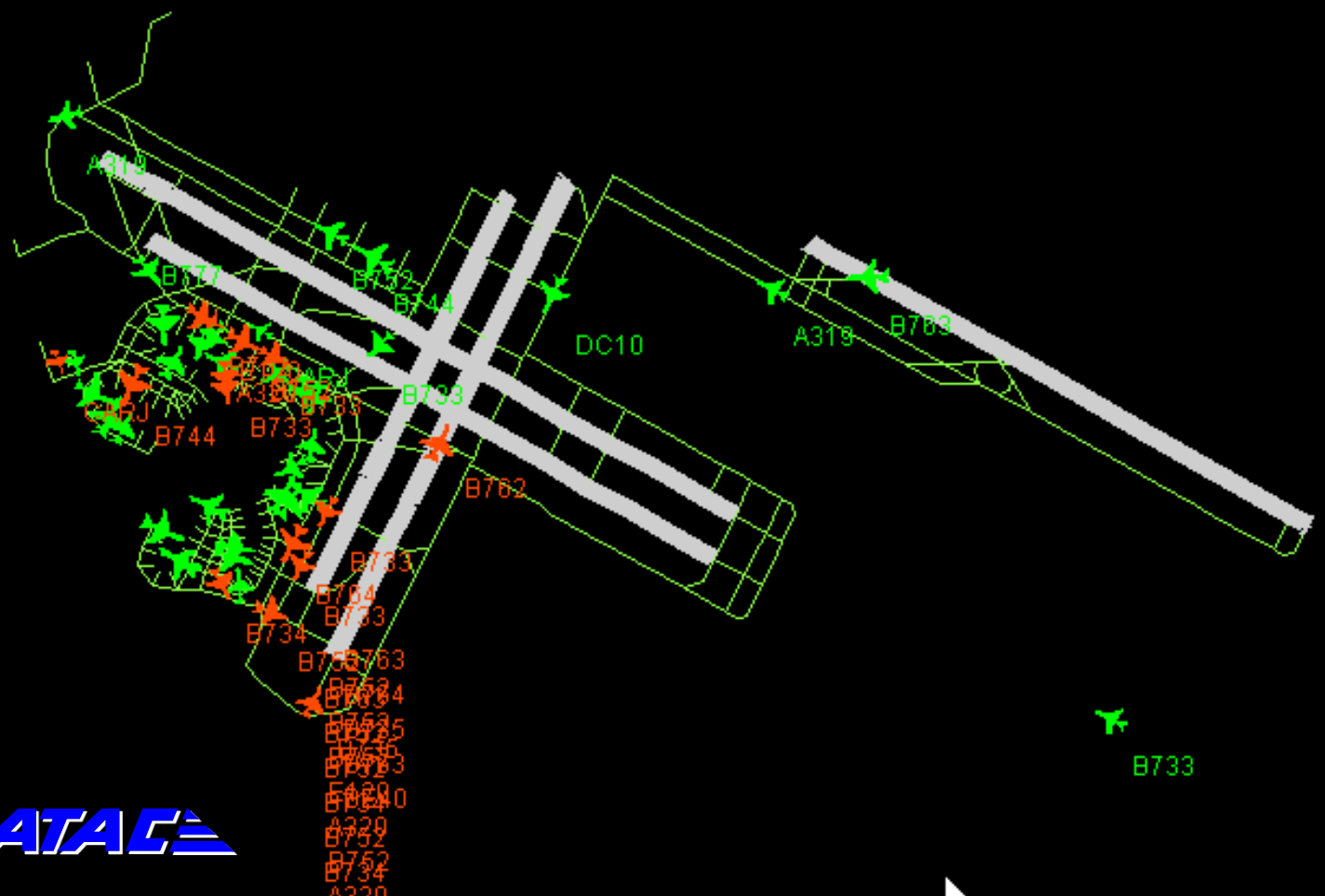
SFO 2020 Aircraft Fleet Mix



West Plan IFR Comparison

SFO A-3 West Plan

Poor Weather 60 Arrivals Per Hour

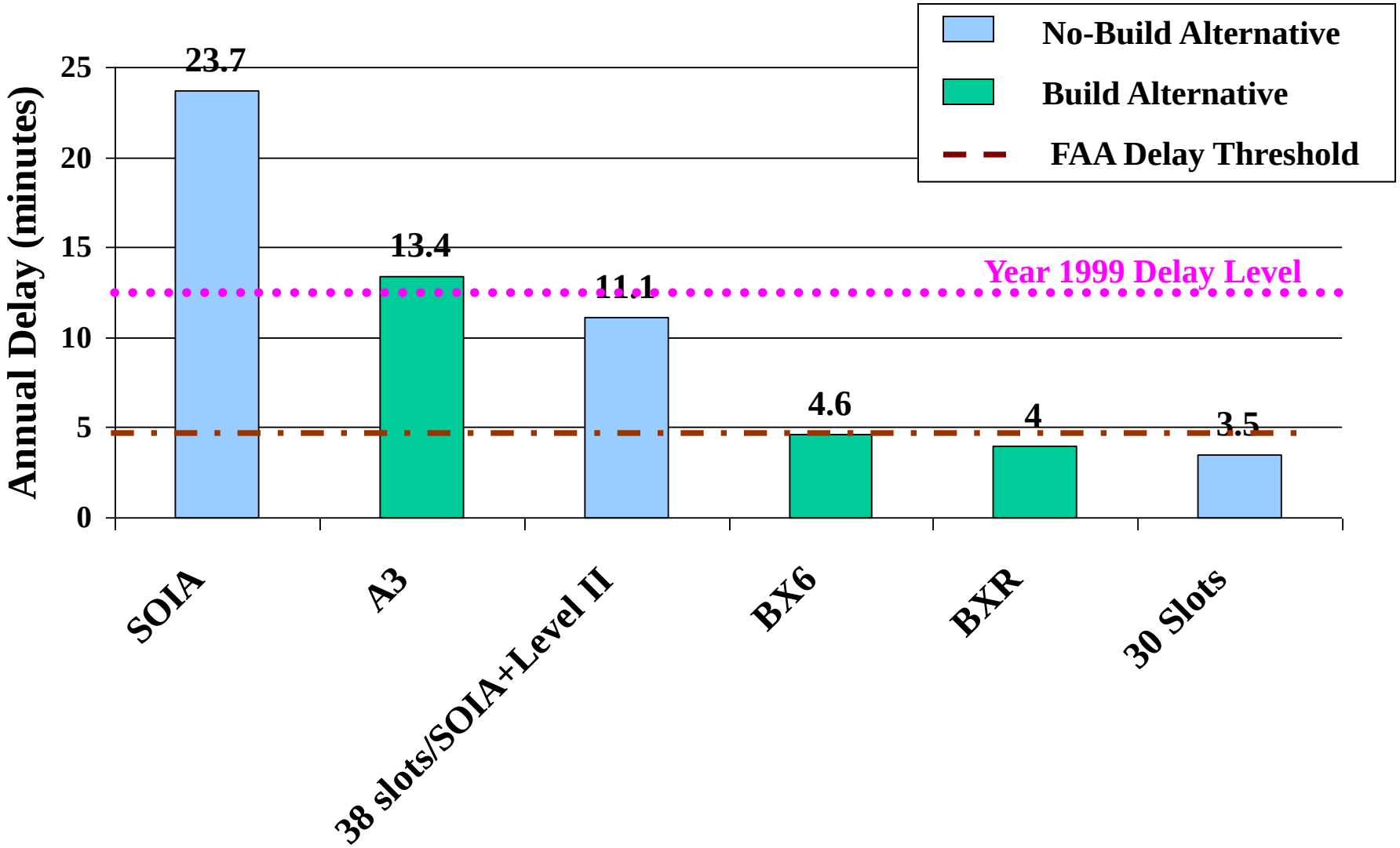


