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PLANNING COMMITTEE PRESENTATION

ABAG
Association of Bay Area Governments

METROPOLITAN TRANSPORTATION COMMISSION

bcdc
Bay Conservation Development Commission

OCTOBER 8, 2010

Passion. Expertise. Results.

Topics

- Study Context
- Aviation Forecasts
- Runway Capacity Issues
- Scenario Analysis
- Summary of Results

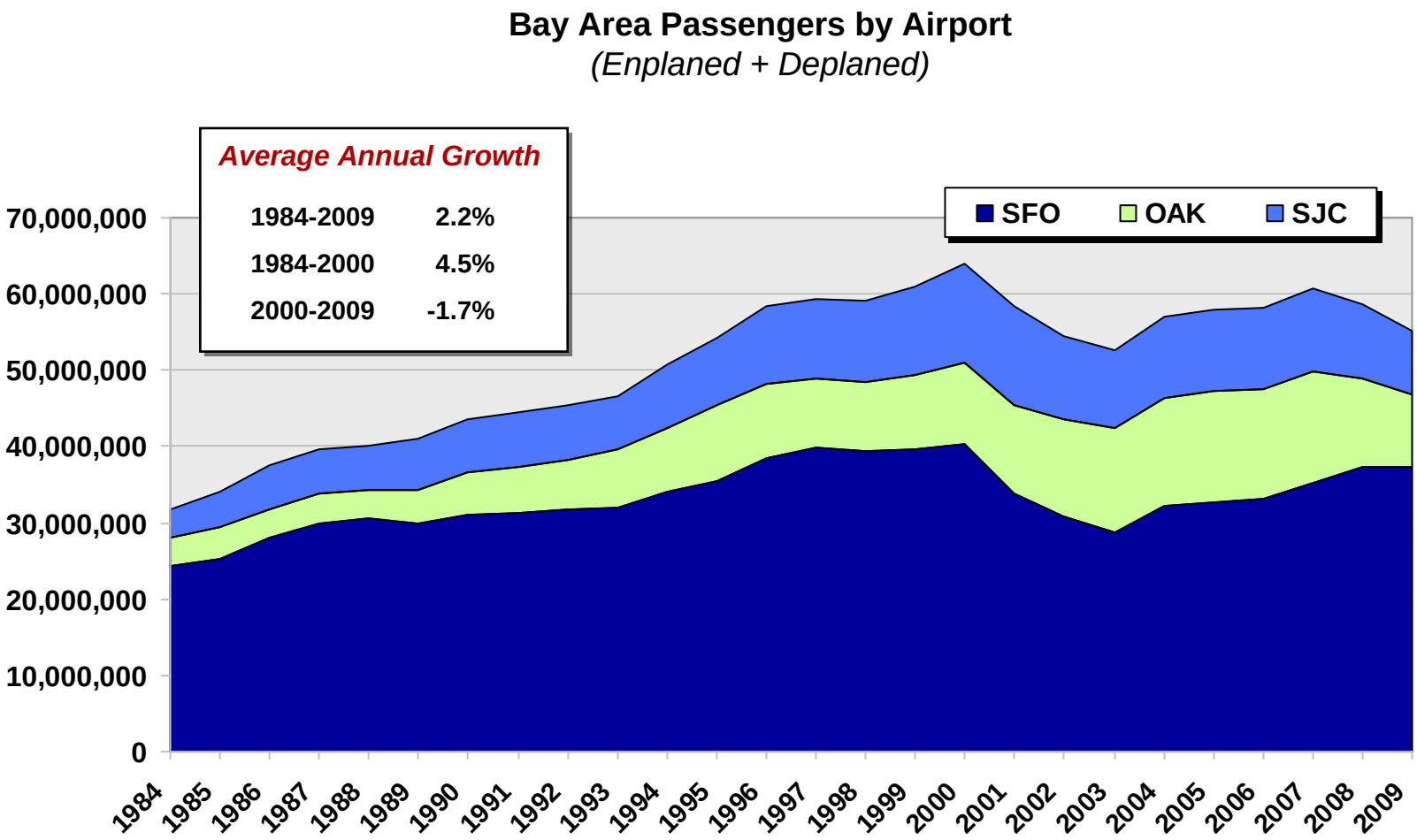
Study Objectives and Critical Questions

- **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?*

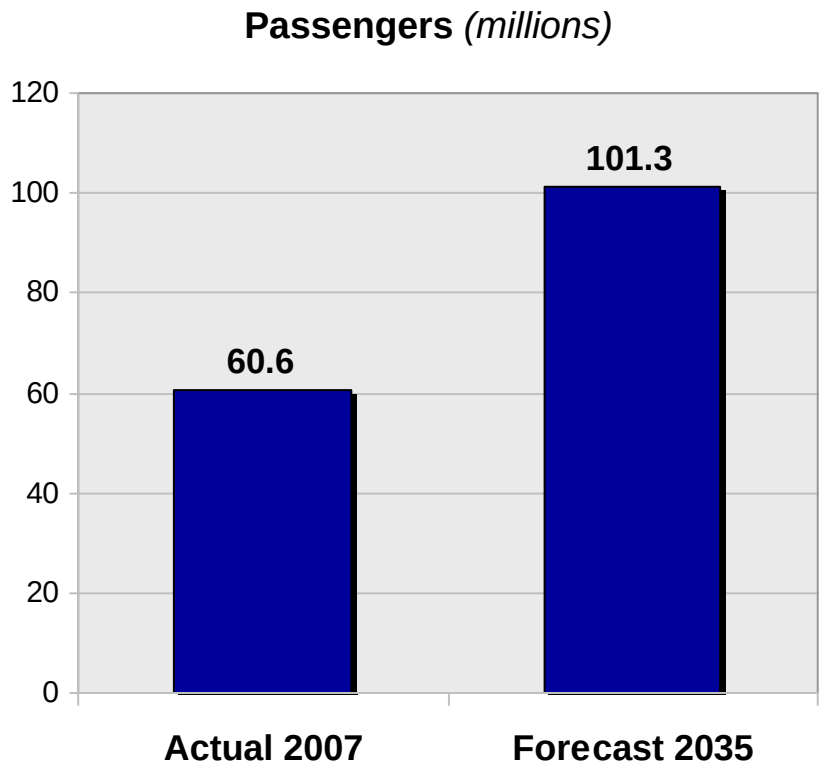
Bay Area Airports Handled 55.1M Passengers in 2009 After Peaking at 64M in 2000

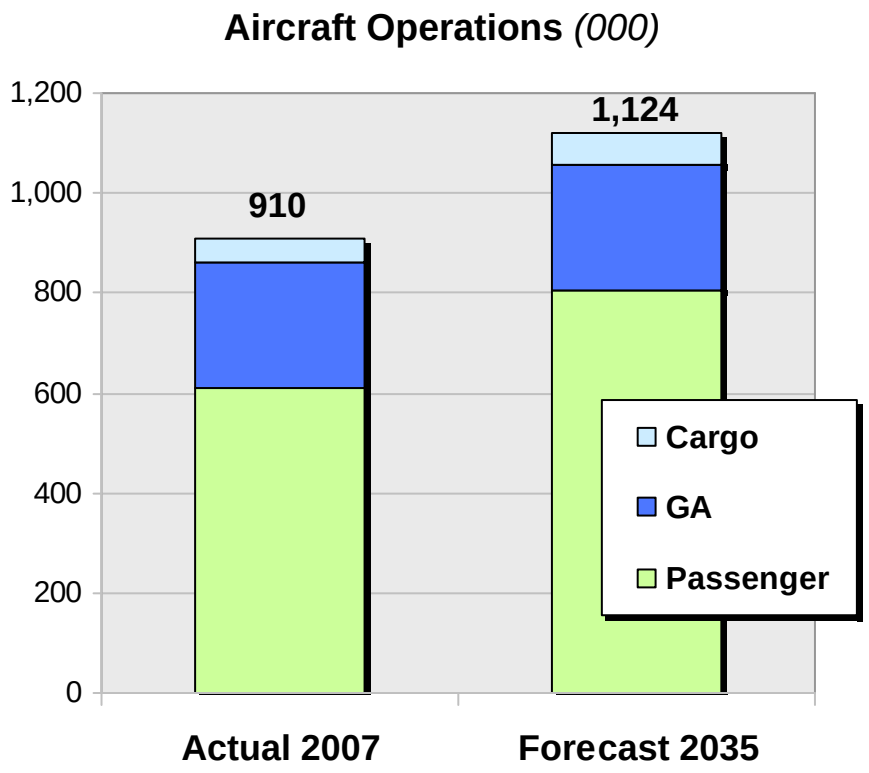


Source: ACI, and individual airport statistics.

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

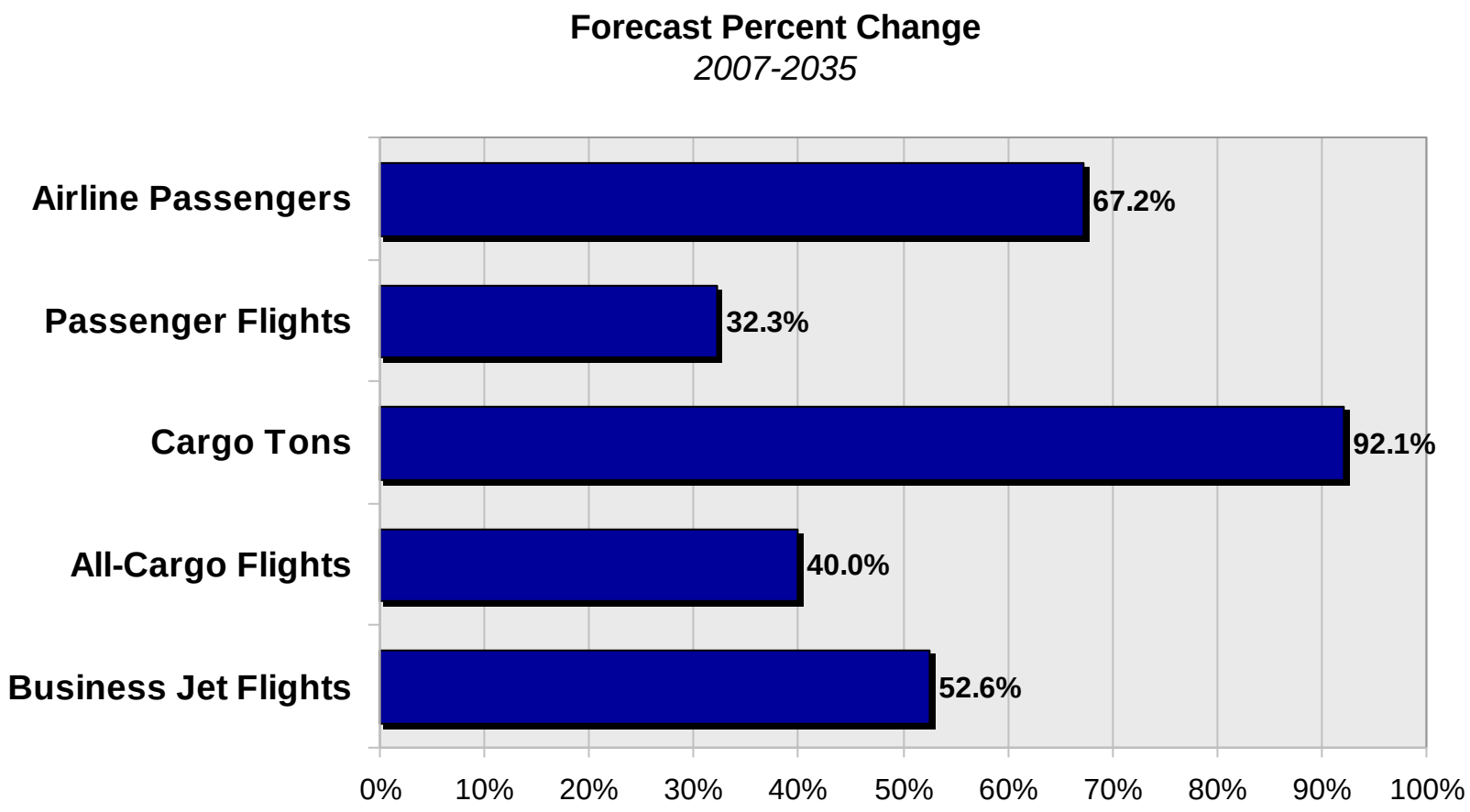
Actual and Forecast Regional Aviation Demand
2007 and 2035





