City and County of San Francisco
Department of City Planning

SAN FRANCISCO INTERNATIONAL AIRPORT MASTER PLAN
Final
Environmental Impact Report

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Volume II: Summary of Comments and Responses

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SAN FRANCISCO INTERNATIONAL AIRPORT
● FINAL EIR

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A. INTRODUCTION

This document contains summaries of the public comments received on the Draft Environmental Impact Report (EIR) prepared for the proposed San Francisco International Airport (SFIA) Master Plan project, and responses to those comments. Also included are staff-initiated text changes.

All substantive comments made at the Draft EIR public hearings held in Millbrae on August 27, 1991, and before the San Francisco City Planning Commission on August 29, 1991 and on October 17, 1991, and all written comments received during the Draft EIR public review period from July 11 to October 21, 1991, are presented herein by direct quotation, edited to delete repetition and nonsubstantive material only.

Each comment presented herein is followed by the name of the commenter. Where several comments on one topic are made by the same commenter, the commenter's name is presented once, at the end of the group of comments. Where a commenter makes the same comment more than once, such as in a letter and public hearing testimony, the comment is presented once herein, followed by the dates of the letter(s) and/or hearing(s) in which the comment was made. Endorsements of the comments of a person or agency are listed in Section B of this document, List of Persons Commenting.

Comments and responses are grouped by subject matter and are arranged by topics corresponding in part to the Table of Contents in the Draft EIR. Each group of comments is followed by its set of responses; the order of the responses under each topic follows the order of the comments. As the subject matter of one topic may overlap that of other topics, the reader must occasionally refer to more than one group of comments and responses to review all information on a given subject. Where this occurs, cross references are provided.

Commenters wishing to find the locations of their comments in this document can turn to Section E, List of Topics and Commenters, p. C&R.432. The section lists the topics under which the comments are grouped, and the names of the commenters submitting comments on each topic, in the order presented in this document.

Some comments do not pertain to physical environmental issues, but responses are included to provide additional information for use by decision makers.

These comments and responses will be incorporated into the Final EIR as a new chapter. EIR text changes resulting from comments and responses will also be incorporated into the Final EIR, as indicated in the responses.

B. LIST OF PERSONS COMMENTING

Gary F. Adams, District CEQA Coordinator (for Preston W. Kelley, District Director), California Department of Transportation (written comments, September 10, 1991)

Dennis Argyres, City Manager, City of Burlingame, CA (written comments, September 9, 1991)

Peter E. Bank, President, Rutherford & Chekene (written comments, August 21, 1991)

Belmont City Council (endorsement of City/County Association of Governments of San Mateo County [C/CAG] Airport Land Use Committee [ALUC] recommendations to C/CAG, cited in Ed Everett's written comments, September 6, 1991)

Bruno Bernasconi, San Francisco, CA (public hearing comments, August 27, 1991)

Bob Berry, Berkeley, CA (written comments, August 28, 1991)

Don Bertone, San Francisco Airport Noise Committee (public hearing comments, October 17, 1991)

Bhimje, San Francisco, CA (public hearing comments, August 29, 1991)

Susan Bierman, (then) San Francisco Planning Commissioner (public hearing comments, August 29, 1991)

Gary Binger, Planning Director, Association of Bay Area Governments (written comments, September 18, 1991)

Jessie Bracker, Millbrae, CA (public hearing comments, August 27, 1991 and written comments, August 18, 1991 and August 27, 1991)

Brisbane City Council (endorsement of SamTrans, C/CAG ALUC, and C/CAG comments, cited in Honorable Steven W. Waldo's written comments, September 9, 1991)

Chris Brittle, Manager, Planning, Metropolitan Transportation Commission (written comments, September 16, 1991)

Thomas H. Brown, Manager, Facilities Planning and Design, United Airlines (written comments, October 16, 1991)

Burlingame City Council (endorsement of C/CAG ALUC and C/CAG comments, cited in Dennis Argyres' written comments, September 9, 1991)

Bob Bury, Chair, Inter-City T.S.M. Authority (written comments, September 19, 1991)

C/CAG (endorsement of SamTrans staff comments, cited in Raymond Miller's written comments, September 3, 1991)

C/CAG, ALUC (recommendations to C/CAG, incorporated into Raymond Miller's written comments, September 3, 1991)

Leslie J. Carmichael, Senior Planner, Estero Municpal Improvement District, City of Foster City, CA (written comments, September 20, 1991)

Honorable Roger Chinn, Chairman, Airport/Community Roundtable (written comments, September 6, 1991)

Patricia E. Clark, Belmont, CA (written comments, October 12, 1991)

Jerome A. Copelan, Property & Facilities Director, The Americas, Qantas (written comments, October 14, 1991)

Wendy L. Cosin, Planning and Building Director, City of Pacifica, CA (written comments, September 4, 1991)

County of San Mateo Board of Supervisors (comments attached to written comments by Paul M. Koenig, Director, Department of Environmental Management, County of San Mateo, September 6, 1991)

Carol Danville, Glen Park Association (public hearing comments, October 17, 1991)

Donald J. de la Pena, Director of Community Development, City of Menlo Park, CA (endorsement of C/CAG comments, September 11, 1991)

David Deakin, San Francisco, CA (written comments, August 29, 1991)

Honorable Jack Drago, Mayor, City of South San Francisco, CA (written comments, September 10, 1991)

Douglas Engmann, (then) San Francisco Planning Commissioner (public hearing comments, August 29, 1991 and October 17, 1991)

Ed Everett, (then) City Manager, City of Belmont (written comments, September 6, 1991)

David Few, Burlingame, CA (public hearing comments, August 27, 1991)

Honorable Janet Fogarty, Mayor, City of Millbrae, CA (public hearing comments for the Millbrae City Council, August 27, 1991, and written comments, September 6, 1991)

