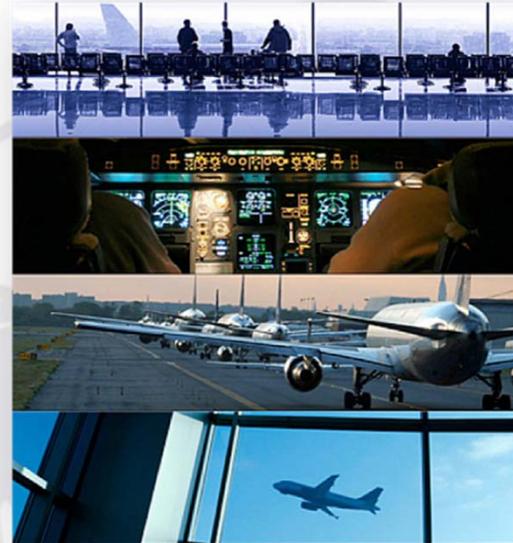


**Regional
Airport
System
Planning
Analysis**



2011 Update

**The San Francisco Bay
Area's New Game Plan**

May 21, 2012

8th National Aviation System Planning Symposium

May 20-22, 2012



Agencies Involved in the Study

Advisory Committee for:

- ◆ **Association of Bay Area Governments (ABAG)**
- ◆ **Bay Conservation and Development Commission (BCDC)**
- ◆ **Metropolitan Transportation Commission (MTC)**

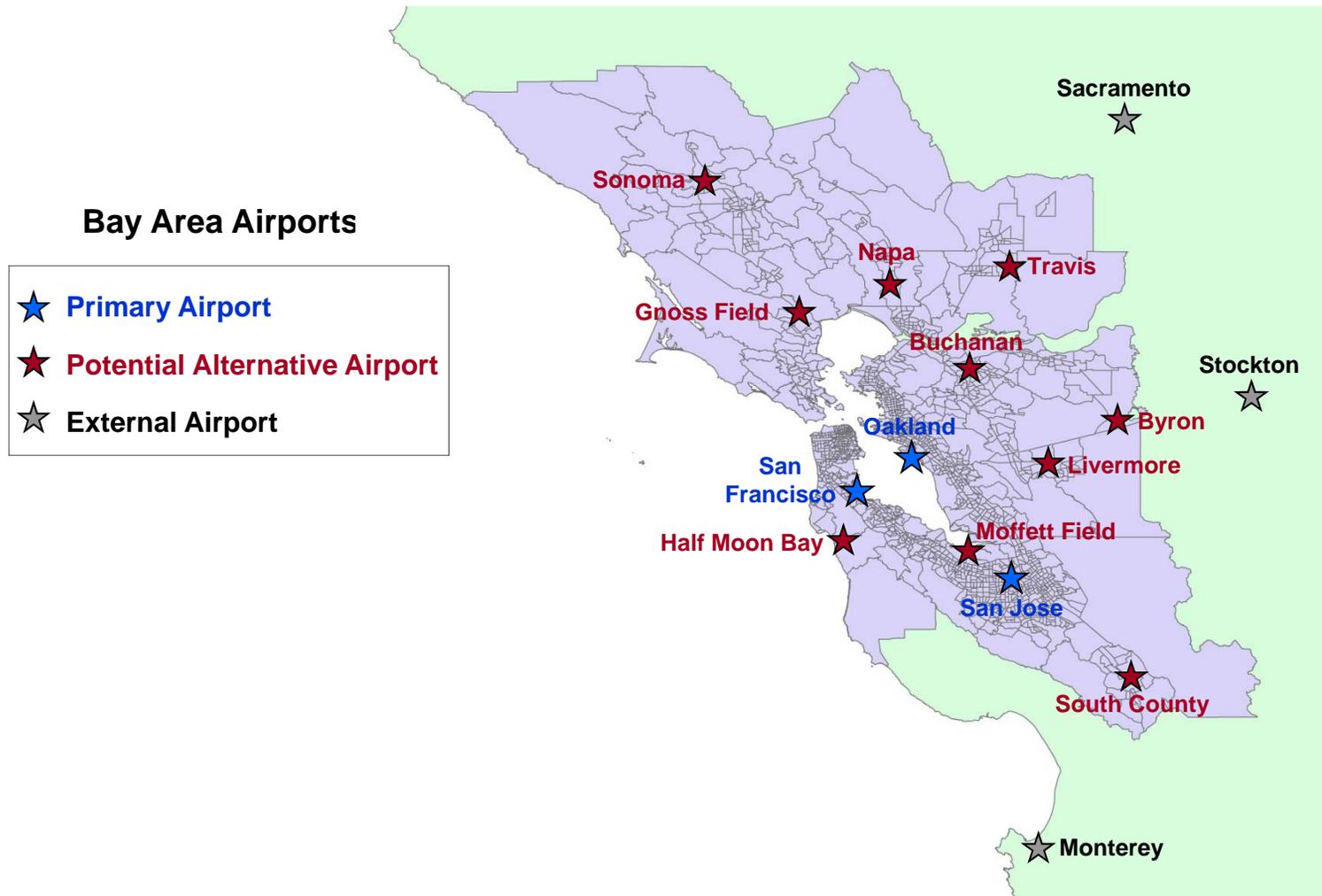
Includes Airport Representatives:

- ◆ **OAK**
- ◆ **SFO**
- ◆ **SJC**
- ◆ **SMF**
- ◆ **MRY**
- ◆ **SCK**
- ◆ **General Aviation (1)**

Includes FAA and Caltrans

Includes 3 additional County representatives for geographic balance and Bay Area Air Quality Management District (BAAQMD)

Bay Area Airport System



Study Objectives and Critical Questions

- ◆ **Evaluate Strategies for Accommodating the Region's Long-Term Aviation Demand Without Building Additional Runways at the Primary Airports**
 - What are the capacity limits of the primary Bay Area airports?
 - When are these limits likely to be reached?
 - Which Scenarios (including alternative modes) offer the greatest potential to allow the region to efficiently accommodate future aviation demand?
- ◆ **Involve Stakeholders and the Public to Aid in Building a Regional Consensus**
- ◆ **Develop Recommendations**
 - Includes proposed future Work Plan





Vision

- ◆ **Bay Area passengers will have a choice of more flights (or trains) at more airports**
- ◆ **There will be fewer weather-related flight delays**
- ◆ **Airport noise impacts on the regional population will be minimized**
- ◆ **Adverse air quality and climate change impacts will be minimized**
- ◆ **Surface travel to airports will take less time**
- ◆ **The airport system will support regional economic expansion**