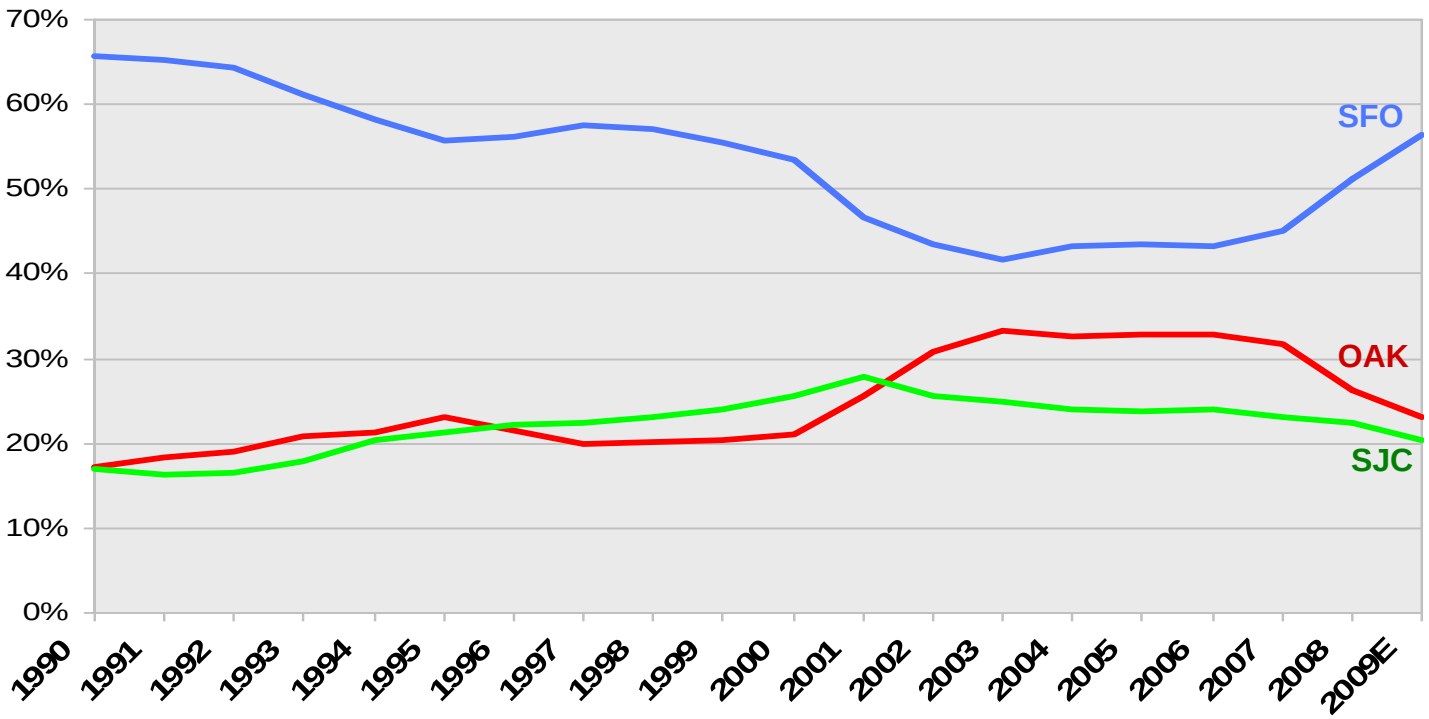
Source: SH&E analysis.

Forecast Growth in Bay Area Aviation Demand



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

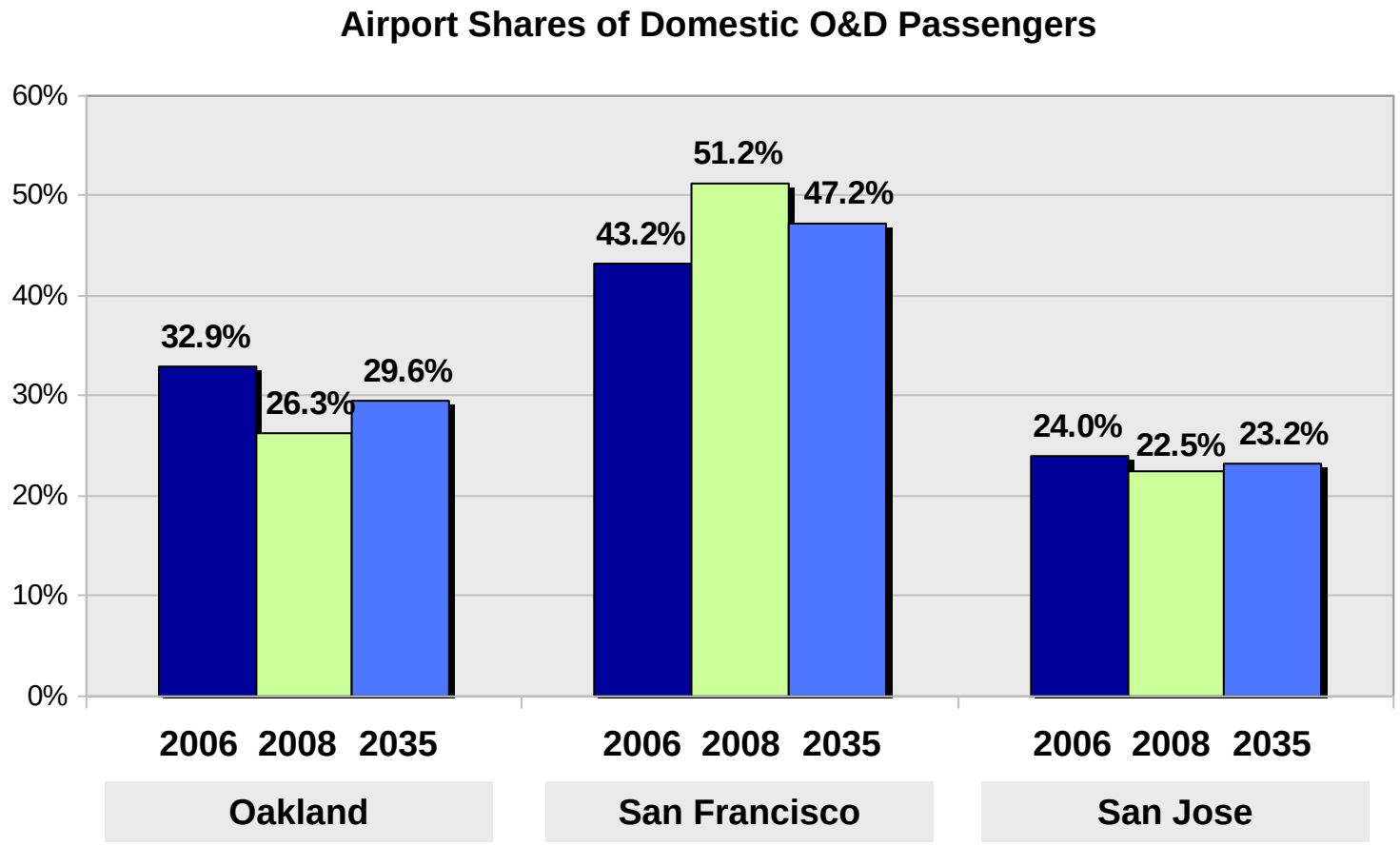
Primary Airport Shares of Bay Area Domestic O&D Passengers
CY 1990 – CY 2009



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

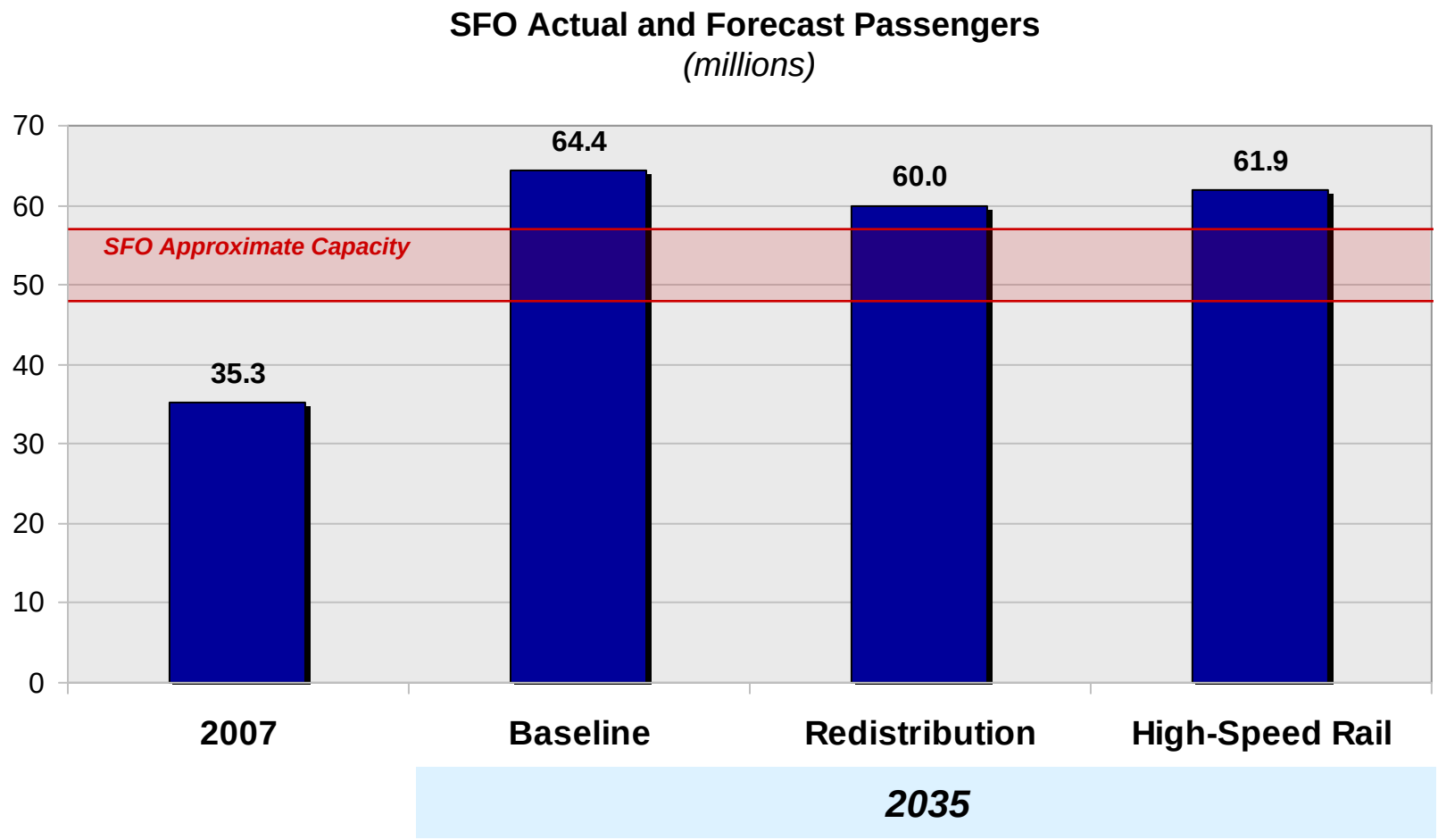
Source: ACI-NA Airport Traffic Statistics; Airport Data