George D. Foscardo, Director of Planning and Building, City of San Bruno, CA (written comments, September 9, 1991 and September 10, 1991)

Carol E. Gamble, Esq., San Francisco, CA (written comments, October 18, 1991)

Richard D. Gee, Deputy General Manager, Planning and Engineering, SamTrans, and Deputy Executive Director, San Mateo County Transportation Authority (written comments, August 28, 1991, September 9, 1991, and September 20, 1991) (SamTrans staff comments endorsed by the Inter-City Transportation Systems Management [TSM] Authority, cited in Bob Bury's written

comments, September 19, 1991; by the Citizens Advisory Committee of the San Mateo County Transportation Authority, cited in Richard Gee's written comments, September 9, 1991; by C/CAG, cited in Raymond Miller's written comments, September 3, 1991; by the San Mateo County Transportation Authority, cited in Richard Gee's written comments, September 20, 1991; and by the Brisbane City Council, cited in Honorable Steven W. Waldo's written comments, September 9, 1991)

Barbara Giel, Chairman, San Francisco Foreign Flag Carriers (written comments, September 10, 1991)

Sandy Hesnard, Environmental Planner, California Department of Transportation, Division of Aeronautics (written comments, September 5, 1991)

Jack Hickethier, Burlingame, CA (public hearing comments, August 27, 1991)

Curt Holzinger, San Francisco, CA (public hearing comments, August 29, 1991, and October 17, 1991, and written comments, October 18, 1991)

Stanford M. Horn, San Francisco, CA (written comments, September 3, 1991)

Honorable Fred Howard, City of Pacifica, Pacifica City Council Representative, Airport/Community Roundtable, representing the Pacifica Noise Abatement Committee (public hearing comments, August 27, 1991, and written comments, September 7, 1991)

Wayne Hu, (then) San Francisco Planning Commissioner (public hearing comments, August 29, 1991 and October 17, 1991)

Korbey G. Hunt, Properties Manager, Alaska Airlines (written comments, September 10, 1991)

Inter-City T.S.M. Authority (endorsement of SamTrans comments, cited in Bob Bury's written comments, September 19, 1991)

Diane Jones, Analyst, California State Lands Commission (written comments, August 14, 1991)

Shelley Kessler, Coordinator, SFO Airport Labor Coalition (written comments, September 11, 1991)

Carol Kocivar, President, West of Twin Peaks Central Council (written comments, September 27, 1991)

Paul M. Koenig, Director, Department of Environmental Management, County of San Mateo (written comments, September 6, 1991)

Bruce Krell, President, Forest Hill Association (written comments, October 9, 1991)

Charles J. Kroupa, San Francisco, CA (public hearing comments, August 29, 1991 and October 17, 1991, and written comments, October 17, 1991)

Joan A. Kugler, Planning Project Manager, South and West Bay Projects, Extension Planning Department, BART (written comments, September 12, 1991)

Alyn I. Lam, San Francisco, CA (written comments, August 15, 1991)

Harvey E. Levine, Hallgrimson, McNichols, McCann & Inderbitzen, for Sierra Point Associates (written comments, September 10, 1991)

James D. Lowe, Transit Planner, MUNI (written comments, August 3, 1991)

Jerome S. Lukas, San Francisco, CA (written comments, October 14, 1991)

Leonard Lundgren, Legislative Advocate, Lakeside Property Owners Association (written comments, August 27, 1991)

Steven A. McAdam, Assistant Executive Director for Governmental Affairs, San Francisco Bay Conservation and Development Commission (written comments, August 5, 1991)

Menlo Park City Council (endorsement of C/CAG comments, cited in Donald J. de la Pena's written comments, September 11, 1991)

Honorable Raymond Miller, Chairman, C/CAG (written comments, September 3, 1991) (Comments endorsed by the Menlo Park City Council, cited in Donald de La Pena's written comments, September 11, 1991; by the Brisbane City Council, cited in Honorable Steven Waldo's written comments, September 9, 1991; and by the Burlingame City Council, cited in Dennis Argyres' written comments, September 9, 1991)

James Morales, (then) San Francisco Planning Commissioner (public hearing comments, August 29, 1991)

Stan Moy, Partner, Finger & Moy Architects (written comments, October 15, 1991)

National Organization of Minority Architects (written comments, September 10, 1991)

David C. Nunenkamp, Deputy Director, Permit Assistance, State of California, Governor's Office of Planning and Research (written comments, August 29, 1991)

James J. Palma, San Jose, CA (written comments, September 30, 1991)

Debbie Pilas-Treadway, Staff Analyst, Native American Heritage Commission (written comments August 1, 1991)

Dehnert C. Queen, Founder and CEO, Small Business Development Corporation (public hearing comments, August 29, 1991, and written comments, October 17, 1991)

San Mateo County Transportation Authority (endorsement of C/CAG ALUC recommendations to C/CAG and SamTrans staff comments, cited in Richard Gee's written comments, September 20, 1991)

San Mateo County Transportation Authority, Citizens Advisory Committee (endorsement of SamTrans staff comments, cited in Richard Gee's written comments, September 9, 1991)

Edward Sewell, (then) San Francisco Planning Commissioner (public hearing comments, August 29, 1991)

Charles L. Smith, Berkeley, CA (written comments, July 1991)

Duane Spence, Airport Mitigation Coalition (written comments, September 9, 1991)

Duane Spence, Peninsula Litigation Coalition (public hearing comments, August 27, 1991)

Peter Straus, Director of Service Planning, MUNI (written comments, August 3, 1991)

Maria Gracia Tan-Banico, Associate Planner, City of Daly City, CA (written comments, August 23, 1991)