West Plan IMC Comparison

San Francisco International Airport
runway reconfiguration program

SFO BXR West Plan

All Weather 60 Arrivals Per Hour

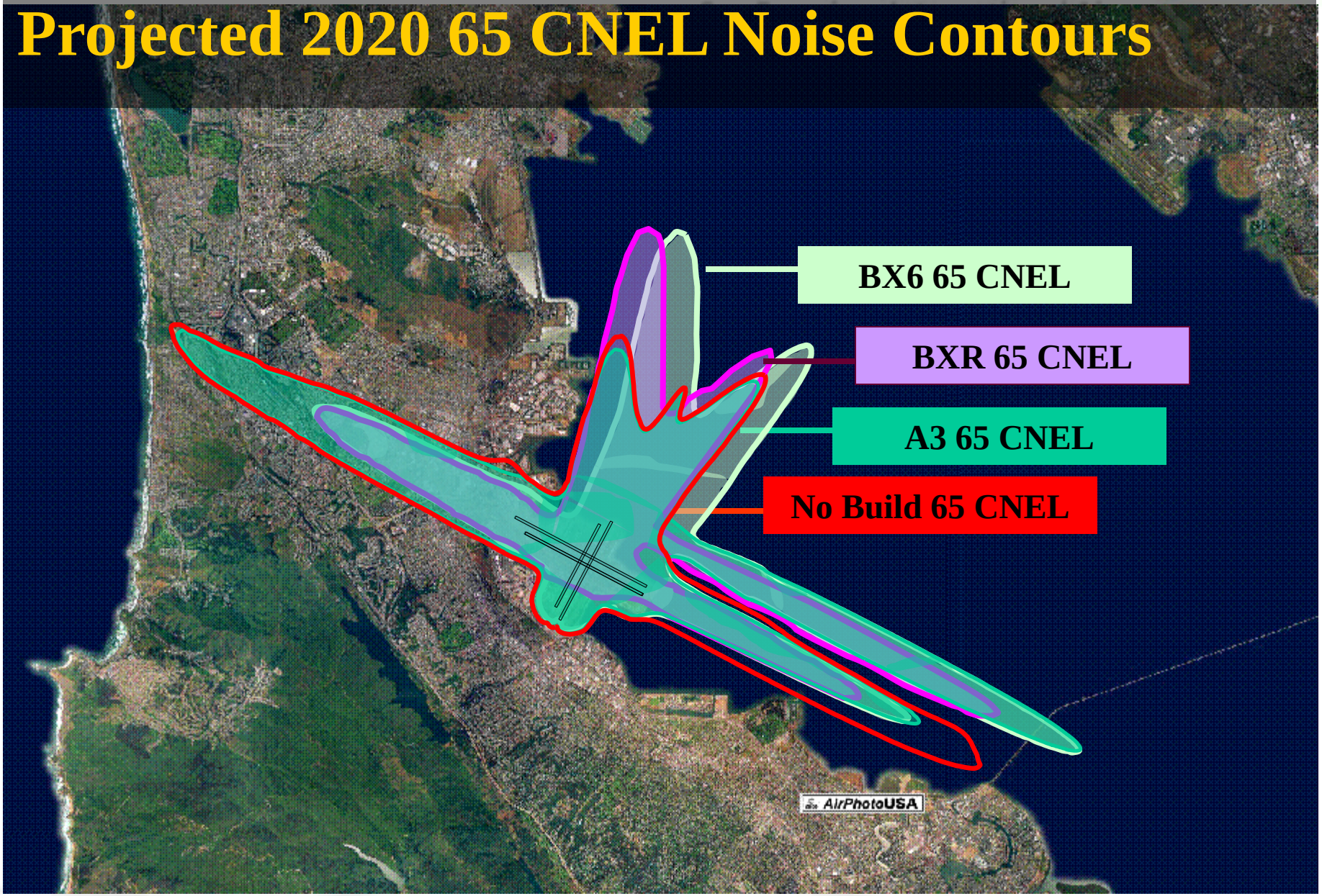

No-Build Alternative
Build Alternative
FAA Delay Threshold
Annual Delay (minutes)
25
20
15
10
5
0
23.7
13.4
11.1
4.6
4
3.5
Year 1999 Delay Level
SOIA
A3
38 slots/SOIA+Level II
BX6
BXR
30 Slots

