

# PUBLIC WORKSHOP PRESENTATION

*Prepared for:*

**Regional Airport Planning Committee**



METROPOLITAN  
TRANSPORTATION  
COMMISSION



Bay Conservation  
Development Commission

**May 10-12, 2010**

**Passion. Expertise. Results.**

# Topics

- ◆ **Welcome and Study Context**
- ◆ **Aviation Forecasts**
- ◆ **Runway Capacity Issues**
- ◆ **Scenario Analysis**
- ◆ **Summary of Results**

# 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 a Vision and Implementation Plan for the Region's Aviation System**

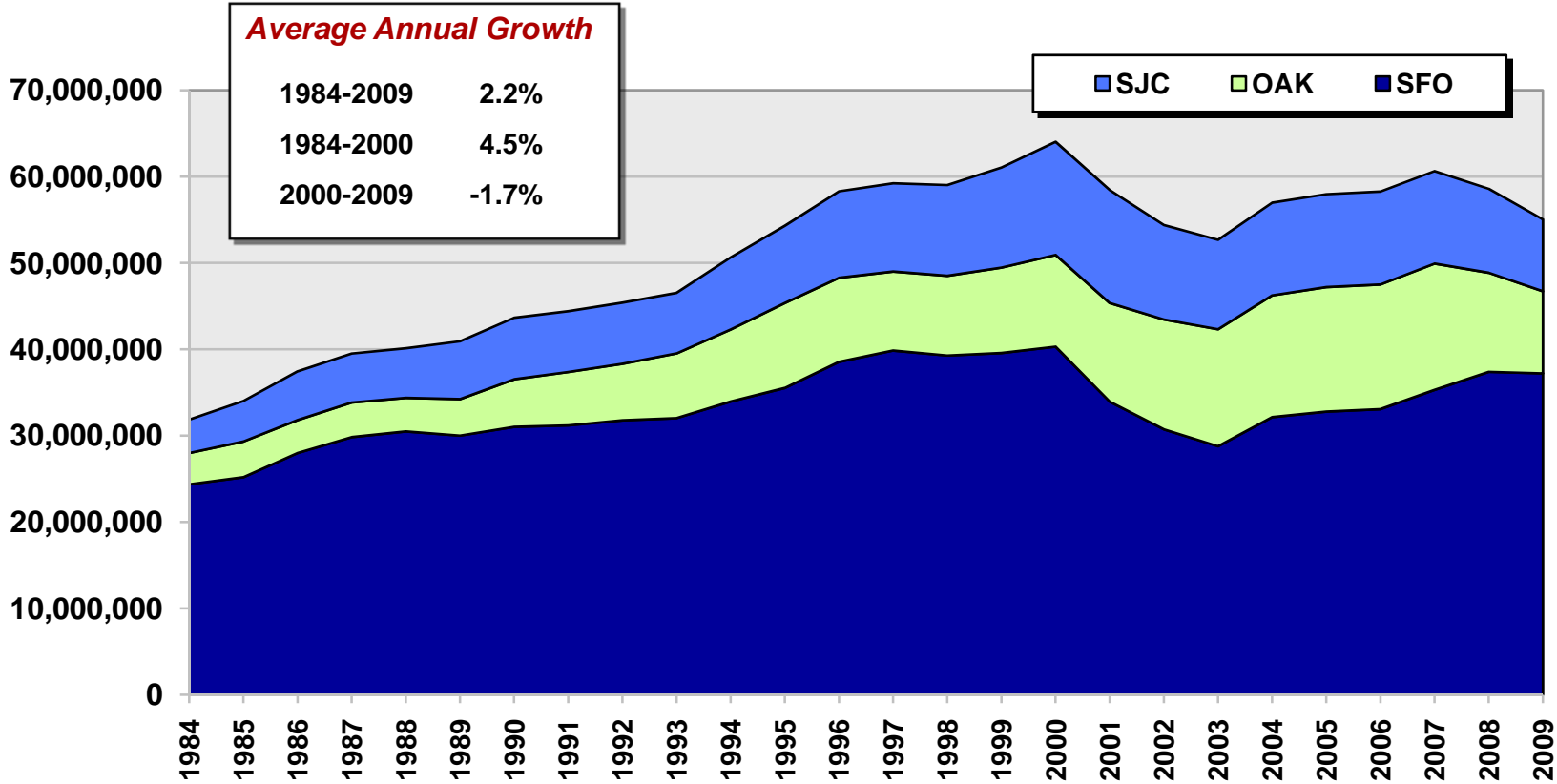


# Each Scenario is Measured Against 7 Goals

- ◆ **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 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?*

# Bay Area Airports Handled 55.1M Passengers in 2009 After Peaking at 64M in 2000

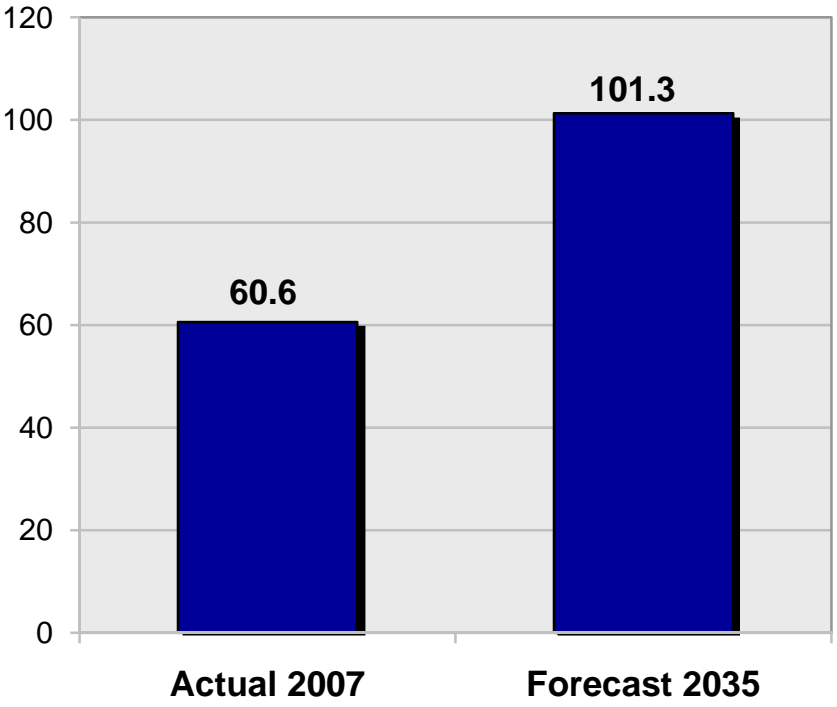
Bay Area Passengers by Airport  
(Enplaned + Deplaned)



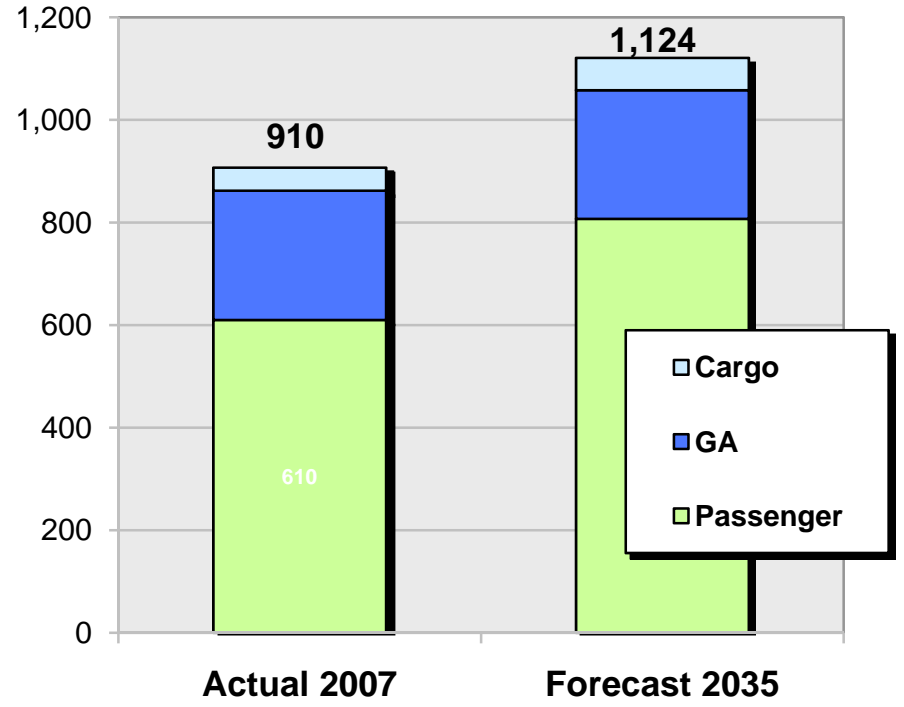
# By 2035, Regional Air Passengers are Forecast to Reach 101M, and Aircraft Operations Will Exceed 1M

Actual and Forecast Regional Aviation Demand  
2007 and 2035

Passengers (millions)

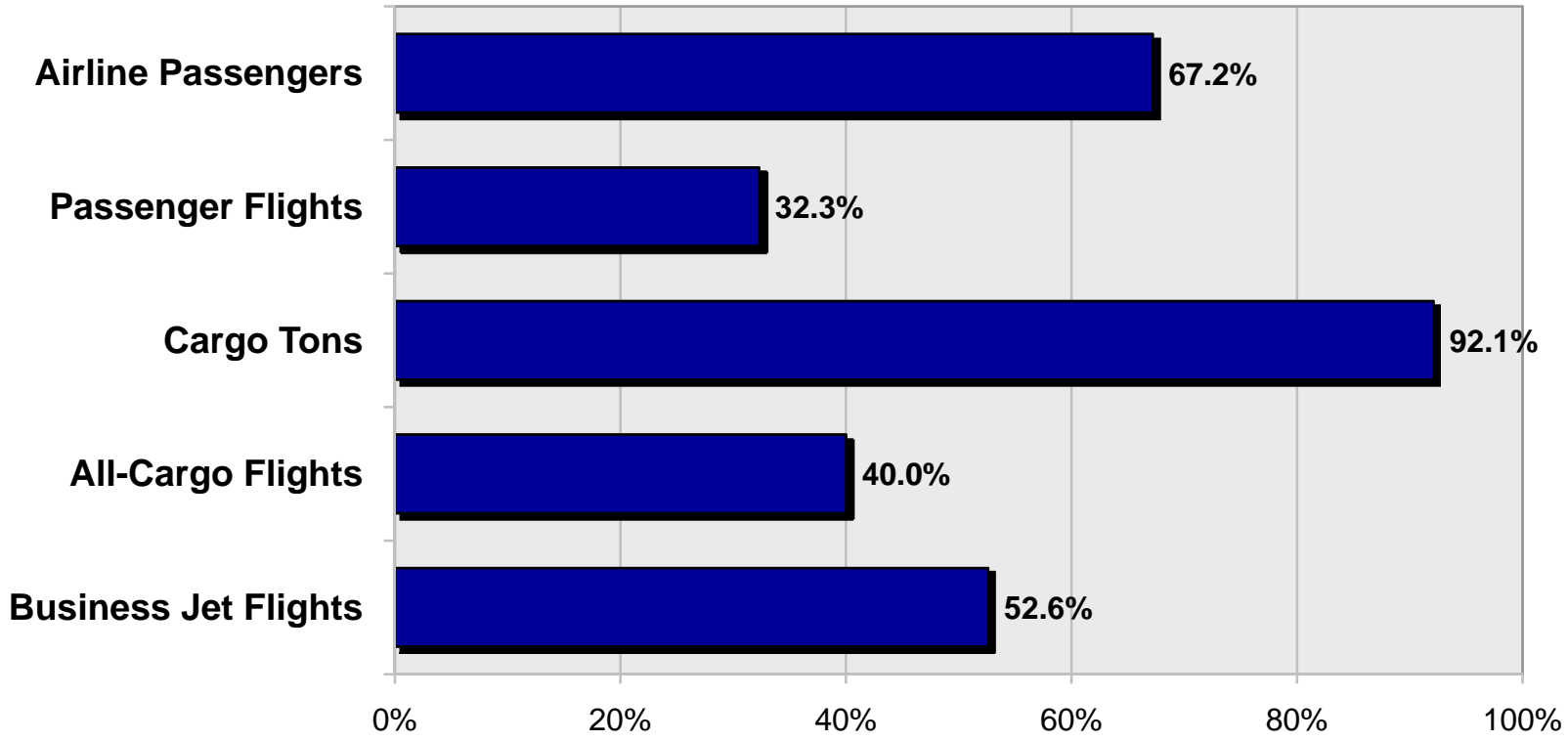


Aircraft Operations (000)