Onnolee Trapp, Transportation Director, Leagues of Women Voters of San Mateo County (public hearing comments, August 27, 1991, and written comments, August 27, 1991)

Timothy E. Treacy, Chairman, San Francisco Airport Noise Committee (written comments, October 9, 1991) (Comments also incorporated into Carol E. Gamble's written comments, October 18, 1991)

TREE, Palo Alto, CA (written comments, September 29, 1991)

Honorable Robert H. Treseler, Councilman, City of Millbrae, CA (written comments, September 6, 1991)

L. A. Turpen, Director of Airports, San Francisco International Airport (written comments, September 10, 1991)

Rose Urbach, San Bruno, CA (public hearing comments, August 27, 1991)

Honorable Steven W. Waldo, Mayor, City of Brisbane, CA (written comments, September 9, 1991)

Jim Wheeler, Loma Prieta Chapter Transportation Committee, Sierra Club (written comments, October 11, 1991)

Arthur Wong, City Engineer, City of South San Francisco (written comments, August 26, 1991)

Edwin Works, San Bruno, CA (public hearing comments, August 27, 1991)

C. COMMENTS AND RESPONSES

PROJECT DESCRIPTION

The Notes for this section begin on p. C&R.44.

PROJECT SPONSOR OBJECTIVES AND APPROACH

Comments

". . . SFO has opted to make itself the Regional Airport for the Bay Area. SFO has done so in spite of declarations made fifteen years ago that it would limit passenger levels to an "ultimate" 31 million (FEIS Vol. I Ch. I & III [Landrum & Brown, *San Francisco International Airport, Environmental Impact Assessment Report, Airport Improvement Program*, 1975]). MTC, California's designated official Bay Area planning agency, states in the DEIR that development of SFO should 'be consistent with the Regional Plan' and then recommends that SFO adhere to passenger assignments of between 27 and 31 million passengers per year for the years 1994 through 2000 (DEIR Vol. I Ch. III Table 14). Even SFO's proposed offsite development alternative recognizes a potential 'redistribution to other airports' as feasible (DEIR Vol. I Ch. I §D). Never-the-less, SFO has blithely initiated an expansion program to increase capacity in order to accommodate 42.3 and 51.3 million passengers by 1996 and 2006, respectively. . .

"There really doesn't seem to be much innovation in this expansion plan. I sense that the primary objective of this proposed expansion is to develop large terminal buildings in order to 'harvest' rental and concession revenues for San Francisco's depleted coffers." (Alyn Lam)

"The bottom line is, evidently, for San Francisco, they are greedy for a monetary position. The more flights, the more money, the more intake it is for their treasury." (Bruno Bernasconi)

". . . I am a little . . . disappointed in [the Airports Commissioners'] approach to this, and that is: It's the traditional way. Demand is going to increase 70 percent in the future. We have to expand to deliver it. We are really not going to consider regionally how we can address it. And what is even worse, even if you're looking at it from a competitive point of view, really, it's a big business maker for San Francisco. We want to keep it. We want to keep all business here.

"It's a head-in-the-sand approach. If you look at the freeway congestion, I can't imagine anybody who is going to want to go to San Francisco International Airport in the year 2006. You're not going to be able to get there. It's going to be totally impossible. If you look at BART -- BART, out of 160,000 trips, BART is going to take care of 10,000 of them.

"From a competitive point of view, there is no analysis of, gee, in order to be able to compete and keep these passengers, we are going to have to do something different, like we have an interest, a real interest in seeing transit developed or these new off-site registrations and get people into buses to come to San Francisco International. It's, gee, you're going to have to do that because that is required mitigations. San Francisco International is going to go out of business if they keep along this particular path. There is just no creativity, no forward looking kind of activity. I am very disappointed in it. . .

". . .[I]t is essential for the airport to explain in greater detail -- and we never got the Draft Master Plan to review. We just have the EIR -- what the goals of the airport are, where they are trying to go, how they fit into regional planning, and where they want to be. What kind of airport do we want to be in the future?" (Commissioner Engmann)

"It could be economically disastrous for the SFIA to provide the proposed expansion of facilities if the problems created make it impossible to fully utilize the airport facilities. . . . To use a well-known slogan, 'Since we're neighbors, let's be friends,' and let all concerned agencies work together for a mutually satisfactory resolution of problems." (Onnolee Trapp, Leagues of Women Voters of San Mateo County)

"The only reason I can think of to expand San Francisco Airport operations is to expand the complications of operating it so that the people working there can hire more helpers and run larger departments. I realize this is not a politically correct statement, but I also think it is good for someone to come out and say it like it is.

"The politically astute people with offices to enlarge who work for the airport authority have cleverly engineered the entire setup, including charging San Mateo County a billion dollars to expand someone else's dream - BART." (Patricia Clark)

"It's like in L.A., where Burbank becomes the airport of choice." (Commissioner Sewell)

". . .[A]round the U.S. and beyond, virtually every city is working on or has recently completed major airport improvements. Could San Francisco's planners . . . see merit in allowing our job- and revenue-producing airport, alone among all the world's major terminals, to deteriorate? Our runways date to 1927 and our terminals to 1954; there shouldn't be anything sinful about bringing them up-to-date as other cities seem to have no debate about doing." (Stanford Horn)

Response

The group of comments above invites clarification of Airports Commission objectives for the SFIA Master Plan; questions the SFIA Master Plan's approach to meeting its objectives; and challenges the integrity of unstated Airports Commission objectives for the SFIA Master Plan. Responses to these issues are presented in three parts.

