SH&E
an ICF International Company

ICF INTERNATIONAL

VISION and RECOMMENDATIONS

Prepared for:

Regional Airport Planning Committee

ABAG
Association of Bay Area Governments

METROPOLITAN TRANSPORTATION COMMISSION

bcdc
Bay Conservation Development Commission

April 22, 2011

Passion. **Expertise.** **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**
- **Prepare a Vision and Implementation Analysis Report**
  - Includes study Recommendations
  - Includes future Work Scope

Vision

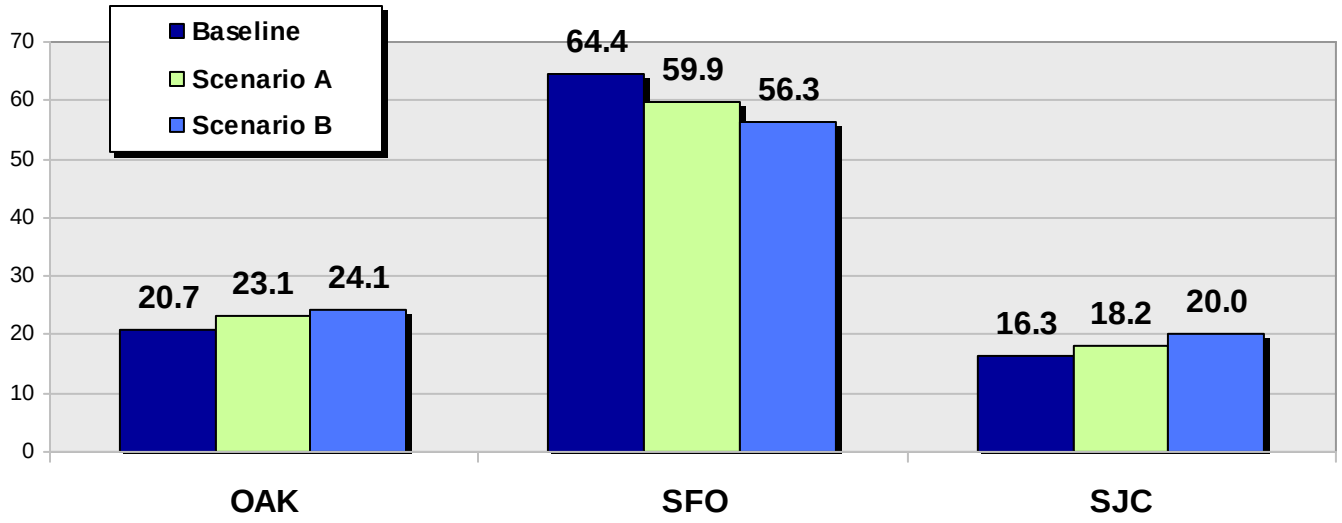
- Bay Area passengers will have a choice of more flights (or trains) at more airports
- There will be fewer weather-related flight delays
- Airport noise impacts on the regional population will be minimized
- Adverse air quality and climate change impacts will be minimized
- Surface travel to airports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

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?*

Potential Solutions for Serving 101 MAP in 2035 – *Scenarios B is Recommended Regional Approach*

Forecast Passengers by Airport and Scenario *2035*



Scenario B Features:

- **Modest ATC Technology Improvements (SFO/OAK)**
- **Demand Management (SFO)**
- **Potential High-Speed Rail (TBD)**
- **Greater Use of Sonoma County Airport**

Share of Bay Aea 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%

ICF INTERNATIONAL SH&E an ICF International Company

Overview of Issues and Recommendations

- **Recommendations reflect major issues that have been discussed during the study**
- **Recommendations are consistent with RAPC's advisory role**
- **Recommendations assume additional resources will be available**

Issue #1: Changing Conditions That Alter Long-range Planning Assumptions

Recommendations:

- **Track changes in forecasts, runway congestion**
- **Use regional forecasts for airport planning**
- ***Related Work Tasks:***
  - Forecast Tracking Report/Periodic forecast updates (High Priority)
  - Congestion Tracking Report (High Priority)
  - Multi-Region Air Passenger Survey (High Priority)

Issue #2: Lack of Regional Mechanisms to Influence Airline Decisions About Airport Service

Recommendations:

- **Regional Plans support Scenario B**
- **RAPC should explore ways to engage airlines**
- **Regional marketing program for OAK/SJC**
- ***Related Work Tasks:***
  - Multi-region air passenger survey (High Priority, related to marketing efforts)
  - Regional Airport Marketing Program (Medium Priority)
  - New Airline Route Study-OAK/SJC (Low Priority)
  - Airport Pricing Study (Medium Priority)

Issue #3: Difficulty Implementing Airport-Originated Demand Management Programs

Recommendations:

- **Future SFO airline agreements should not preclude congestion pricing**
- **SFO should continue to examine new Demand Management approaches**
- **Bay Area may need to advocate for FAA controls if SFO's are not enough**
- ***Related Work Tasks:***
  - Congestion Tracking Report (High Priority)
  - Monitor Demand Management programs at other airports (High Priority)
  - Airport Pricing Study (Medium Priority)
  - General Aviation Reliever Airport Strategy (Low Priority)

Issue #4: Uncertainty Regarding the Timing and Effectiveness of New ATC Technologies

Recommendations:

- **FAA should provide regular updates to RAPC on NextGen progress**
- **RAPC should engage in advocacy for NextGen funding and Bay Area applications**
- **Form coalitions with other regions experiencing major runway congestion problems to increase effectiveness of advocacy**
- **Support FAA use of Best Equipped, First Served policy to encourage airline equipage**
- ***Related Work Tasks:***
  - Regional Airspace Study (High Priority)

Issue #5: Uncertainty Regarding Future HSR Plans and Effectiveness of HSR

Recommendations:

- **Periodically review information on effectiveness of HSR in diverting air passengers**
- **With HSR, SFO may need to monitor airline schedules to determine if flight reductions are occurring, or alter Demand Management program**
- **Encourage discussions between HSR Authority and airlines regarding joint ticketing arrangements**
- ***Related Work Tasks:***
  - None

Issue #6: Uncertainty Regarding Future Role of Some Alternative Airports

Recommendations:

- **If demand increases faster than forecasted, RAPC may wish to update 1976 feasibility study for Travis AFB**
- **Protect aviation capability of Moffett Federal Airfield (possible reliever general aviation airport or other roles)**
- **Continue to involve Sacramento, Stockton, and Monterey airports in Bay Area planning process**
- ***Related Work Tasks:***
  - Travis AFB-Updated Feasibility Study (Low Priority)
  - Moffett Federal Airfield General Aviation Study (Low Priority)
  - Multi-Region Air Passenger Survey (High Priority)

Issue #7: Projected Increase in Community Noise Exposure (2007-2035)

Recommendations:

- **Airports should confirm long-term noise trends from this study using more detailed modeling tools**
- **Re-examine Focus Growth projections to lower regional population noise exposure**
- **Given SFO's projected noise problem, new approaches may be needed *(e.g., shifting more departures to Runway 1 for takeoff over the Bay; would require Bay fill to lengthen runway for use by long-distance international flights)***
- ***Related Work Tasks:***
  - Focus Growth Review (High Priority)
  - SFO Long-Term Noise Study (High Priority)

Issue #8: Projected Increase in Criteria Pollutants and GHGs

Recommendations:

- **Have BAAQMD provide RAPC with annual updates of aviation emissions to determine trends**
- **RAPC should monitor legislation that would reduce aviation emissions and take supporting positions as appropriate**
- ***Related Work Tasks:***
  - Annual Monitoring Reports (above, by BAAQMD)

Issue #9 Other - Healthy Economy Goal

- ***Related Work Tasks*:**
  - Regional Airports Economic Benefits Study (Low Priority)

Future Work Scope

High Priority

- Forecast Tracking System *
- Multi-Region Air Passenger Survey *
- Congestion Tracking System *
- Regional Airspace Study
- Long-Term Noise Mitigation Study (SFO)
- Focus Growth Review
- Monitor Demand Management approaches at other airports *
- Continue Institutional Review *

*Relates to implementation of Scenario B

Future Work Scope *(cont'd)*

Medium Priority

- Regional Airport Marketing Program *
- Airport Pricing Analysis *

Low Priority

- New Airline Route Study (OAK/SJC) *
- Reliever Airport Strategy
- Travis AFB-Updated Feasibility Study
- Moffett Federal Airfield-General Aviation Study
- Regional Airport Economic Benefits Study

*Relates to implementation of Scenario B

Options for Institutional Arrangements

- **Bay Area airports ownership and operation**
- **Coordination will be necessary for many strategies**
  - Demand management
  - Redistribution
  - Air Traffic Control
  - High-speed rail
- **Options to achieve a more coordinated approach**
  - Regional Authority
  - Joint Powers Authority
  - Regional Airport Planning Committee