Annual Delay by Weather

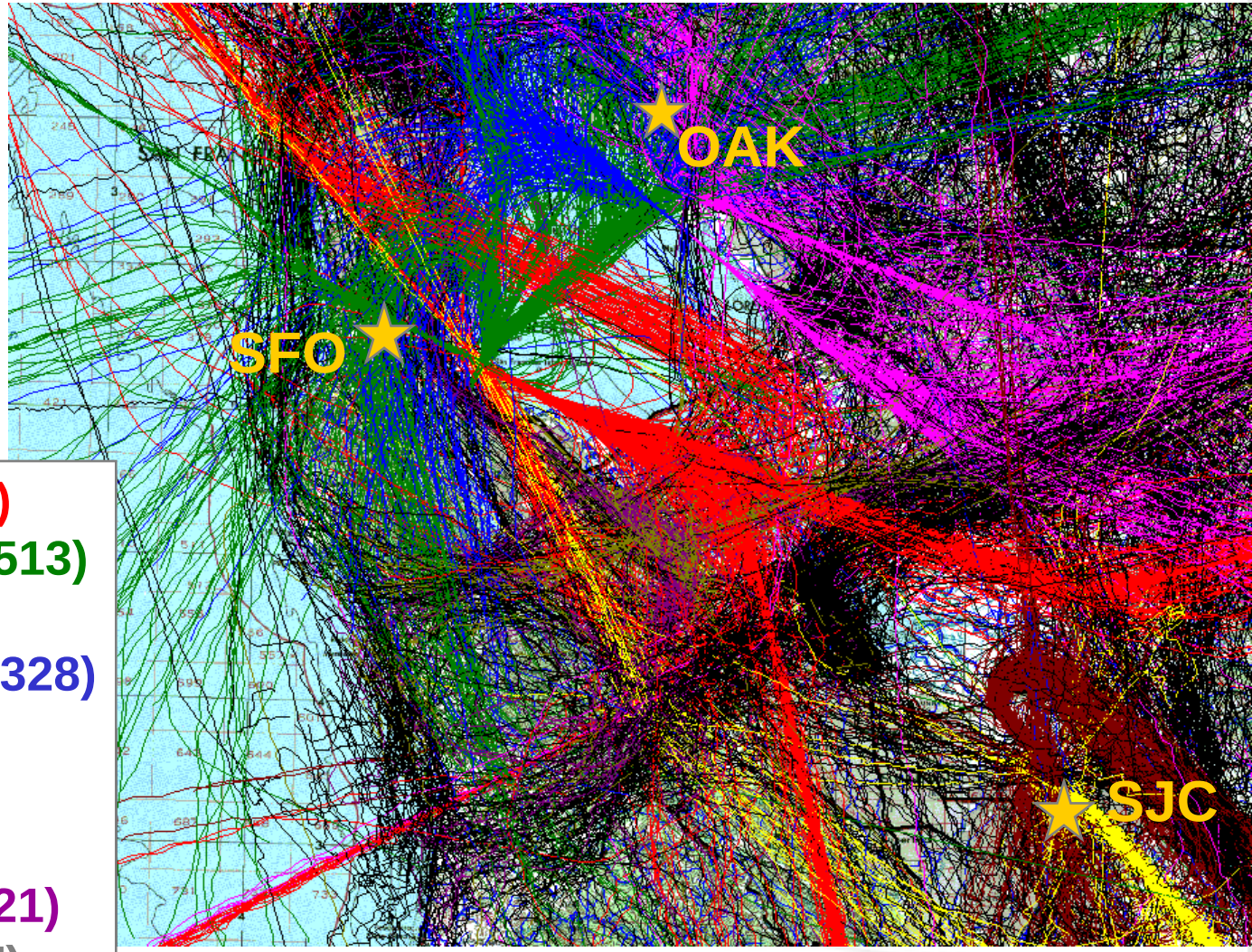
San Francisco International Airport
runway reconfiguration program