Clarification of SFIA Airports Commission Master Plan Objectives

CEQA does not require that an EIR evaluate the objectives of a project sponsor and in practice, such an evaluation is not generally undertaken unless it is necessary to properly scope the EIR and/or carry out the EIR's purpose. This purpose is ". . .to provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project may be minimized; and to indicate alternatives to such a project" (Section 21061). Thus, the primary concern of an EIR is not why the project sponsor seeks approval for a particular project but rather, what effects the project as defined would have on the environment, and how those effects might feasibly be reduced or avoided. The statement of project sponsor's objectives thus helps to explain, first, what "project" is evaluated in the EIR and second, how mitigations and alternatives in the EIR relate to the project.

Under CEQA, if mitigation measures or alternatives would substantially reduce or lessen any significant effects that the project would have on the environment but would prevent the basic objectives of the project from being met, those mitigation measures or alternatives might not be considered "reasonable" or appropriate for inclusion in the EIR. However, alternatives that would "impede to some degree" the attainment of project objectives, or would be more costly, can still be within a "range of reasonable alternatives" to the project (CEQA *Guidelines*, Section 15126(d)). In situations such as the SFIA Master Plan EIR, wherein the project sponsor is also the Lead Agency, the agency's

particular policies and goals for the project necessarily influence which mitigations and alternatives are considered "reasonable" (these issues are discussed further below, under Alternatives, on pp. C&R.86-100 herein). Because the SFIA Master Plan objectives are broadly stated (making it difficult to determine which mitigations and alternatives would meet or only "impede to some degree" those objectives), and because of the nature of questions and concerns expressed in comments on the DEIR, additional discussion of project sponsor / Lead Agency objectives appears warranted.

As stated in the SFIA *Final Draft Master Plan* (p. 2.1), and summarized in the EIR (p. 18), the SFIA Master Plan "...provides San Francisco International Airport with a comprehensive set of plans, guidelines, policies, and conditions which will serve as a framework for decision-making and implementation of landside facilities over the next 15 years. Accordingly, the purpose of the master plan is twofold:

1. To provide a coordinated development plan that will consolidate and relocate many of the existing landside facilities in order to increase the efficiency and cost effectiveness of landside operations.

2. To respond to the projected economic growth of the Bay Area and ensure that the future development required to meet that demand at the airport is implemented in a manner compatible with the plan."

These two objectives could be more simply characterized as increasing efficiency of SFIA landside facilities and expanding SFIA landside facilities to meet forecast increases in air travel demand. The projects contained in the SFIA Master Plan are not generally identified with just one or the other of these basic objectives; most are implicitly represented as addressing both, although the terminal expansion and related projects are linked directly with travel-demand-growth forecasts.

Since World War II, policies of the federal government have strongly supported development of public-use airports and expansion of existing airports' capacities (see Attachment D of C&R Appendix A, "Summary of Federal Regulatory History"). Determining future facility requirements on the basis of forecast air travel demand is standard practice in airport master planning. According to the FAA,

"The goal of a master plan is to provide guidelines for future airport development which will satisfy aviation demand in a financially feasible manner, while at the same time

resolving the aviation, environmental, and socio-economic issues existing in the community."/1/

The master planning approach undertaken by SFIA -- which included issues identification, public meetings and consultations, data collection and facility inventory, demand forecasting, determination and refinement of facility requirements, and development of budgets, plans and schedules -- was generally consistent with basic guidelines for the preparation of individual airport master plans set forth by the FAA in its Advisory Circular No. 150/5070-6A, pursuant to provisions of the 1982 Airport and Airway Improvement Act. (Note: SFIA received no financial assistance from the federal government for preparation of the SFIA Master Plan.) The relationship of individual airport master planning to regional, state and federal aviation system planning is discussed below, under Regional Planning and Coordination, General, on pp. C&R.56-60 herein.

Research and analysis regarding the status of major airport improvements nationally and internationally, and regarding levels of debate in other cities about proposed airport improvements, are beyond the legally mandated scope of the SFIA Master Plan EIR. It should be noted that airside development is not addressed in the SFIA Master Plan, except where necessary to accommodate proposed landside projects (thus, several taxiway modifications, and no runway projects, are included in the SFIA Master Plan).

Preventing deterioration of SFIA is not, as implied by a commenter, among the stated objectives of the SFIA Master Plan (quoted above, on p. C&R.11 herein). Upkeep and improvement of existing facilities, including runways, is undertaken routinely through SFIA's Five-Year Capital Projects Plans process (EIR, pp. 27 & 28 and Appendix B, Table B-4). Modernization and expansion, or bringing SFIA landside facilities "up-to-date" relative to forecast demand, is among the stated objectives of the SFIA Master Plan.

With regard to the comment that "SFO has opted to make itself the Regional Airport for the Bay Area," it may be noted that SFIA's current (1990) share of the Bay Area passenger market is approximately 71 percent (EIR, p.120); passengers from all parts of the Bay Area (as well as outside the Bay Area) use SFIA. As stated in the *Final Draft Master Plan* (pp. 2.4 and 7.2), the Airports Commission assumes that, "Because of its relationship to the central business district and its importance as an interactive gateway, SFIA will continue to be the preferred destination airport for the Bay Area." The Airports Commission further assumes that, "While Oakland may in the future increase its handling of international

freight, SFIA will continue to be the airport of choice for international cargo through 2006" (SFIA *Final Draft Master Plan*, p. 2.4). Forecasts from federal, state, and regional agencies, as well as from the respective master plans, show SFIA maintaining from about 58 percent to 71 percent of the region's passenger market through 2005./2/ (Comparative regional aviation forecasts are discussed further below, under Regional Forecasts and Capacities, on pp. C&R.66-73 herein.)