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

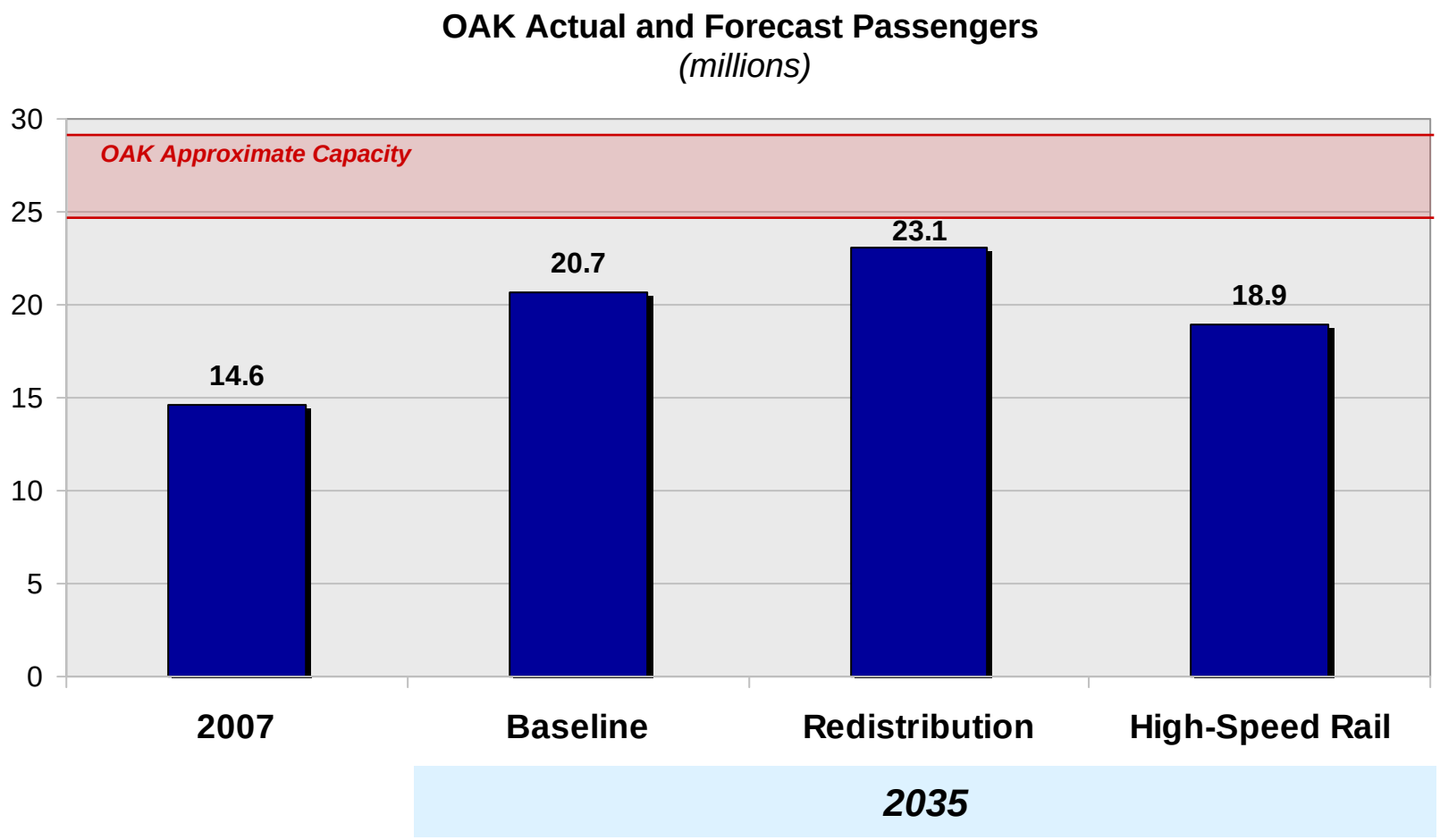


Source: U.S. DOT Origin and Destination Survey, Airport Records, SH&E Analysis

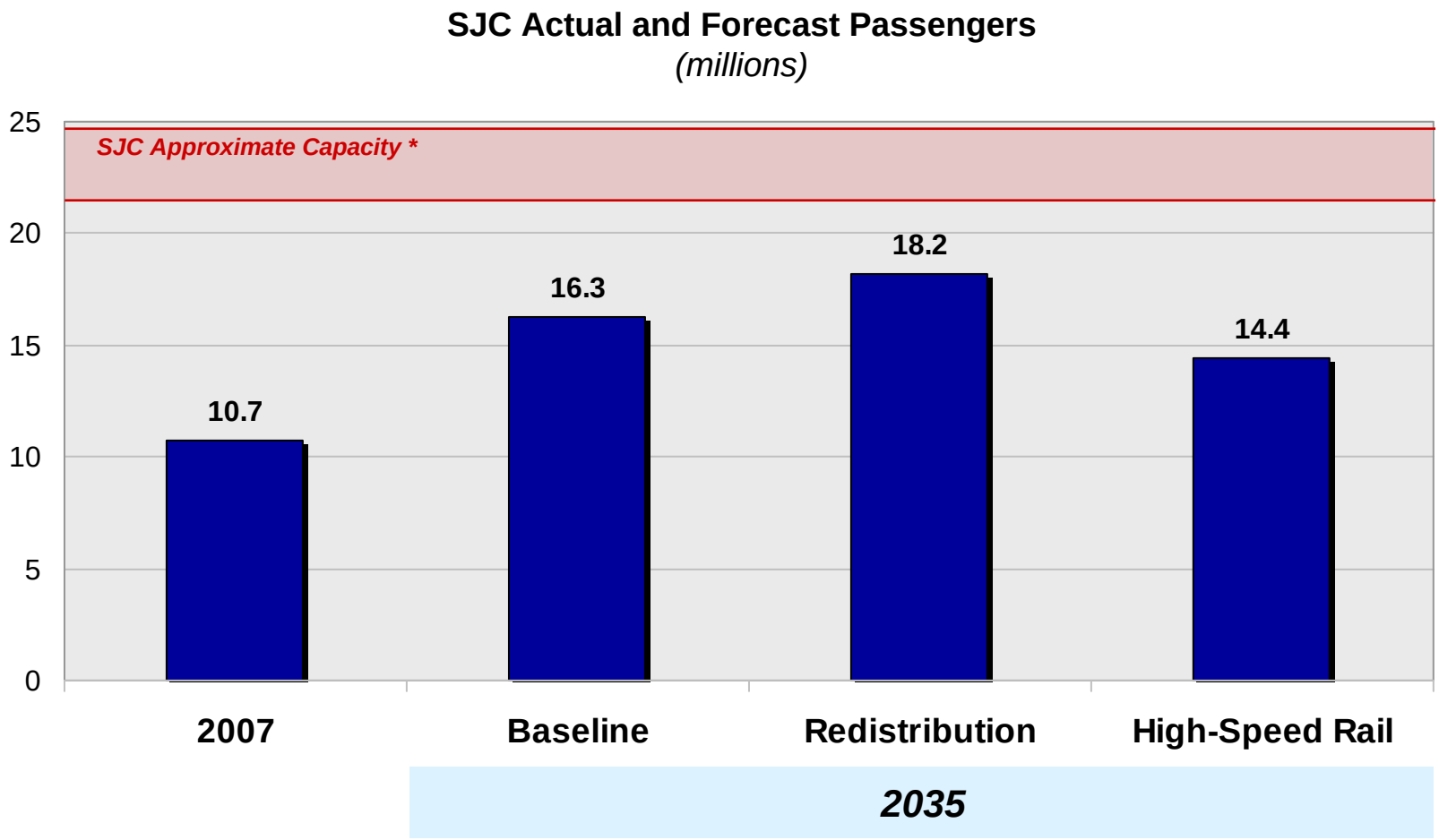
In the Baseline, Passengers at SFO are Forecast at 64.4M



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

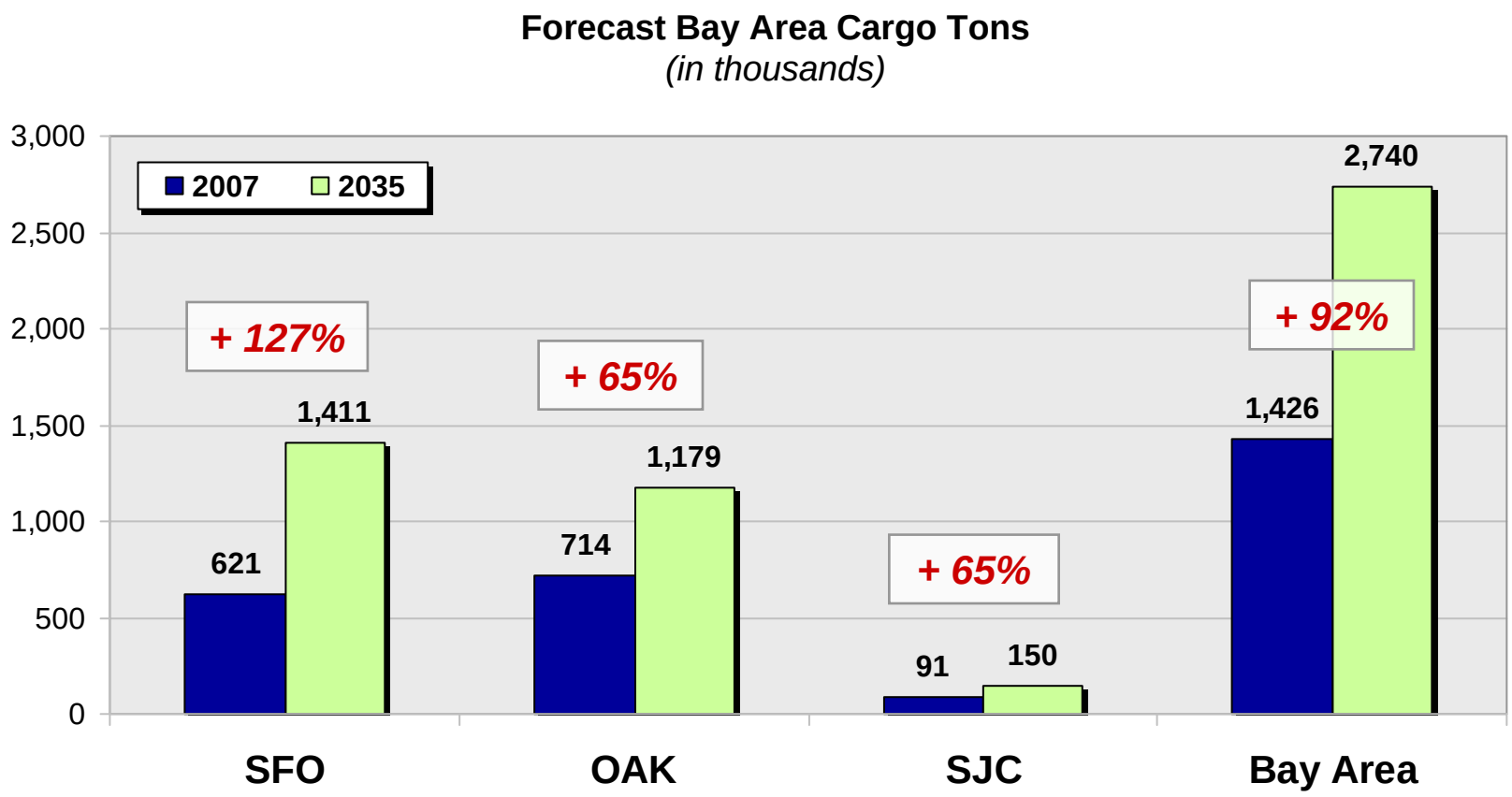


SJC is Forecast at 16M Passengers in the Baseline and Could Range from 14M to 18M with High-Speed Rail or Redistribution