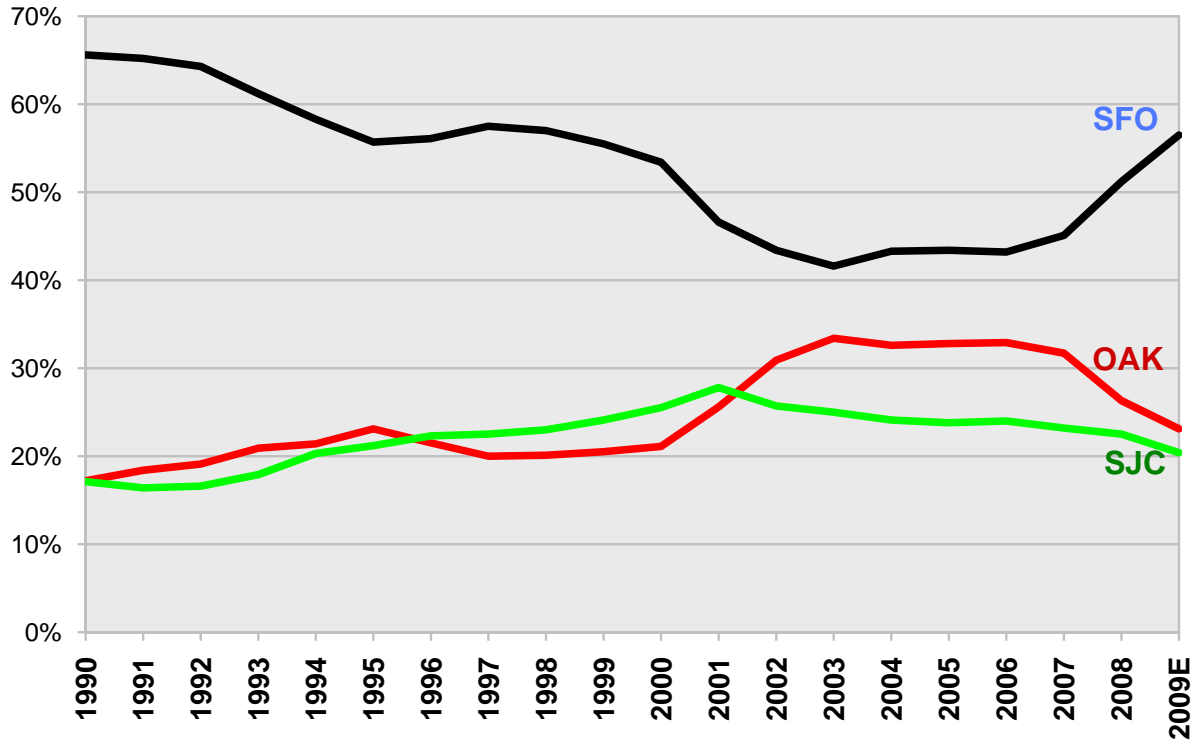
# Forecast Growth in Bay Area Aviation Demand

Forecast Percent Change  
2007-2035



# Historically, OAK and SJC Increased Their Regional Passenger Shares, but Recent Developments Have Eroded Those Gains

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

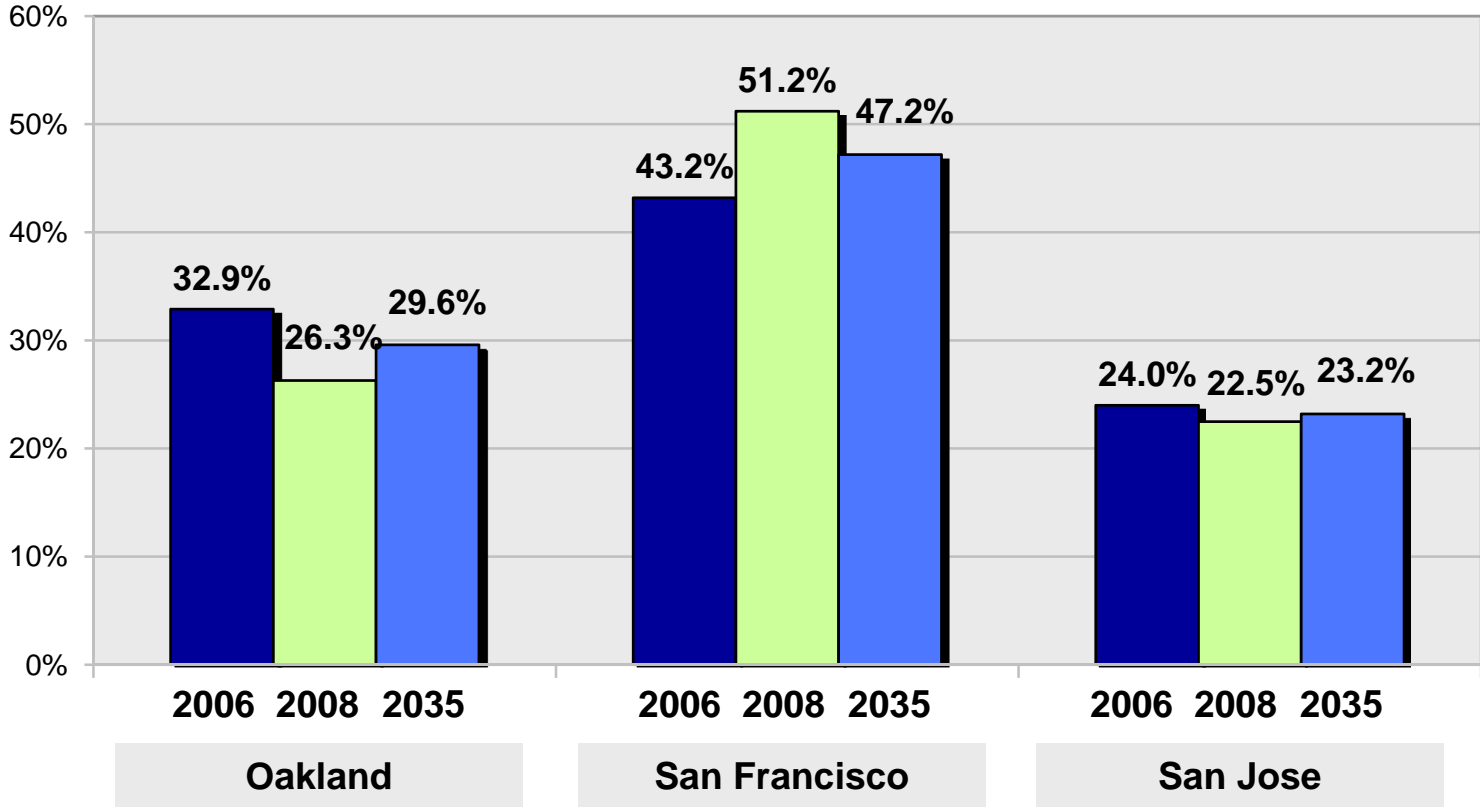


Year	Share of Bay Area Dom O&D Psgrs		
	OAK	SFO	SJC
1990	17.2%	65.6%	17.1%
1991	18.4%	65.2%	16.4%
1992	19.1%	64.3%	16.6%
1993	20.9%	61.2%	17.9%
1994	21.4%	58.3%	20.3%
1995	23.1%	55.7%	21.2%
1996	21.5%	56.1%	22.3%
1997	20.0%	57.5%	22.5%
1998	20.1%	57.0%	23.0%
1999	20.5%	55.5%	24.1%
2000	21.1%	53.4%	25.5%
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**

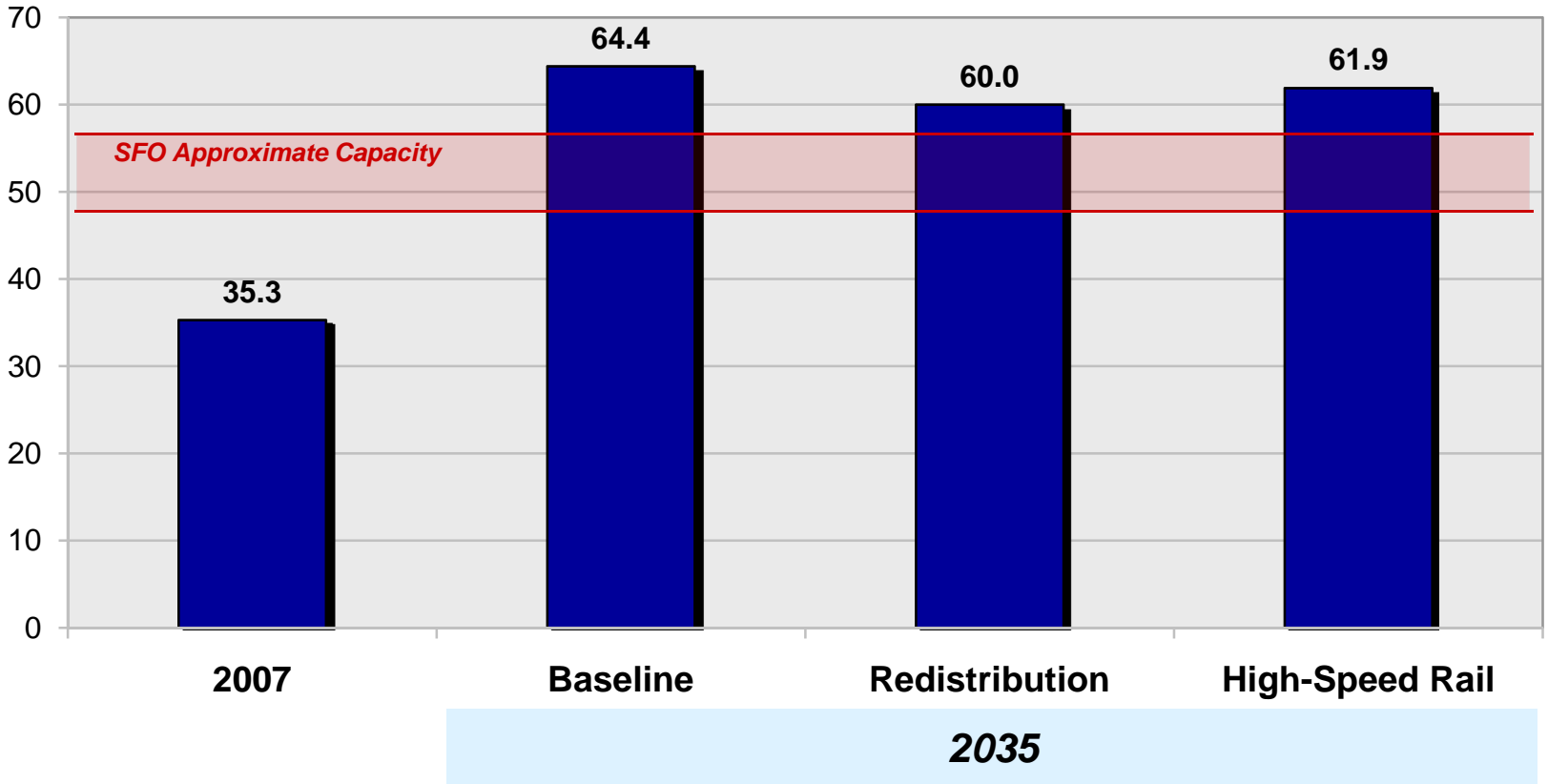
# From 2006 to 2008, There Was a Major Shift of Domestic Traffic From OAK to SFO