Thus, applying a "majority of total annual passengers" criterion, SFIA could be described as "the Regional Airport for the Bay Area" at present and for the foreseeable future. However, it should be noted that four other Bay Area airports currently provide air carrier service and are considered regional airports. Moreover, as shown in EIR Table 75 (p. 470), SFIA's market share, which was nearly 92 percent in 1960, has been decreasing steadily. According to a preliminary draft consultant report presented to the MTC Regional Airport Planning Committee (RAPC),

"Although SFO is planning for significant growth in passenger traffic (much of it international), combining the individual airport master plan forecasts reveals a future shift in passenger market share away from SFO [SFIA] and toward OAK [Metropolitan Oakland International Airport] and SJC [San Jose International Airport]. Under the unconstrained forecast for 2010, SFO's regional market share would fall from its 1990 level of 71% to 61%. Under the constrained forecast, SFO's share of the region's total passengers would decrease to 56% by the year 2010."/2/

Thus, while SFIA is planning for substantial growth over the next 15 years, the other Bay Area Airports are planning for much higher rates of growth, starting from much lower base levels. The 1990 FAA Terminal Area Forecast, one of a number of alternative future air carrier forecasts, extrapolated to 2010 by the MTC RAPC, yielded the following 1990-2010 passenger growth for the five Bay Area Air Carrier Airports: SFIA -- 48 percent; Metropolitan Oakland International Airport (MOIA) -- 92 percent; San Jose International Airport (SJIA) -- 138 percent; Concord (Buchanan Field) -- 408 percent; and Sonoma County -- 32 percent./2/

The international air passenger market is a key component of SFIA Master Plan expansion objectives. As noted in EIR Table 1, p. 24, SFIA forecasts a 96 percent increase in international passengers between 1990 and 2006, compared to a 68 percent increase in domestic passengers over the same period. The physical SFIA Master Plan centers on a new international terminal and additional aircraft gates, although international passengers represented fewer than 12 percent of SFIA's total passengers in 1990. (According to MTC

RAPC "high" forecasts, total annual international passengers for the Bay Area would increase between 1990 and 2010 by about 136 percent, from 3,765,473 to 8,877,264. SFIA's share would decrease from about 97.6 percent of the Bay Area total in 1990 to about 94.5 percent in 2010.)/2/ Even with the forecast increase in international air traffic, international passengers would represent only approximately 14 percent of total SFIA passengers in 2006.

As correctly stated by one commenter, the Metropolitan Transportation Commission (MTC) is the nine-county Bay Area regional transportation planning agency. However, MTC at present does not have authority to fully implement every regional aviation plan and policy (see further discussion below, under Regional Airport System Plan (RASP) Update, on pp. C&R.60-66 herein)./3/ Regarding the commenter's reference to SFIA expansion plans that exceed MTC's previously recommended limits, the EIR notes on pp. 118, 119 and 258 that the 1980 MTC-adopted *Regional Airport Plan* (RAP) contained recommended passenger shares for the respective Bay Area airports and recommended a limit of 31 million annual passengers (MAP) for SFIA as a matter of policy. MTC's allocations were based on regional forecasts that have been surpassed by actual passenger traffic; MTC has since revised its forecasts and recommended allocations (most recently in 1986 and 1987)./4/ As noted in the EIR (page 258), MTC is currently updating the entire RAP, which is now being called the Regional Airport System Plan (RASP). It is acknowledged that the SFIA Master Plan would be inconsistent with both MTC's 1980-recommended policy limit and with MTC's subsequently revised regional market share recommendations. (The 1986/87 MTC forecasts and passenger traffic assignments, and the issue of SFIA Master Plan consistency with the MTC RAP, are discussed further below, under Regional Airport System Plan (RASP) Update, pp. C&R.60-66 herein.)

According to SFIA Administration staff, the 1976 Final Environmental Impact Statement (FEIS) referenced by the commenter is not known to have stated that SFIA would limit annual passengers to a certain number. The forecasts used in that document indicated SFIA's reaching 31 million annual passengers by 1990, and this forecast has been realized./5/ The forecasts in the 1976 FEIS may be assumed to reflect the Airports Commission's analysis of conditions and data then available; the Commission's expectations have since shifted in response to changing conditions and data availability.

SFIA Master Plan's Approach to Meeting its Objectives

Several commenters express concern that increased traffic or other problems resulting from SFIA Master Plan implementation would prevent the full utilization of expanded SFIA facilities. In effect, one commenter contends, SFIA would not compete effectively for the forecast passenger demand that the SFIA Master Plan is intended to serve, because the SFIA Master Plan does not creatively address ground-access constraints. Another commenter suggests that underutilization of expanded airport facilities could be economically disastrous [for adjacent communities].

Although the EIR transportation analysis found that cumulative impacts on levels of service (LOS) at selected intersections and freeway ramps would result from implementation of the SFIA Master Plan (EIR, pp. 4-5 & pp. 295-319), the analysis did not conclude that resultant freeway congestion in 2006 would make it "impossible" to get to SFIA, as one commenter suggests./6/ The EIR does not draw conclusions regarding the effects of congestion on SFIA's ability to meet demand, and did not identify traffic impacts severe enough to cause SFIA to "go out of business"; it includes a range of transit mitigation measures (SFIA Master Plan traffic impacts, and the degree to which they could be mitigated by BART, off-airport terminals and other transit mitigation measures, are discussed below under Traffic Mitigation, pp. C&R.158-165 herein). However, as suggested by the commenters, it is reasonable to assume that lack of capacity (or "bottlenecks") in any of a number of locations or functional areas could constrain future SFIA passenger volumes, cargo activities, or other operations. Computer models have been developed to help study relationships between ground access to airports and travellers' airport choice; one of these, called ACCESS, was developed for MTC for evaluation of airport system plan alternatives as well as rail transit extension planning. Based on MTC's *1990 Air Passenger Survey* data, ACCESS is being used in the MTC RASP Update process (ACCESS was previously based on 1985 data)./3/ The basic premise of the commenters' argument, that quality of ground access strongly affects an airport's competitive position in a multi-airport region, is supported by preliminary results of the ACCESS model runs for the MTC RAPC Update (this is discussed further below, under Alternatives, pp. C&R.90-93 herein, and under Transportation, pp. C&R.135-136 herein).

