

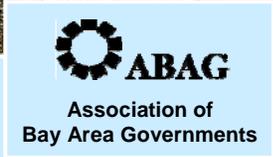
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LONG-TERM FORECASTS OF BAY AREA AVIATION DEMAND

Prepared for:
Regional Airport Planning Committee



March 27, 2009

Passion. Expertise. Results.

Phase 2 Work Scope Objectives

- 1. Identify and Analyze the Effectiveness of Alternative Strategies for Accommodating the Bay Area's Long-Term Aviation Demand Without Additional Runways at the Primary Airports**
- 2. Involve Stakeholders and the Public to Aid in Building a Regional Consensus On How to Respond to Congestion at the Primary Bay Area Airports**
- 3. Assist RAPC in Developing a Vision and Implementation Plan for the Region's Aviation System**

Technical Study Team & Roles

SH&E

an ICF International Company

Project Management
Demand Forecasts
Demand Management
Alternative Airports

FTA

Airport Capacity
ATC Technologies

HMMH



Noise Impacts

**Airport Systems
Consulting**

Demand Forecasts
Demand Management
Alternative Airports
High Speed Rail

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Air Quality
Climate Change

**ICF Jones &
Stokes**
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Meeting Facilitation
Biological Resources

URS

Airport Infrastructure
Costs

BW Research

Telephone Survey

Critical Study Questions

- ◆ **What are the capacity limits of the primary Bay Area airports?**
- ◆ **When are these limits likely to be reached?**
- ◆ **What strategies offer the greatest potential to allow the region to efficiently accommodate future aviation demand?**

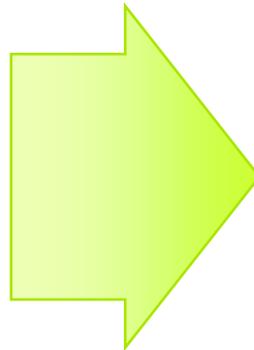
Topics

- 1. Air Passenger Trends Since the 2000 RASP**
- 2. Airline Passenger Forecasts**
- 3. Passenger Forecast Benchmarking**
- 4. Cargo Forecasts**
- 5. GA Forecasts**
- 6. Next Steps**

Scope of Baseline Forecast Task

PROJECT
OBJECTIVE

*Update 2000
RASP Forecasts*



◆ Activity Metrics:

- Commercial airline passengers
- Cargo volumes
- Aircraft operations (including GA) and fleet mix

◆ Planning Years:

- 2020 and 2035

◆ Multiple Scenarios:

- Base, High and Low

Development of a Forecast Tracking System is a Key Element of the Study

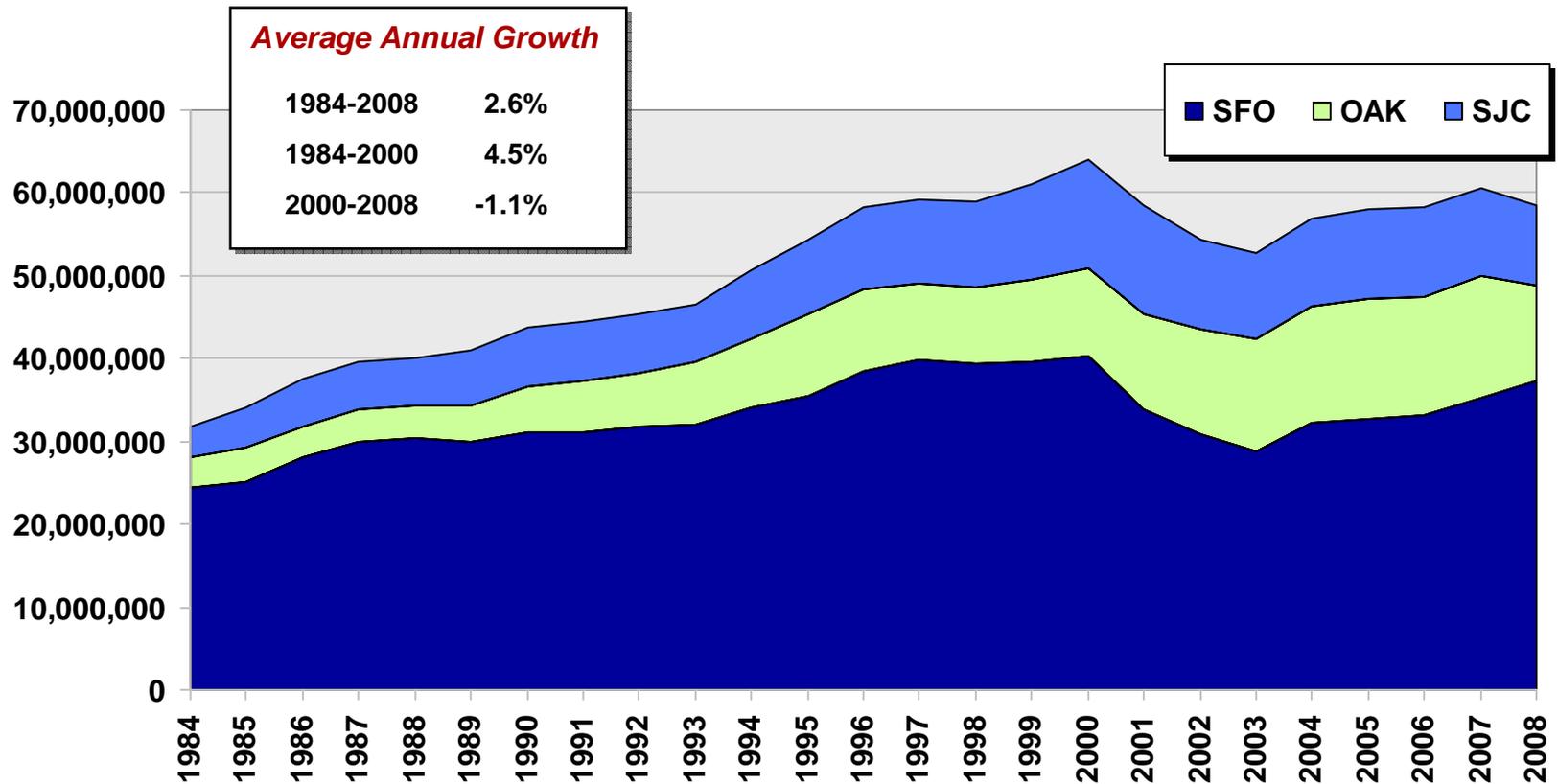
- ◆ **There is always uncertainty surrounding long-term forecasts of aviation demand.**
- ◆ **This uncertainty is accentuated by current economic conditions.**
- ◆ **A forecast tracking system will be developed to ensure that the expectations of RAPC and other stakeholders are informed by the latest trends in actual activity.**
- ◆ **The tracking system will allow RAPC to adjust the timeline on which the region will reach critical capacity thresholds.**

AIR PASSENGER TRENDS SINCE THE 2000 RASP



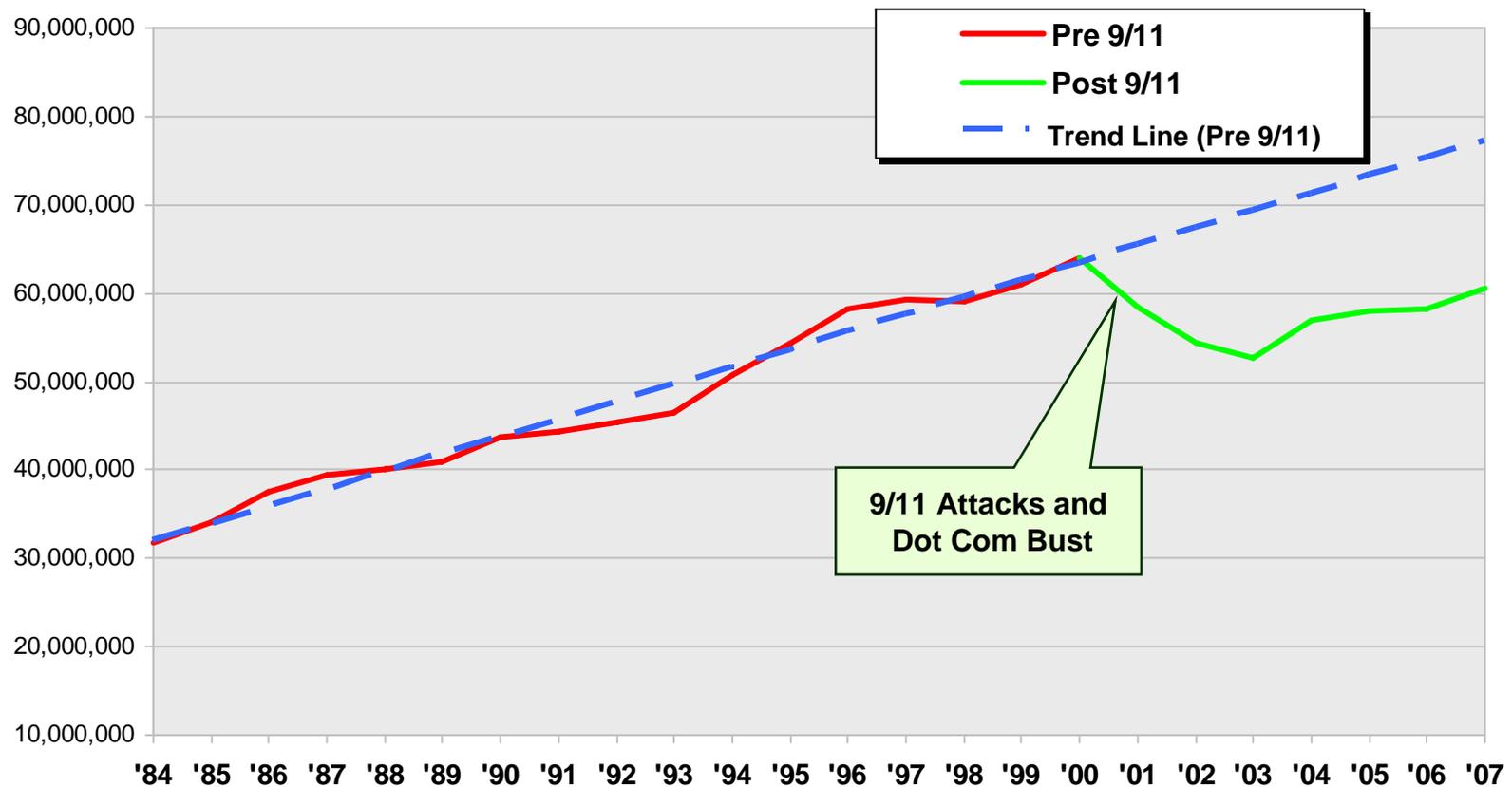
Bay Area Airports Handled 58.6M Passengers Last Year After Peaking at 64M in 2000

Bay Area Passengers by Airport
(Enplaned + Deplaned)

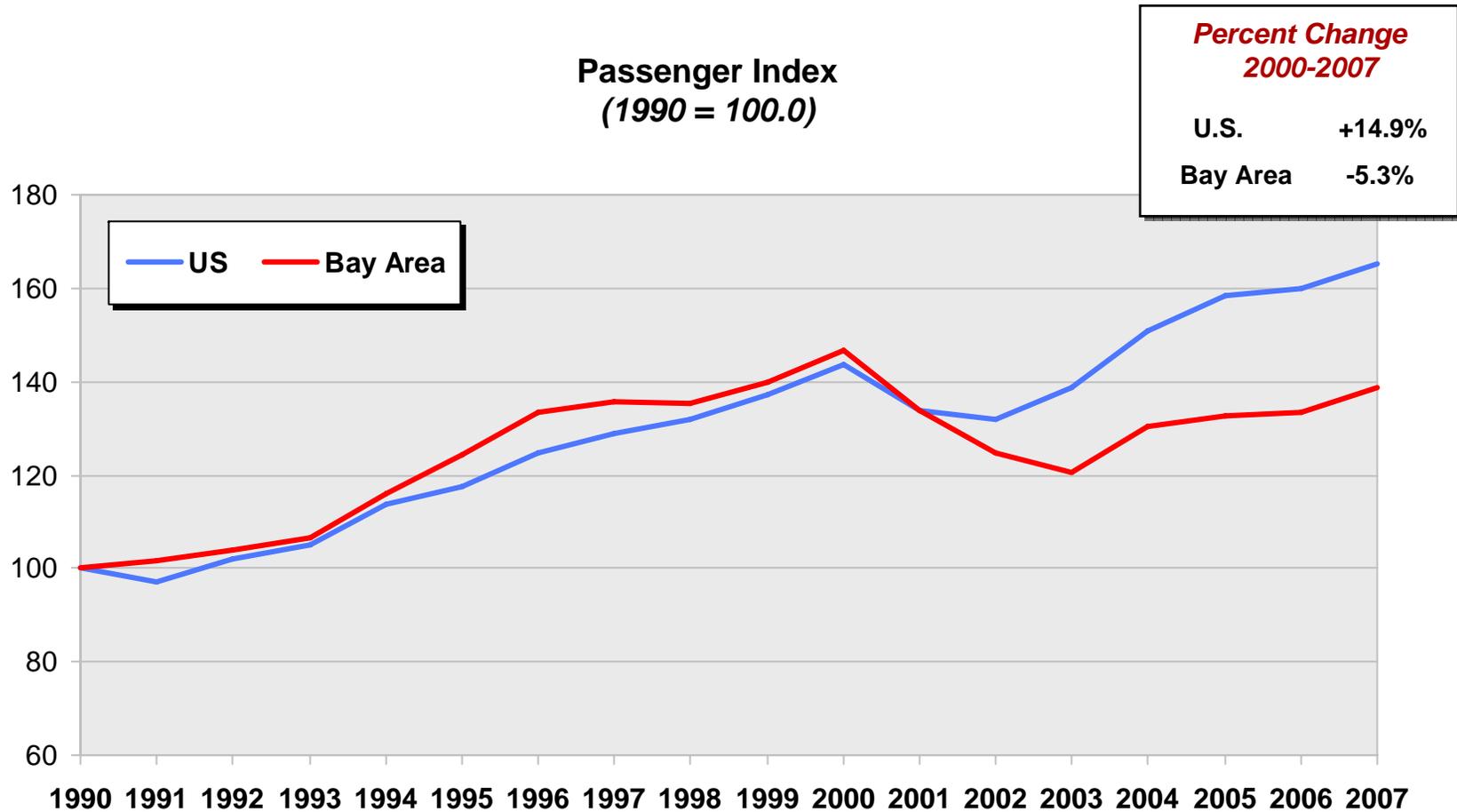


Bay Area Airport Passenger Traffic was Showing Stable Growth Through 2000

Bay Area Airport Passengers
1984 to 2007



Since 2000, Bay Area Passenger Demand Has Not Kept Pace with U.S. Air Passenger Demand