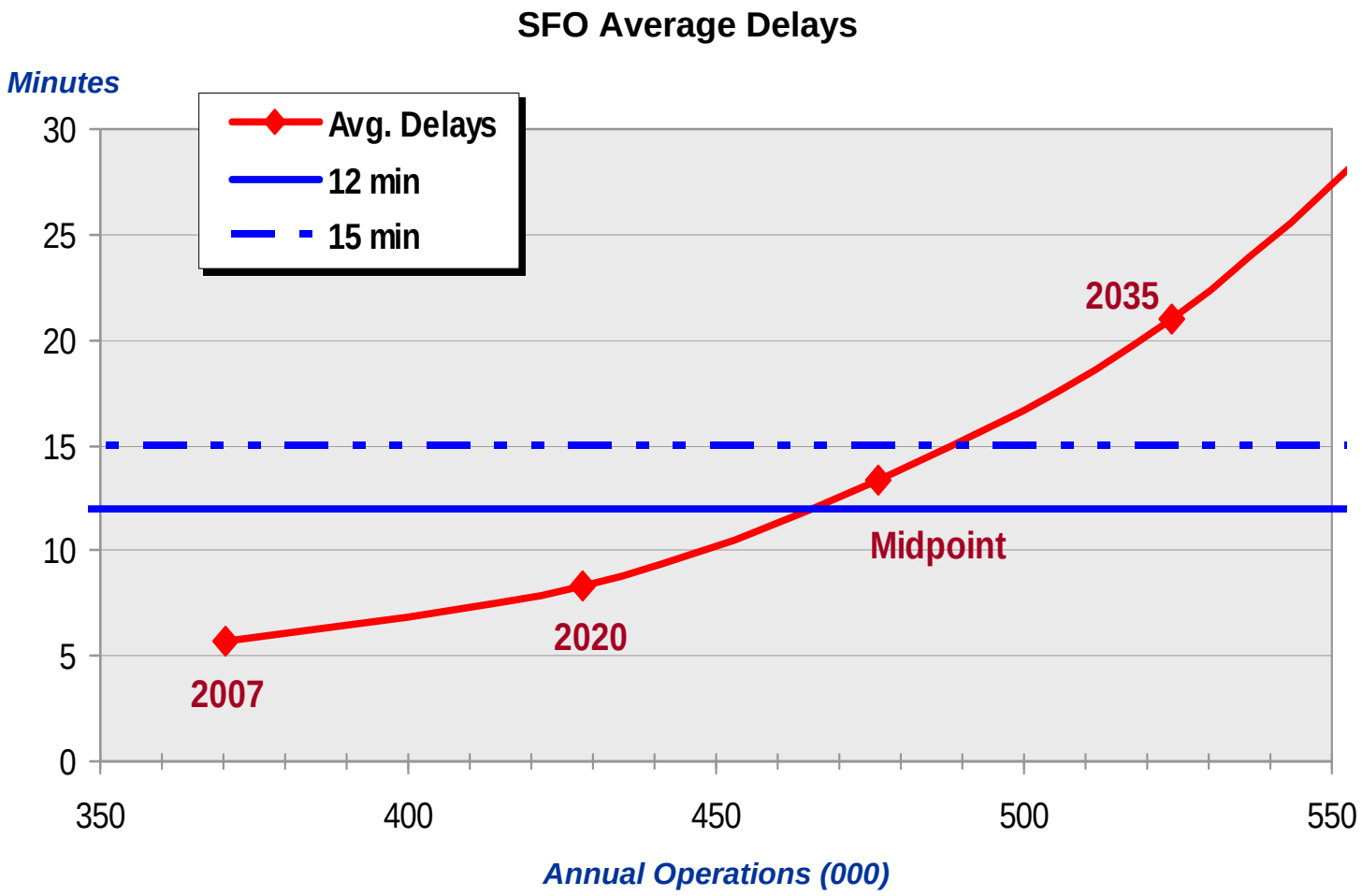
* Reflects landside constraints rather than runway capacity.

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



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



Note: "Midpoint" = the average of 2020 and 2035 operations

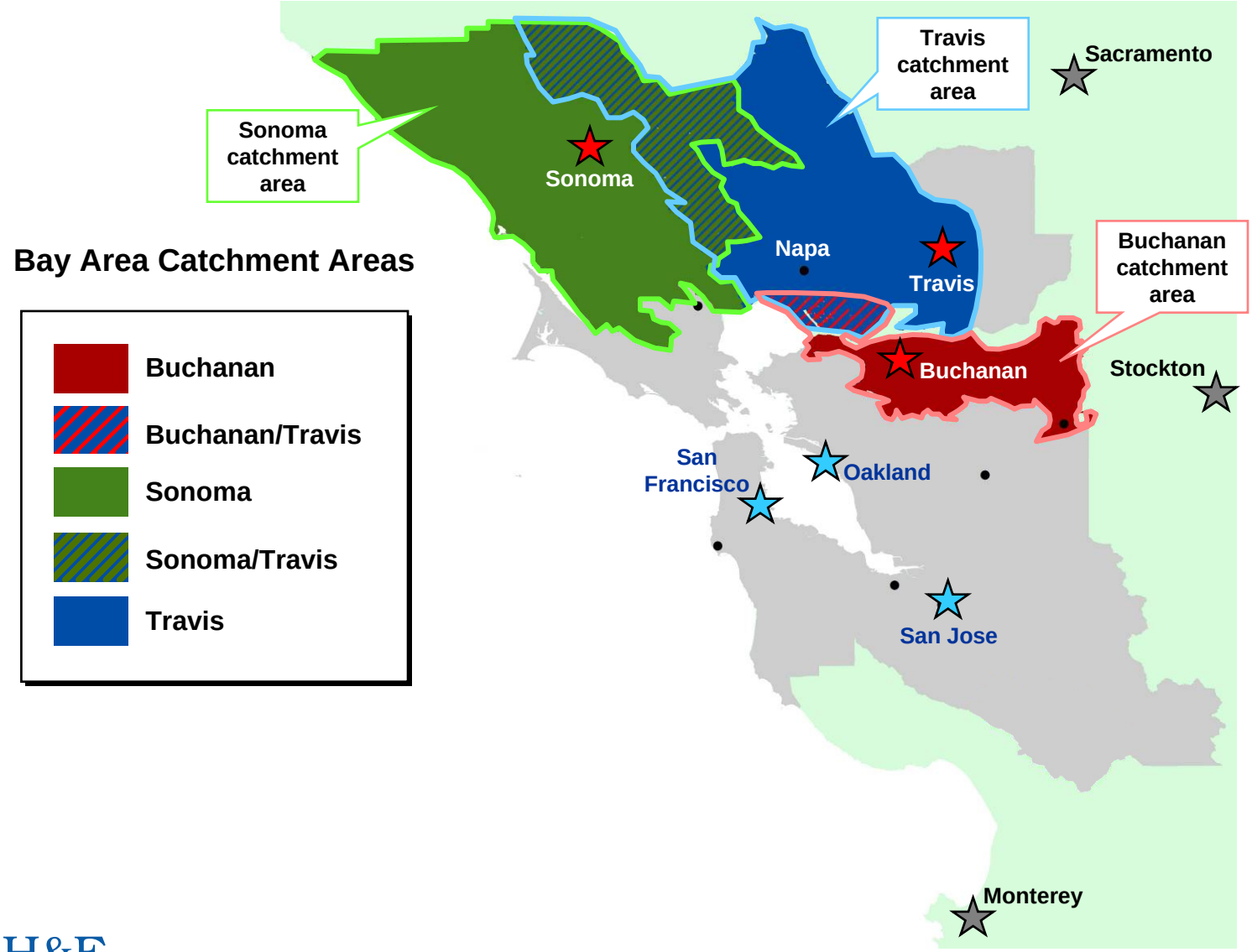
Six Scenarios were Analyzed

- **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

Potential Travis Catchment Area

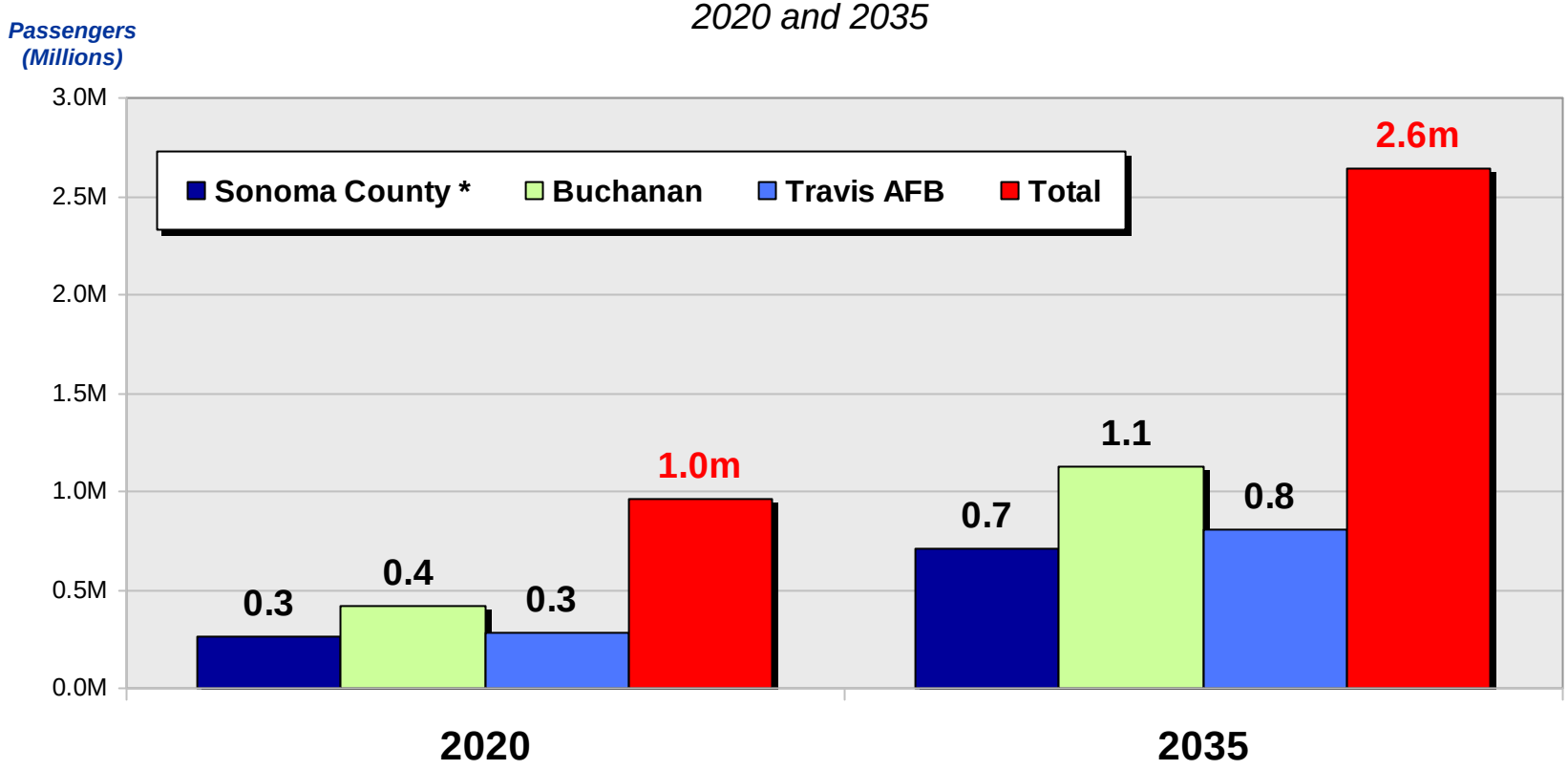


Air Service Assumptions

- **Aircraft Type** ..... **Large Turboprop**
  Large Regional Jet
- **Average Seat Capacity** **70**
- **Average Passenger Load Factor** **75%**

In 2035, Travis Could Potentially Divert 810,000 Passengers from the Primary Bay Area Airports with 42 Scheduled Daily Flights

Potential Passenger Diversion from the Bay Area Airports
2020 and 2035



	2020				2035			
Average Daily Operations	11	22	15	48	29	59	42	129

* Forecast for Sonoma County Airport includes newly diverted passengers and excludes growth in existing passengers and aircraft operations at the airport.