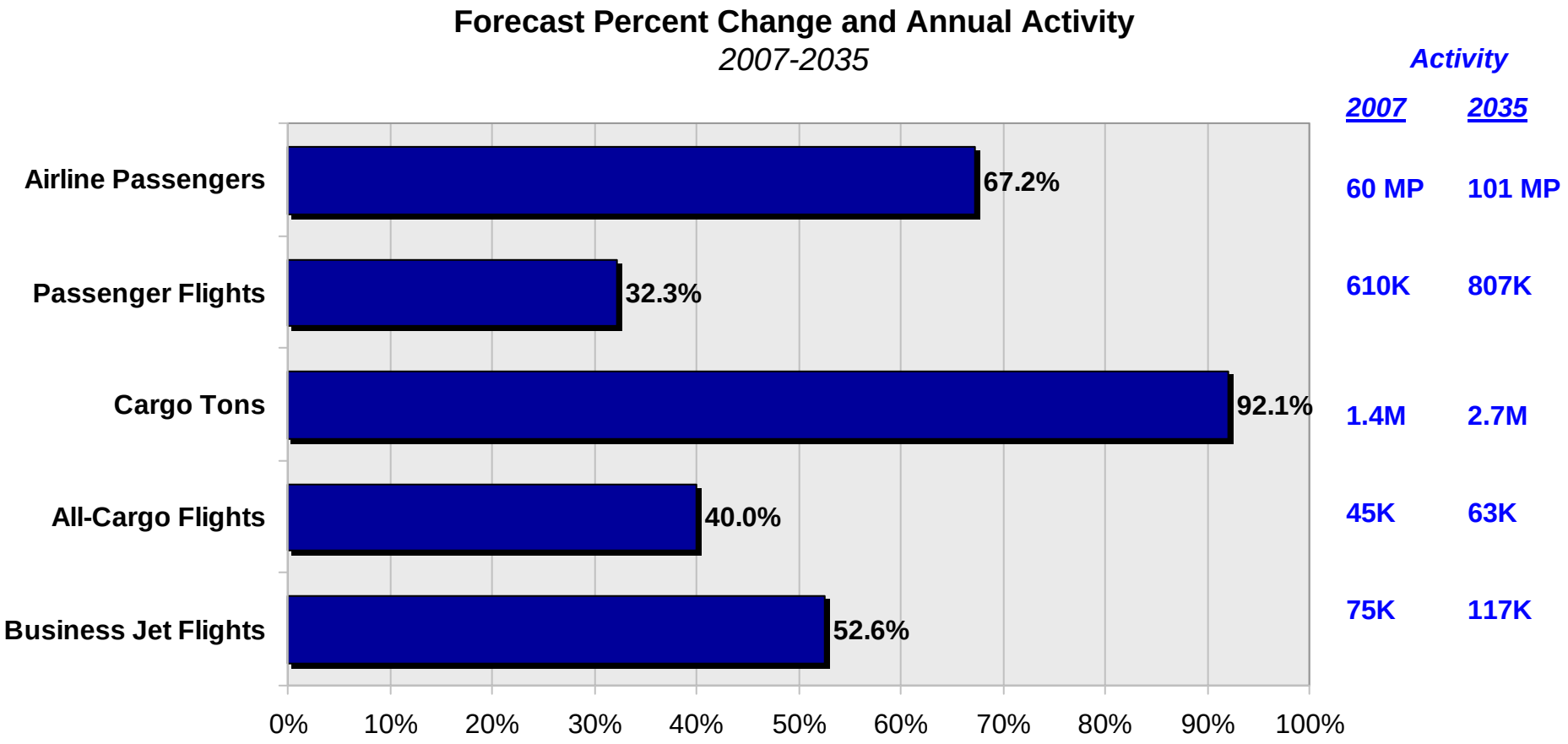
SH&E
an ICF International Company

ICF INTERNATIONAL

Appendix

Passion. **Expertise. Results.**

Baseline Forecast of Bay Area Aviation Demand



Key Planning Issues

- **Delay Problems at SFO**
  - Due to increased flights and poor weather
- **Increased Airport Noise Impacts**
  - Due to increased flights and population growth
    - *SFO and SJC*
- **Growth in air emissions (GHGs/criteria pollutants)**
  - Due to increased flights and air passenger trips to airports