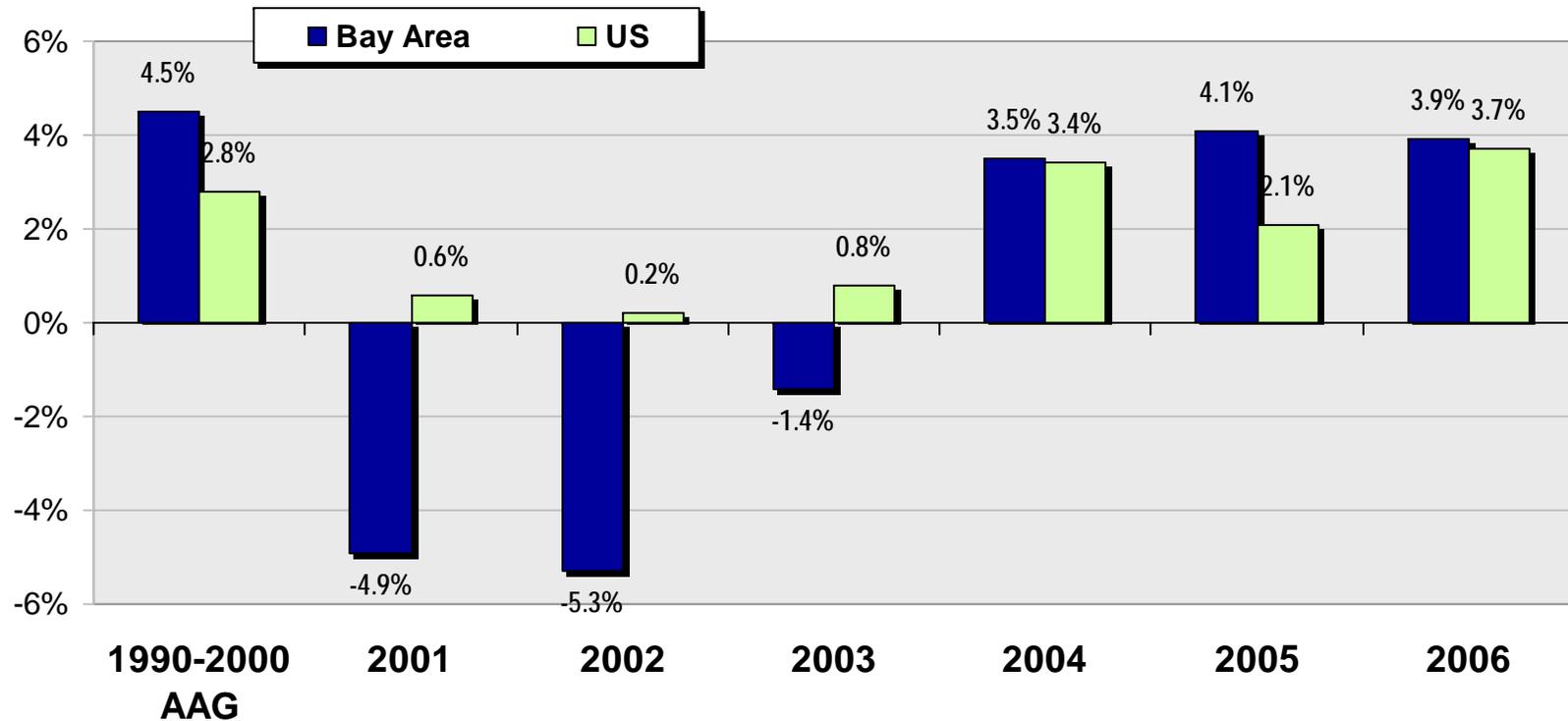


Note: Region includes SFO, OAK and SJC airports.

Source: ACI, Worldwide Air Traffic Report and individual airports.

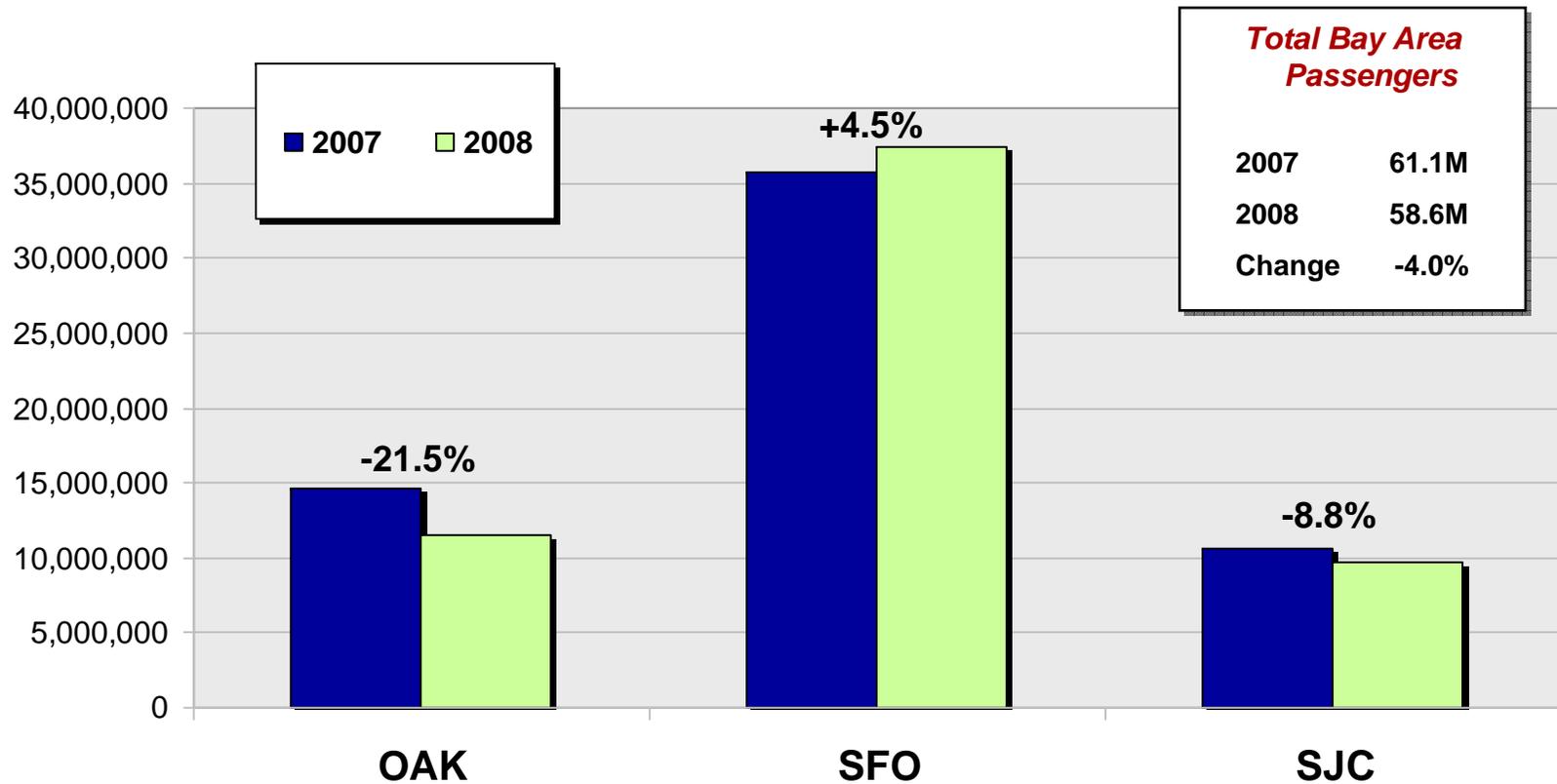
The Region Suffered Steep Declines in Personal Income During the Dot Com Fallout

Real Personal Income Growth



In 2008, Total Bay Area Passenger Traffic Fell by 4%

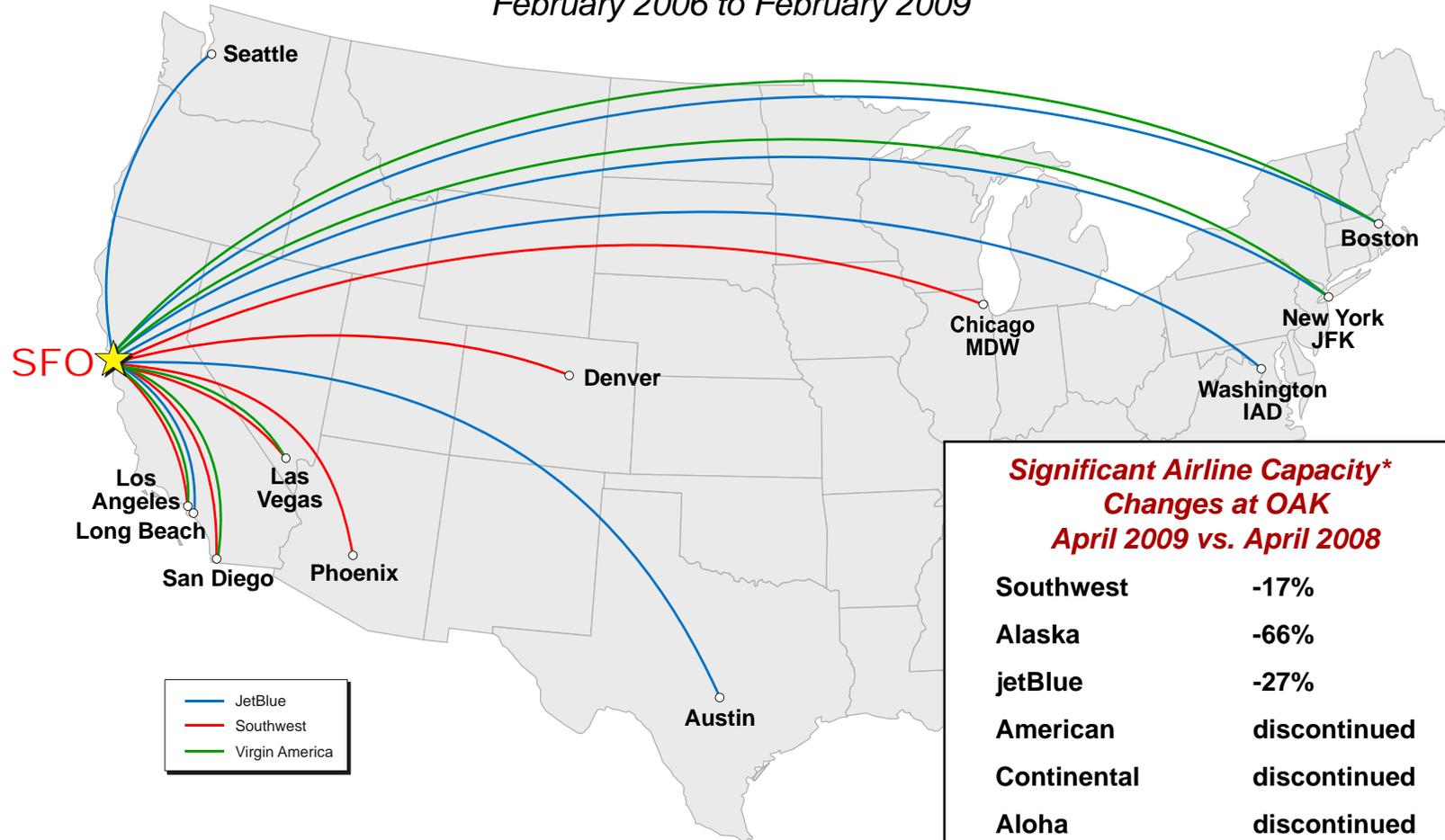
Total Airport Passengers and Percent Change
CY 2007 and CY 2008



SFO has Gained a Number of LCC Routes While Top Airlines at OAK have Contracted or Left the Market

SFO Low-Cost Carrier Nonstop Service Added Since February 2006

February 2006 to February 2009



Significant Airline Capacity* Changes at OAK April 2009 vs. April 2008

Southwest	-17%
Alaska	-66%
jetBlue	-27%
American	discontinued
Continental	discontinued
Aloha	discontinued
ATA	discontinued

Note: JetBlue Boston service is being reinstated in May 2009

* daily scheduled seats

Source: OAG Schedules

AIRLINE PASSENGER FORECASTS



METROPOLITAN
TRANSPORTATION
COMMISSION



ABAG
Association of
Bay Area Governments

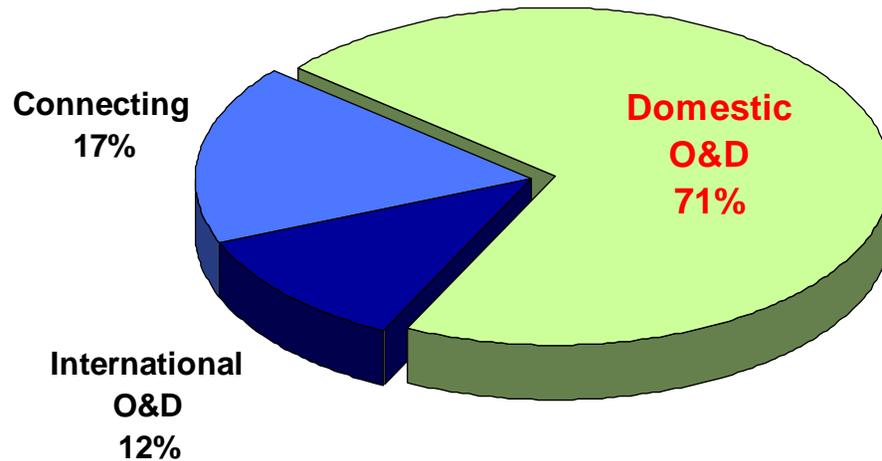


Bay Conservation
Development Commission

Domestic O&D Passengers Account for More Than Two-Thirds of Bay Area Airport Passengers