Screening Analysis Results

Scenario:	Goal: 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	Medium	Medium	Low	Low	Low	Medium	Low
Internal Airports	Low	Low	Medium	Low	Low	Medium	Low
External Airports	Low	Low	Low	Low	Low	Low	Low
High-Speed Rail	Medium	Medium	High	Low	Medium	High	Medium
ATC Technologies	High	High	Low	Low	Low	Low	Low
Demand Mgmt	Medium	Medium	Low	Low	Low	Low	Low

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

Notes: Climate Protection, Clean Air and Livable communities exclude impacts of trains in High-Speed Rail scenario

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Appendix

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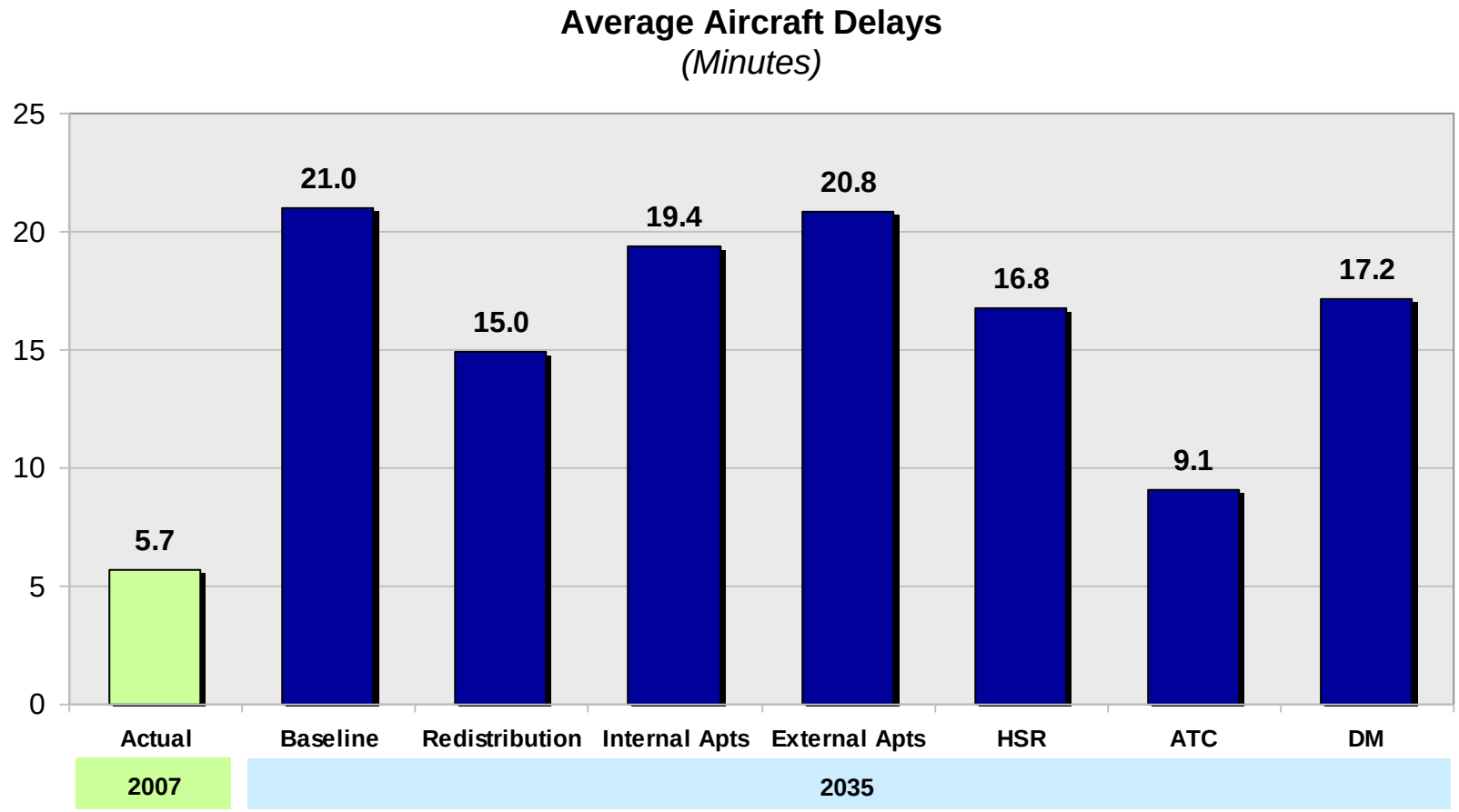
Projected Trends: 2007 to 2035

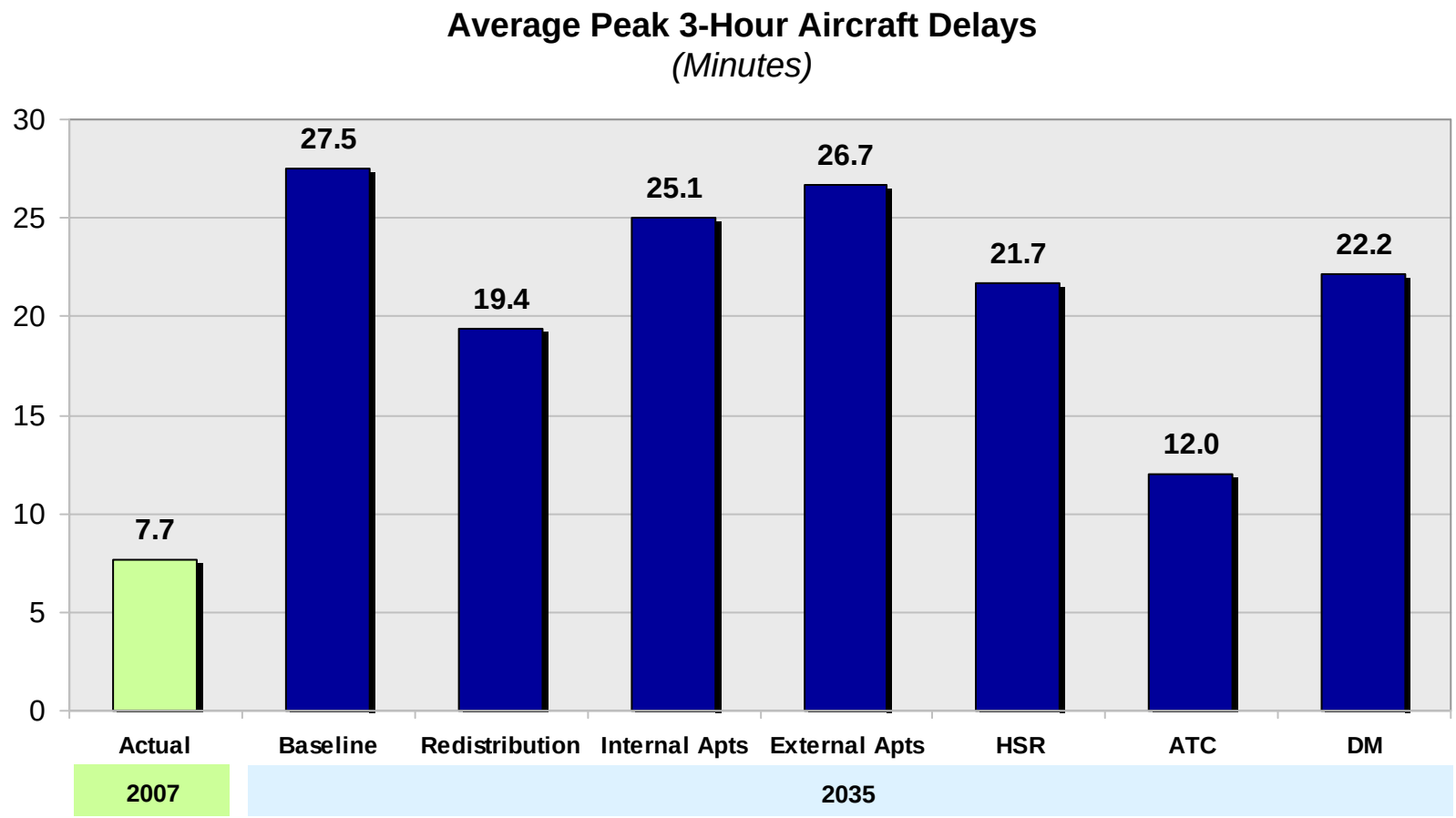
- **Average Delay Minutes (SFO):**
  - 2007: 5.7
  - 2035: 21.0 (Baseline)
    9.1 (ATC)
- **Annual Departures per Capita in Top 15 Domestic Markets**
  - 2007: 263
  - 2035: 262 (Baseline)
    256 (External Airports)
    288\1(HSR)
- **Airport Access Times**
  - 2007-2035: +3.3% (Baseline)
    -0.3% (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\2
  - Many residences in the 65 CNEL contours have been soundproofed