	Year 2020		
	Avg. Annual Delay	**Avg. Good Weather Delay**	**Avg. Adverse Weather Delay**
No Build Scenarios			
SOIA/Constrained	23.7	6.8	68.9
SOIA/Constrained with Technology	19.0	6.8	51.6
30 Slots	3.5	2.5	6.3
38 Slots + PRM/SOIA	14.5	3.7	43.4
38 Slots with ADV. Tech	11.1	3.7	30.8
Build Scenarios			
A-3	13.4	4.4	45.6
BX-R	4.0	2.0	8.6
BX-6	4.6	2.1	12.8

Projected 2020 65 CNEL Noise Contours



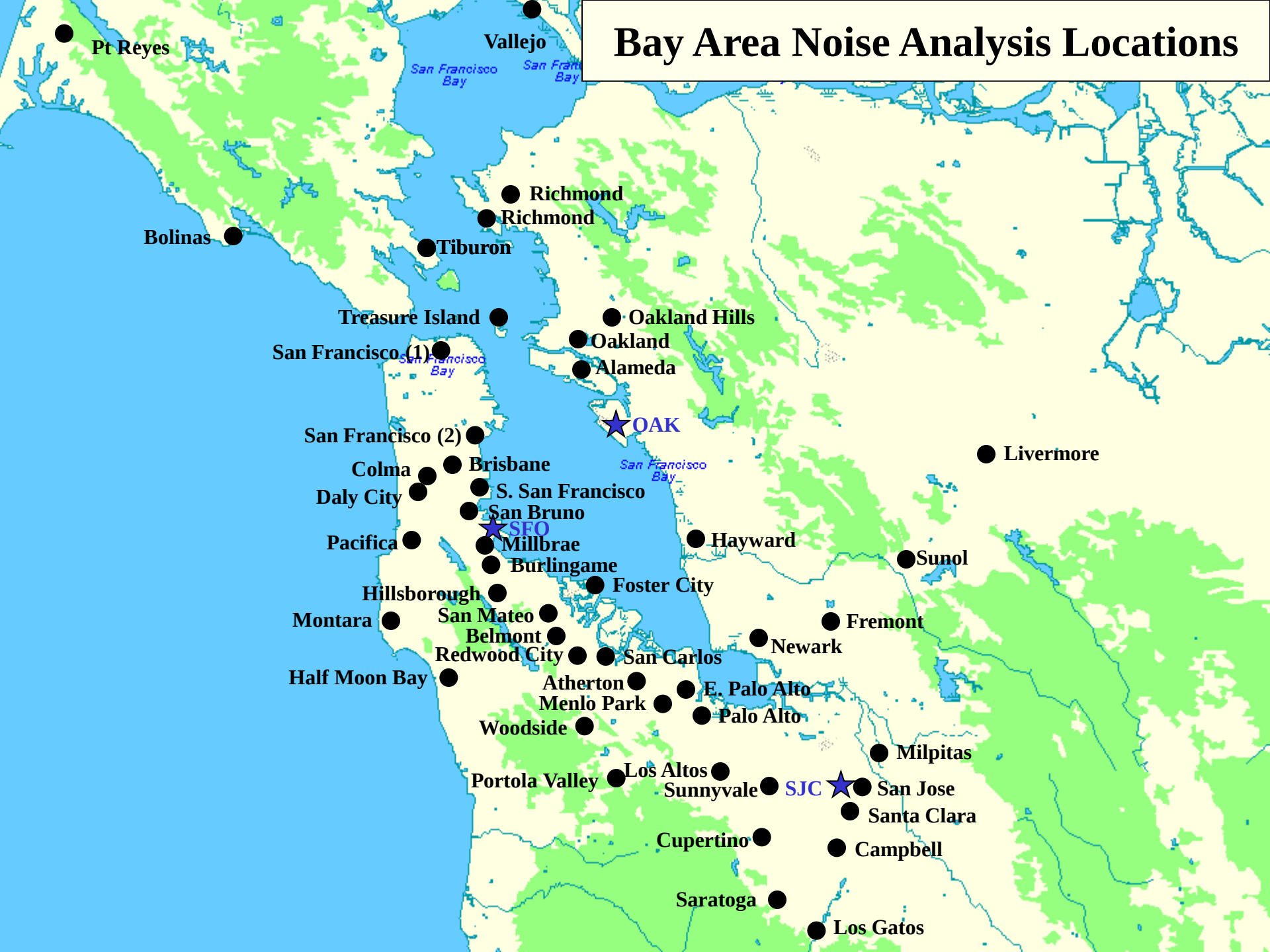
A Typical Day Over the Bay Area



- SFO Arrivals (515)
- SFO Departures (513)
- OAK Arrival (358)
- OAK Departures (328)
- SJC Arrivals
- SJC Departures
- SQL Arrivals (7)
- SQL Departures (21)
- Other Airport (907)

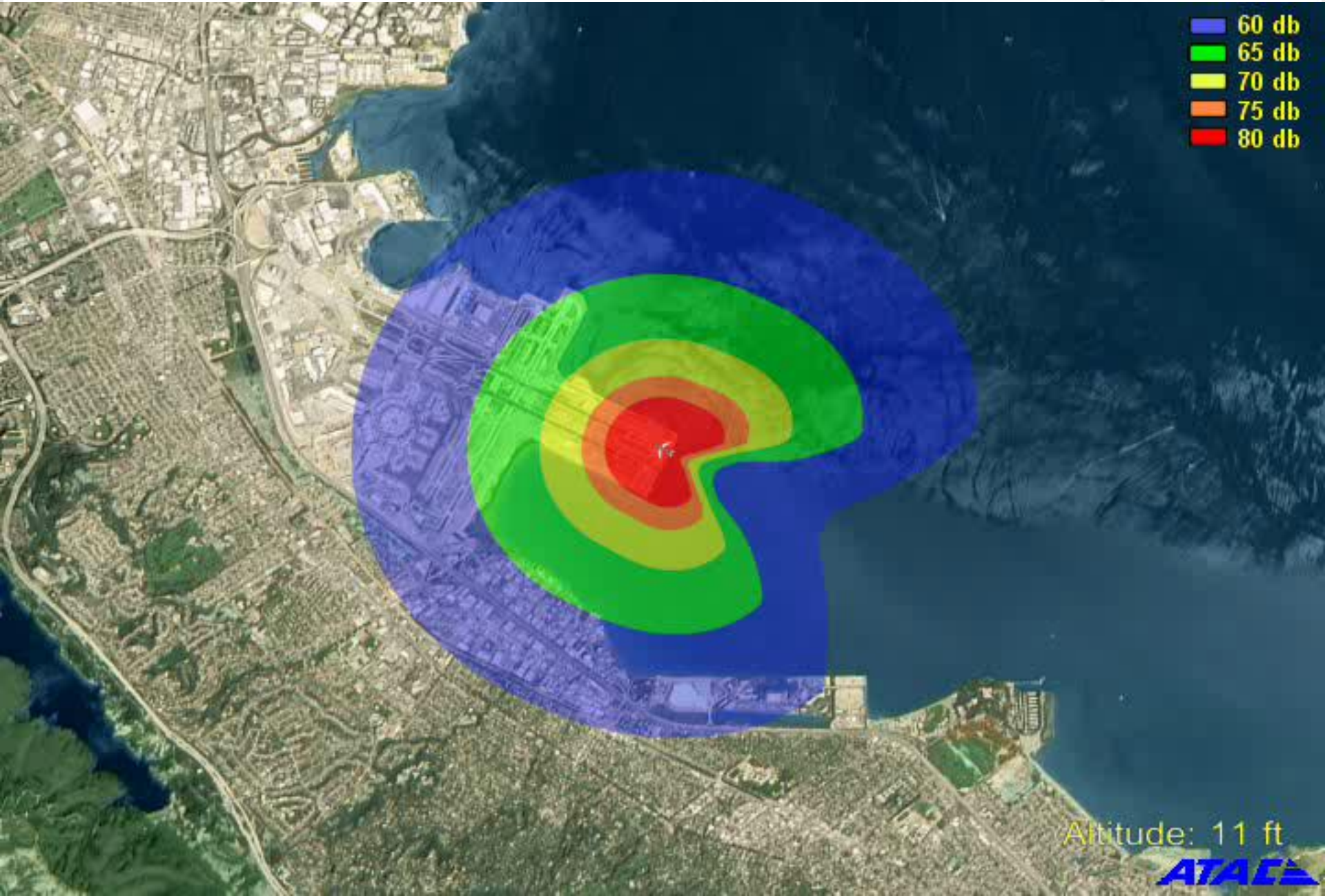
West Plan Conditions, 12/16/00 (24 hours)