Mix of Bay Area Airport Passengers

2007



Base Year 2007 Passengers by Airport

In millions

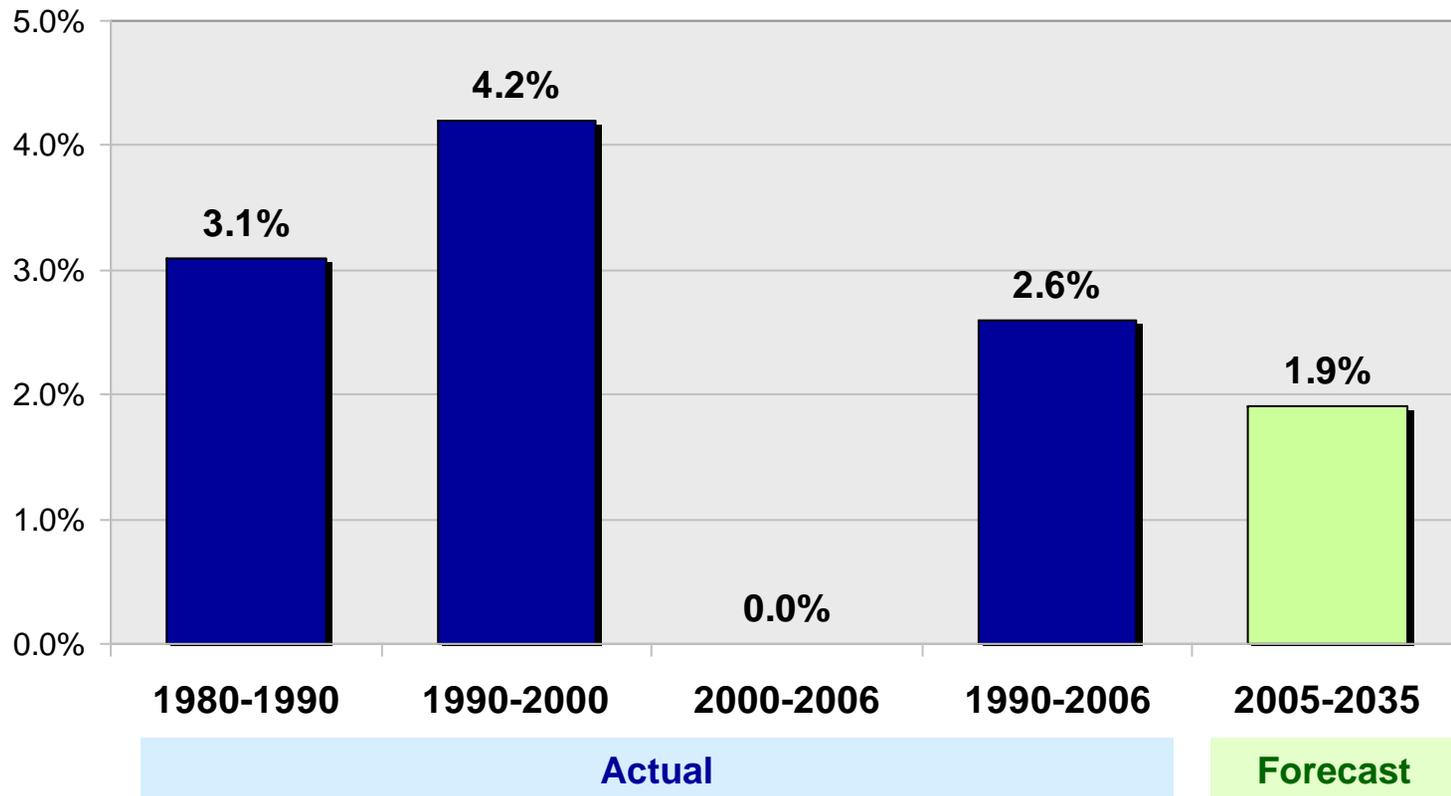
Airport	Domestic	Intl	Conx	Total
OAK	13.6	0.2	0.8	14.6
SFO	19.5	6.8	9.1	35.3
SJC	10.0	0.2	0.5	10.7
Total	43.1	7.1	10.4	60.6

Overall Approach to Passenger Demand Forecasts

- ◆ **Analyzed 3 Main Traffic Segments, Each Driven by Different Variables**
 - Domestic O&D, International O&D and Connecting
- ◆ **Domestic O&D**
 - Calibrated Econometric Relationship Between Bay Area Passenger Demand and Explanatory Variables
 - *Personal Income, Airline Yields, and Post 9/11 Structural Change*
- ◆ **International O&D**
 - Forecast Bay Area Share of U.S. International Passengers by World Region
 - Assumed no growth in international traffic for 2007-2011 to account for impact of worldwide economic crisis
- ◆ **Connecting Passengers**
 - Forecast as a Ratio to Domestic and International Passengers

Growth in Bay Area Income, a Primary Determinant of Air Travel Demand, is Forecast to Slow Over the Forecast Period

Average Annual Growth in Real Personal Income for the Bay Area
Actual and ABAG Forecast



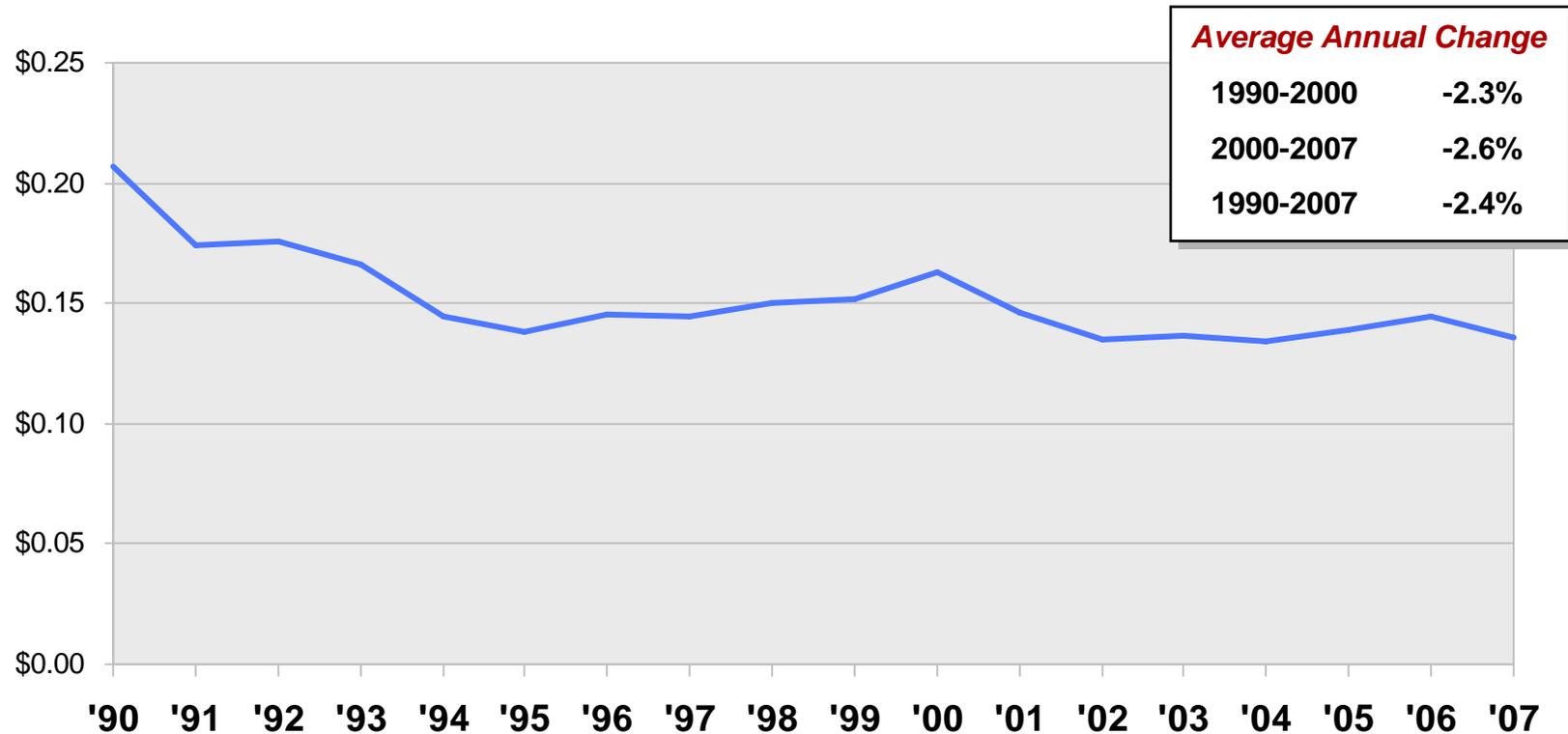
Sources: ABAG, 2007 Projections.

Bureau of Economic Analysis and Bureau of Labor Statistics.

Historically, the Price of Air Travel in the Bay Area Declined, Falling by 2.4% Per Year Between 1990 and 2007

Traffic Weighted Real Average Airline Yield for the Bay Area

Actual, 1990-2007

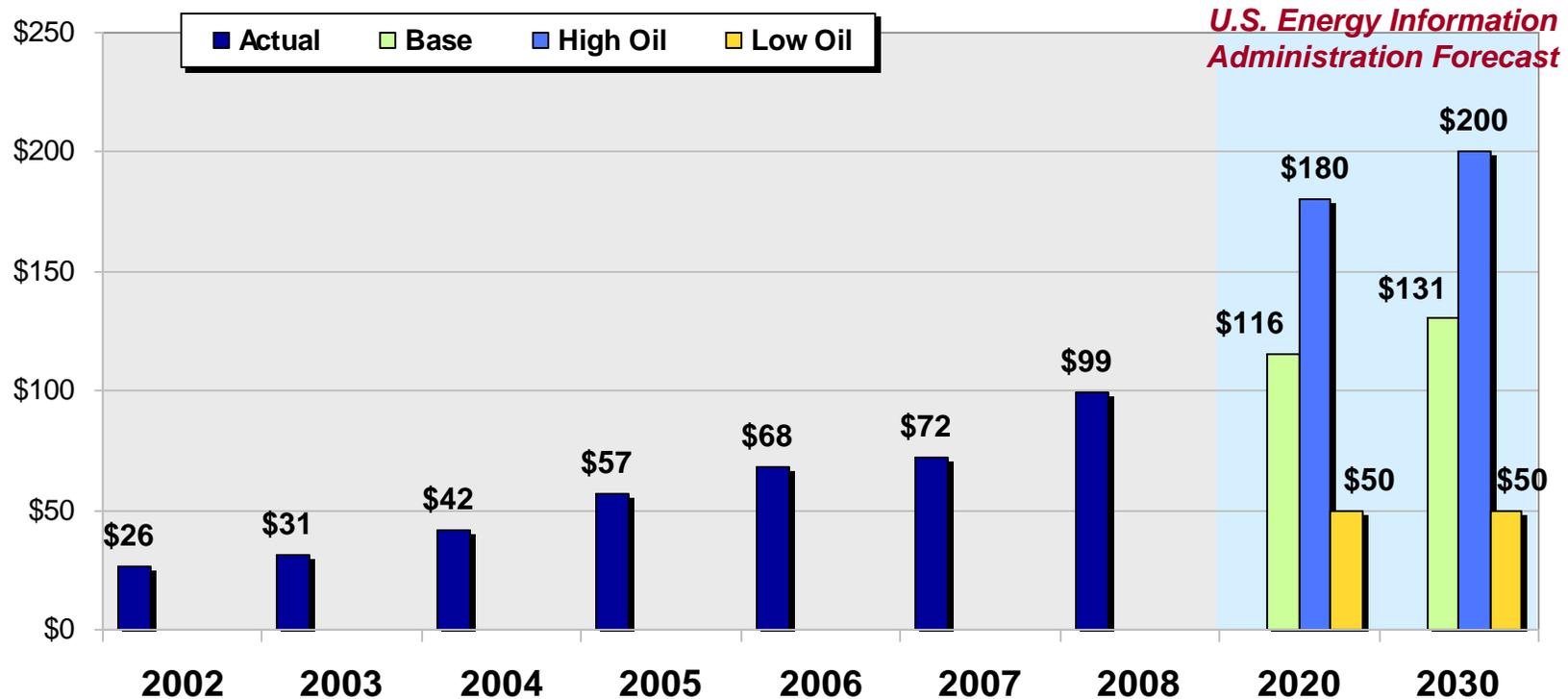


Note: Average Bay Area Yield for Top 50 O&D Markets in CY 2006, weighted by average market share for 1990 and 2006.

Sources: US DOT, O&D passenger Survey; Bureau of Labor Statistics, CPI-U.

In the Future, the Price of Air Travel will be Largely Driven by Changes in Oil Prices

Actual and Forecast Price of Oil
Dollars per Barrel



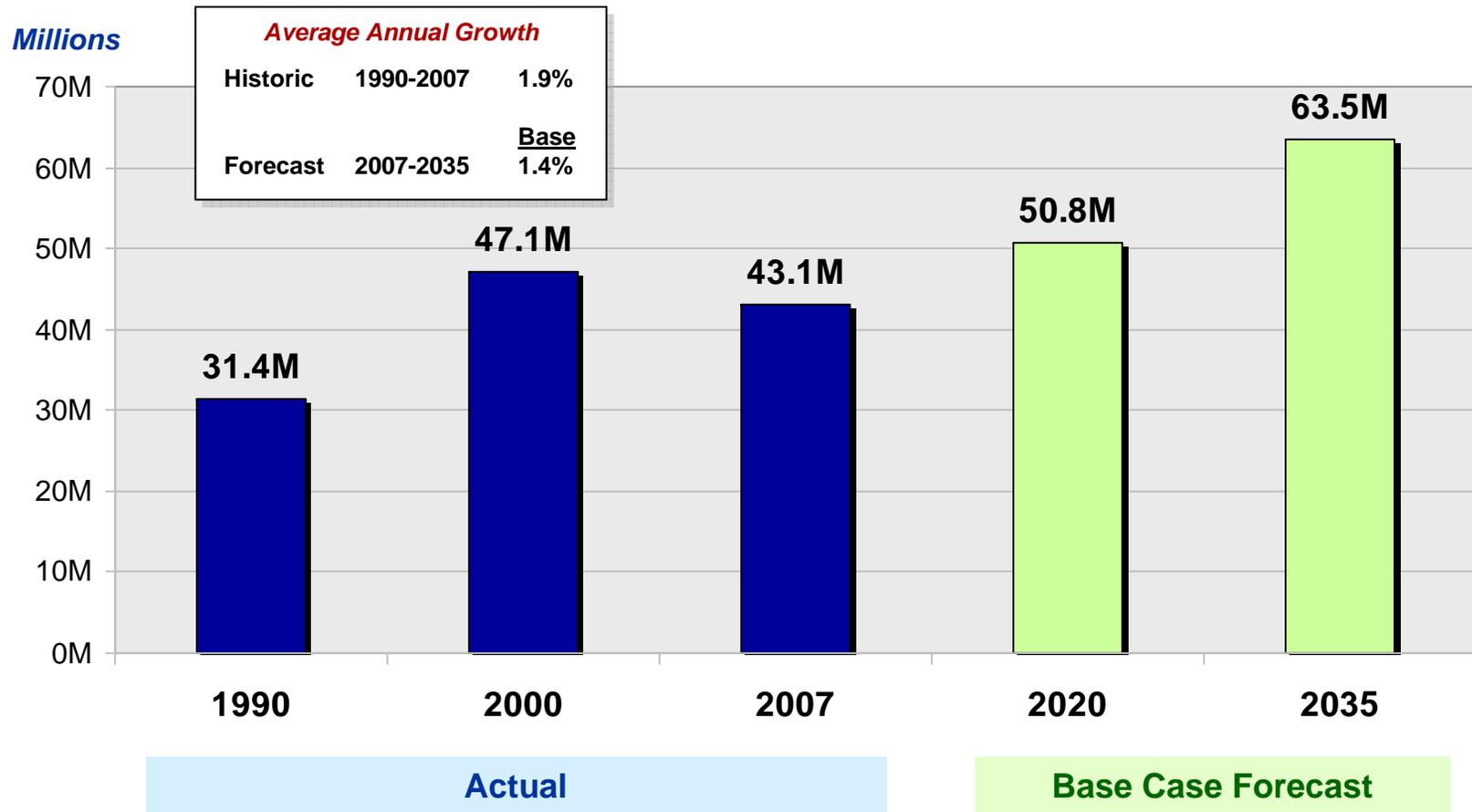
Major Forecast Assumptions were Varied to Produce Base, Low and High Forecasts for Bay Area Domestic O&D Passengers