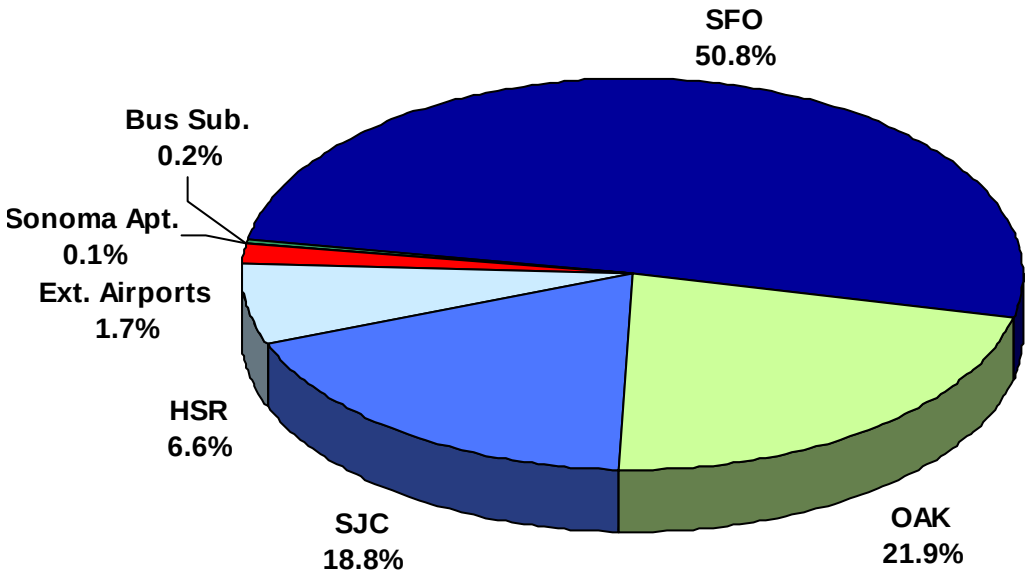
Six Scenarios were Initially Analyzed to Serve Long-Range Demand

- **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

Scenario Effectiveness versus Goals

Overall Effectiveness (highest to lowest)	Goal Strengths
Combined Scenario B with HSR	All Goals
Combined Scenario A with HSR	All Goals
Scenario B (no HSR)	Reliable Runways, Economy, Good Service, Clean Air
Scenario A (no HSR)	Reliable Runways, Economy, Clean Air, Livable Communities
High Speed Rail	Good Service, Climate Protection, Clean Air, Livable Communities
New ATC Technologies	Reliable Runways, Economy
Traffic Redistribution	Reliable Runways, Economy, Clean Air
Demand Management	Reliable Runways
Alternate Internal Airports	Good Service, Convenient Airports
Alternate External Airports	Convenient Airports

Potential Solutions for Serving 129 MAP in 2035 (High Forecast) – *Combined Scenario C*



Airport	2035 Passengers (millions)
SFO	65.0
OAK	28.0
SJC	24.0
HSR	8.4
External Airports	2.2
Sonoma County Airport	0.9
Bus Substitution	0.2
Total Bay Area	128.8

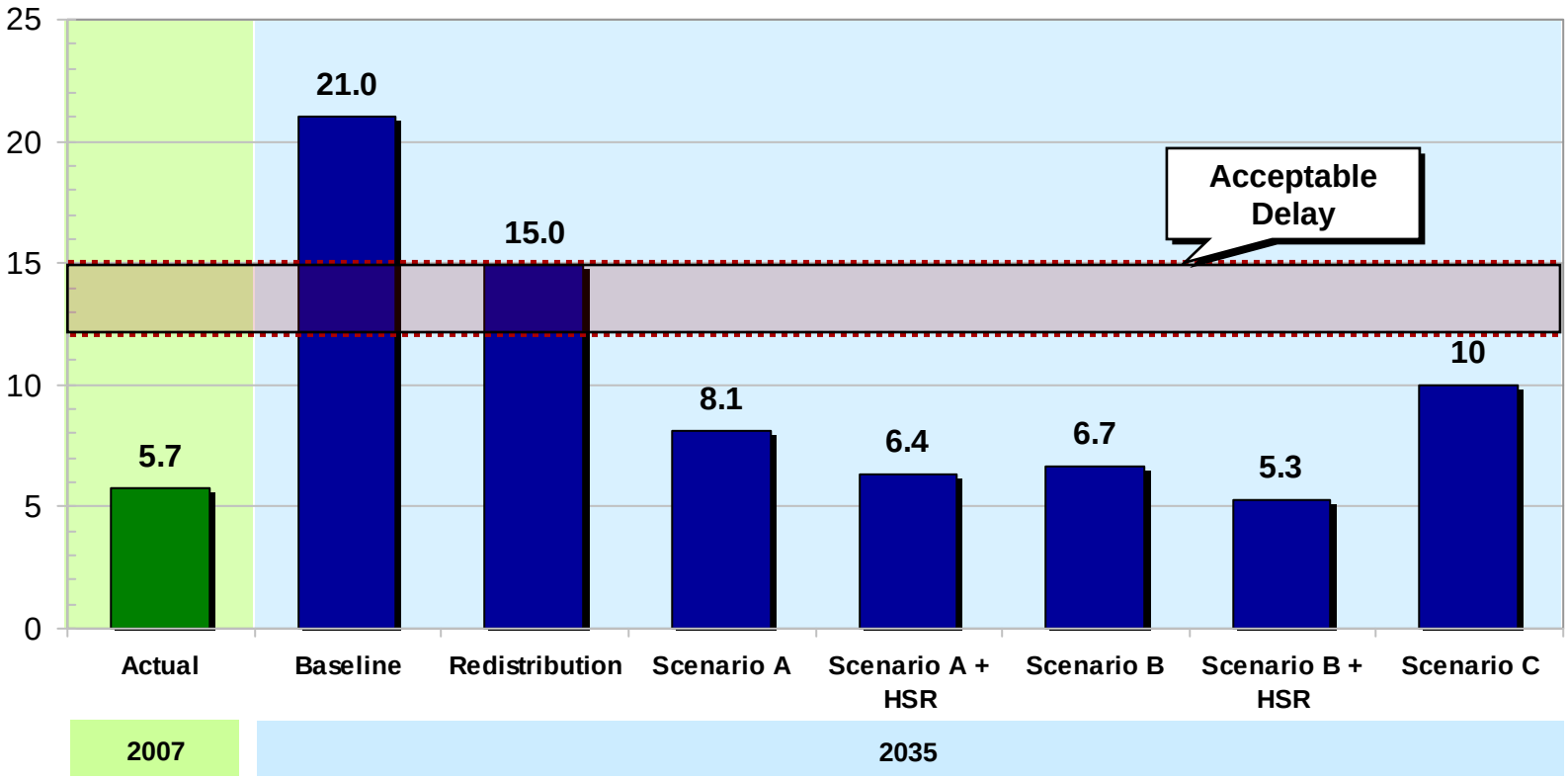
Scenario C Features:

- **Full ATC Technology Improvements**
- **Aggressive Demand Management**
- **High-Speed Rail**
- **Greater Use of Sonoma County Airport**
- **Greater Use of External Airports**

ICF INTERNATIONAL SH&E an ICF International Company

Reliable Runways Goal –
SFO Average Aircraft Delays for Major Scenarios

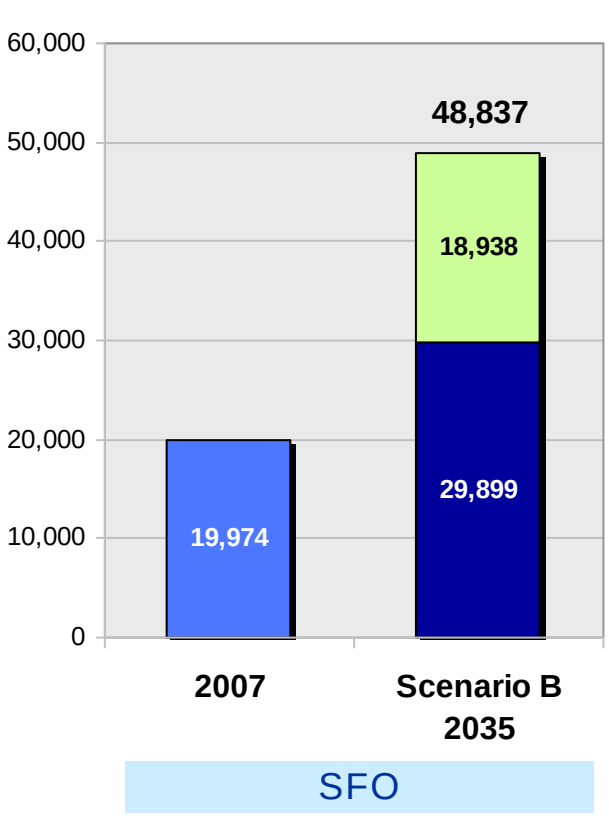
Average Aircraft Delays at SFO
(Minutes)