\1 Includes train frequencies
\2 Based on 2007 population

Reliable Runways: *Average Aircraft Delays at SFO*



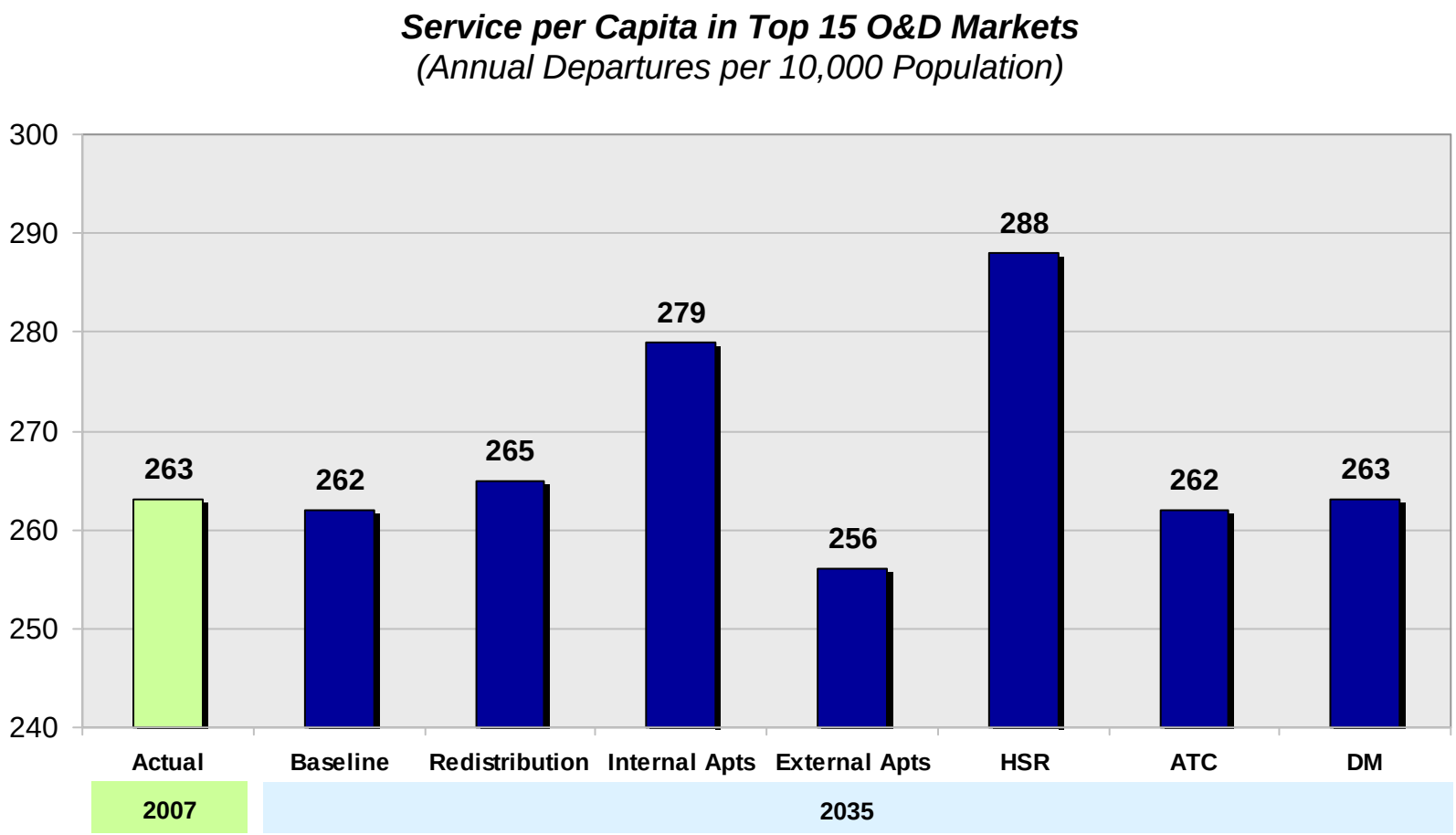
Reliable Runways: *Peak 3-Hour Delays at SFO*



Healthy Economy: *Average Delays at SFO*

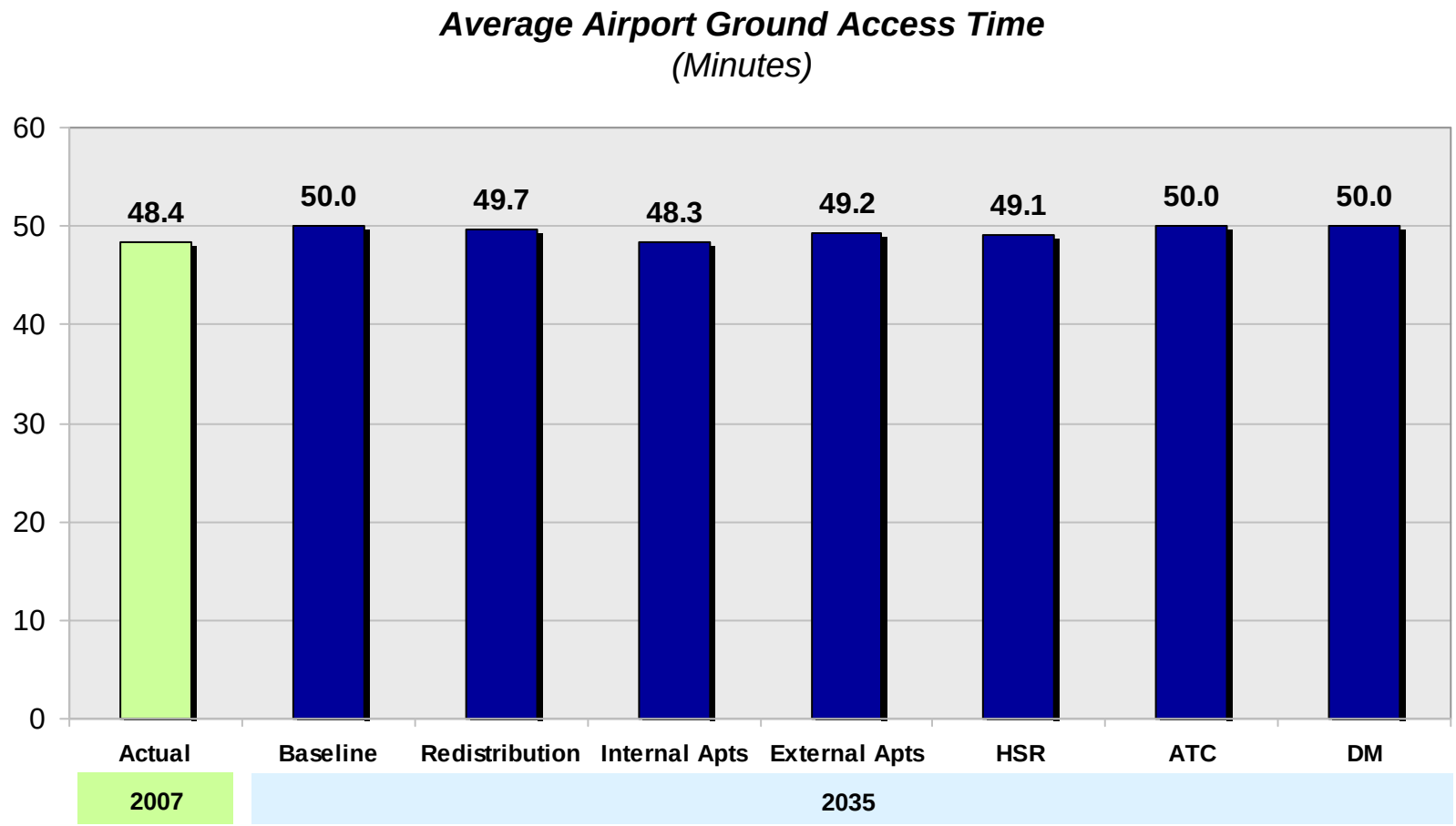
Scenario	2035 SFO Avg Aircraft Delay (minutes)	Healthy Economy Rating
Baseline	21	Low
Redistribution	15	Medium
Internal Regional Airports	19	Low
External Regional Airports	21	Low
High-Speed Rail	17	Medium
New ATC Technologies	10	High
Demand Management	17	Medium

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



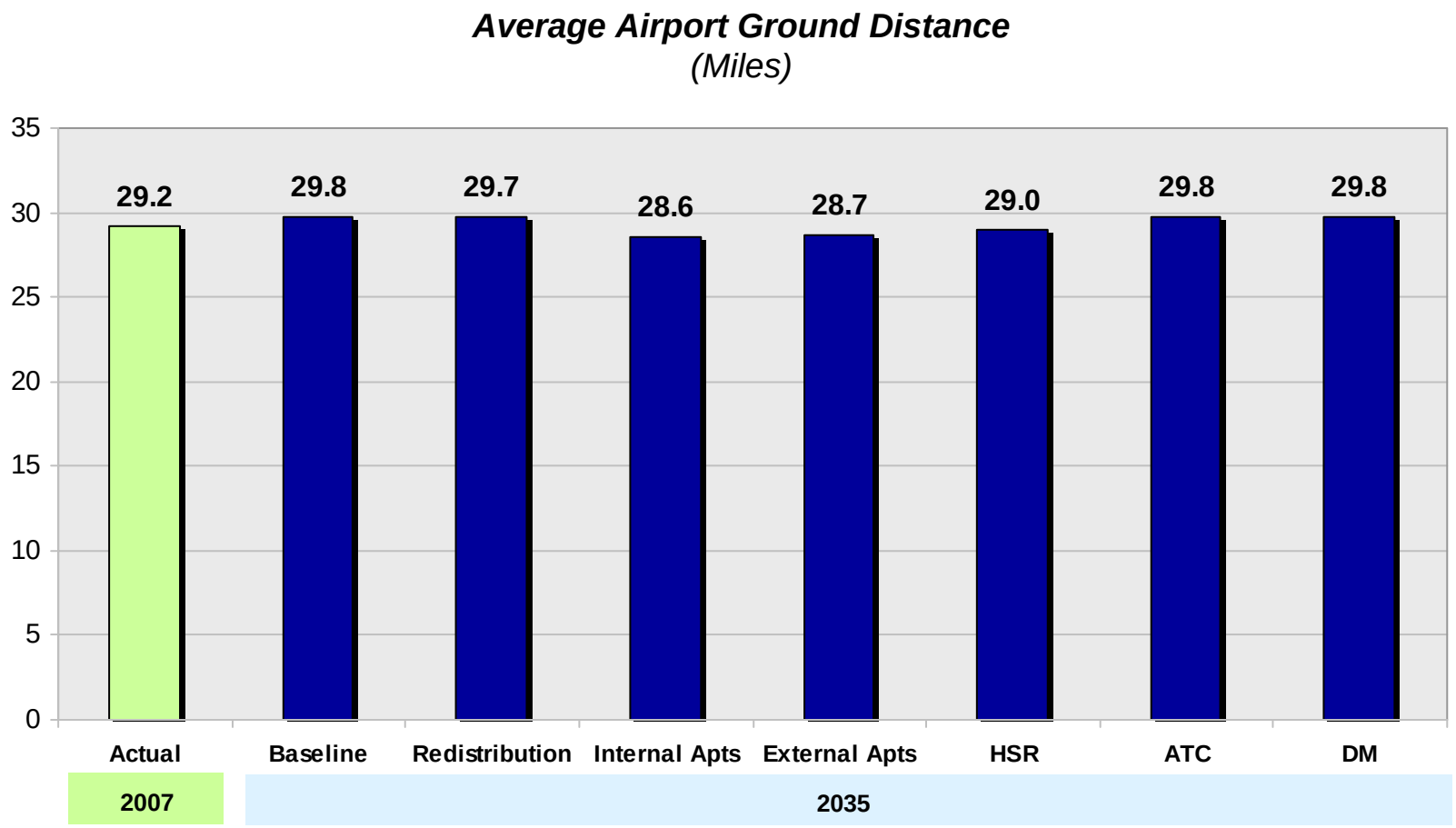
Note: HSR Scenario counts train frequencies as flights.
2035 population based on ABAG's 2007 projections.