Variable	Base	Low	High
Personal Income (annual change)	1.8%	1.8%	2.2%
Personal Income Elasticity	0.88	0.76	1.00
Price of Oil (2035) [1]	\$135	\$207	\$50
Airline Yields (annual change)	0.4%	1.0%	-0.3%
Post 9/11 Structural Changes [2]	Yes	Yes	Yes

In the Base Case, Domestic O&D Passengers are Forecast to Grow by 1.4% per Year Reaching 64M in 2035

Bay Area Domestic O&D Passengers

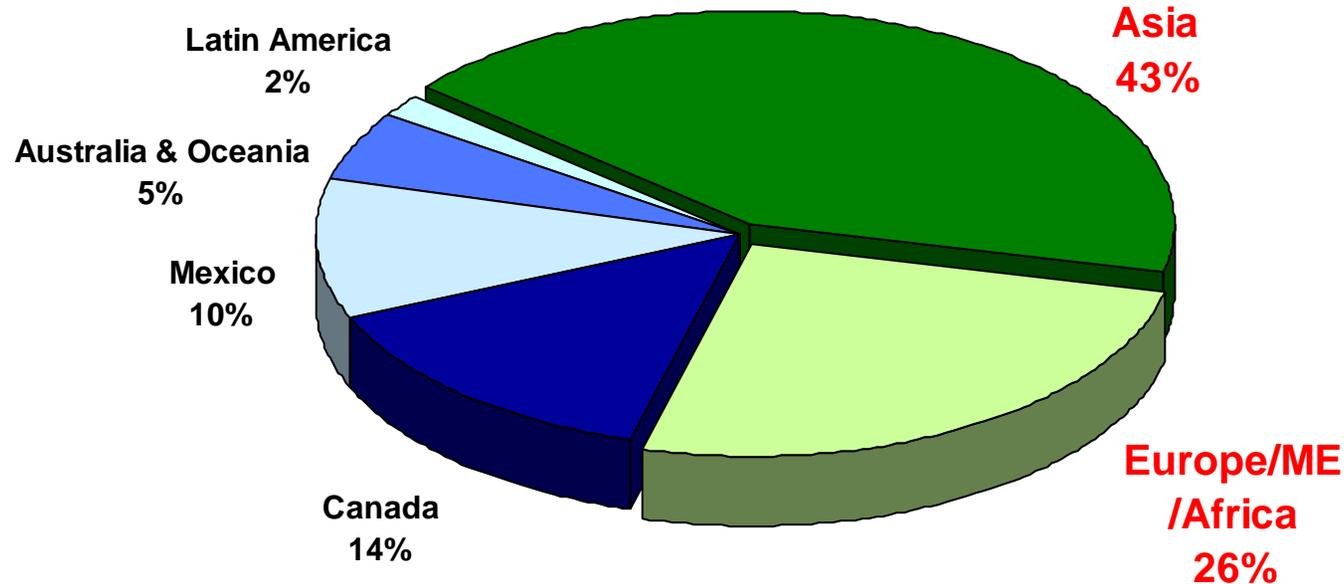
Actual and Forecast



Asia and Europe Account for More than Two-Thirds of Bay Area International Passengers

Bay Area International Gateway Passengers by World Region

2007

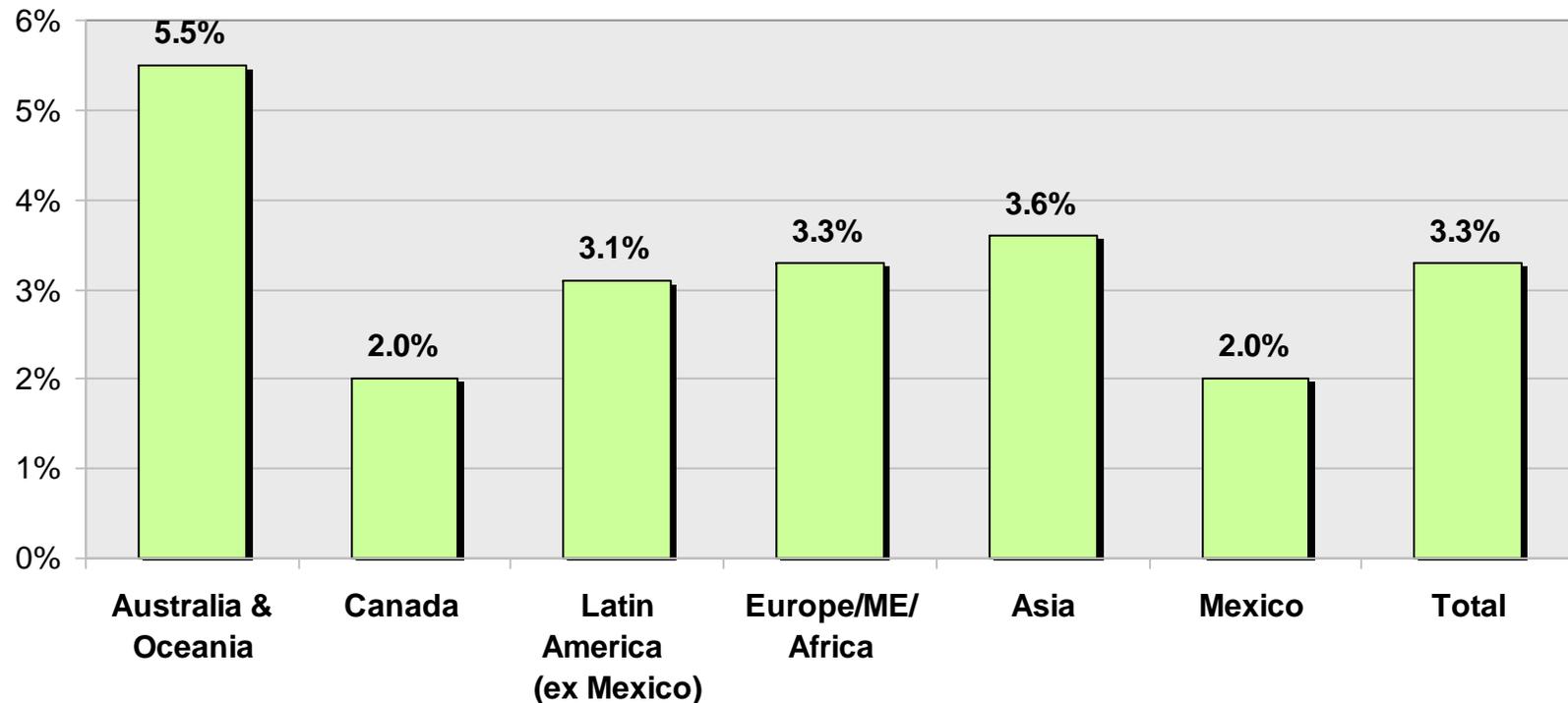


Australia and Asia are Forecast to be the Fastest Growing Regions for Bay Area International Traffic

Forecast Average Annual Growth in Bay Area International Passengers by World Region

Average Annual Growth, 2007-2035

BASE CASE

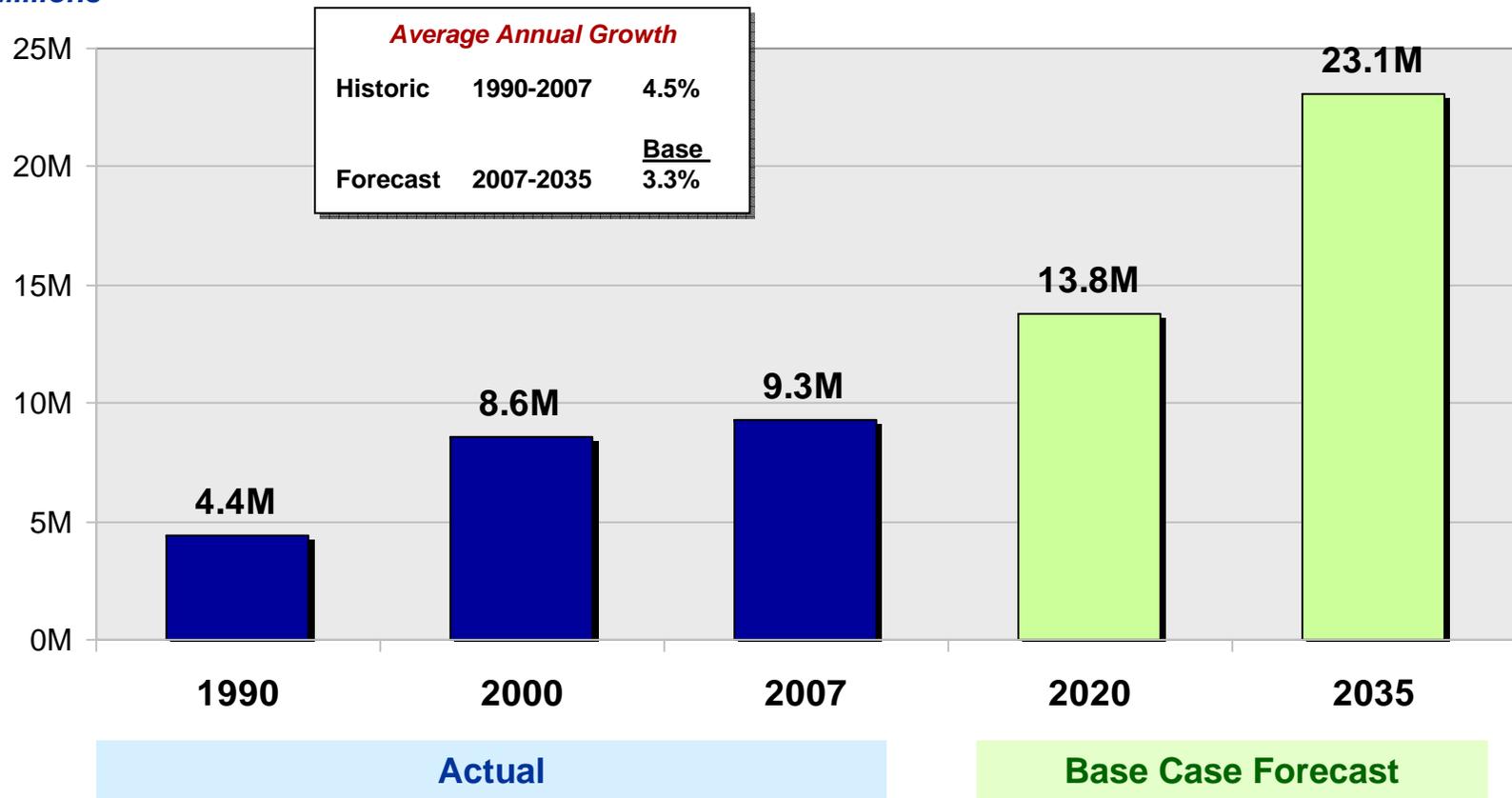


In the Base Case, Bay Area International Passengers are Forecast to Grow by 3.3% per Year Reaching 23M in 2035

Bay Area International Passengers

Actual and Forecast

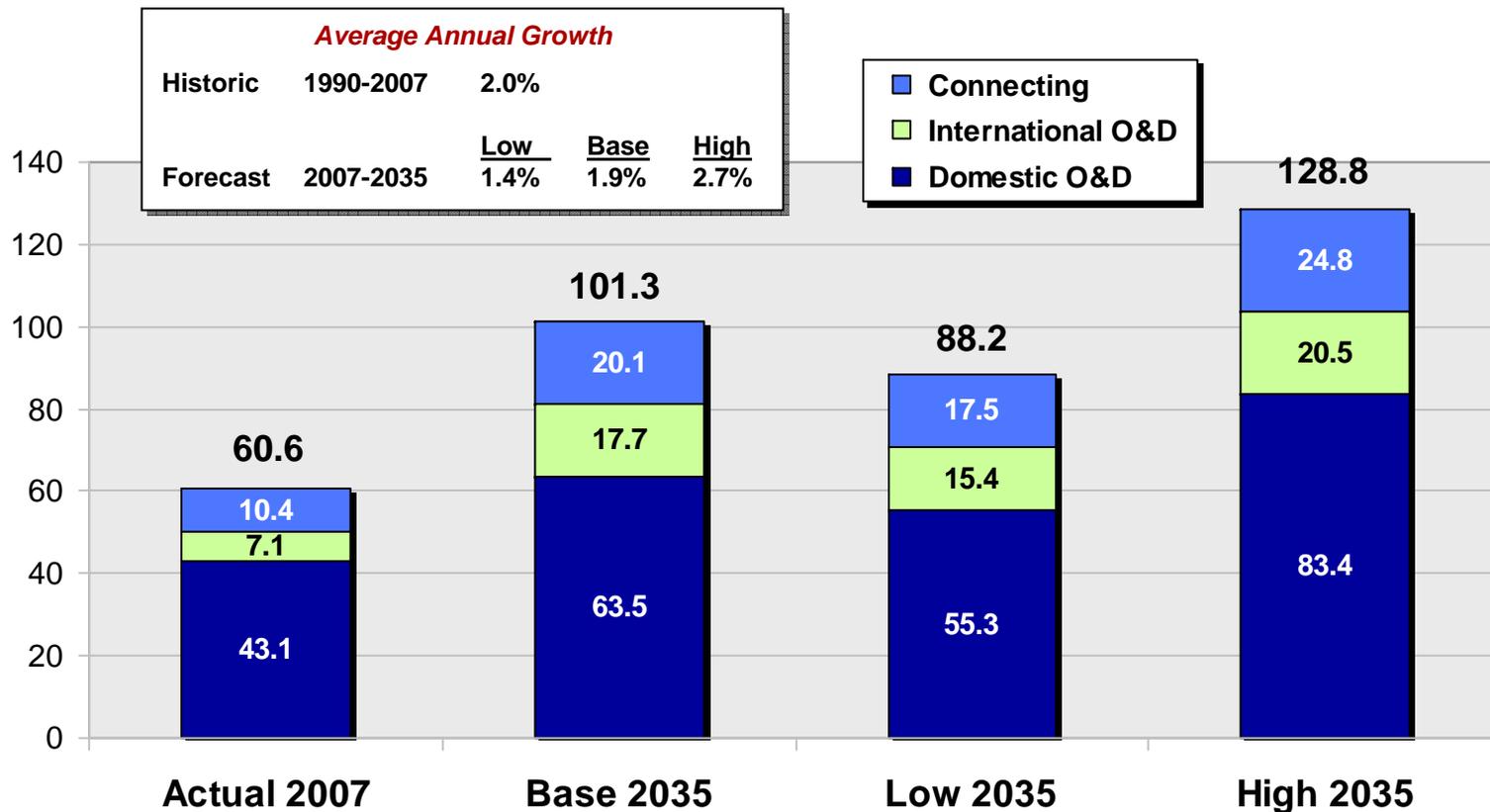
Millions



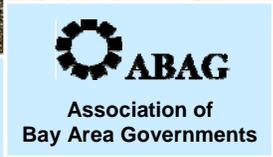
Total Bay Area Airport Passengers are Forecast at 88M to 129M in 2035