Key Planning Issues

- ◆ **Delay Problems at SFO**

- Due to increased flights and poor weather

- ◆ **Increased Airport Noise Impacts**

- Due to increased flights and regional population growth
 - *SFO and SJC*

- ◆ **Growth in air emissions (GHGs/criteria pollutants)**

- Due to increased flights and air passenger vehicle trips to airports

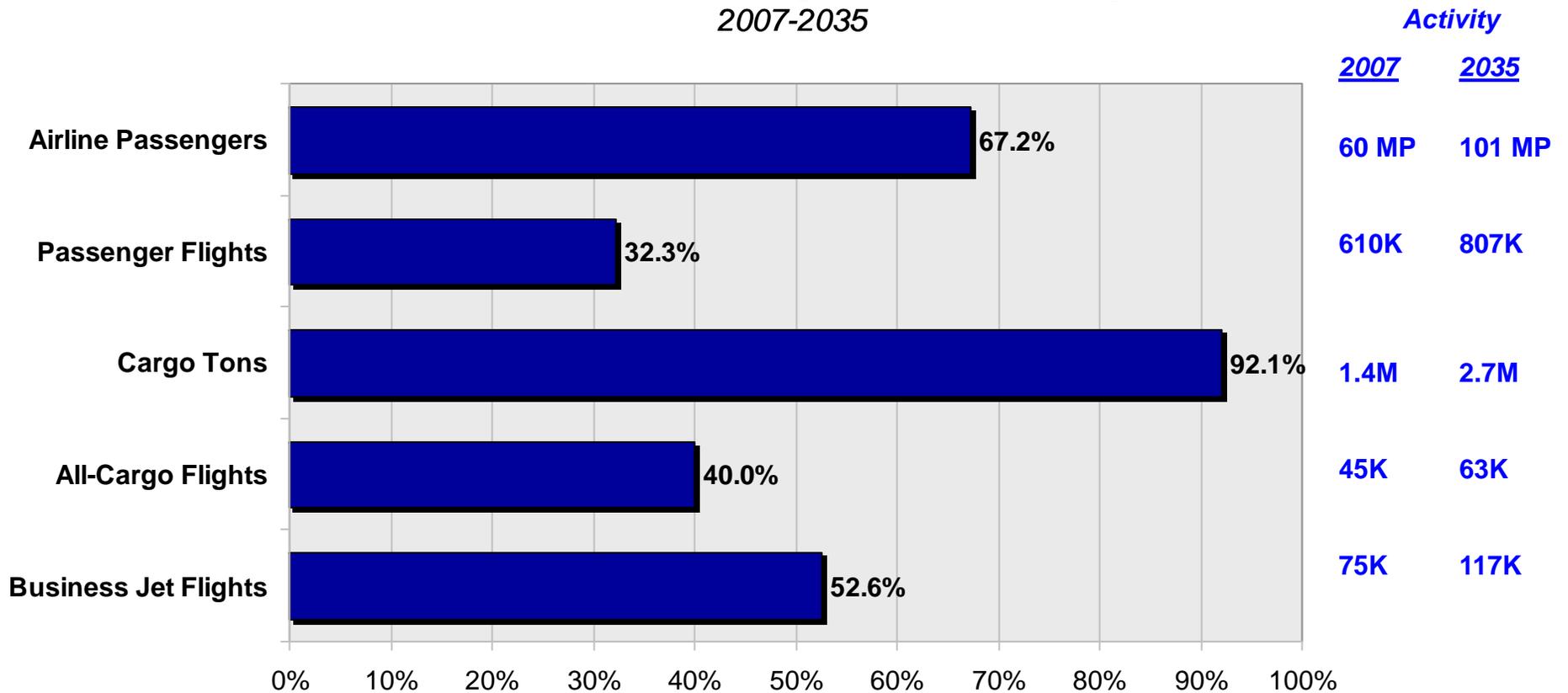


Each Scenario is Measured Against 7 Goals

- ◆ **Reliable Runways** *Can we reduce flight delays and passenger inconvenience?*
- ◆ **Healthy Economy** *Can the region serve future aviation demand and support a healthy economy?*
- ◆ **Good Passenger Service** *Can we provide better service to the region's major air travel markets?*
- ◆ **Convenient Airports** *Can we maintain or improve airport ground access times and reduce travel distance?*
- ◆ **Climate Protection** *Can we decrease Greenhouse Gas (GHGs) emissions from aircraft and air passengers traveling to airports?*
- ◆ **Clean Air** *Can we decrease air pollution from aircraft and air passengers traveling to airports?*
- ◆ **Livable Communities** *Can we avoid increasing the regional population exposed to aircraft noise?*

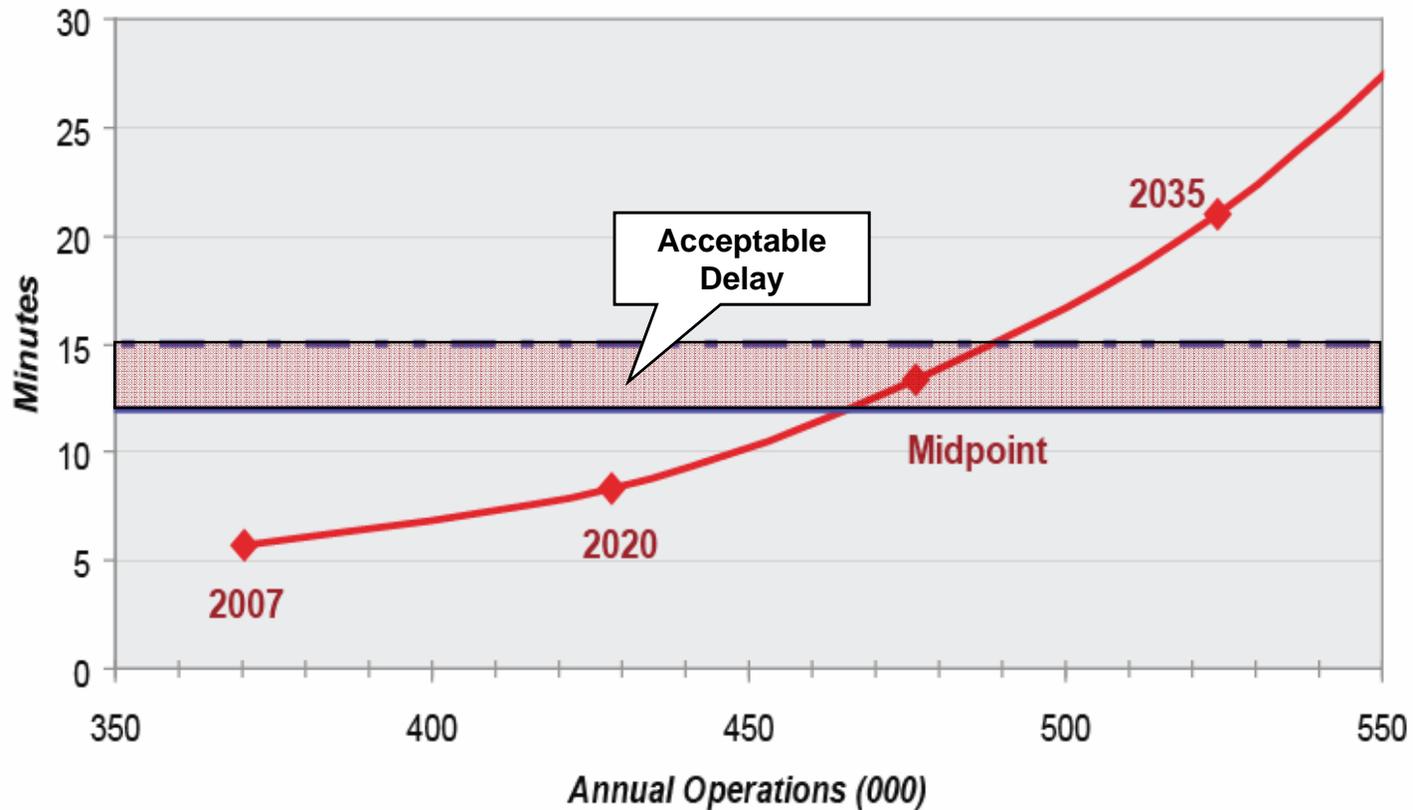
2035 Baseline Forecast of Bay Area Aviation Demand