Convenient Airports: *Average Airport Ground Access Time*



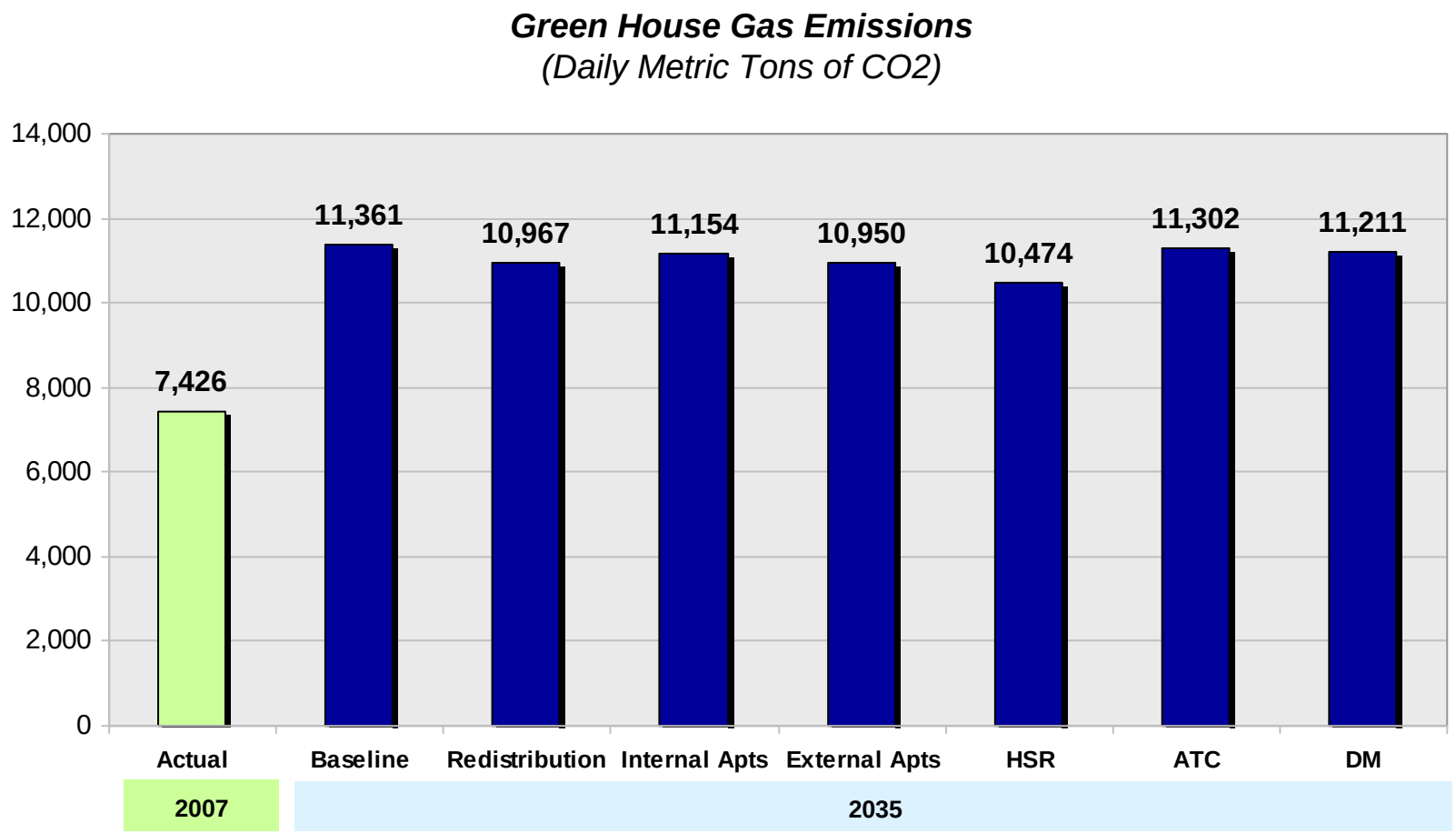
Note: Assumes 2035 Travel Times from MTC.

Convenient Airports: *Average Ground Access Distance*



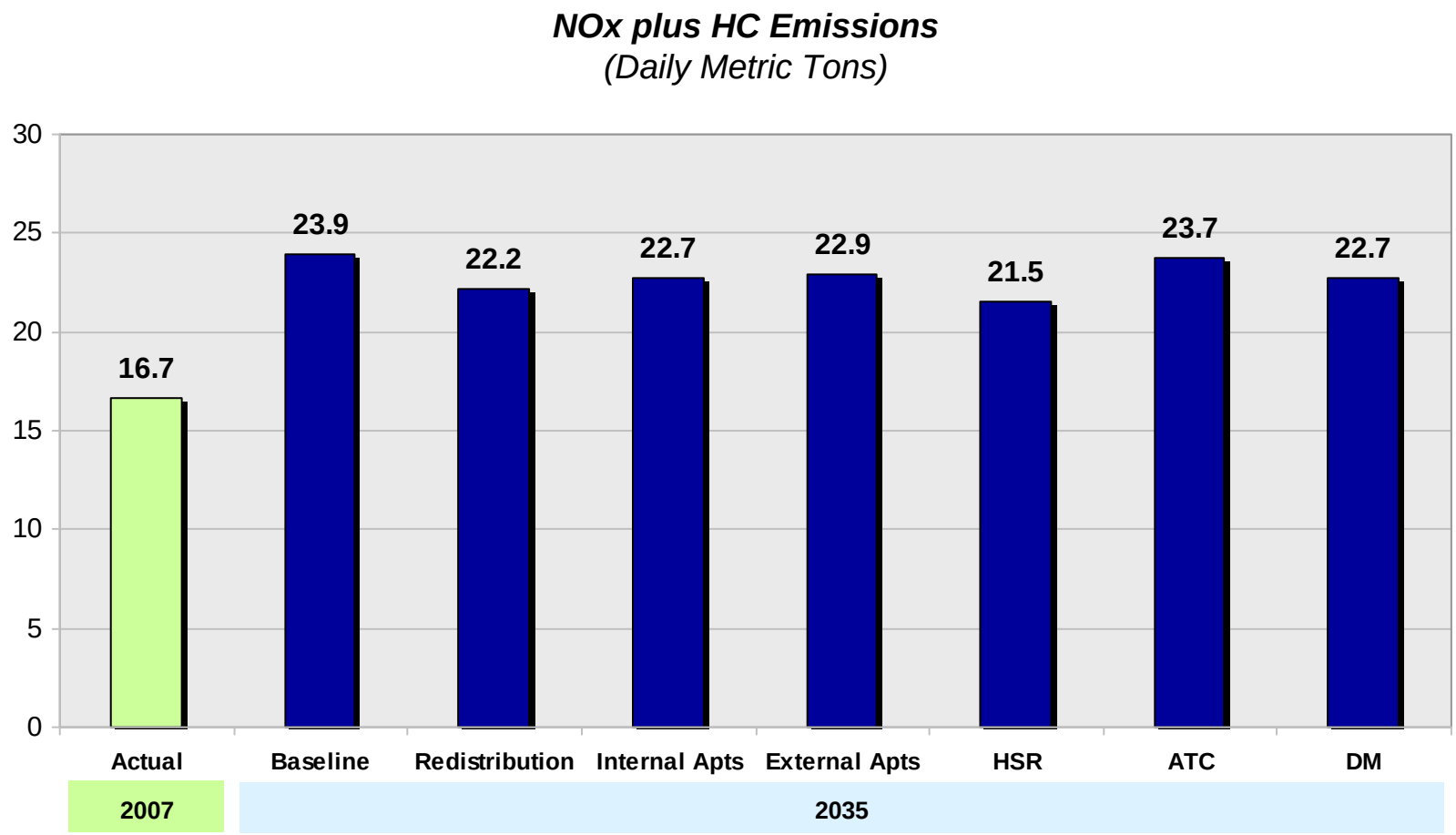
Note: Access costs include highway and transit costs.

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



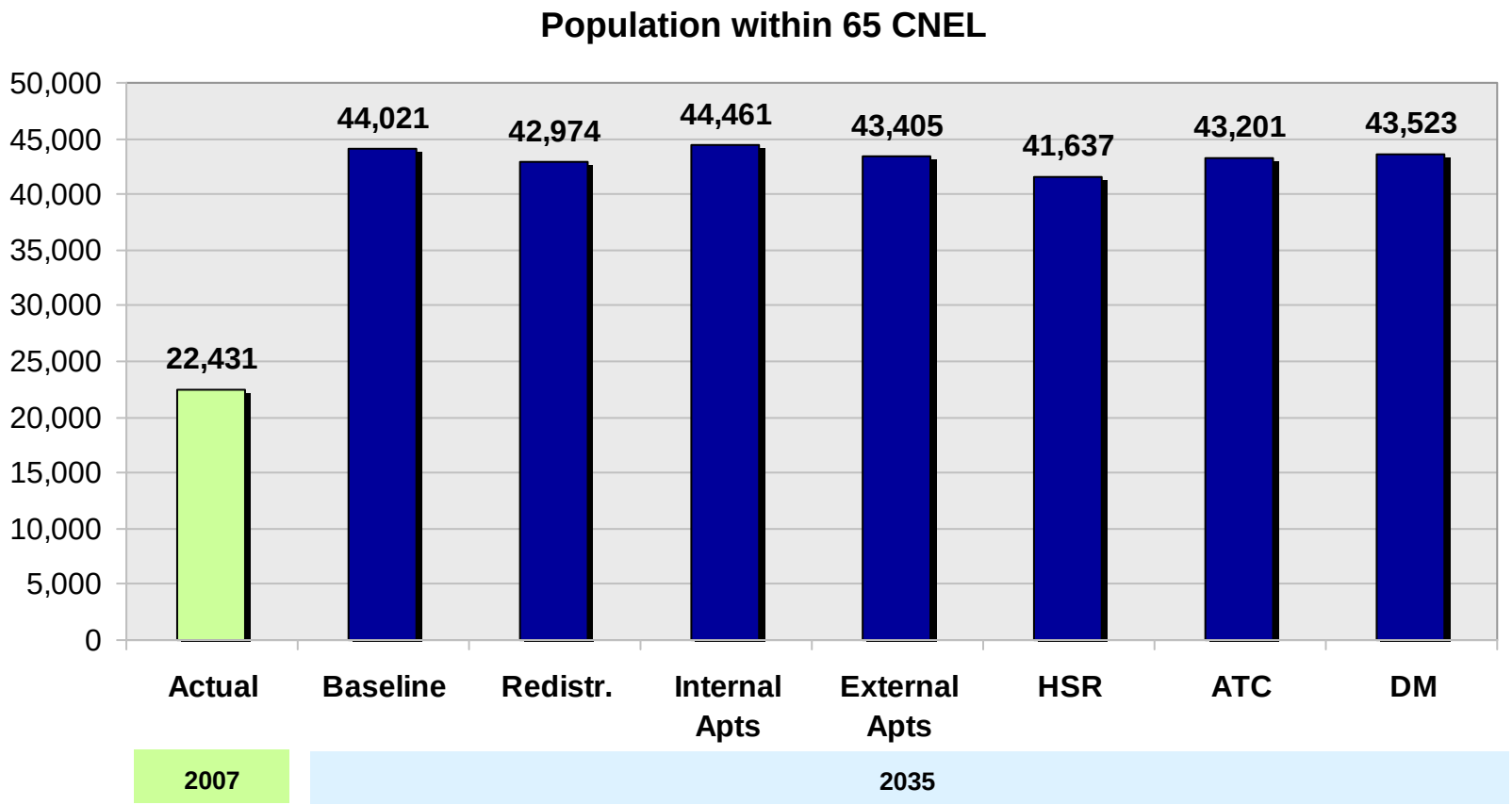
Notes: Includes emissions from aircraft and airport ground access vehicles.
Internal Airports Scenario includes emissions from new air services at alternative airports.
External Airports Scenario excludes emissions from service development at airports outside the region.
HSR Scenario excludes emissions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

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



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.