Airport Shares of Domestic O&D Passengers



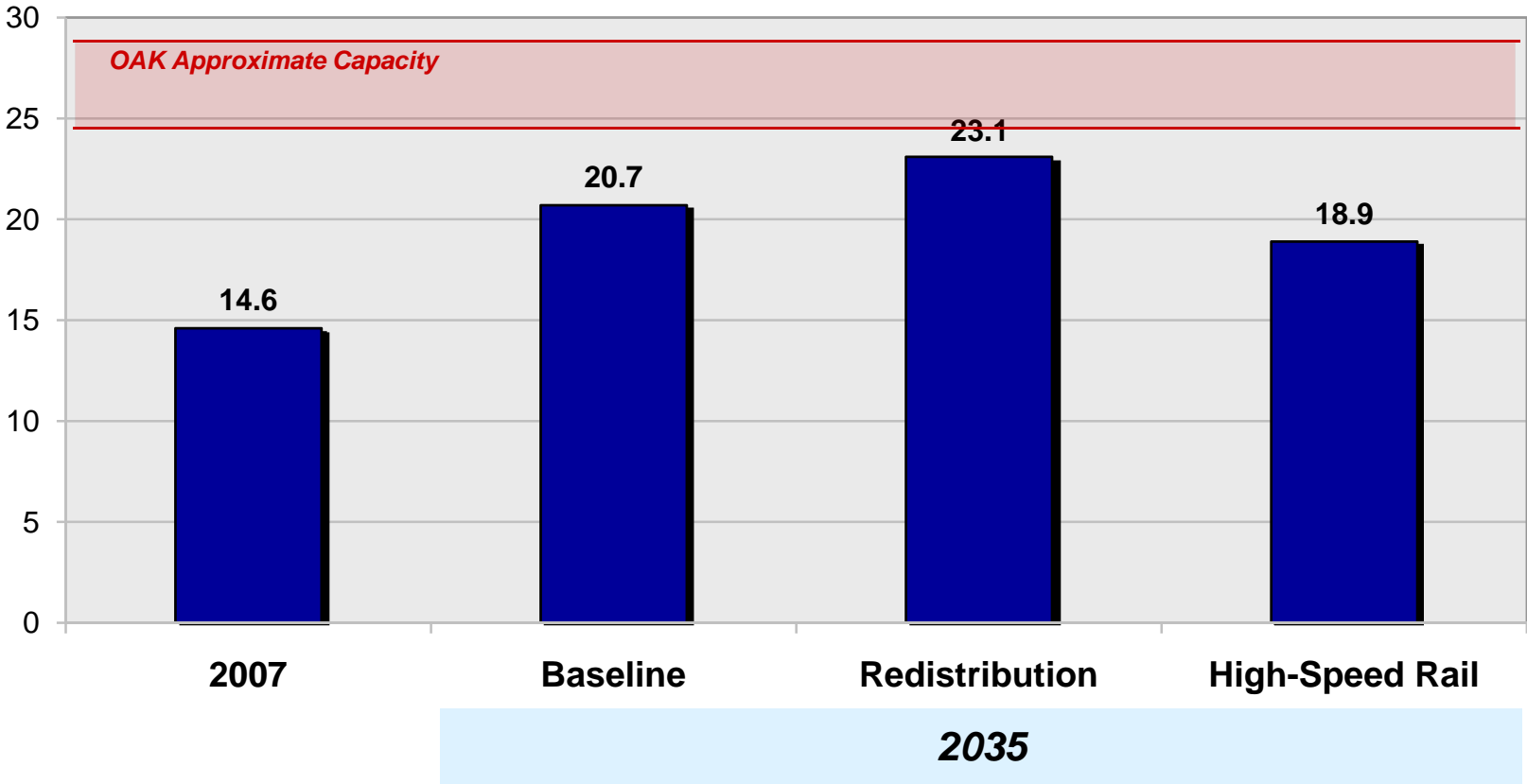
# In the Baseline, Passengers at SFO are Forecast at 64.4M

SFO Actual and Forecast Passengers  
(millions)



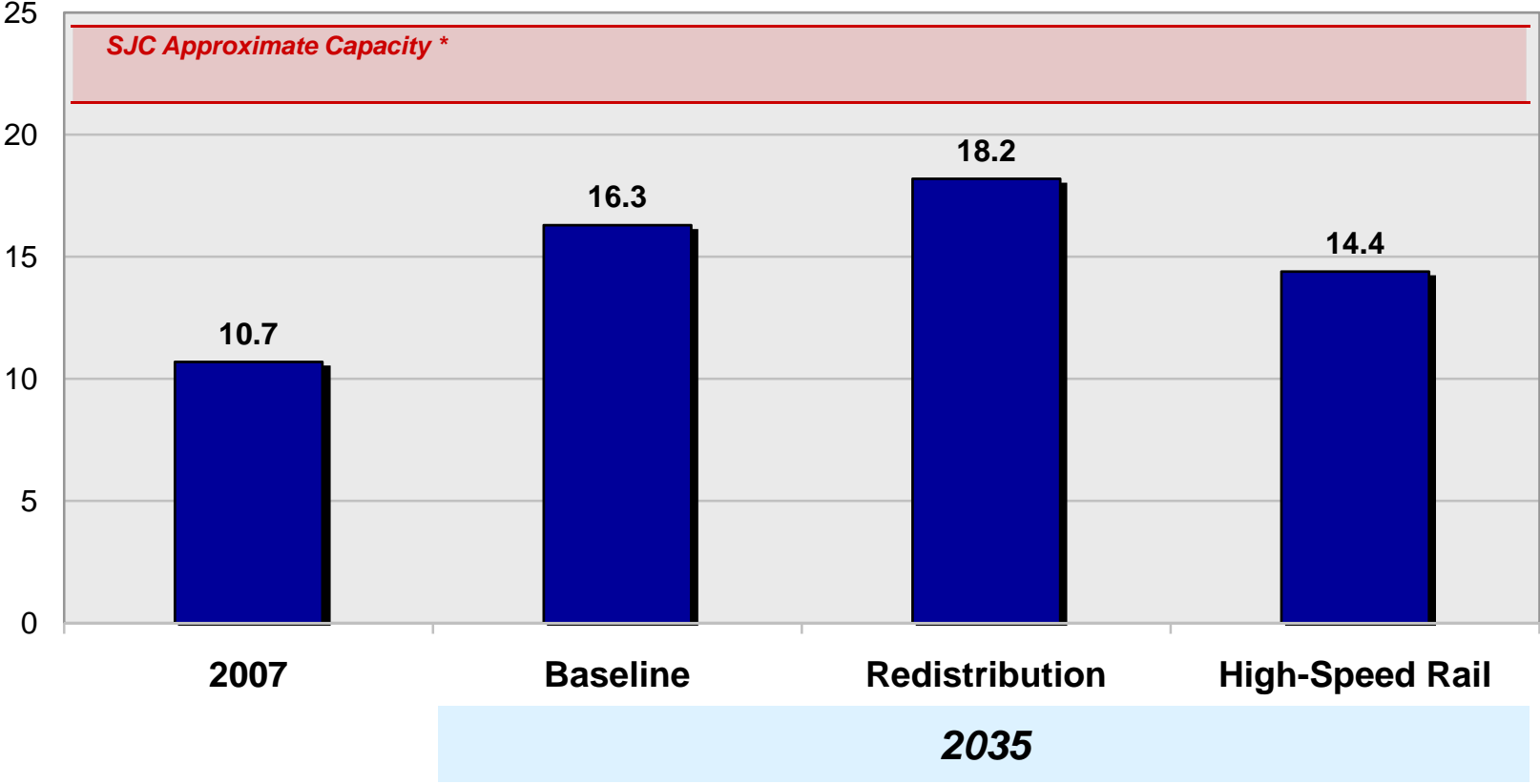
# OAK Passengers are Forecast at 21M in the Baseline, but Could Vary from 19M to 23M with High-Speed Rail or Redistribution

OAK Actual and Forecast Passengers  
(millions)



# SJC is Forecast at 16M Passengers in the Baseline and Could Range from 14M to 18M with High-Speed Rail or Redistribution