**Forecast Percent Change and Annual Activity
2007-2035**



SFO Will Have Capacity Problems Well Before 2035

SFO Average Aircraft Delays



OAK average aircraft delay in 2035 is 3.5 minutes
SJC average aircraft delay in 2035 is less than 1 minute

Six Scenarios were Initially Analyzed to Serve 2035 Demand

◆ Airport Traffic Redistribution

- In response to delays at SFO, domestic traffic shifts from SFO to OAK and SJC through natural market forces

◆ Internal Alternative Airports

- Some Bay Area passengers are served at secondary airports in the Bay Area region (Sonoma County, Travis AFB, and Buchanan) reducing demand at the primary airports

◆ External Alternative Airports

- Service development at Sacramento, Stockton, and Monterey reduces passenger demand originating from outside the Bay Area region

◆ High-Speed Rail

- Proposed rail service to Southern CA diverts air passengers from planes to trains

◆ New ATC Technology

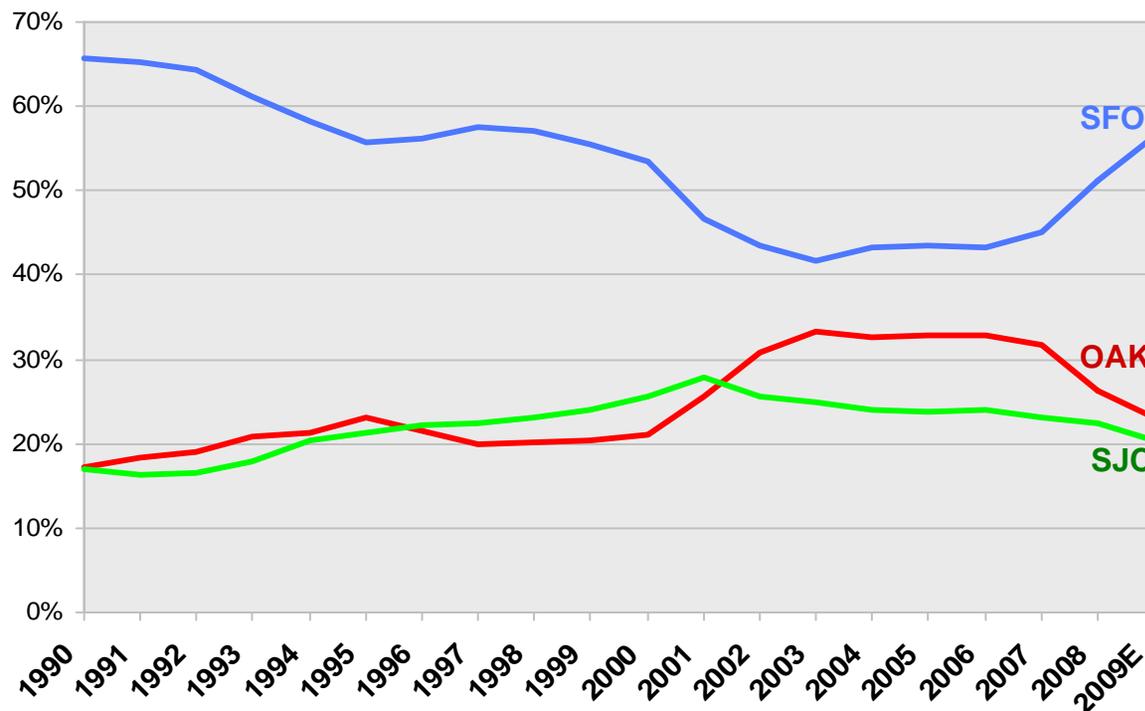
- FAA's NextGen technologies create more capacity during bad weather, reducing delays

◆ Demand Management

- Demand Management strategies at SFO reduce small aircraft operations during the most delay prone times of the day

Traffic Distribution-Getting more Flights to OAK and SJC depends on Airline Decisions