Actual and Forecast Total Bay Area Airport Passengers

2007 and 2035



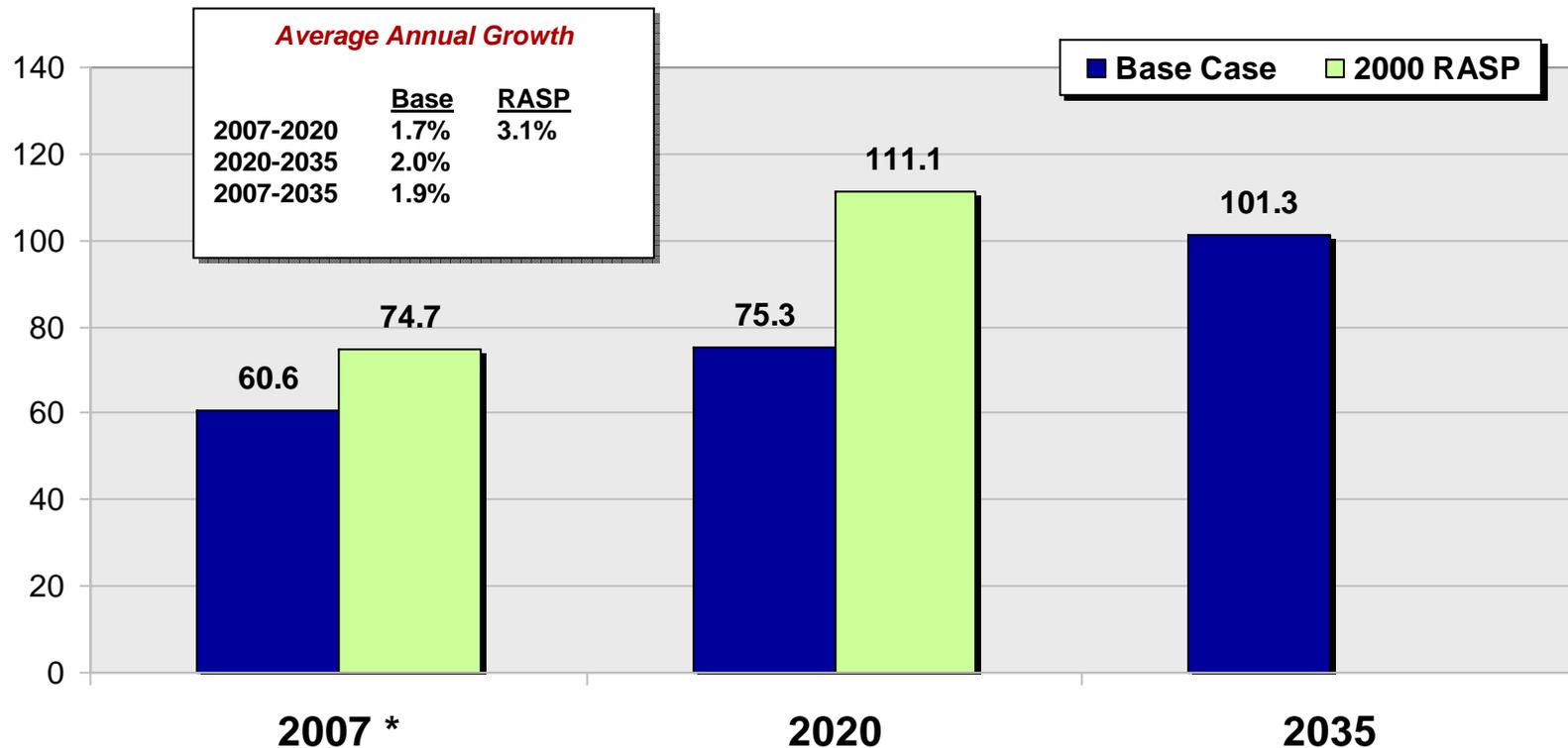
PASSENGER FORECAST BENCHMARKING



The New 2035 Base Case Forecast of 101M, is 9% Below the Previous Projection of 111M in 2020

Actual and Forecast Total Bay Area Airport Passengers

Base Case Update vs. 2000 RASP Forecast

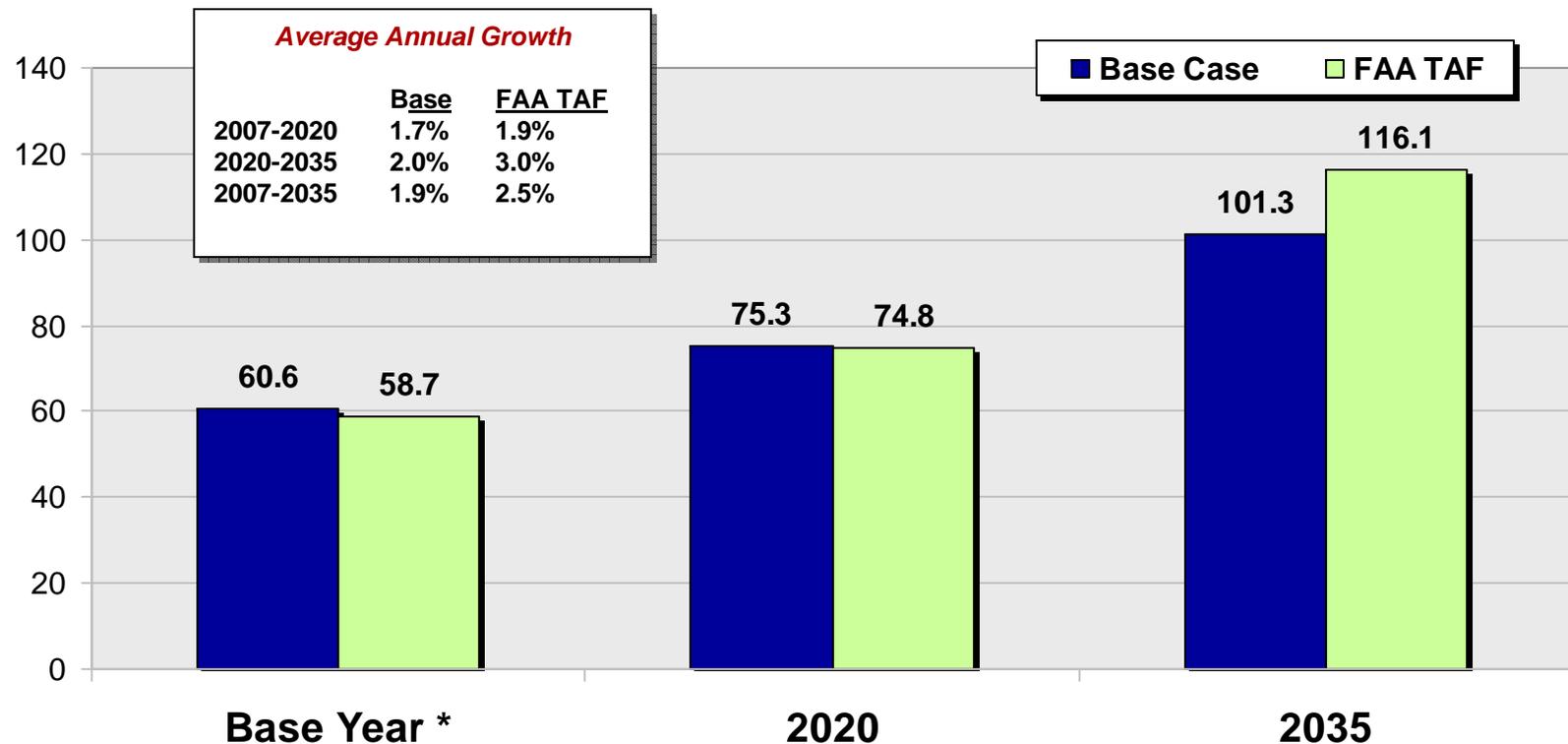


* Base Case passenger number for 2007 is actual.

The Base Case Forecast is 12.7% Below the Most Recent FAA TAF for the Bay Area

Actual and Forecast Total Bay Area Airport Passengers

Draft vs. FAA TAF



* Forecast base year is CY 2007. FAA base year is FYE October 2007.

Note: Reported airport traffic is higher than FAA airport statistics.

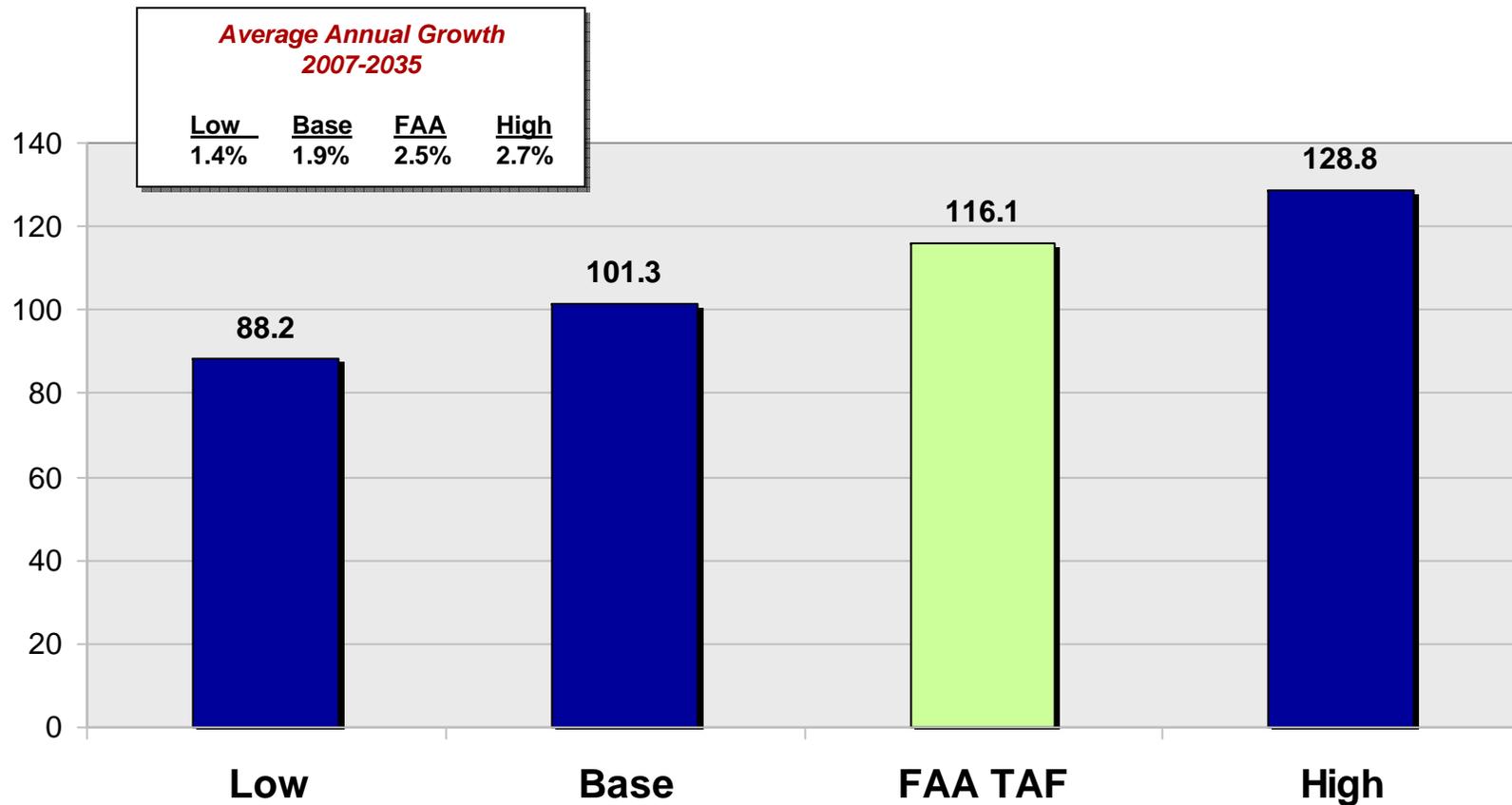
FAA Forecast for 2035 is extrapolated from 2025 using 2024-2025 forecast growth rate.