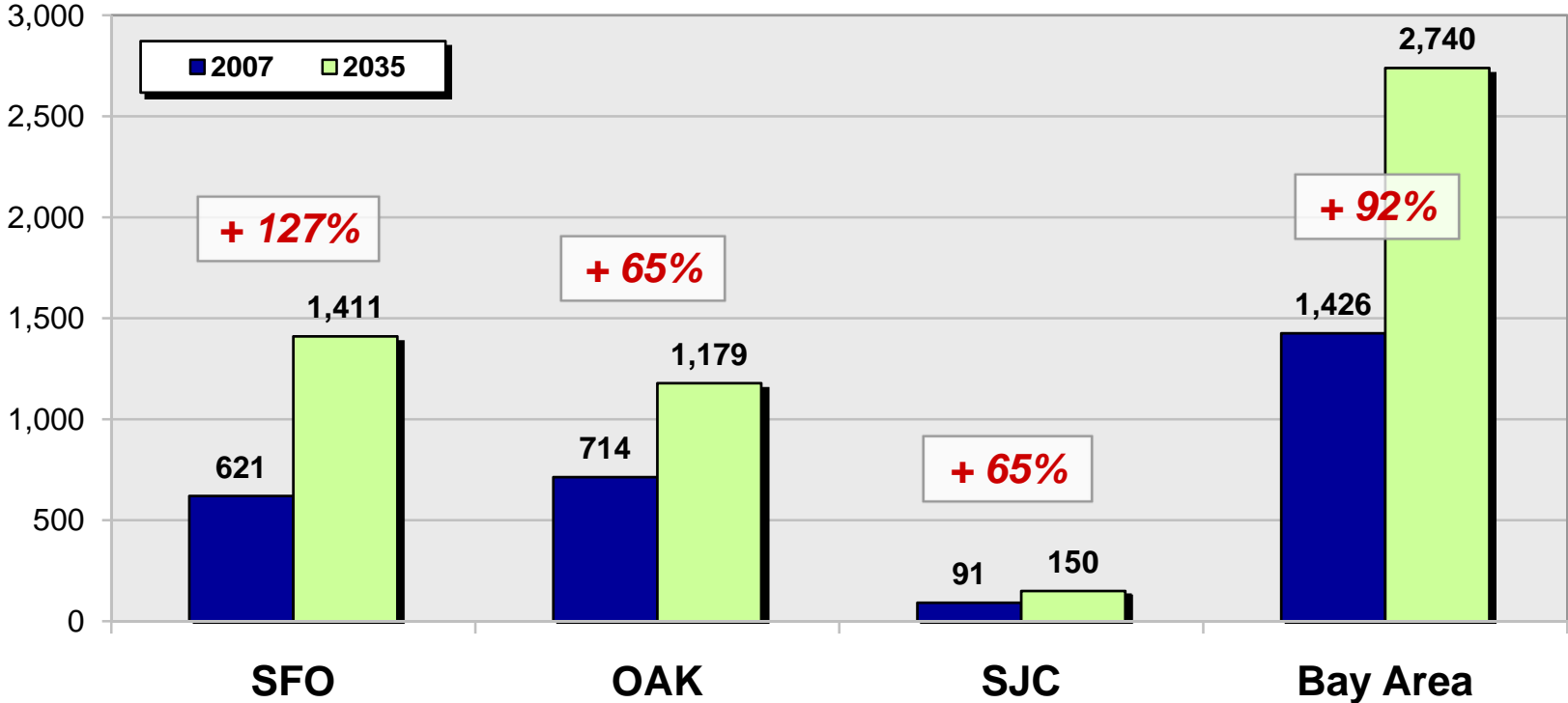
SJC Actual and Forecast Passengers  
(millions)



\* Reflects landside constraints rather than runway capacity.

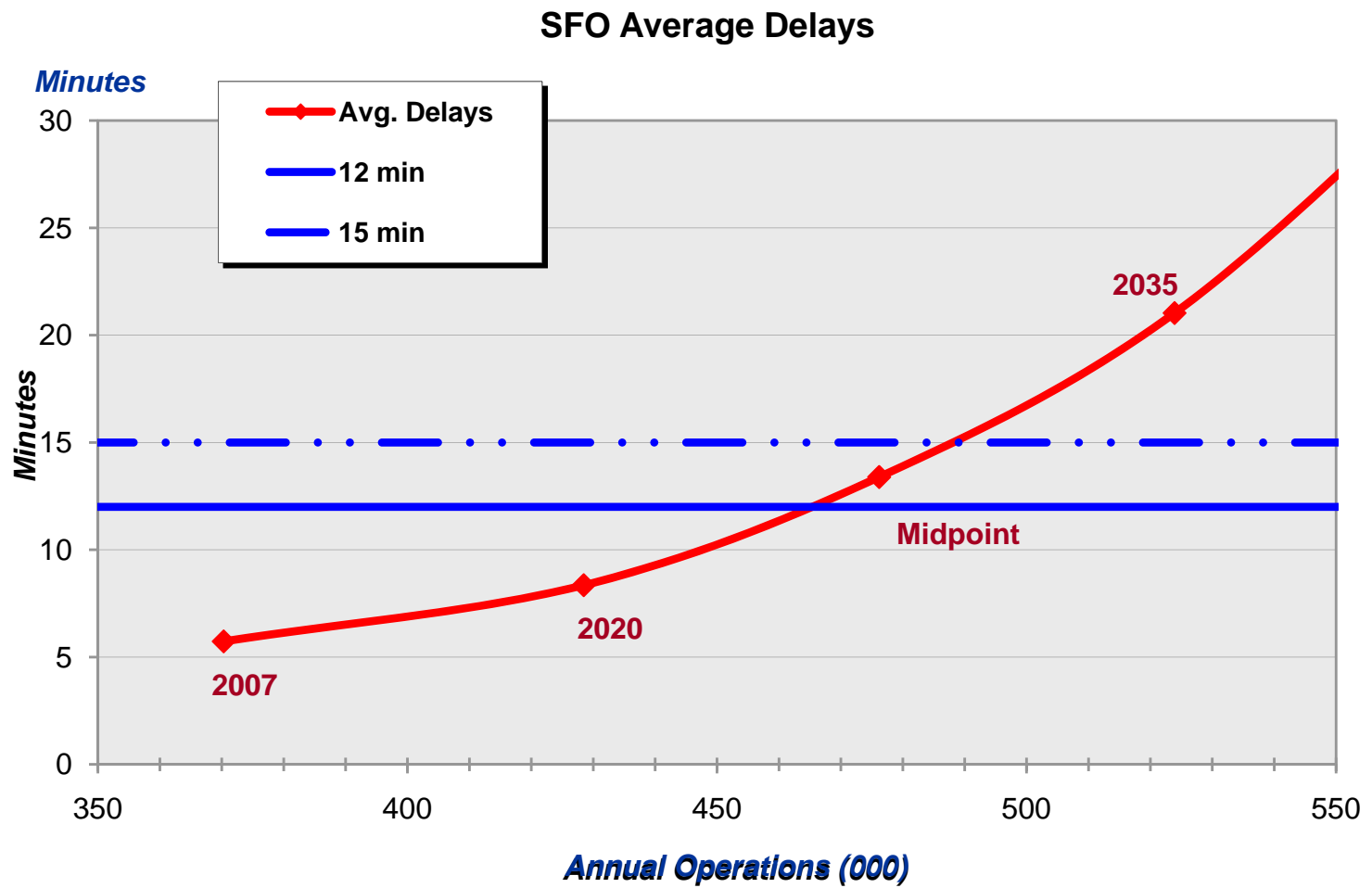
# Cargo Tons are Forecast to Grow the Fastest at SFO Due to Forecast Growth in International Cargo Demand

Forecast Bay Area Cargo Tons  
(in thousands)



Note: Enplaned plus deplaned tons. Includes freight and mail for passengers airlines and all-cargo airlines.

# SFO is Forecast to Reach Airfield Capacity at 460,000 to 485,000 Operations – Well Before 2035



## Six Scenarios were Analyzed

### ◆ 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

- NexGen 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

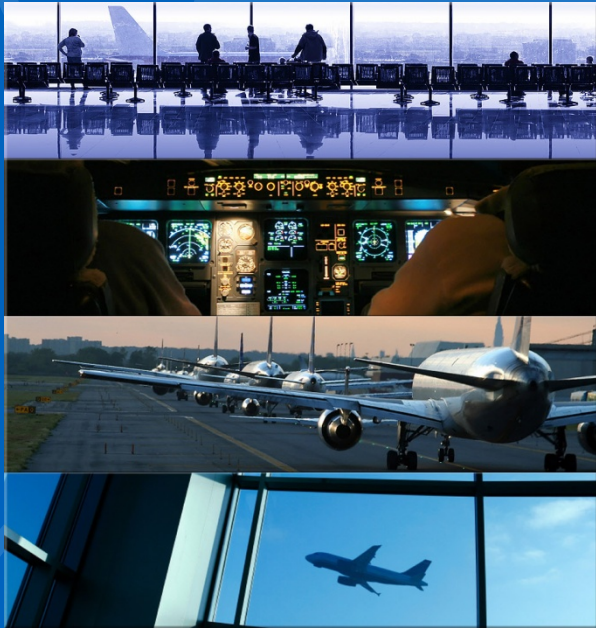
# Scenario Considerations

- ◆ **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
  - Program form and effectiveness will be determined by airport operators and the US DOT/FAA

# Screening Analysis Results

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
Redistribution	Yellow	Yellow	Red	Red	Red	Yellow	Red
Internal Airports	Red	Red	Yellow	Red	Red	Yellow	Red
External Airports	Red	Red	Red	Red	Red	Red	Red
High-Speed Rail	Yellow	Yellow	Green	Red	Yellow	Green	Yellow
ATC Technologies	Green	Green	Red	Red	Red	Red	Red
Demand Mgmt	Yellow	Yellow	Red	Red	Red	Red	Red

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



## Appendix

## Projected Trends: 2007 to 2035

### ◆ Average Delay Minutes (SFO):

- 2007: 5.7
- 2035: 21.0 (Baseline)  
9.1 (ATC)

### ◆ Annual Departures per Capita in Top 15 Domestic Markets

- 2007: 263
- 2035: 262 (Baseline)  
256 (External Airports)  
288<sup>\1</sup>(HSR)

### ◆ Airport Access Times

- 2007-2035: +3.3% (Baseline)  
-0.3% (Internal Airports)

### ◆ GHGs

- Change 2007-2035: +53% (Baseline)  
+41% (HSR)