**Primary Airport Shares of Bay Area Domestic O&D Passengers
CY 1990 – CY 2009**

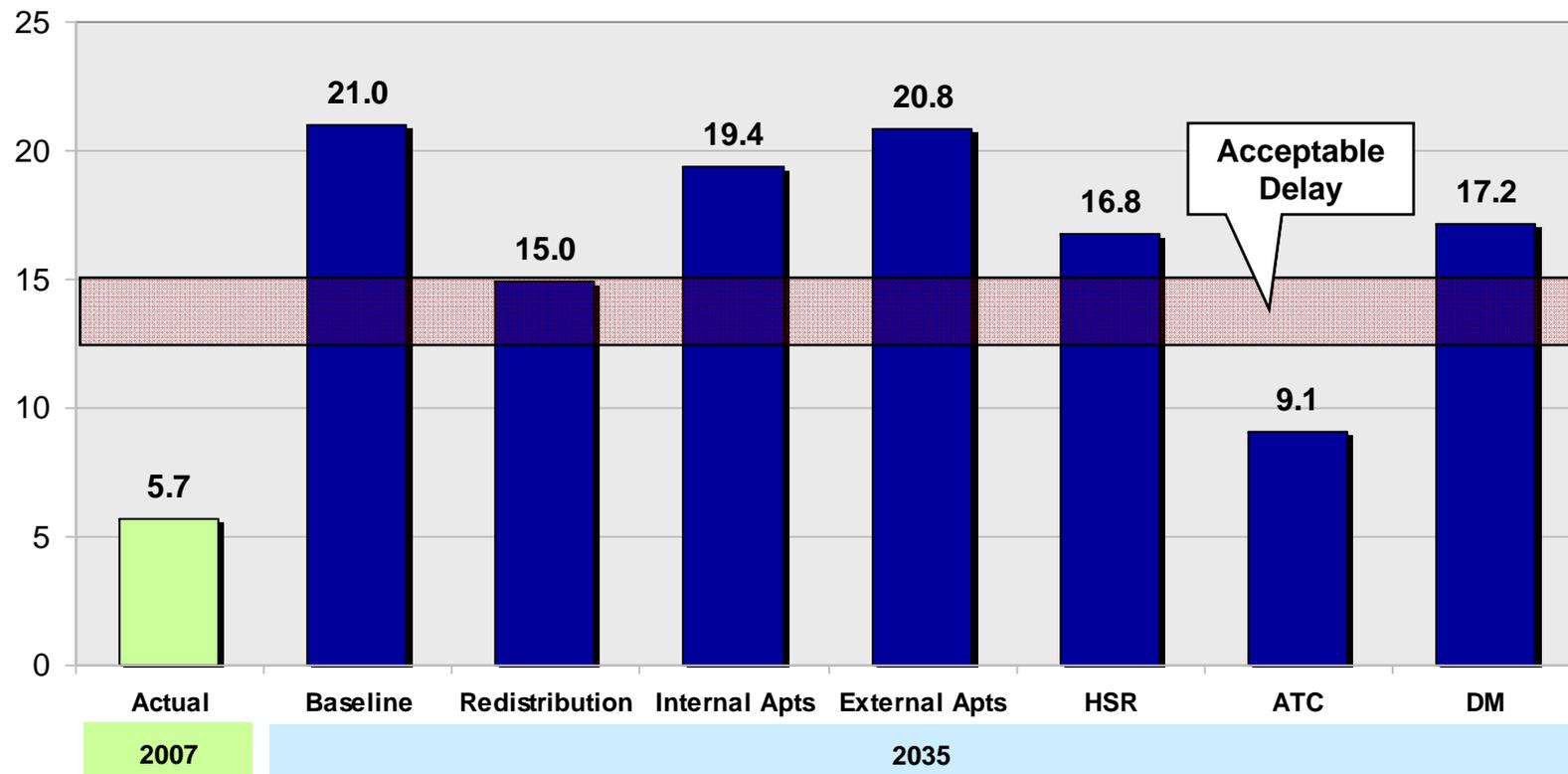


Year	Share of Bay Area Dom O&D Psgrs		
	OAK	SFO	SJC
1990	17.2%	65.6%	17.1%
1991	18.4%	65.2%	16.4%
1992	19.1%	64.3%	16.6%
1993	20.9%	61.2%	17.9%
1994	21.4%	58.3%	20.3%
1995	23.1%	55.7%	21.2%
1996	21.5%	56.1%	22.3%
1997	20.0%	57.5%	22.5%
1998	20.1%	57.0%	23.0%
1999	20.5%	55.5%	24.1%
2000	21.1%	53.4%	25.5%
2001	25.6%	46.6%	27.8%
2002	30.9%	43.4%	25.7%
2003	33.4%	41.6%	25.0%
2004	32.6%	43.3%	24.1%
2005	32.8%	43.4%	23.8%
2006	32.9%	43.2%	24.0%
2007	31.7%	45.1%	23.2%
2008	26.3%	51.2%	22.5%
2009E	23.1%	56.5%	20.4%

The 2007 Entry of Southwest Airlines, Virgin America and JetBlue Produced a Major Increase in SFO's Share of Bay Area Domestic Passengers