Source: FAA, Terminal Area Forecasts, December 2008

The FAA TAF Forecast Falls Within the Base and High Forecast Range

Forecast 2035 Total Bay Area Airport Passengers

Draft vs. FAA TAF

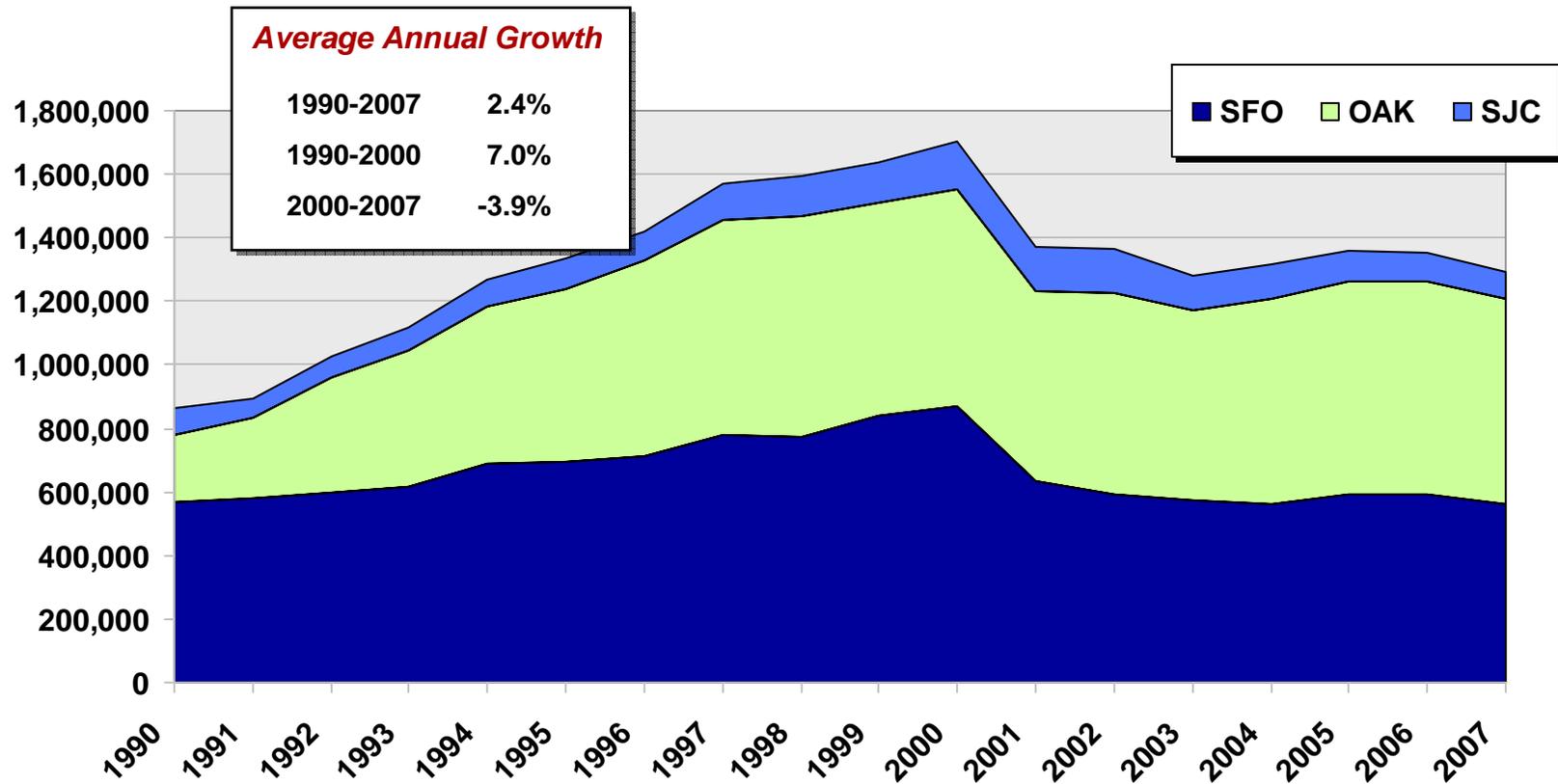




CARGO FORECASTS

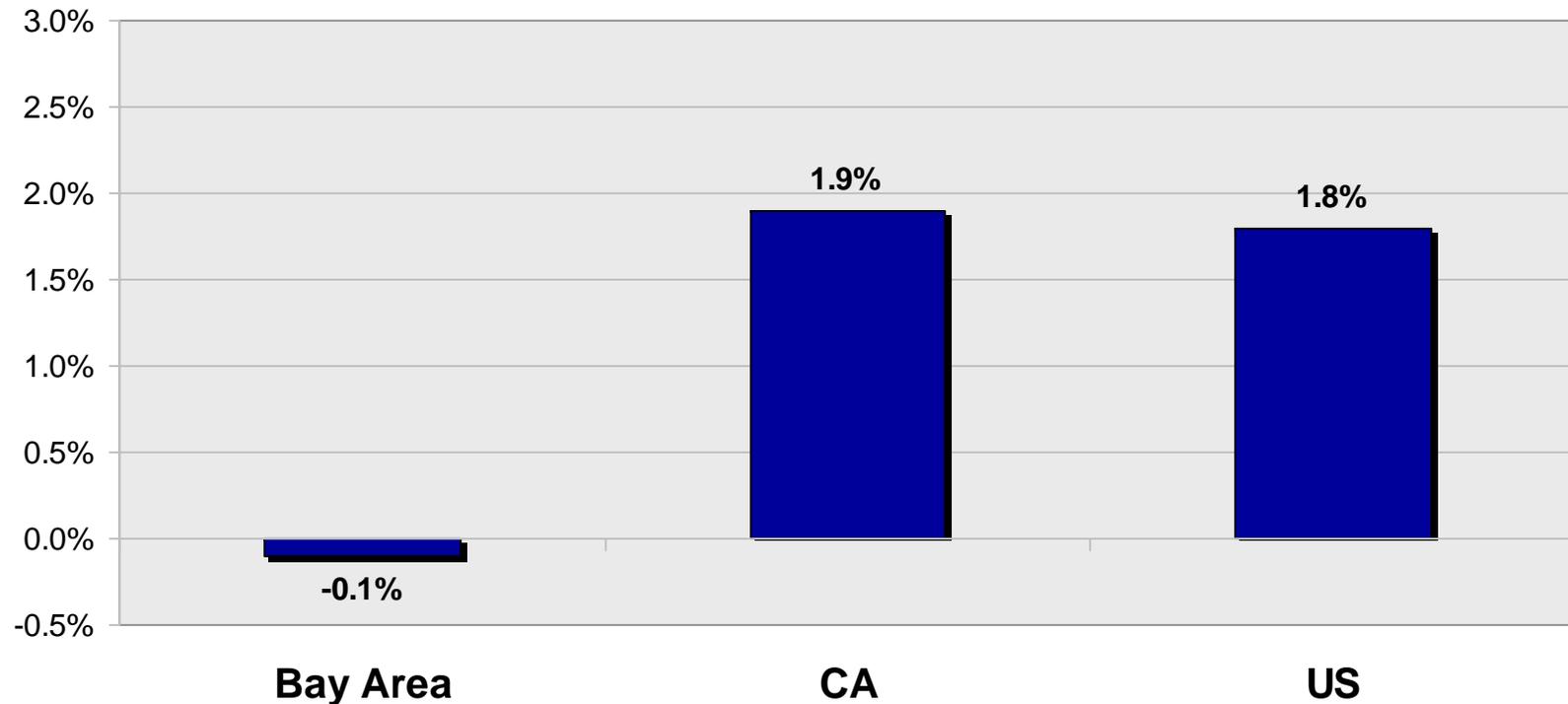
Total Cargo Handled by the Bay Area Airports Has Declined Sharply Since 2000

Bay Area Freight & Mail by Airport
(Enplaned + Deplaned Metric Tonnes)



From 2000 to 2006, Personal Income for the Bay Area Declined Compared to Moderate Growth for the US and CA

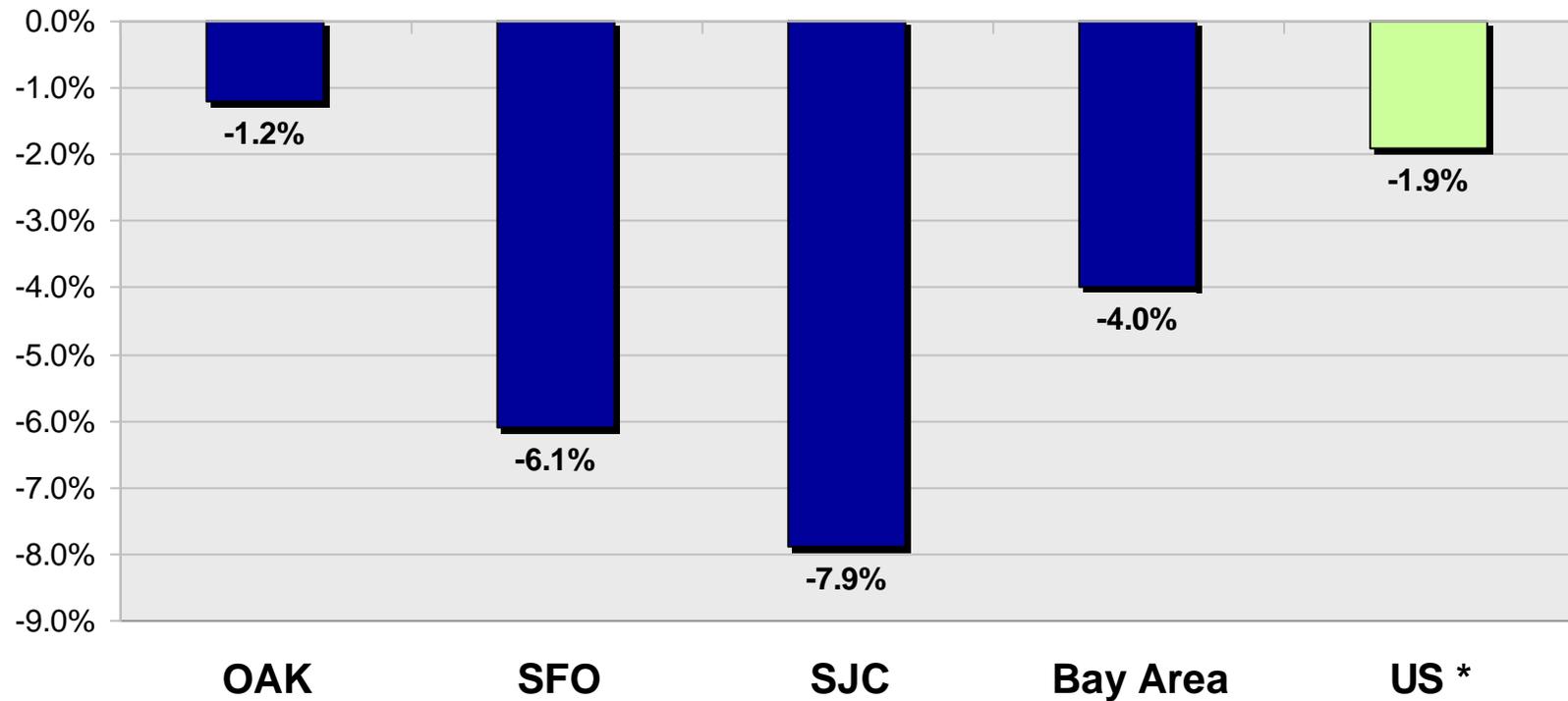
Average Annual Growth in Real Personal Income
2000 to 2006



Air Cargo Demand is Highly Correlated with Economic Growth

As a Result, Bay Area Air Cargo Declined at a Faster Rate than U.S. Air Cargo

Average Annual Growth in Air Cargo
2000 to 2007



* US based on cargo reported by top 60 US airports, excluding ANC (used for technical stops) and primary integrator sort hubs – MEM/FedEx and SDF/UPS.

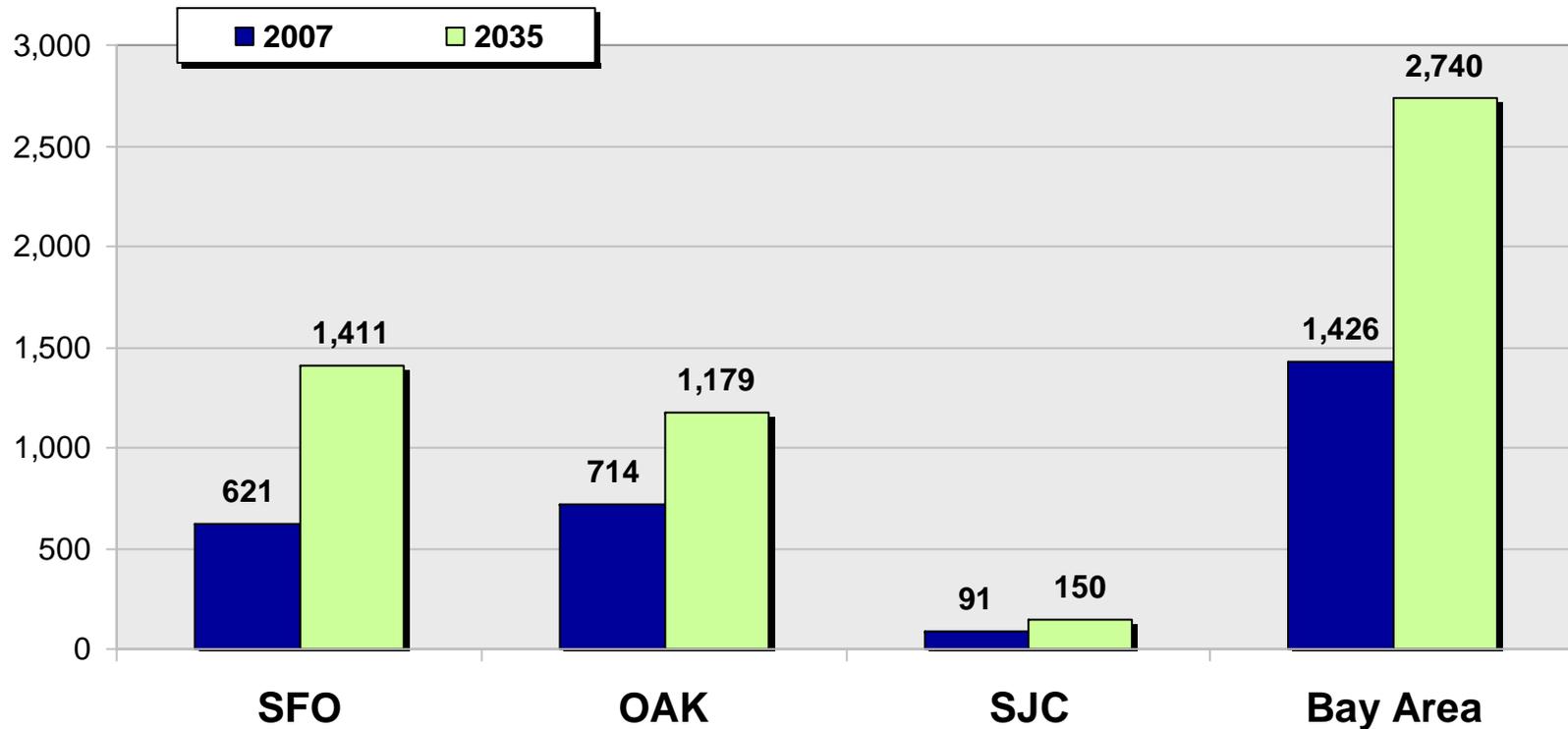
Cargo Forecast Approach and Assumptions

- ◆ **Assumed No Growth in Cargo Over the Short-term (2007-2011) to Reflect Current Economic Conditions**
- ◆ **Developed Long-term Growth Rates for the U.S. Air Cargo Market Based on FAA and Boeing Forecasts**
- ◆ **Forecast Bay Area Cargo Growth in Relation to the U.S. Cargo Market**
 - Base Case: Bay Area grows slower than U.S.(0.75 times based on forecast income growth)
 - *Forecast Bay Area Income Growth of 1.8% p.y. versus U.S. at 2.5% p.y.*
 - Low Case: Bay Area grows even slower than U.S. (0.50 times)
 - High Case: Bay Area grows at same rate as the U.S.