Bay Area Noise Analysis Locations



Visual example of single event noise (Lmax)

SFO
San Francisco International Airport

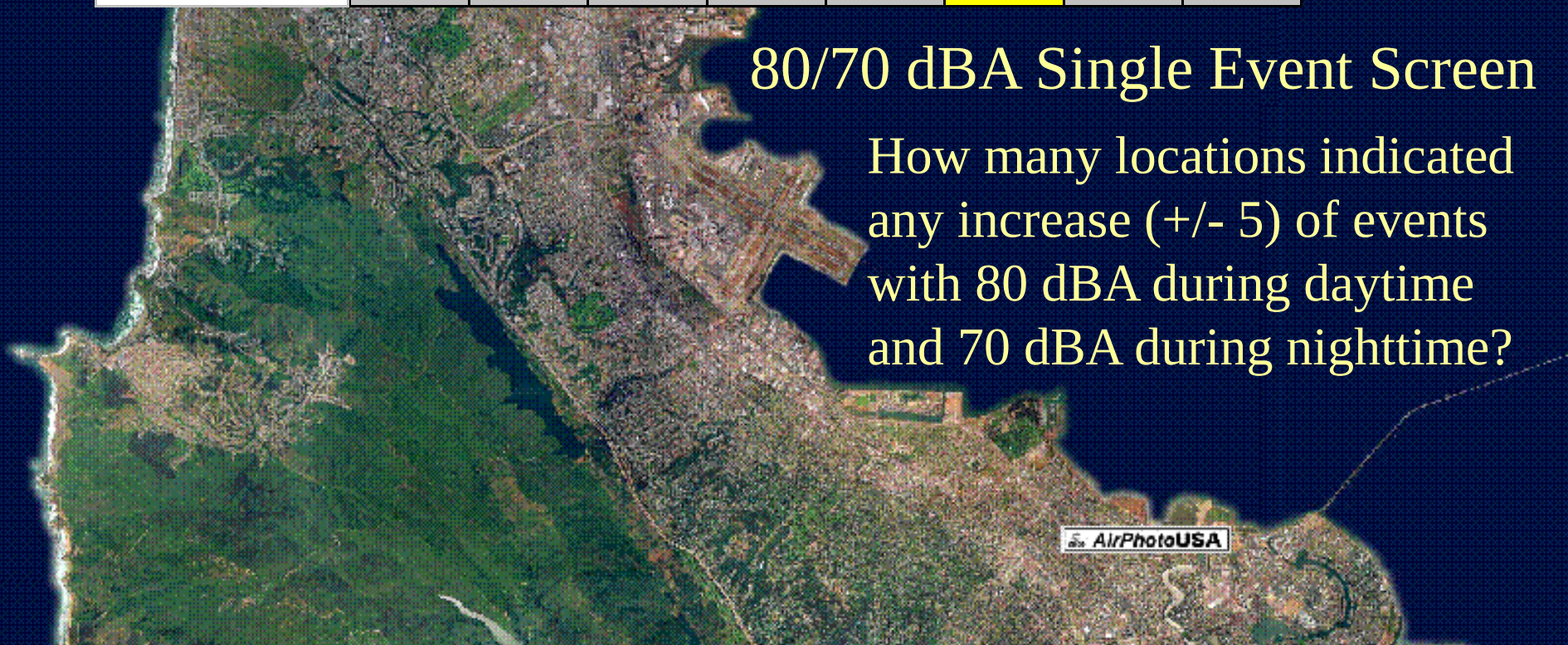


Visual example of single event noise (Lmax)

SFO
San Francisco International Airport

ATAC

Change in Number of Aircraft Events over 80 dBA day, over 70 dBA night in 2015								
Noise Analysis Locations	Difference from No Build Constrained w/ Technology							
	Alt2-30		A-3		BX-R		BX-6	
	Day	Night	Day	Night	Day	Night	Day	Night
H3 Burl. Marriot	58	-2	47	2	-1	-41	0	-10
SFO 20 Daly City	0	0	0	0	0	0	0	0
SFO 12 Foster City	0	-2	0	-16	0	-16	0	-16
G70 Hunters Point	0	0	0	0	0	0	0	0
H4 Millbrae Clarion	11	-8	3	10	-49	-48	-48	-31
H5 Millbrae Resid.	0	3	0	-1	0	-11	0	1
H6 Millbrae Resid.	0	5	0	-1	0	-7	0	4
SFO 05 San Bruno	0	-1	0	0	-3	-16	-3	-16
SFO 23 San Fran. 2	0	-2	0	0	0	0	0	0
SFO 24 McCl Park	0	0	0	0	0	0	0	0
G36 Treas. Island	0	0	0	0	0	6	0	5



80/70 dBA Single Event Screen

How many locations indicated any increase (+/- 5) of events with 80 dBA during daytime and 70 dBA during nighttime?

Proposed Alternatives
(based on Year 2020)

San Francisco International Airport
runway reconfiguration program