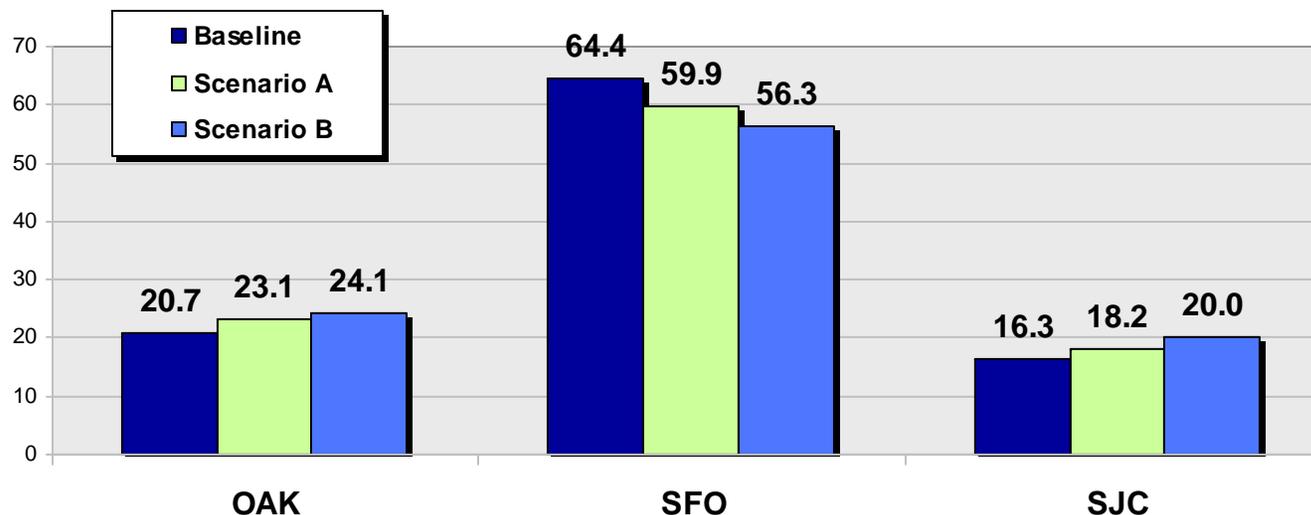
Reliable Runways: SFO Delays not Acceptable for Most Scenarios

Average SFO Aircraft Delays
(Minutes)



Next Step was to Combine Scenarios

Forecast Passengers by Airport and Scenario 2035



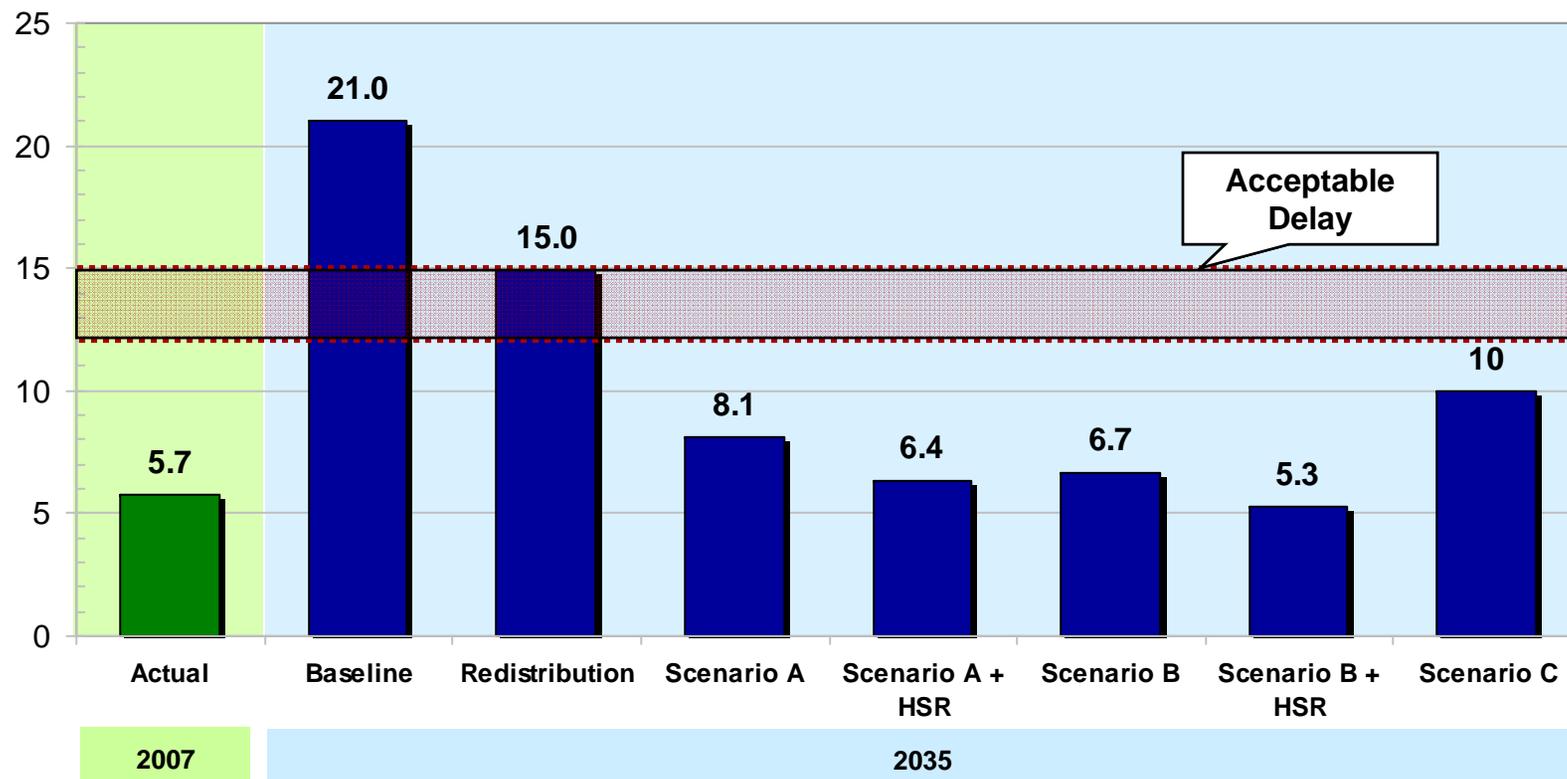
Scenario A/B Features:

- ◆ More Domestic Service @ OAK/SJC
- ◆ NextGen “Light”
- ◆ SFO Demand Management
- ◆ Potential High-Speed Rail

Share of Bay Area Passengers			
	OAK	SFO	SJC
Baseline	20.4%	63.5%	16.1%
Scenario A	22.8%	59.2%	18.0%
Scenario B	24.0%	56.1%	20.0%

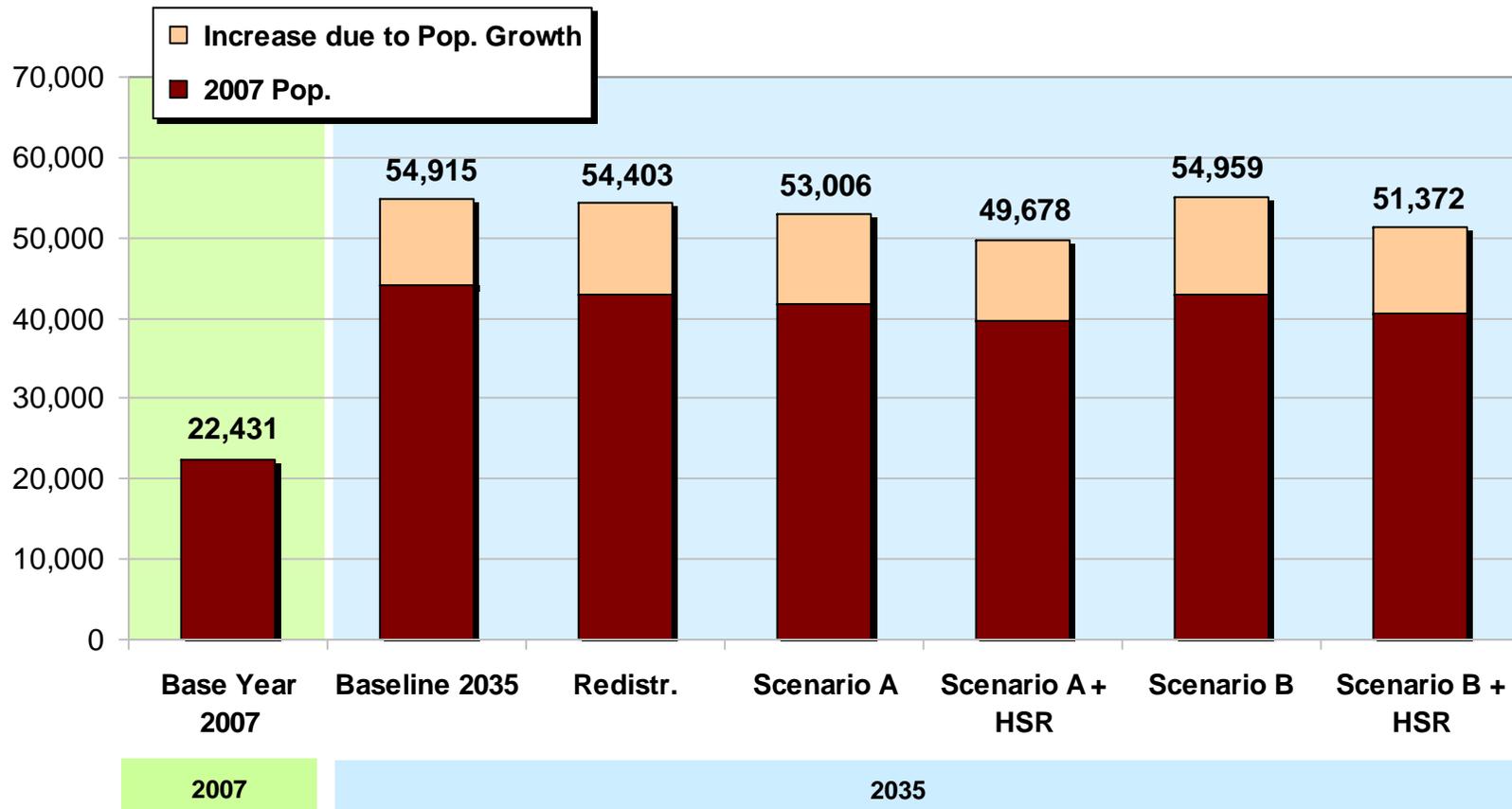
Reliable Runways Goal – SFO Average Aircraft Delays Minimized

**Average Aircraft Delays at SFO
(Minutes)**



Livable Communities Goal-Local land use policies add 10,000 to 12,000 People to the 65 CNEL Population Counts