In the Base Case, Bay Area Cargo Tons are Forecast to Grow by 2.4% per Year Reaching 2.7M Tons in 2035

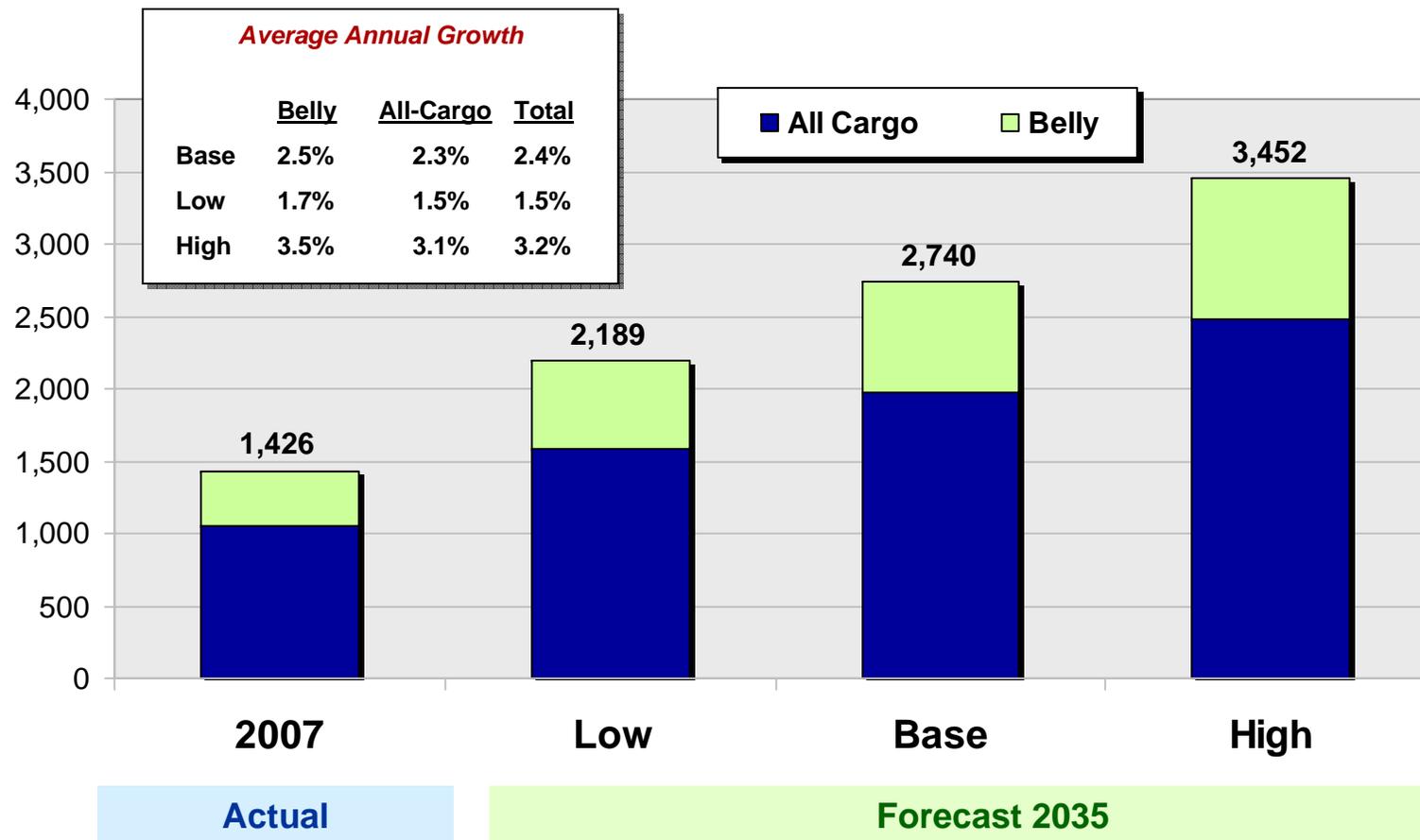
Forecast Bay Area Cargo Tons

(in thousands)



All-Cargo Tons, Which Will Directly Translate into Additional Aircraft Operations, are Forecast to Grow by 2.3% per Year in the Base Case

Forecast Bay Area Cargo Tons (in thousands)





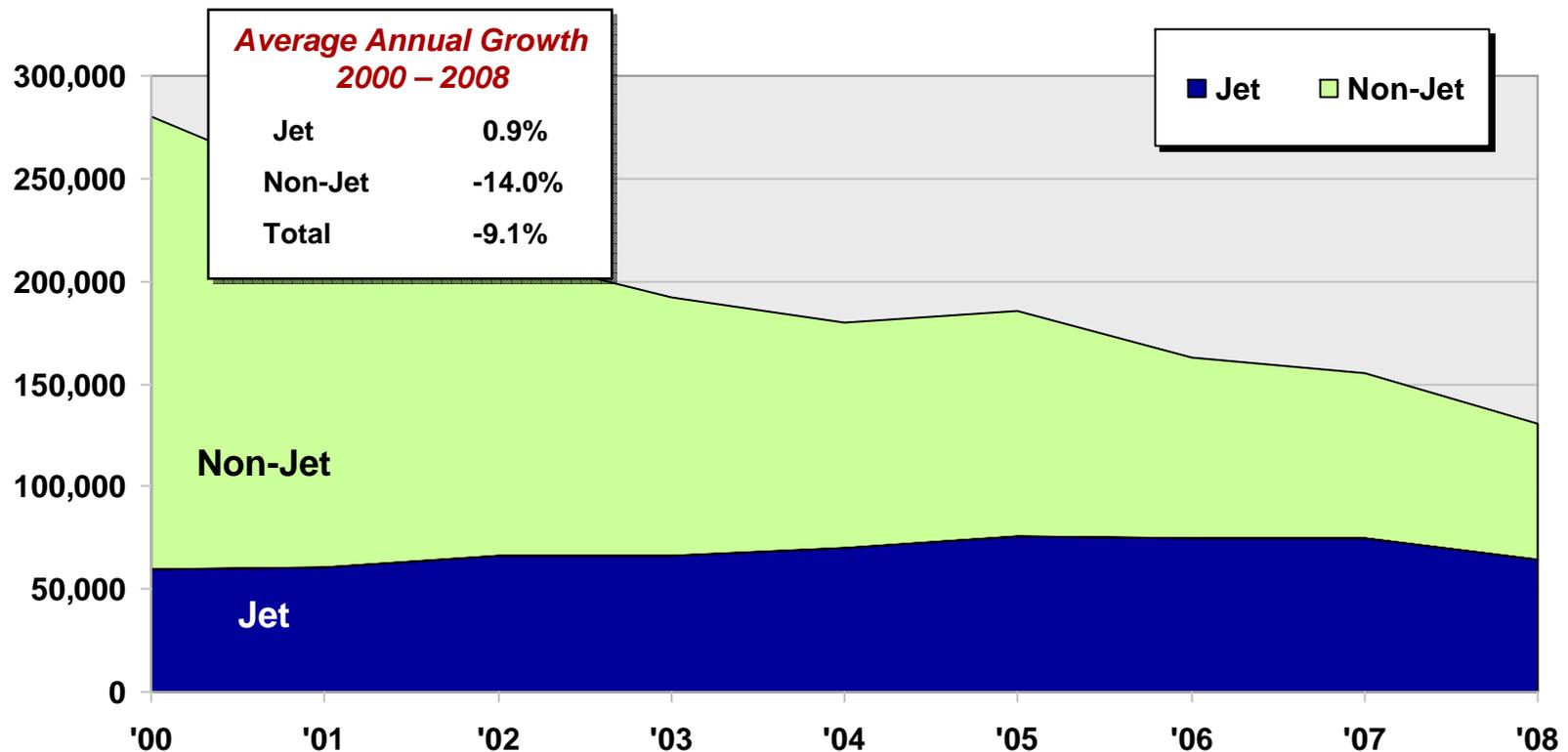
BUSINESS GA FORECASTS

After Years of Strong Growth, Business GA has Been Particularly Hard Hit by the Global Recession and Credit Crisis

- ◆ **U.S. Business Jet Operations in 4Q 2008 Fell by Nearly 25%**
- ◆ **The Predicted Emergence of Very Light Jets (VLJs) and On-demand Air Taxi has not Materialized**
- ◆ **Corporations are selling their corporate planes and cutting back on private business jet travel**
- ◆ **Aircraft manufacturers like Bombardier are cutting business jet production**
 - Bombardier expects a 10% reduction in business aircraft deliveries in 2009
 - Honeywell expects a 5% to 10% reduction in business aircraft deliveries in 2009

Since 2000, Itinerant GA Operations at the Bay Area Airports have Declined by 9.1% Annually, but Business Jet Activity has Grown

Itinerant GA Operations at the Bay Area Airports
2000–2008

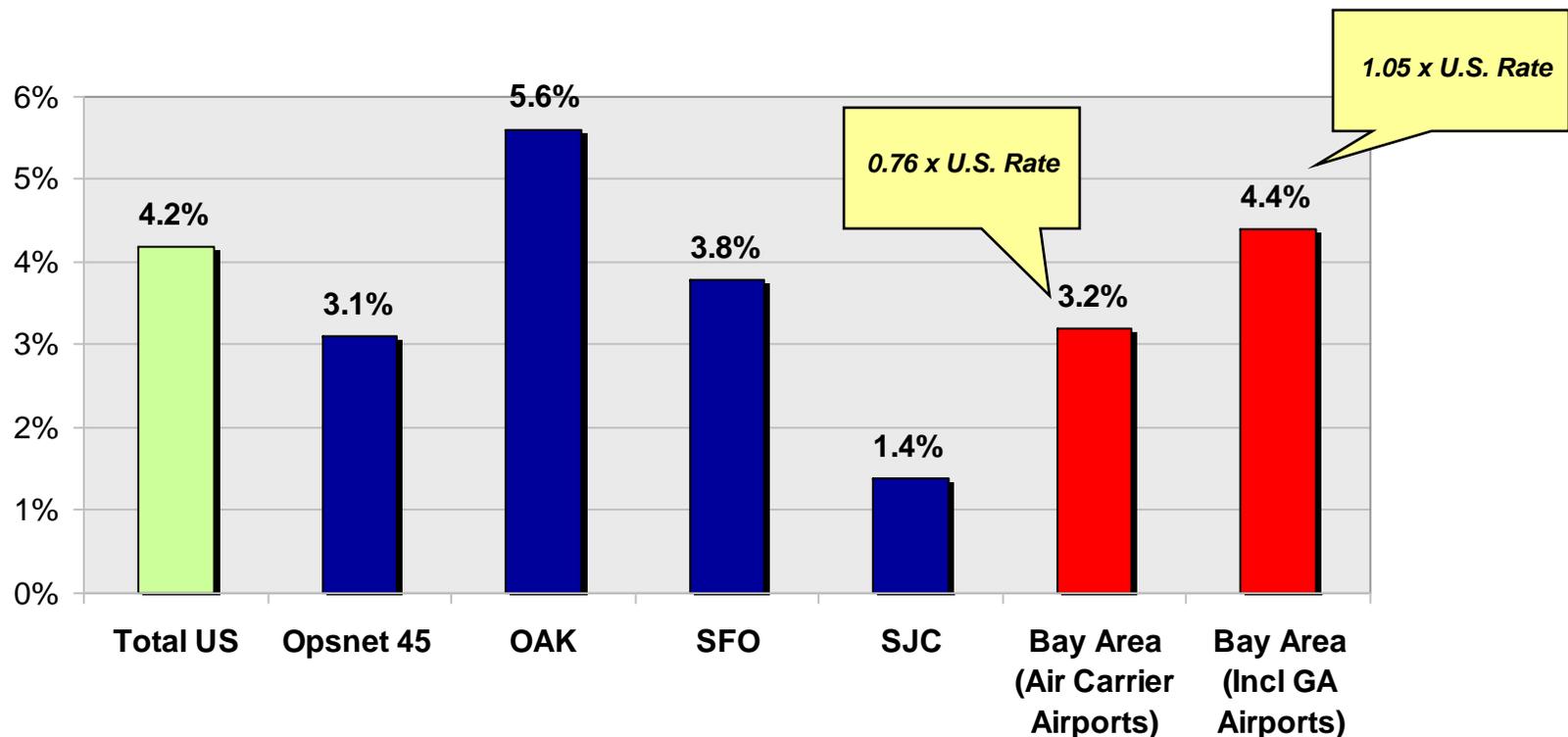


Note: Excludes local GA operations (mainly pilot training and flights that stay in the local airspace)