### ◆ HC/NOx

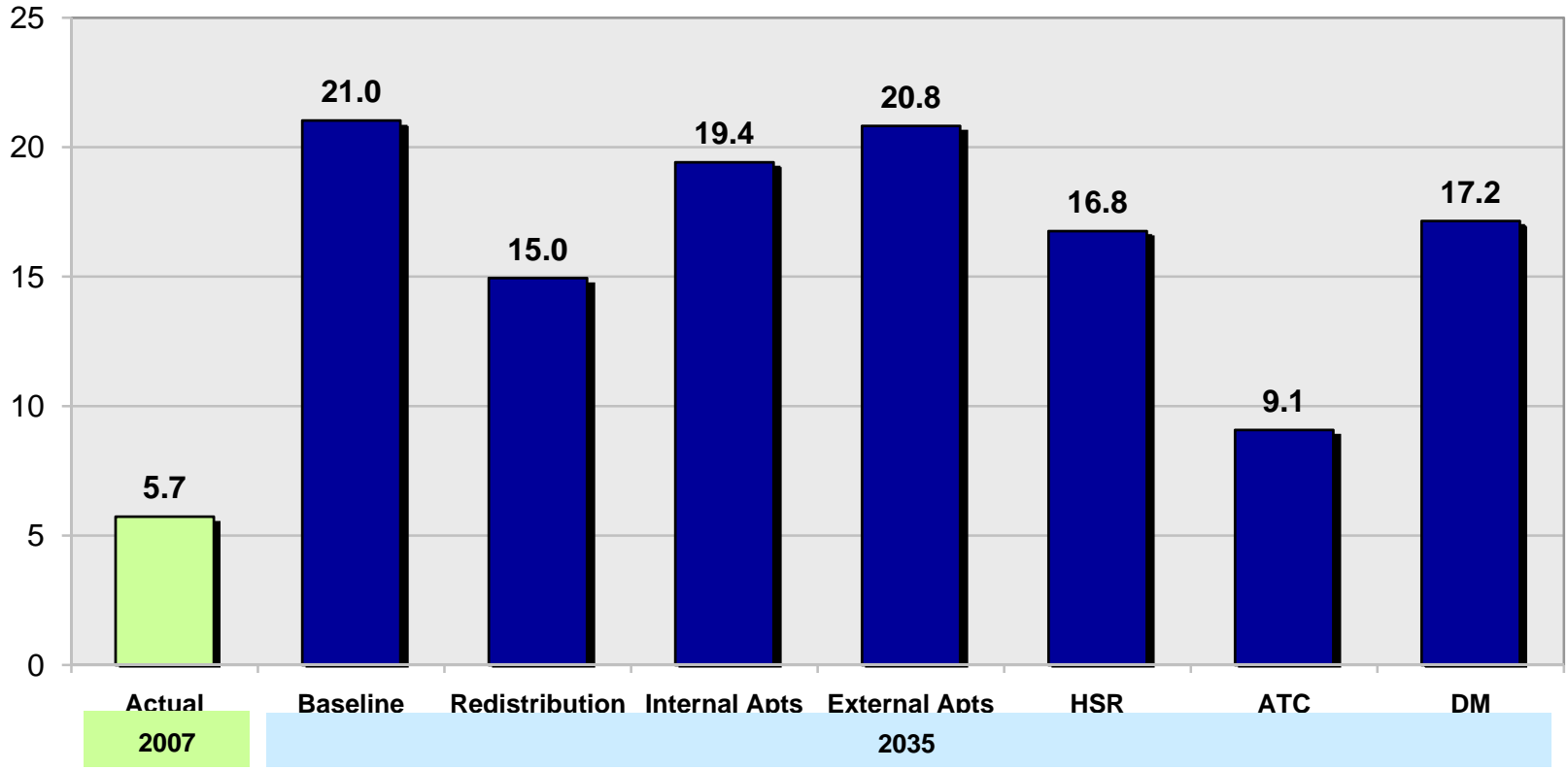
- Change 2007-2035: + 44% (Baseline)  
+29% (HSR)

### ◆ Regional Population in 65 CNEL Noise Contour

- Change 2007-2035: +19,200 to  
22,000 people<sup>\2</sup>
- Many residences in the 65 CNEL contours have been soundproofed

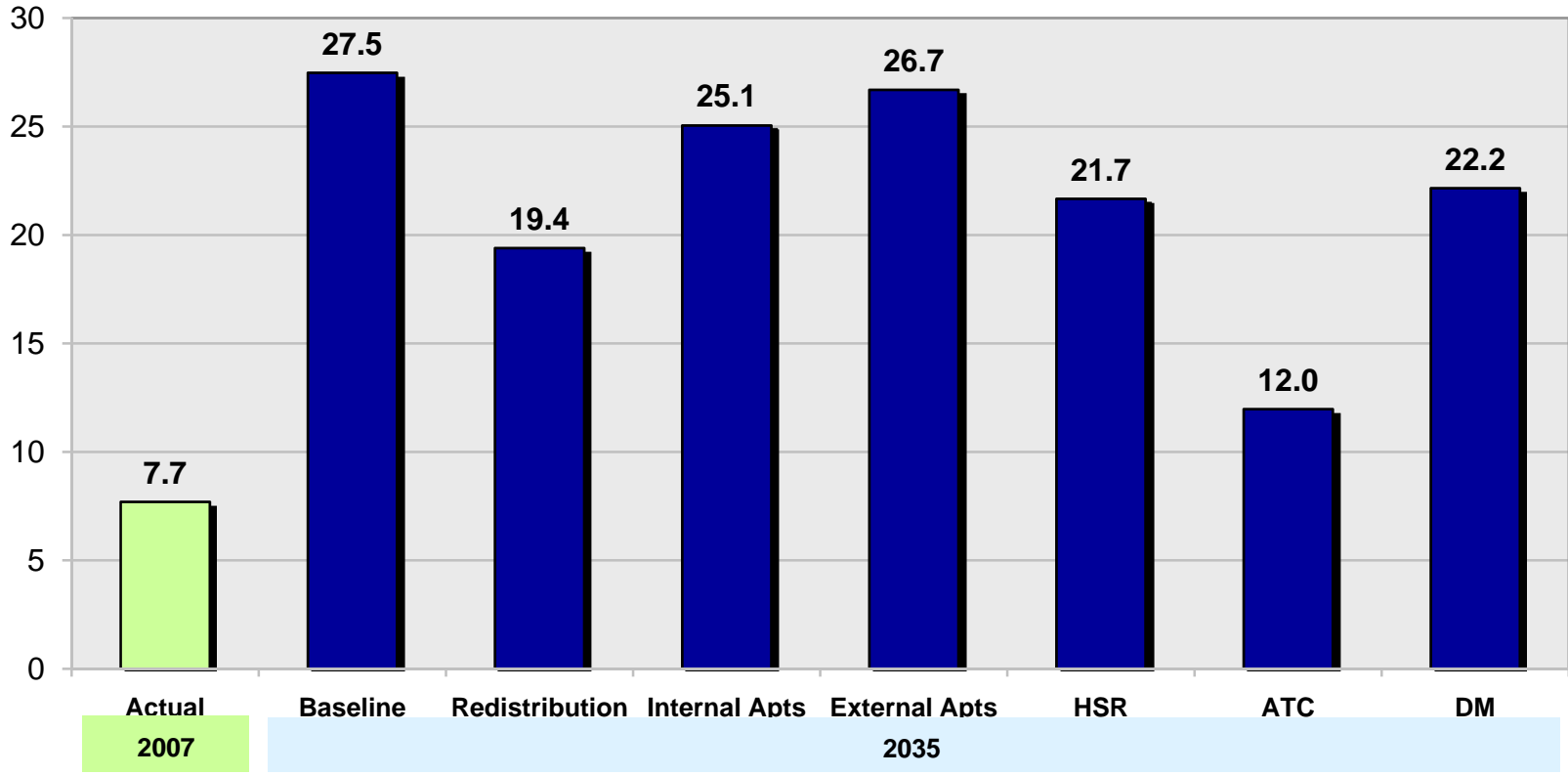
# Reliable Runways: Average Aircraft Delays at SFO

Average Aircraft Delays  
(Minutes)



# Reliable Runways: Peak 3-Hour Delays at SFO

Average Peak 3-Hour Aircraft Delays  
(Minutes)

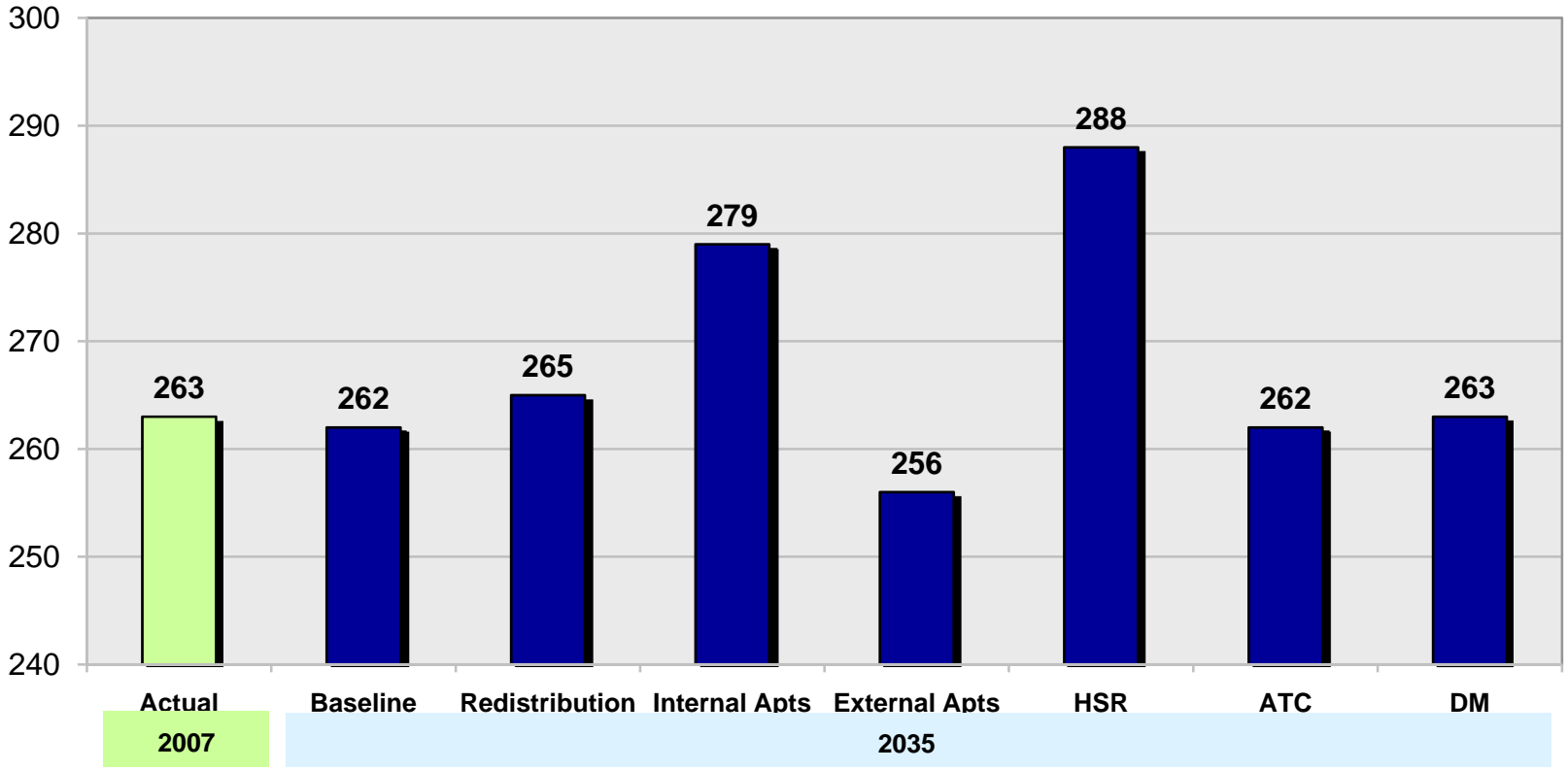


# Healthy Economy: Average Delays at SFO

Scenario	2035 SFO Avg Aircraft Delay (minutes)	Healthy Economy Rating
Baseline	21	Low
Redistribution	15	Medium
Internal Regional Airports	19	Low
External Regional Airports	21	Low
High-Speed Rail	17	Medium
<b>New ATC Technologies</b>	<b>10</b>	<b>High</b>
Demand Management	17	Medium