This phenomenon could be represented by the SFIA Master Plan's "constrained" forecast, under which passenger demand:

"... may be impacted in the future by ... increasing impact of capacity constraints, particularly during IFR [instrument flight rule] conditions, consolidation of the airline industry, and certain improvements that may occur at competing Bay Area airports which would result in greater convenience and capacity at those airports .... The constrained forecast describes the possible effect on future passenger levels if additional and restructured existing [SFIA] airport facilities are not available to satisfy demand (SFIA *Final Draft Master Plan,* p. 7.3).

(Note that the "constraints" reflected in this scenario are mostly related to the airfield and airport facilities. However, the lack of ground access capacity could produce a similar result).

Potential impacts of the SFIA Master Plan's "constrained" future scenario are analyzed in the EIR as Variant 1 of the No-Project Alternative (pp. 439-456), and discussed further below, under Alternatives, pp. C&R.86-93 herein.

If the commenters' concerns (that SFIA Master Plan expansion-related ground-access problems could severely constrain utilization of SFIA) were to be realized, it would in effect mean that SFIA would have "overbuilt." Impacts of SFIA Master Plan overbuilding or underutilization, whether due to constrained access, inflated forecasts, or other factors, would likely be of concern under CEQA only if overall regional or cumulative impacts would worsen, or adverse environmental impacts would merely be shifted to other locations, as a result.

The EIR provides an approximation of "worst case" SFIA Master Plan operational impacts by assuming full utilization of expanded airport facilities. (It is an "approximation" because it is based on numerous professional judgments, estimates and forecasts, including SFIA Master Plan forecasts of passenger, cargo, and/or aircraft operation levels. As discussed below under Activity Patterns and Forecasts, on pp. C&R.30-38 herein, such forecasts necessarily contain margins of error and uncertainty; actual future activity levels at SFIA could easily be lower than forecast for the SFIA Master Plan.) Therefore, relative to SFIA Master Plan impact levels identified in the EIR, underutilization of airport facilities would be expected to reduce the overall severity of both direct operational impacts (e.g., traffic, noise, air quality, employment) and indirect operational impacts (e.g., housing demand and related services). Construction impacts would not be reduced. It would be difficult to demonstrate causal relationships between an underutilized or over-expanded SFIA, and environmental impacts at locations outside the SFIA vicinity (for example, worsened traffic congestion in other parts of the Bay Area). Thus, while it might

not be prudent to effectively "overbuild" SFIA, that outcome would not likely result in identifiable environmental effects more severe than those estimated in the EIR for the project.

With regard to one commenter's concern that underutilization of expanded SFIA facilities could be economically disastrous [for adjacent communities], it should be noted that CEQA does not require analysis of economic or social issues unless those issues are related to or caused by physical changes to the environment (CEQA *Guidelines*, Section 15131). It may also be noted, however, that if the proposed SFIA Master Plan improvements are financed with revenue bonds, payment of the bonds would be backed by Airport revenues, with the airlines covering debt payment costs not recovered from other Airport users (for further information on airport economics, see discussion below under Project Costs on pp. C&R.26-28 herein and in C&R Appendix A, Attachment D, Background to Airport Operations).

Integrity of Unstated Airports Commission Objectives for the SFIA Master Plan

Several commenters expressed concern that the primary objectives of the SFIA Master Plan are actually to expand Airport departments, to generate money for the Airport from landing fees, or to generate money for the City of San Francisco from rental and concession revenues. According to SFIA Administration staff, the San Francisco Charter establishes the San Francisco Airports Commission as a financially self-supporting enterprise fund department of the City and County of San Francisco. The Airport Airline Lease and Use Agreements, effective July 1, 1981, require the Airport to retain all revenues on the Airport with two exceptions (49 U.S.C. App. Section 2210 (a) (12)). First, the Airport reimburses the City for direct services provided by City departments to the Airport. Second, the Airport pays the City a portion of its yearly concession revenues in accordance with an established formula related to the indirect services provided to the concessionaires that operate at the Airport.

As one commenter points out, implementation of the SFIA Master Plan would generate employment and likely lead to expansion of some Airport departments. However, these are not among the stated or evident objectives of the SFIA Master Plan and, according to CEQA, would more appropriately be considered effects of the project. Department expansion is not subject to environmental review under CEQA, since it would not itself result in physical effects on the environment or adverse effects on people. Employment

effects are subject to review under CEQA requirements; SFIA Master Plan employment effects are evaluated in the EIR (pp. 394-399) and discussed further below, under Employment and Housing, on p. C&R.351-368 herein. The relationship between SFIA and financing of BART is discussed below, under Transportation Mitigation, on p. C&R.156 herein.

Regarding the comment that the San Francisco City Planning Commissioners "never got the Draft Master Plan to review," as noted herein under Public Participation in the Master Planning Process on pp. C&R.19-20, copies of the Draft SFIA Master Plan Working Papers and Response to Comments documents were available to the public during the SFIA Master Plan development process. Copies of the SFIA Final Draft Master Plan and Working Papers were made available to the Department of City Planning and the Mayor's Office, and are available for review in the San Francisco Department of City Planning files at 450 McAllister Street. The comment that "all concerned agencies should work together for a satisfactory resolution of problems" is further addressed below, under Regional Planning and Coordination, pp. C&R.56-85 herein and EIR Process, pp. C&R.393-413 herein.