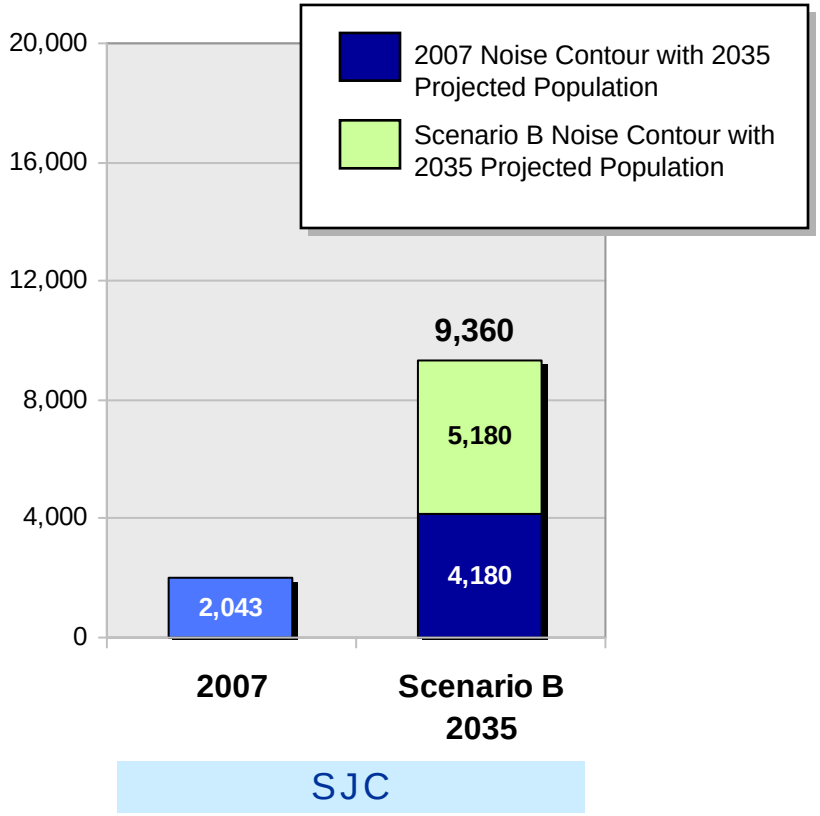


Livable Communities Goal –
Scenario B Community Noise Exposure versus 2007

Population Inside 65 CNEL Noise Contour

2007 vs. 2035 Scenario B

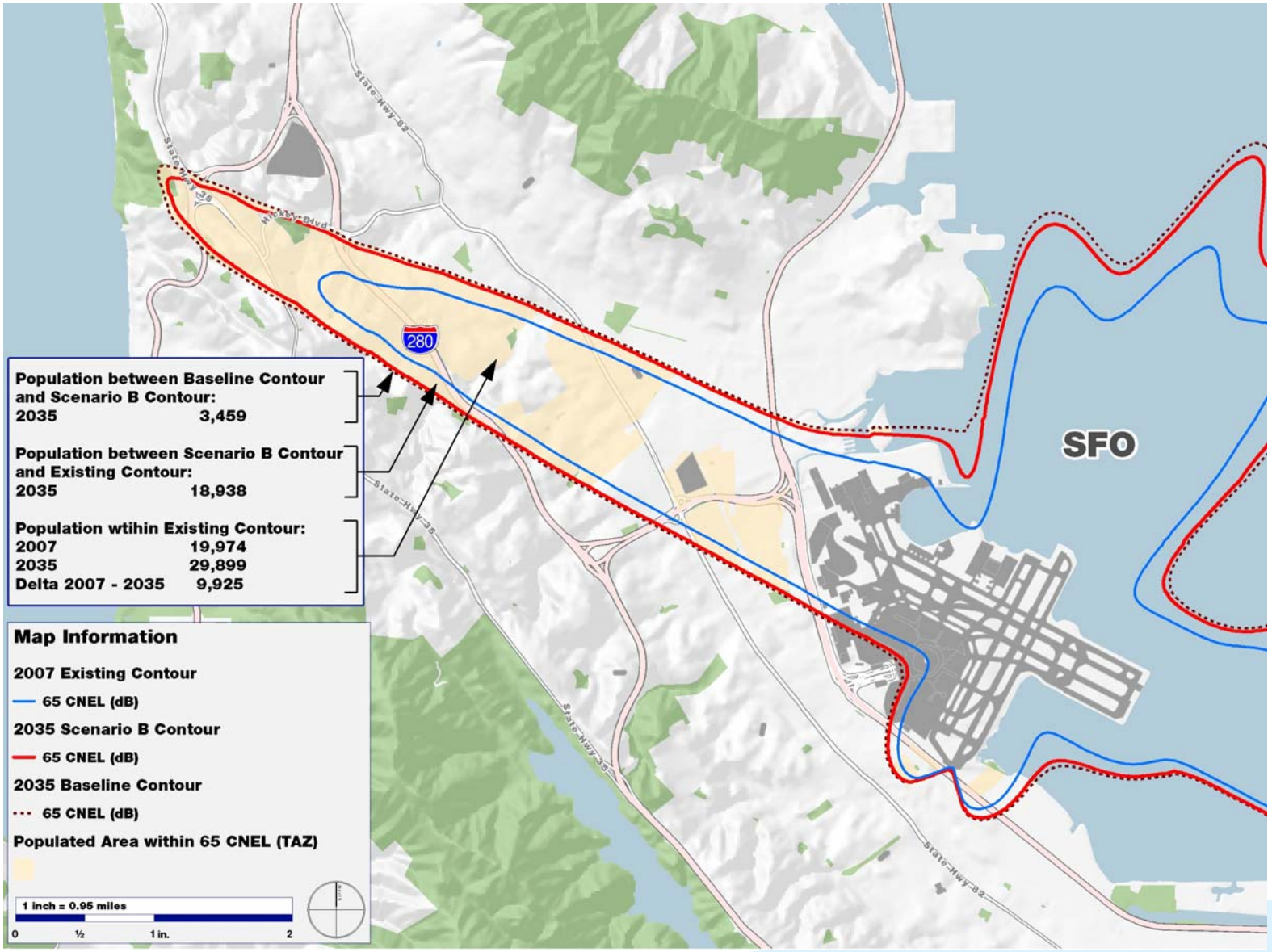




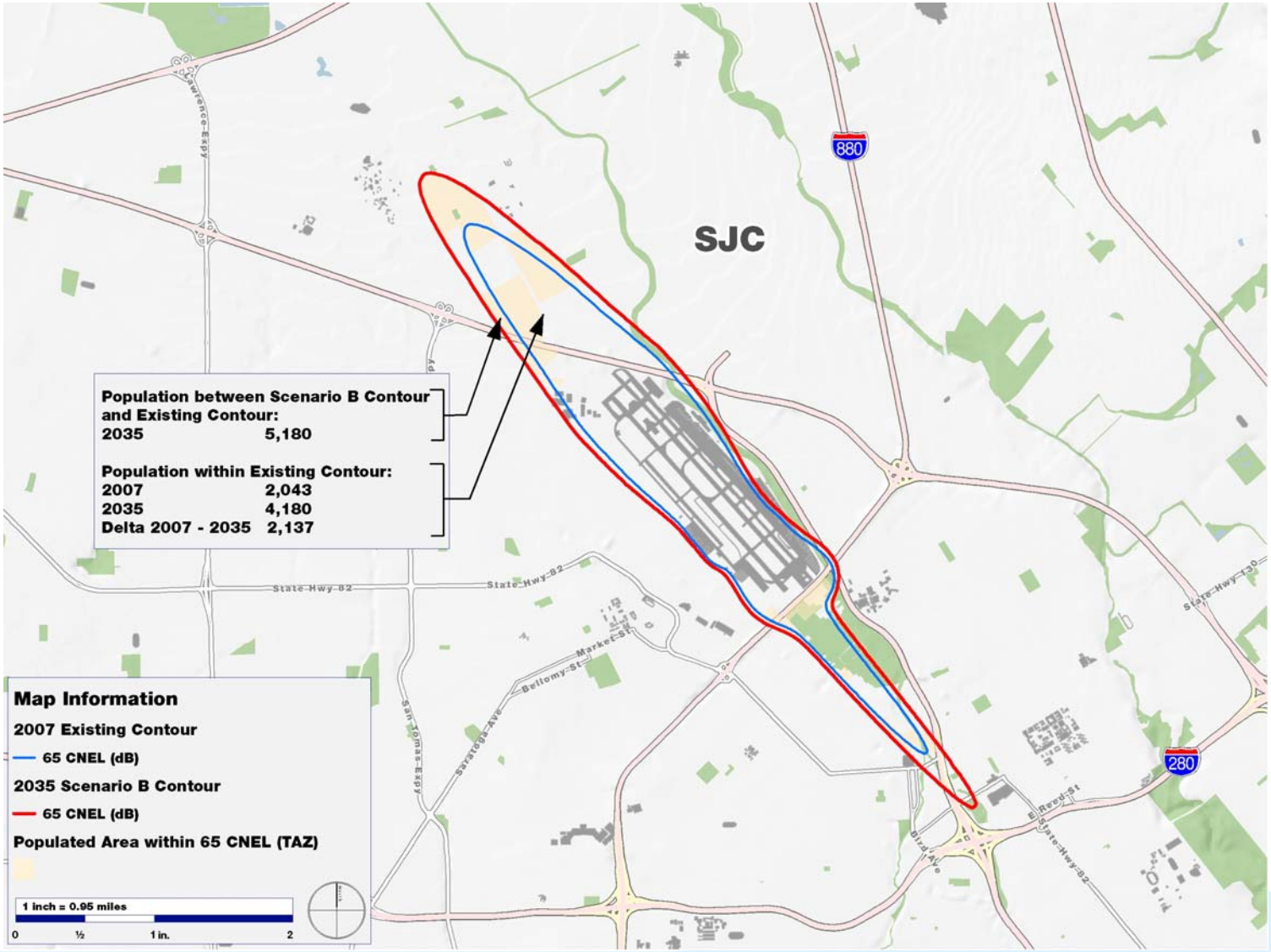
Notes: Population projections are based on ABAG's 2009 Focus Growth projections and Scenario B includes projected increase in flights.
No population exposure at OAK.
Some residences in the 65 CNEL contours for SFO and SJC have already been soundproofed.