Liveable Communities Population within 65 CNEL



All New Scenarios Produce Better Goal Results than Original Scenarios

Percent Change vs. 2035 Baseline

Goal:							
Scenario:	Economy	Reliable Runways	Good Service	Convenient Airports	Climate Protection	Clean Air	Livable Communities
Metric:	Average Aircraft Delay	Average Aircraft Delay	Flight Frequency in Top 15 O&D Markets	Average Ground Access Time	Green House Gases (CO2)	Hydrocarbons (Nox+VOCs)	Population in 65 CNEL
Scenario A	-61.4%	-61.4%	1.4%	-1.5%	-4.2%	-7.8%	-5.1%
Scenario A+HSR	-69.8%	-69.8%	11.0%	-3.3%	-8.7%	-11.9%	-9.8%
Scenario B	-68.2%	-68.2%	5.6%	-3.5%	-4.8%	-8.4%	-2.7%
Scenario B+HSR	-74.8%	-74.8%	15.2%	-5.3%	-9.2%	-12.5%	-7.9%

Impact vs. Baseline	Improvement Criteria	
	Aircraft Delay	All Other
● High Impact	>= 50%	>= 10%
● Medium Impact	15 to 49%	5 to 9%
● Low Impact	< 15%	< 5%

But Still Some Significant Impacts Compared to 2007 Even with Preferred Scenario

- ◆ **Regional Noise Exposure (population, 65 CNEL noise contour)**
 - Baseline: +93%
 - Scenario B: + 78% to 88% (with/without HSR)
- ◆ **Air Emissions (Smog)**
 - Baseline: +43%
 - Scenario B: + 26% to 31% (with/without HSR)
- ◆ **Air Emissions (GHGs)**
 - Baseline: +53%
 - Scenario B: +39% to 46%(with/without HSR)

A wide, horizontal photograph of an airport terminal with people and check-in counters, overlaid with a semi-transparent blue banner containing the title text.

Also Some Major Uncertainties with New Game Plan

- ◆ **Redistribution, Internal Airports and External Airports**
 - Depends on airline decisions and passenger airport choice

- ◆ **Air Traffic Control Technologies**
 - Assumed availability of an optimal set of technologies
 - Timing, funding, equipage and airline acceptance are uncertain

- ◆ **High-Speed Rail**
 - Uncertainty of funding, ultimate implementation, and airline competitive response

- ◆ **Demand Management**
 - Limited U.S. airport experience (e.g., congestion pricing)
 - Effect of Demand Management at SFO on shifting traffic to OAK/SJC



Future Work Activities

- ◆ **Tracking Reports (runway congestion and delays)**
- ◆ **Air Passenger Survey (airport catchment area demand)**
- ◆ **NextGen Legislative Advocacy (funding and new coalitions)**
- ◆ **FAA Bay Area Airspace Study (monitor study)**
- ◆ **Regional marketing program for OAK/SJC (increase share)**
- ◆ **Demand Management programs (find successful programs)**
- ◆ **Regional land use policies (revise to reduce noise impacts)**



Issues and Recommendations, 1-3

- ◆ **#1: Changing conditions that alter long-range planning assumptions**
 - Regularly track trends in air passengers, air cargo, and runway delays
 - Regional forecasts should be updated more frequently

- ◆ **#2: Lack of regional mechanisms to influence airline decisions about airport service**
 - Regional Plans support the traffic redistribution to OAK/SJC in Scenario B
 - RAPC should explore ways to engage airlines in regional capacity discussions
 - Develop regional marketing program to expand use of OAK/SJC

- ◆ **#3: Difficulty implementing airport-originated demand management programs**
 - Future SFO airline agreements should not preclude congestion pricing
 - Bay Area may need to advocate for FAA intervention if SFO delay programs not enough



Issues and Recommendations, 4-5

- ◆ **#4: Uncertainty regarding the timing and effectiveness of new ATC technologies**
 - FAA should provide regular updates to RAPC on NextGen progress and implementation timeframes
 - RAPC should become more active in legislative advocacy for NextGen funding and early Bay Area applications
 - RAPC should explore forming advocacy coalitions with other regions experiencing major runway congestion problems

- ◆ **#5: Uncertainty regarding future HSR Plans and effectiveness of HSR**
 - RAPC should periodically review new information on effectiveness of HSR in diverting air passengers
 - RAPC should encourage discussions between HSR Authority and airlines regarding joint ticketing arrangements



Issues and Recommendations, 6-7

- ◆ **#6: Uncertainty regarding future role of some alternative airports**
 - RAPC may wish to update feasibility study for Travis AFB if air passenger and air cargo demand increases faster than forecasted
 - Protect aviation capability of Moffett Federal Airfield until further studies are conducted (reliever general aviation airport or limited air cargo)
 - Continue to involve Sacramento, Stockton, and Monterey airports in long-range Bay Area planning process

- ◆ **#7: Projected increase in community noise exposure (2007-2035)**
 - Airports should confirm long-term noise trends forecasted in this study
 - Regional agencies should re-examine Focus Growth projections to lower future population exposure to airport noise
 - Airports may need more detailed studies of noise mitigation options if RAPC's long-range projections are accurate