# Good Passenger Service: *Flight Frequency in Top 15 Domestic Markets*

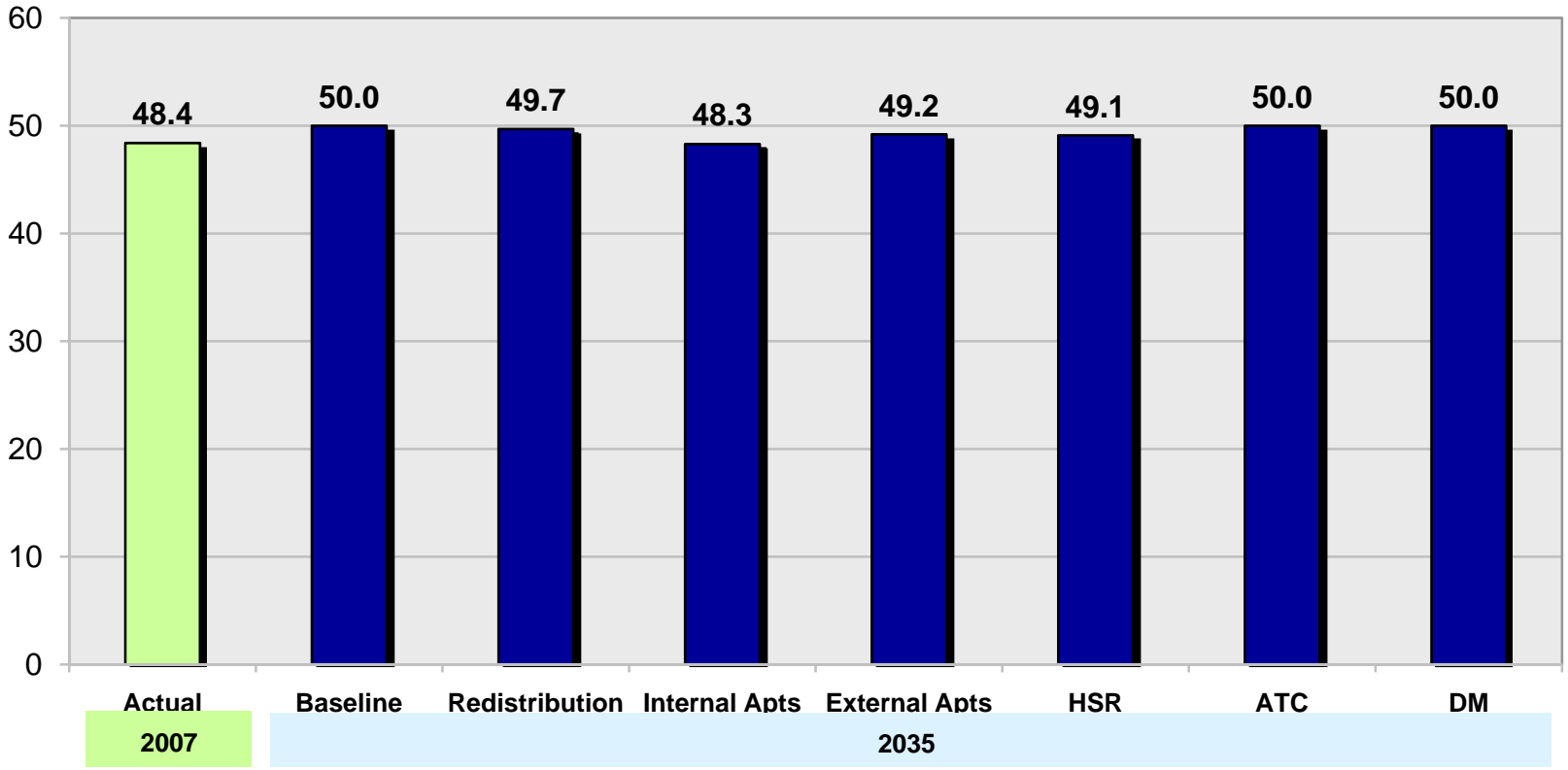
**Service per Capita in Top 15 O&D Markets**  
(Annual Departures per 10,000 Population)



Note: HSR Scenario counts train frequencies as flights.  
2035 population based on ABAG's 2007 projections.

# Convenient Airports: Average Airport Ground Access Time

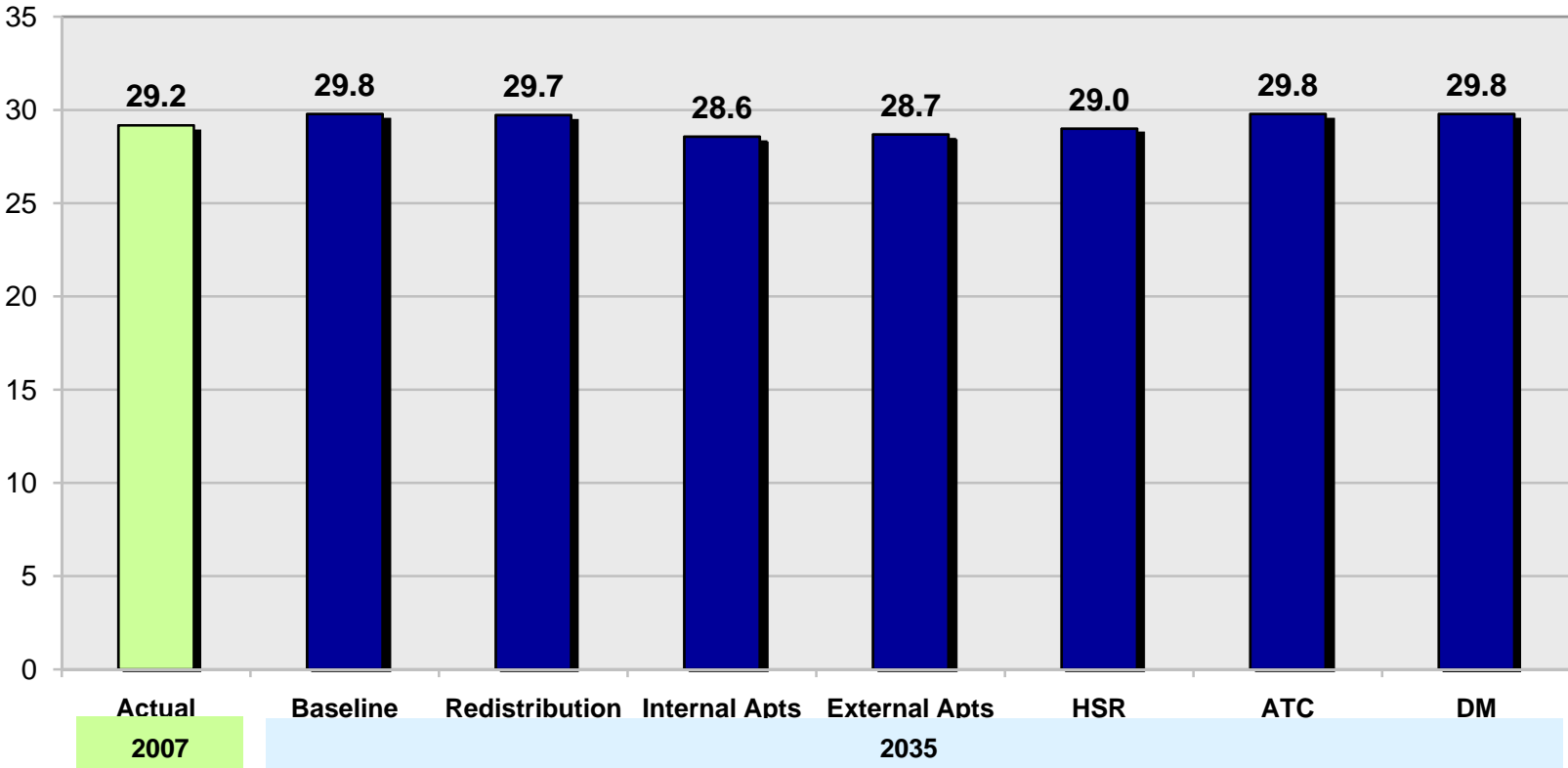
Average Airport Ground Access Time  
(Minutes)



Note: Assumes 2035 Travel Times from MTC.

# Convenient Airports: Average Ground Access Distance

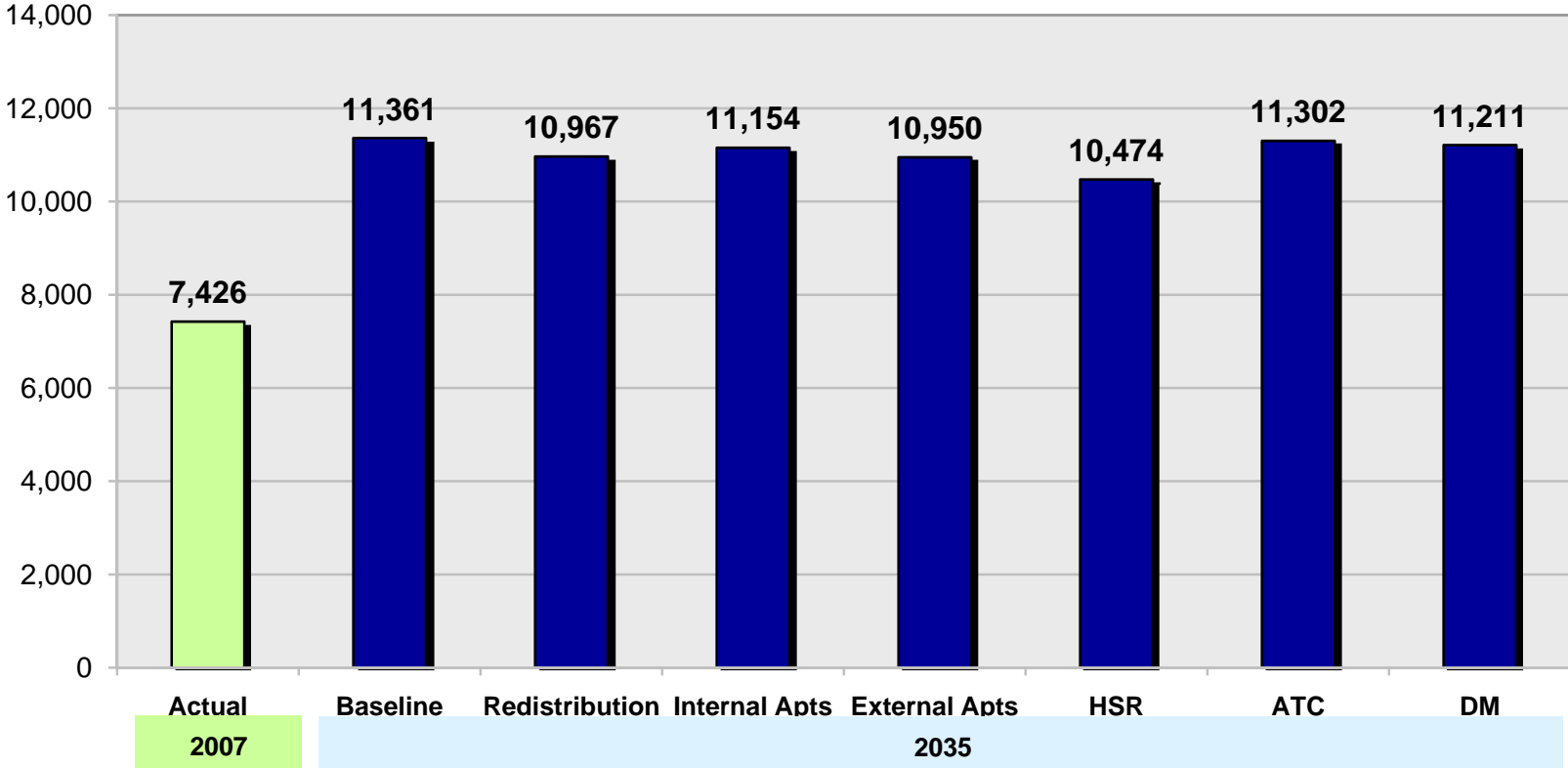
Average Airport Ground Distance  
(Miles)



Note: Access costs include highway and transit costs.