ICF INTERNATIONAL SH&E an ICF International Company

SFO Noise Exposure Contours – *2007 Existing, 2035 Baseline, and 2035 Scenario B*



SJC Noise Exposure Contours – *2007 Existing and 2035 Scenario B*

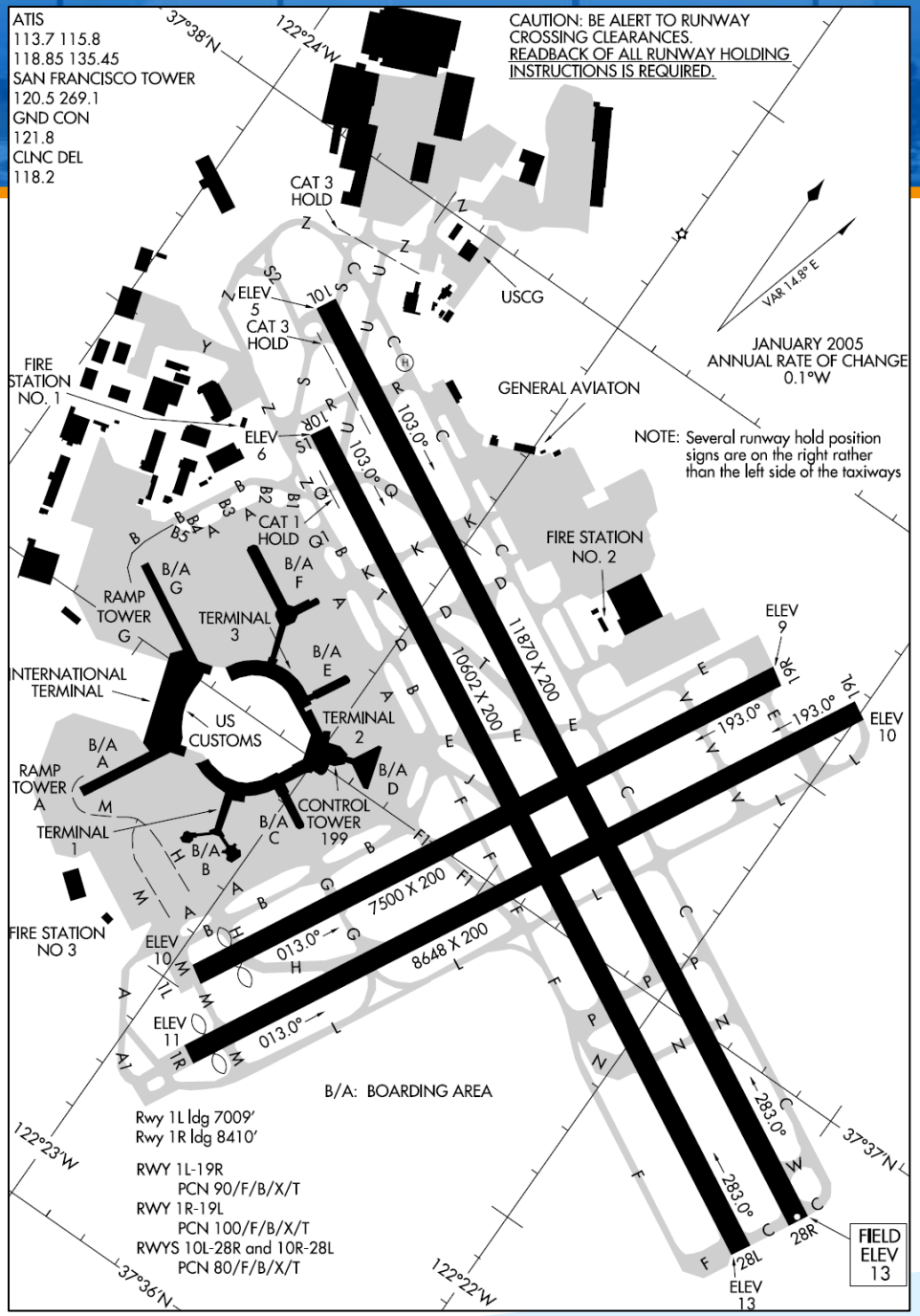


OAK Noise Exposure Contours – *2007 Existing and 2035 Scenario B*

ICF INTERNATIONAL SH&E an ICF International Company

San Francisco (SFO): Airfield Layout

- **The preferred configuration is wingtip-to-wingtip arrivals to 28L & 28R with dual departures on 01L & 01R.**
- **SOIA approaches provide dual arrival runway capacity on 28L & 28R down to weather minimums of 2100 ft ceiling and 4 nm visibility.**
  - Used < 2% of the time
- **Capacity is substantially diminished during IFR and East flow conditions.**



Forecast Tracking System

- Track actual traffic against forecast
- Determine what is driving the difference between actual and forecast
- Assess when the forecast level of 101M passengers will be achieved