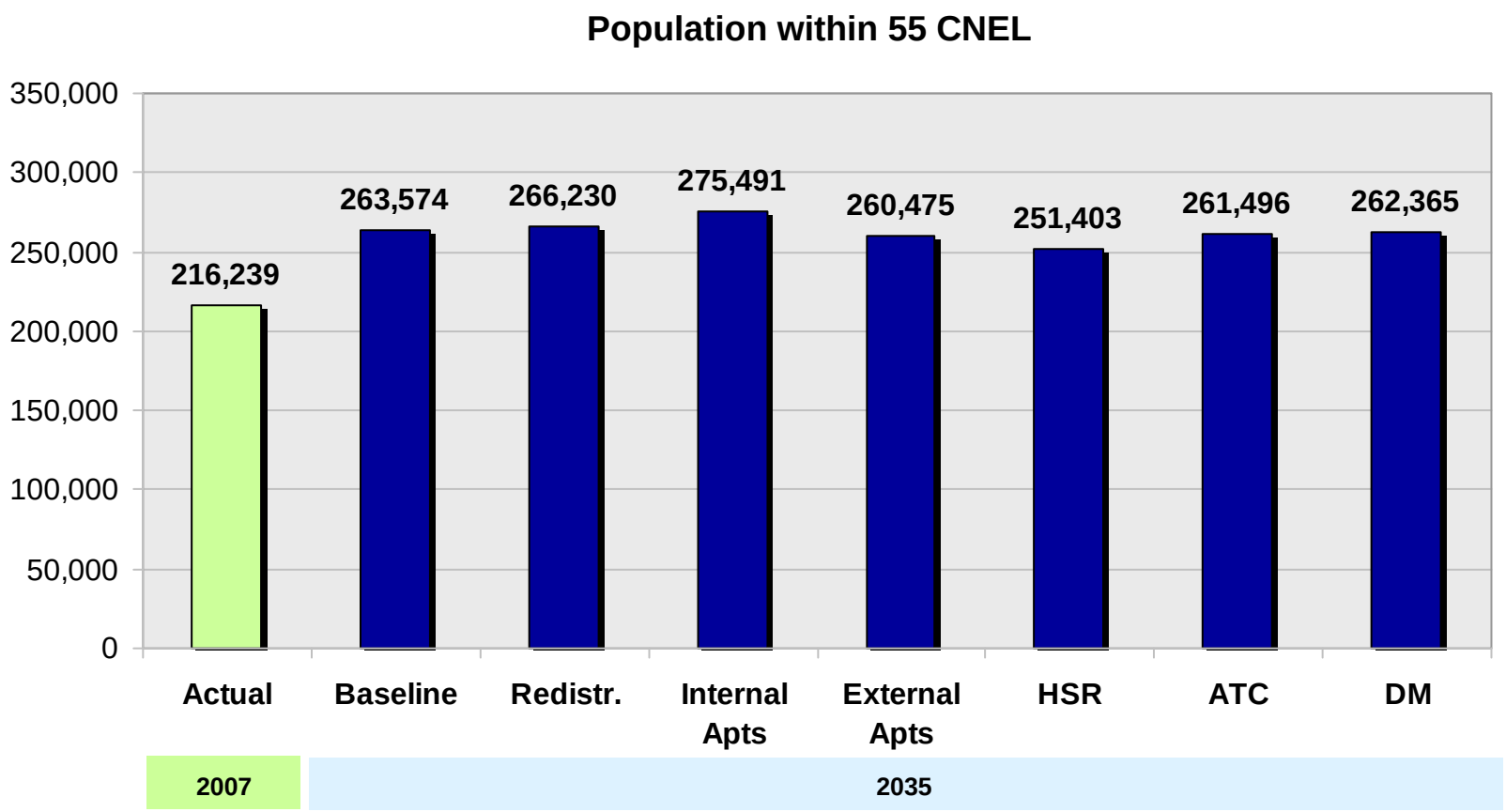
Livable Communities: *65 CNEL Populations*



Some Residences in the 65 CNEL Contours Have Already Been Soundproofed

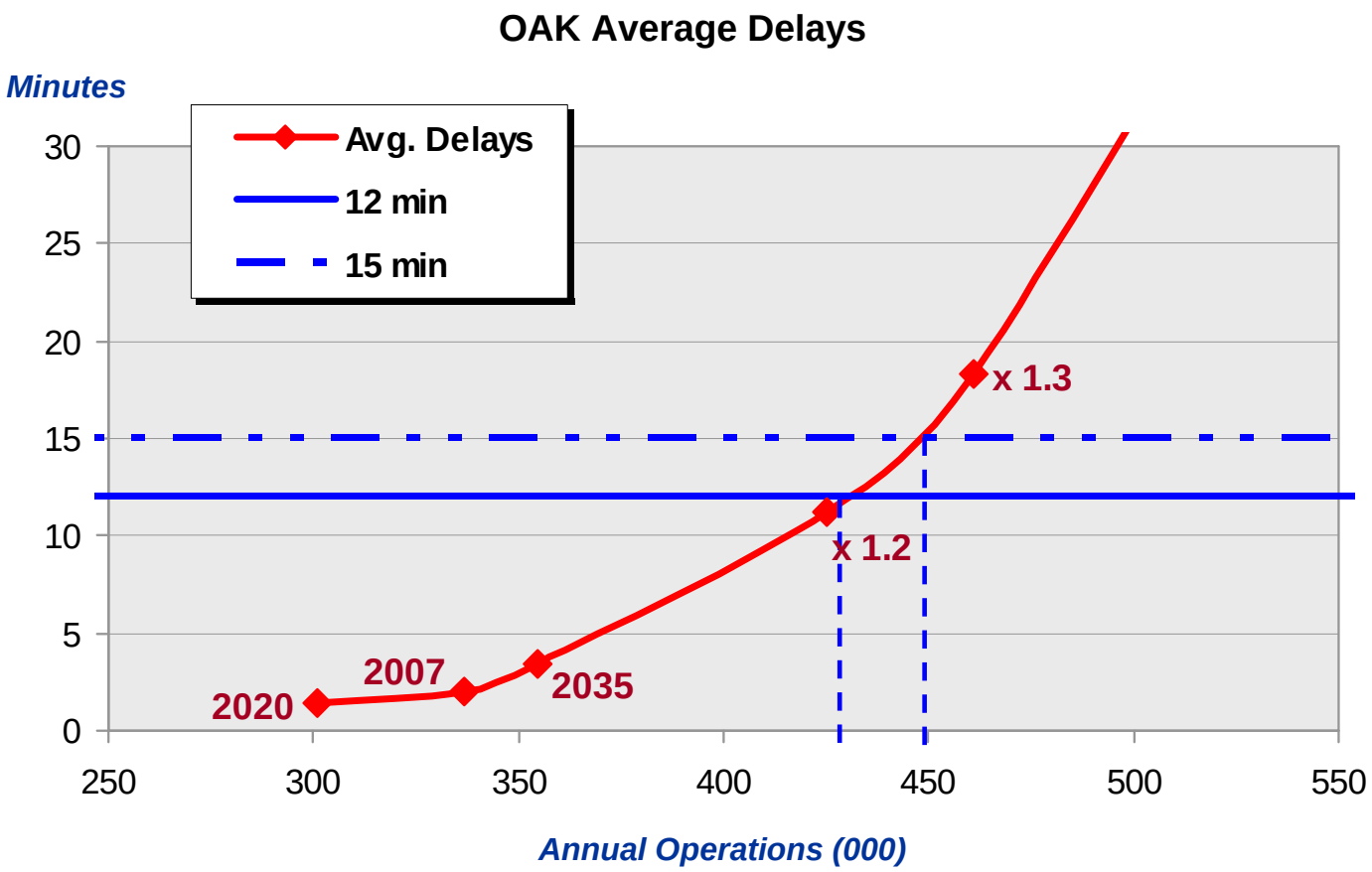
Notes: Internal Airports includes increases in 65 CNEL populations at alternative airports due to diversion from primary airports. Based on 2007 residential population.

Livable Communities: *55 CNEL Populations*



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.

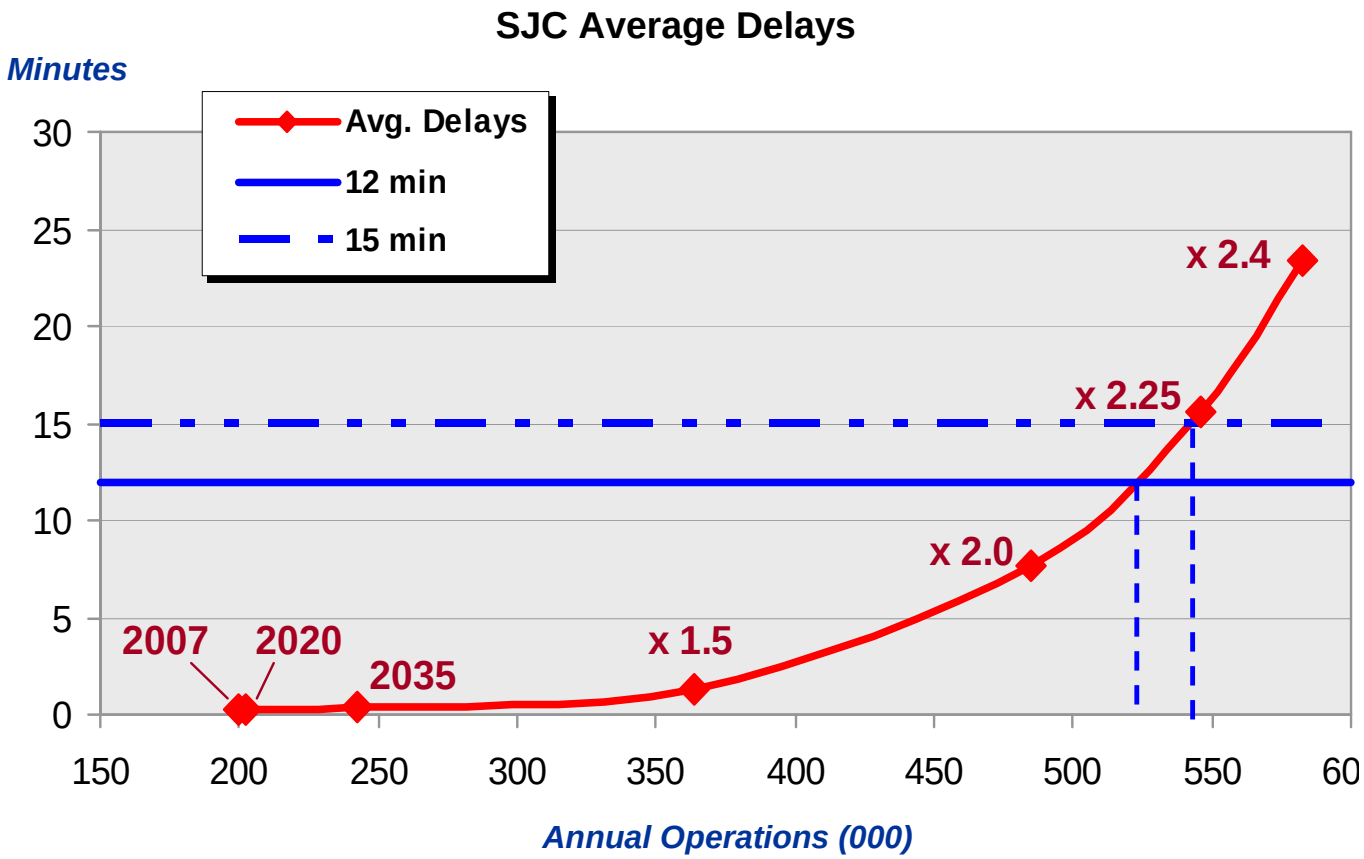
OAK is Predicted to Reach Airfield Capacity at 425,000 to 450,000 Annual Operations, or 20%-25% Above the 2035 Forecast



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.