# Climate Protection: Green House Gases from Aircraft and Airport Ground Access Vehicles

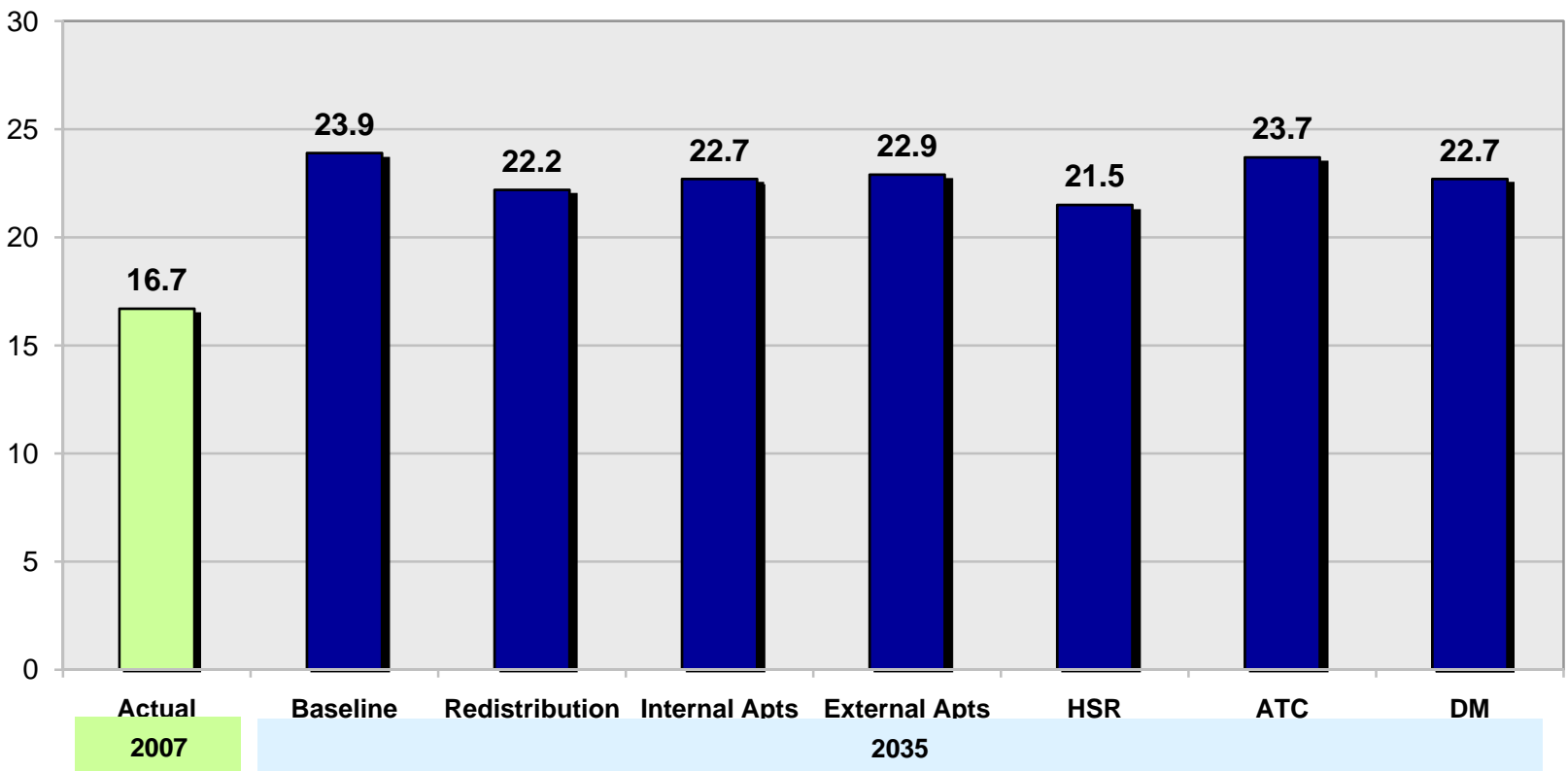
**Green House Gas Emissions**  
(Daily Metric Tons of CO2)



Notes: Includes emissions from aircraft and airport ground access vehicles.  
Internal Airports Scenario includes emissions from new air services at alternative airports.  
External Airports Scenario excludes emissions from service development at airports outside the region.  
HSR Scenario excludes emissions for rail service, but a sensitivity analysis indicates a net reduction.

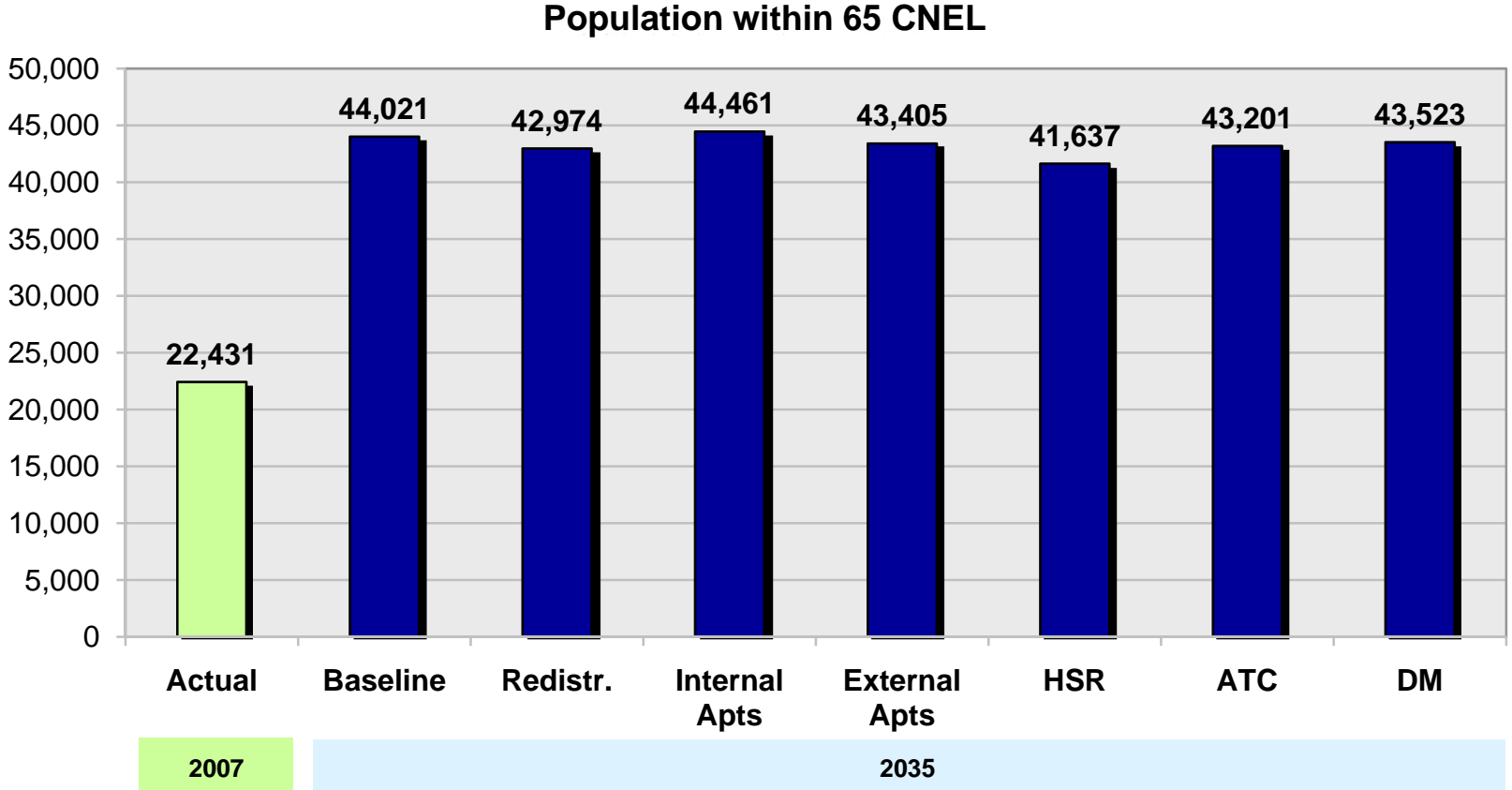
# Clean Air: Hydrocarbon Emissions from Aircraft and Airport Ground Access Vehicles

**NOx plus HC Emissions**  
(Daily Metric Tons)



Note: Includes emissions from aircraft and airport ground access vehicles.  
Internal Airports scenario includes emissions from new air services at alternative airports.  
External Airports scenario excludes emissions from service development at airports outside the region.  
HSR Scenario excludes emissions for rail service.