Source: FAA, ETMSC and ATADS Databases

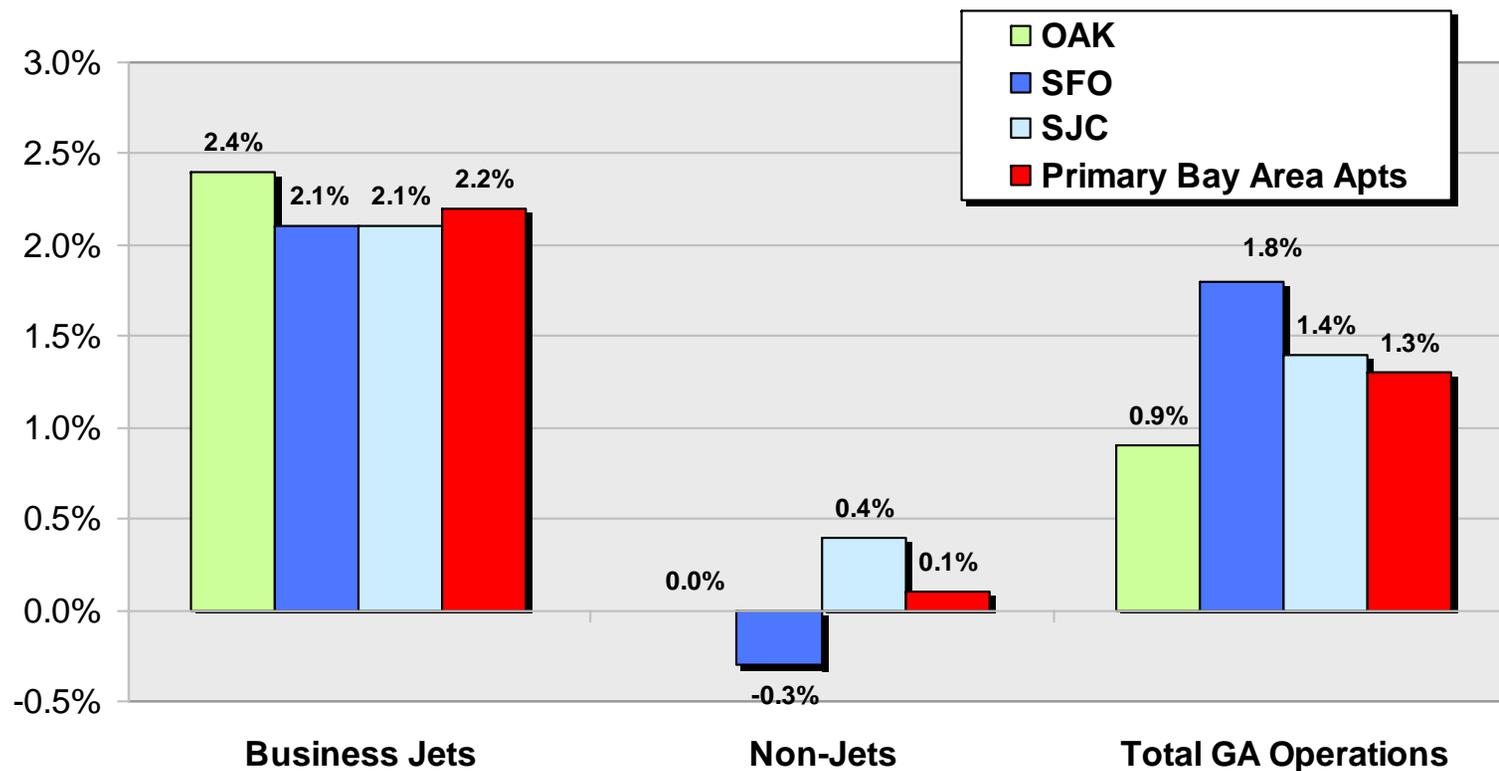
While Business Jet Activity at the Primary Bay Area Airports has Grown Slower than the U.S. Average, The Bay Area Including Nearby GA Airports Has Been Growing Faster Than the U.S.

Business Jet Operations – Historic Average Annual Growth Rate
2000-2007



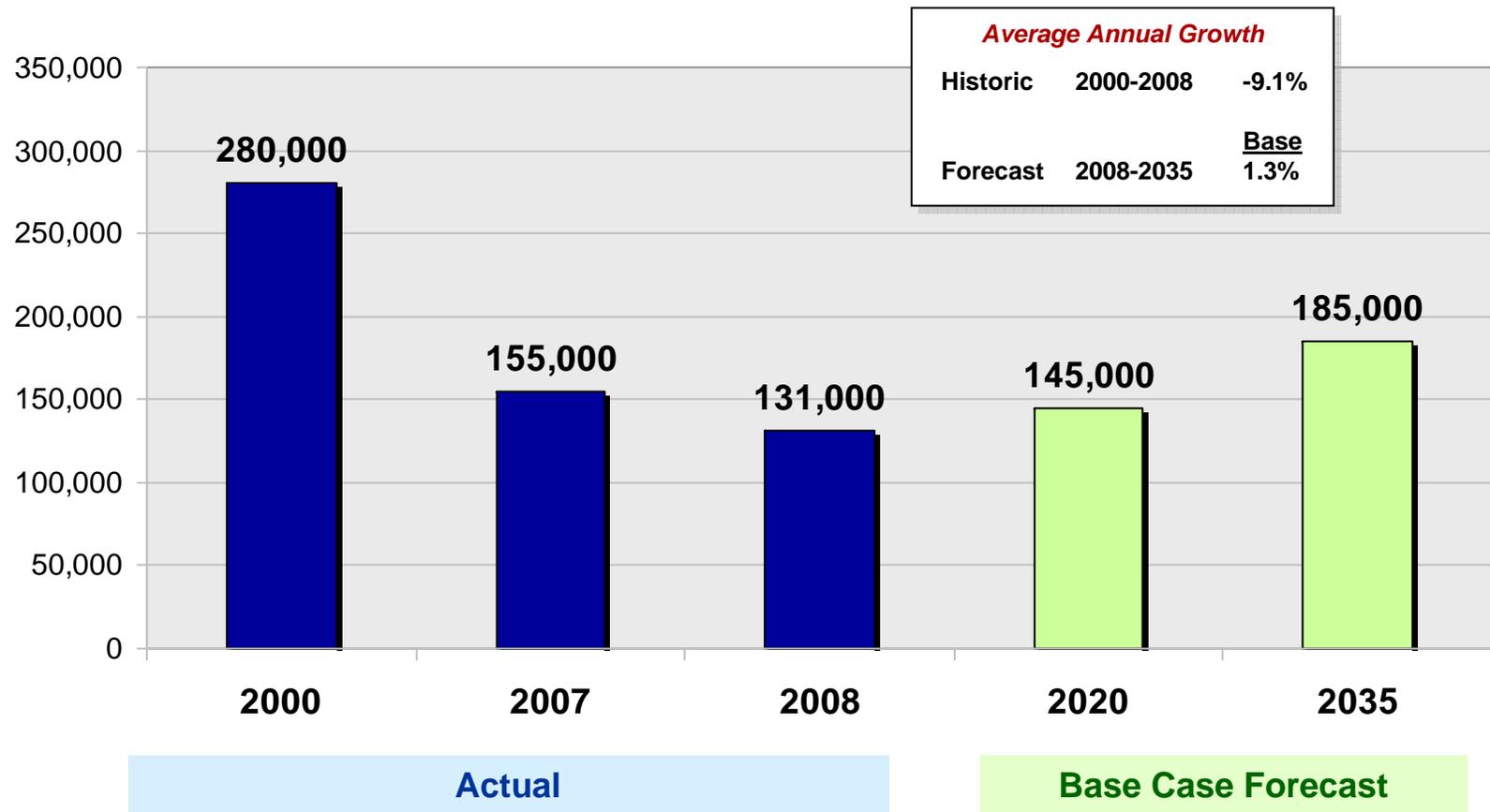
Bay Area GA Operations are Forecast to Increase at 1.3% per Year During the Forecast Period, with Business Jets Increasing at 2.2% per Year

Forecast Annual Rates of Growth (or Decline) in GA Operations by Airport and Aircraft Class
2008- 2035



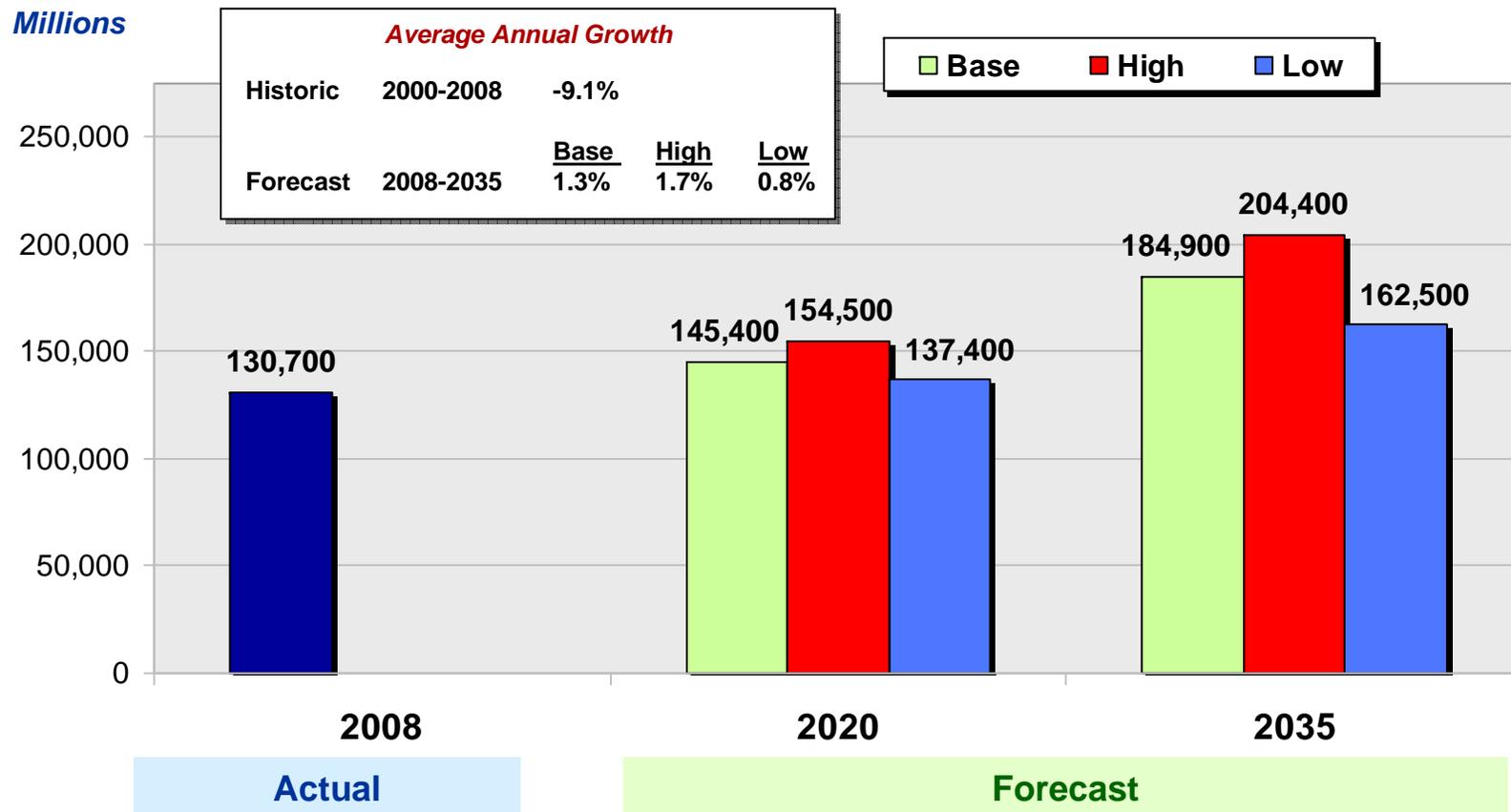
In the Base Case, Itinerant GA Operations are Forecast to Grow by 1.3% per Year Reaching 185,000 in 2035

Bay Area Itinerant GA Operations
Actual and Forecast



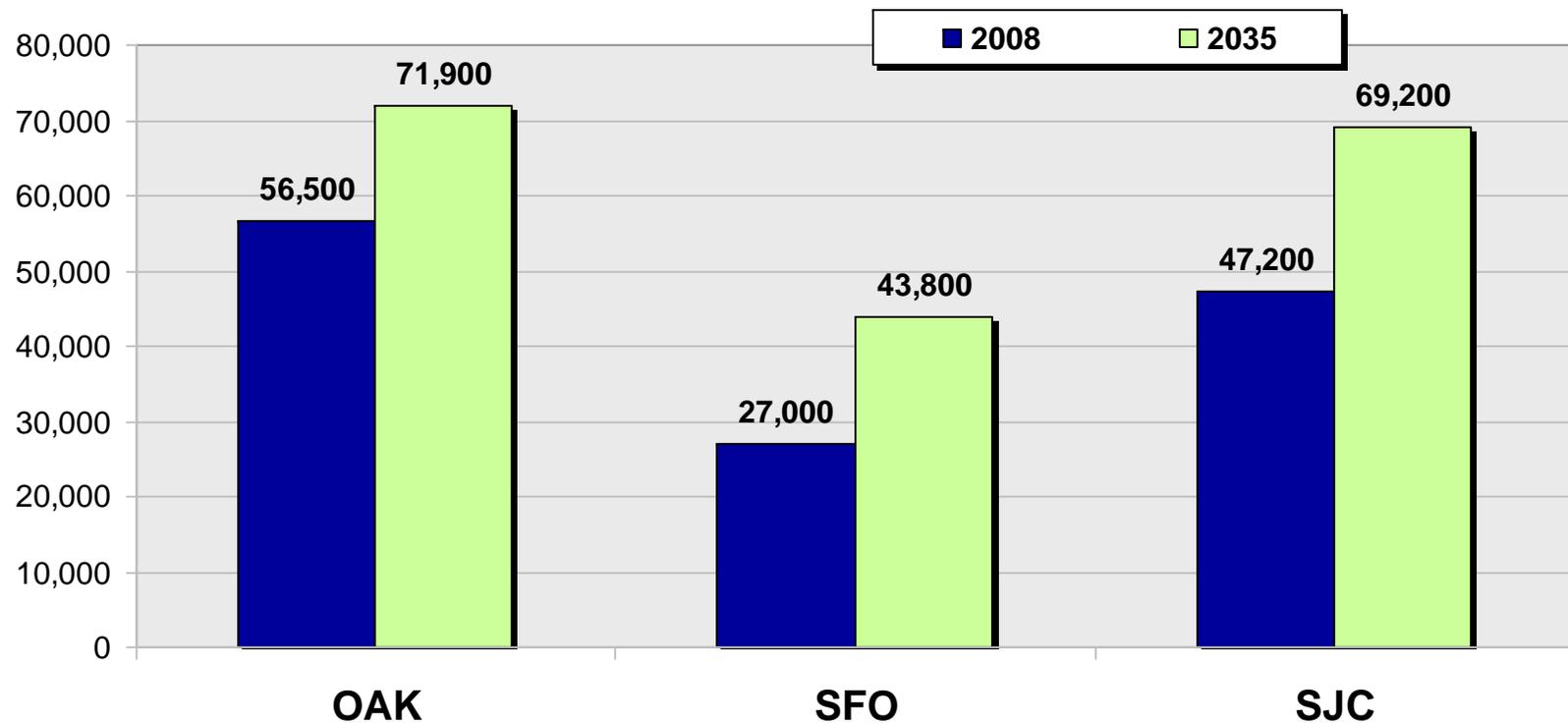
The Forecast Range for Itinerant GA Operations is 162,500 to 204,400 in 2035

Bay Area Itinerant GA Operations
Actual and Forecast



GA Operations Will Remain Concentrated at OAK and SJC Over the Forecast Period

Bay Area Itinerant GA Operations by Airport
Actual and Forecast Base Case





NEXT STEPS

Next Steps

- ◆ **Distribute Forecast Passenger Demand by Airport**
- ◆ **Translate Passenger and Cargo Forecasts into Operations and Aircraft Types for Capacity Modeling**
- ◆ **Develop O&D Market Forecasts**
- ◆ **Disaggregate Forecast to the Ground O&D Level to Assess Potential Diversion to Alternative Regional Airports and High Speed Rail**