PUBLIC PARTICIPATION IN MASTER PLANNING PROCESS

Comments

". . .[A]t each stage of this process, the concerns of San Francisco residents have been raised over a four-year period, at public hearings and meetings, both orally and in writing. (The last public hearing on the [SFIA] Master Plan working papers, in August, 1989, was attended by approximately one hundred neighborhood representatives, representatives of organizations such as the Sierra Club and San Francisco Tomorrow, and individual residents.) At each stage, we have been assured by SFIA administration and staff (and from time to time also by the Airports Commission) that our concerns would be addressed at the NEXT stage. Sadly, we've been through the entire Master Plan working document process and we're at the last stages of the DEIR process now, and our concerns still have not been dealt with." (Carol Gamble)

". . . For four years, representatives of the neighborhoods in San Francisco have come before various bodies, have appeared in various hearings throughout the city asking to be represented in a meaningful way, asking to have our concerns addressed in a meaningful way, in both the

Master Plan documents and in the Draft EIR. At each hearing, at each meeting, we have been assured that we will be given that kind of consideration.

"After four years, we are still asking that our concerns be addressed in a meaningful way in these documents. It is distressing. It is troubling. It is difficult to respond to questions from the members of our association, about the motivation of the airport indicated in this manner.

"It is difficult to understand that an agency can be operating in good faith and still require the residents of the city to come back time and again to make the same requests.

"I hope that this commission will take these matters seriously, will defer any further action, and will direct the staff to do that which it was obligated to do many years ago." (Carol Danville, Glen Park Association)

"I have another question that may not be related specifically to the EIR, but given that there is an Airport Noise Committee appointed by the Board of Supervisors. . . testimony was that they have spent a great deal of time discussing the issues and attended the Airports Commission hearings. . . There may be a response from the airport, maybe if their concerns were addressed in their plan for the airport, not just in this Master Plan, but in the use of the airport and the development of the airport. . . I don't understand when there is a formal committee established that somehow they are not able to get their input directly into the airport, and that they have to use our body, our commission, to get a response. And maybe the response was made. I am not saying there was not a response at all. From what we are hearing today, there appears to be a problem." (Commissioner Hu)

Response

The SFIA Master Plan development process, beginning in 1986, included publication of three Working Papers for review and comment by interested parties and the general public. The Airports Commission held several public meetings (a list of those meetings is available in the San Francisco Department of City Planning EIR file at 450 McAllister Street) and subsequently published "Response to Comment" documents for each of the three Working Papers. The EIR process incorporated public participation opportunities as required by CEQA, including publication of a Notice of EIR Preparation (July 9, 1990); circulation of the Draft EIR (published July 11, 1991); an extended public comment period (July 11, 1991 through October 21, 1991); three public hearings during the public review

period; and publication of this Comments and Responses document. Thus, as the commenters indicate, numerous opportunities have been available for public participation in the SFIA Master Planning and associated EIR process (the latter is discussed further below, under EIR Process, pp. C&R.393-413 herein). The main point of the commenters, however, is that this participation has not, in their view, yielded meaningful results (their concerns "still have not been dealt with").

The SFIA Master Plan process reflects the larger, complex set of forces affecting the Airport generally. SFIA must comply with various government regulations protecting the public health, safety and welfare (such as noise regulations, building codes, etc.), and must meet the statutory requirements of CEQA for environmental review of projects, such as the SFIA Master Plan, that could result in significant adverse environmental effects. SFIA is not legally required to resolve all public concerns in the manner requested or desired by the public. Thus, in pursuing the Airports Commission's twofold objectives, quoted previously on p. C&R.11 herein,

"... the Master Plan attempts to balance the competing requirements of airport tenants, passengers, surrounding communities, and the general public. The plan continues to address the concerns of those in the airport environs and attempt to balance their needs with the public demand for utilization of this facility [SFIA]. Invariably, conflicting needs and requirements will result that will require resolutions. The Master Plan and EIR process has been designed to facilitate resolution of these conflicts" (SFIA *Final Draft Master Plan,* p. 2.1).

PROJECT CHARACTERISTICS

Facilities and Site Plan

Comments

"...The other thing is, if you look at LAX, how big a final product will this be relative to the size of LAX today? I'd be very curious, just so we get some order of magnitude." (Commissioner Sewell)

"Planning Concepts: Can anything at all be salvaged from this Master Plan? Why does SFO, particularly with apron areas 'cleared' on either side of its entry roads, insist on enclosing its 'horseshoe-shaped' terminals? Why not open them up into a gigantic 'U' in order to reduce traffic

concentration and improve air quality? Why do the rental cars have to be located in the proposed terminal area along the entry roads when clientele are already being 'bussed' out of the existing terminal area? Why not move the TWA freight facility into the proposed West Field Cargo Area and locate the rental cars along the south access road?

"Why is a large administration building needed at all in this age of computers and sophisticated communication links? All administrative support staff should be located outside the terminal area. Why can't a separate truck access route be provided for the West Field Cargo Area as it is for the North Field Area? Lastly, why can't the full potential of the existing terminal buildings be developed by renovating the existing mezzanine level into ticketing areas with bridge connections from the existing garage?" (Alyn Lam)

"Maintenance Operations Center ('MOC'). It cannot be assumed that there will be no modernization, renovation or expansion of the only 'major' maintenance facility at SFIA (Summary, pg. 9). United has more than twenty years remaining on its land lease for MOC facilities and will undoubtedly be required to accommodate, over time, its growth as a company and changes in its aircraft fleet. United has requested that the City add approximately eight (8) acres to its current 128 acre MOC site to support a limited expansion of this facility. Current estimates are that approximately 175,000 square feet of hangar space will be added in the near term. . .