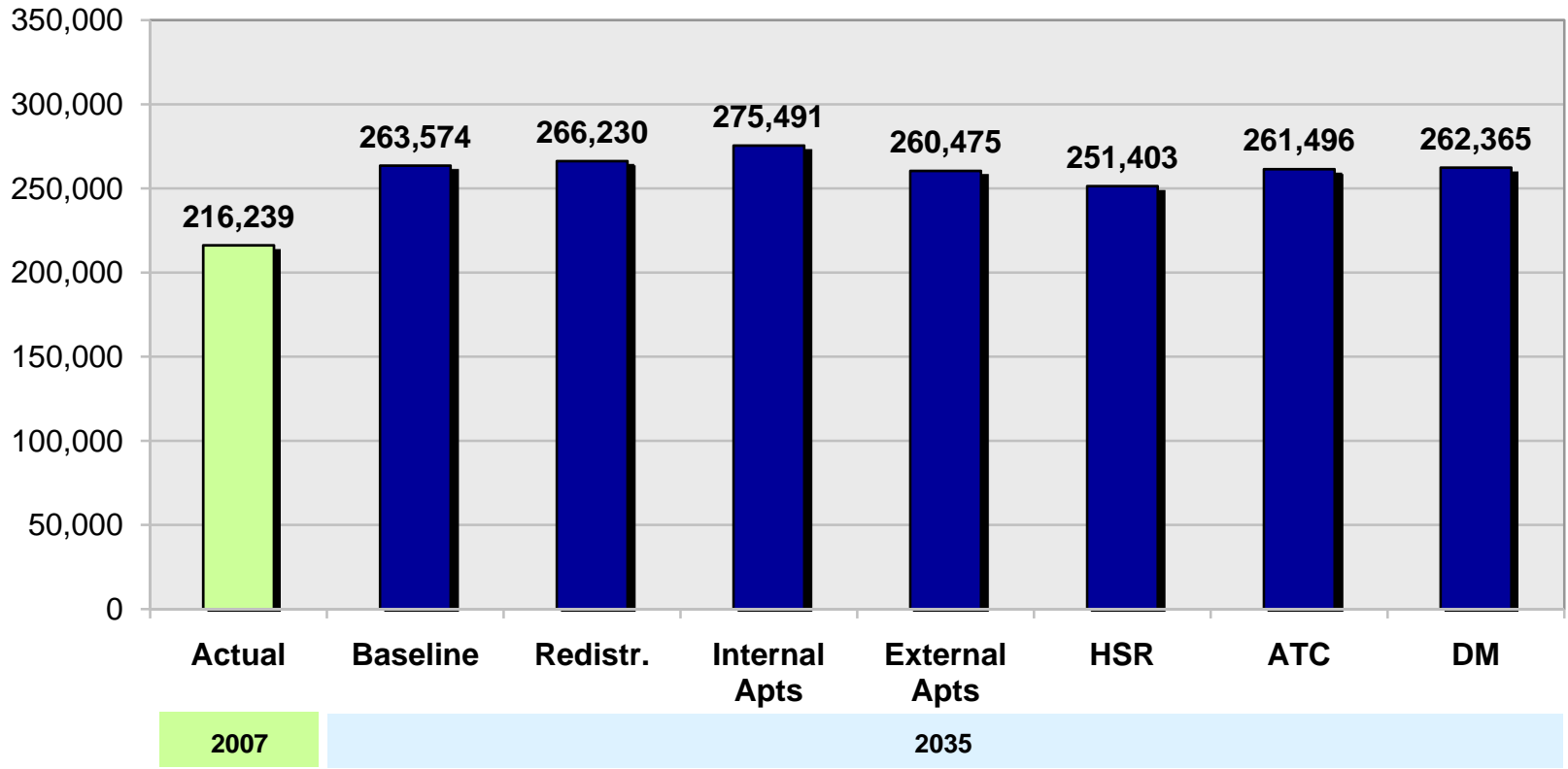
# Livable Communities: 65 CNEL Populations



***Some Residences in the 65 CNEL  
Contours Have Already Been Soundproofed***

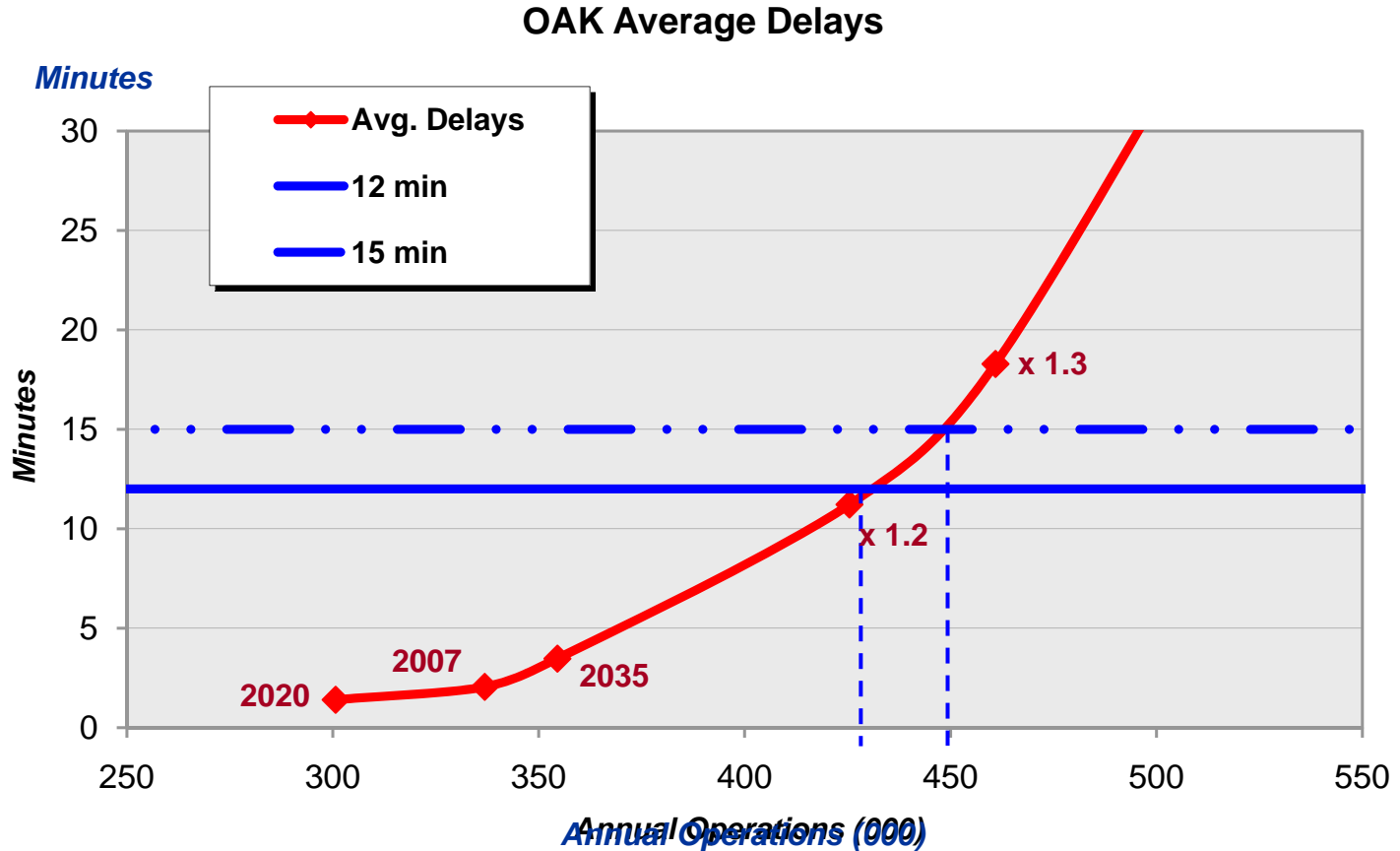
# Livable Communities: 55 CNEL Populations

Population within 55 CNEL



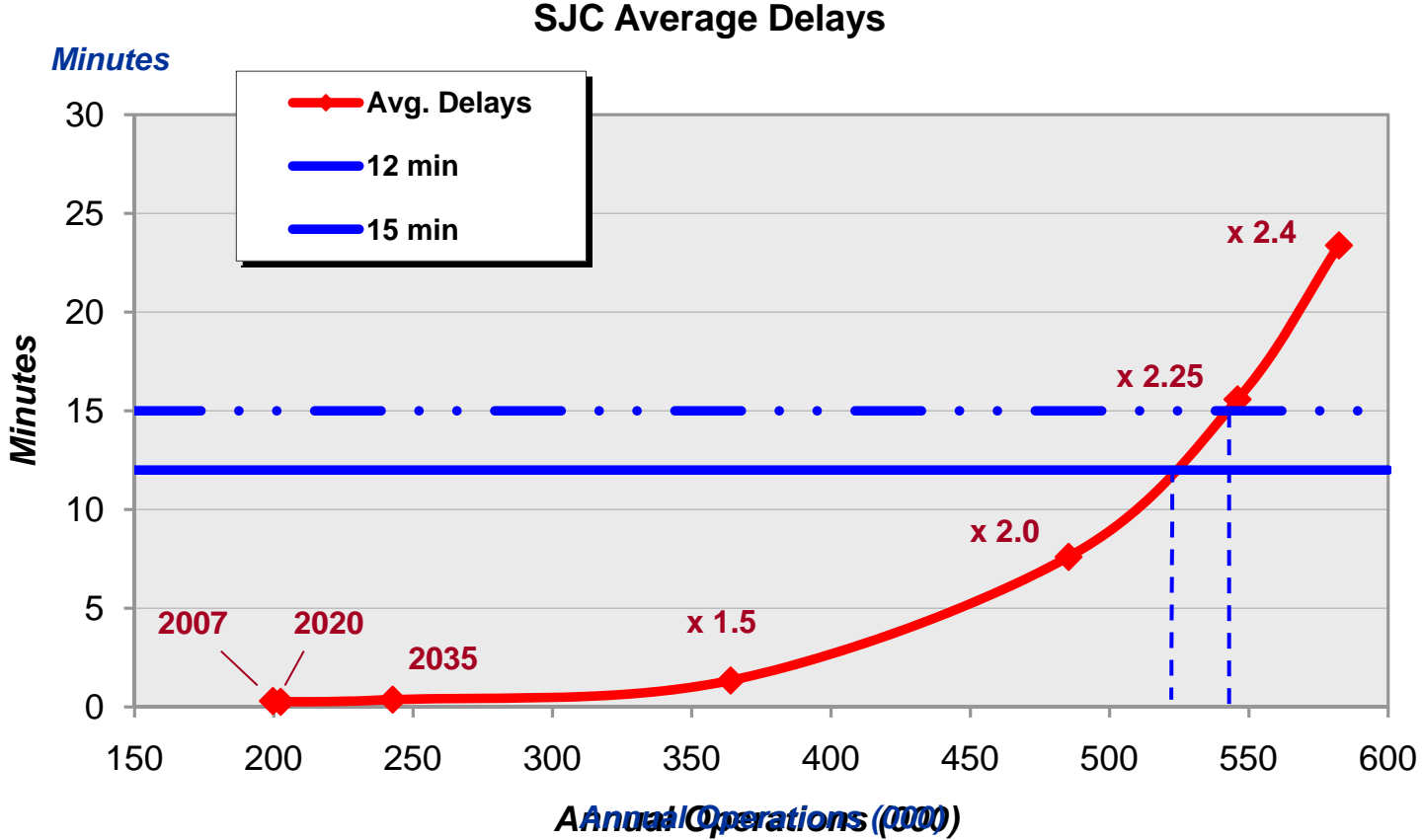
Notes: Internal Airports includes increases in 55 CNEL populations at alternative airports due to diversion from primary airports. Some residences in forecast 2035 contours have already been soundproofed. Based on 2007 residential population.

# OAK is Predicted to Reach Airfield Capacity at 425,000 to 450,000 Annual Operations, or 20%-25% Above the 2035 Forecast



Notes: Capacities are for North and South Fields combined.  
"x1.2" = 1.2 times 2035 operations; "x1.3" = 1.3 times 2035 operations

# No Significant Runway Capacity Issues are Predicted for SJC Over the Forecast Period



**SJC has Runway Capacity to Accommodate Over 500,000 Aircraft Operations However, Terminal Capacity is the Critical Constraint**

Notes: Capacities are for all three runways serving commercial air carrier and general aviation users.

"x1.5" = 1.5 times 2035 operations; "x2.0" = 2.0 times 2035 operations; etc.