(Based on 2020 projections)	1999		No Build/ SOIA	Alt 2 @ 30 slots + Tech	Alt 2 @ 38 slots + Better Tech	A3	BXR	BX-6
Objective 1: Reduce Delay								
Average Annual Delay (minutes per aircraft operation)	12.7		24.0	3.5	11.0	13.4	4.0	4.5
Objective 2: Reduce Noise								
Population within 65 Contour	9,932		20,649	15,257	18,647	14,692	5,490	5,495
Shift in Noise (Single Event)			No	Yes	Yes	Yes	No	No
Objective 3: Accommodate NLA								
Runway 1/19 Unrestricted ops	No		No	No	No	No	Yes	Yes
Runway 10/28 Unrestricted ops	No		No	No	No	Yes	Yes	Yes
Additional Considerations								
Fill Size (Acres)			Existing	Existing	Existing	390	940	660

Summary of Findings

- **SFO will be among the first US Markets for the Airbus A-380 (NLA) in 2006 and 2007.**
- **BX-R, BX-6 and Demand Management (30 Arrival Slots per hour) reduce delays to acceptable levels through year 2020.**
- **BX-R and BX-6 decrease noise and do not shift noise from one community to another.**
- **Demand Management and A-3 increases noise in Millbrae.**

Questions?

San Francisco International Airport
runway reconfiguration program

"Bummer of a birthmark, ~~Hal~~ ~~XXX~~ Matt"

E-mail: StopTheDelays.com Web: www.FlySFO.com/runways