"Airport Support Area Facilities. We believe it is important that the extent of United facilities being demolished to accommodate Master Plan development be correctly identified (II.C. Table 8, pg. 54). This should have a significant influence on a reviewer's perception of the 'net gain' in support facility construction actually being proposed by the Master Plan. United facilities being demolished which are not on Table 8 include:

- A four aircraft bay hangar
- A two aircraft bay hangar
- A stores/warehouse building
- A training/administration building
- An aircraft sanitary waste disposal building
- A flight kitchen
- Thirty aircraft parking hardstands
- Employee parking facilities -- 5,000 spaces

"Most of these displaced facilities must be relocated to other locations on SFIA, and sized to accommodate United's activity and employment levels of the future.

". . .[T]he list of new development (IV, B., pg. 276) should be revised as follows:

- The 226,440 square foot East Field Cargo/Maintenance Facility should be sized at 262,000 square feet and identified as an Aircraft Maintenance Hangar consistent with the Master Plan.

- United's flight kitchen should be sized at 120,000 square feet in lieu of 46,200 square feet.

- United plans to construct a new cargo facility of 231,000 square feet in the West Field Area.

- United plans to construct a new stores/ground equipment maintenance building of 80,000 square feet in the West Field Area.

- The 100,670 square foot Pan Am Maintenance Hangar should be removed from the listing.

"Terminal Area. As is the case with the MOC, the North Terminal building will require modernization, renovation and expansion over the twenty years remaining on United's lease for this facility. As noted in the Master Plan, this expansion does not create additional aircraft gates, but provides for enhanced passenger and baggage handling capabilities. The data in II.C. (pg. 26) of the DEIR should reflect approximately 500,000 square feet of new North Terminal construction, and the remodeling of approximately 300,000 square feet of the existing North Terminal complex in the near term.

"NOTE: The listings, areas, square footages and other data in II.C., Section 1.0, Figures 4, 5 and 6, Tables 4, 5, 6 and 7 (pp. 41-50) should reflect the information outlined in 1., 2., and 3. above with respect to new construction, demolished structures, and remodeled spaces.

"Automated People Mover System. The statement in the DEIR regarding routing of the APM system (II.C., Sec. 9, Pg. 55) is not consistent with what is shown in the Master Plan. United, and we can speak here for all the airlines serving SFIA, believes the concept described in the Master Plan is the more viable solution." (Thomas Brown, United Airlines)

Response

The Los Angeles Department of Airports is expecting to award a contract for the Master Plan of Los Angeles International Airport (LAX) in November 1992./7/ The future growth of LAX is currently being guided by an April 11, 1991 document prepared by the City of Los Angeles, Department of Airports - Facilities Planning Bureau entitled, "Proposed Plan for LAX Development To The Year 2000". The proposed Master Plan includes a new

International Terminal, Ground Transportation Center, airport-wide people mover system, modified access roadways, and new cargo building, much as does SFIA's Master Plan. The preliminary estimate in current dollars is $1.5 billion./8/ Following (Table C&R.1) are the existing and forecast service levels and facilities at LAX compared to the SFIA Master Plan.

TABLE C&R.1: COMPARISON OF ACTIVITY AT LOS ANGELES INTERNATIONAL AIRPORT AND SFIA

	LAX		SFO
	Existing 1990	Master Plan 2000	Master Plan 2006
Total Aircraft Operations (thousands)	623.8	N/A	538.5
Total Passengers (millions)	45.8	65.2	51.3
Domestic	36.0	47.6	44.1
International	9.8	17.6	7.2
Aircraft Gates	120	149	103
Domestic	102	122	77
International	18	27	26
Passenger Terminals (million sq. ft.)	3.74	5.74	4.10
Domestic	2.10	2.60	2.10
International	1.64	3.14	2.00
Cargo (acres)	234	316	120
Public Parking spaces (thousands)	26	34	21

SOURCE: "Proposed Plan For LAX Development To The Year 2000", April 11, 1991; SFIA Draft Master Plan, November 1990; SFO and LAX Airport Staff.

As noted above, under Public Participation in Master Planning Process, pp. C&R.18-20 herein, the development of the SFIA Master Plan, including the physical layout of project components, provided opportunity for public participation. The "Preferred Plan" reflects the input from that process, as well as the Airport's efforts to reconcile numerous identified facility requirements with site constraints, including limited available land for facility expansion and/or reconfiguration. Suggested options to reconfigure buildings differently

should be addressed to the Airports Commission, as the options would no likely change the overall environmental impacts of expansion proposed under the SFIA Master Plan.

The Master Plan presented a conceptual alignment for the APM system within the terminal complex (terminal roof or backside of terminal). The EIR identifies a more definitive and feasible alignment based on further studies by Airport staff (circumference of terminal roadway). Any concerns the airlines may have about the alignment of the APM system should be addressed to the Airports Commission and staff./9/

Also, Sections I and II of the EIR describe the projects contemplated in the SFIA Draft Master Plan. The proposed expansion of United Airlines Maintenance Operations Center and the North Terminal are not included in the SFIA Master Plan. Section II, Table 8, p. 54 of the EIR lists miscellaneous demolition. Primary demolition projects are identified in Figures 5 and 7. These projects are aggregated and accounted for under functional areas in Tables 4 through 7. This includes United's demolished facilities as shown in the SFIA Master Plan and listed above in the United Airlines comments. The text, figures, and tables (pp. 39-51) of the EIR identify the SFIA Master Plan's replacement facilities, collectively for all airlines, by identifying development projects under each functional area. Consequently, exclusive facility replacement for any one airline may not be identified. However, the SFIA Master Plan replacement for United's flight kitchen and expansion of cargo facilities are as requested by United in letters dated October 28, 1988 and August 18, 1989 commenting on the SFIA Master Plan./9/

The projects listed in Section IV, p. 276 of the EIR are a specified list for analyzing project traffic impacts in 1996. The list is not all-inclusive and the areas indicated do not necessarily represent gross new development but rather "The net increase in existing development and the new development that would generate traffic". That is, the numbers shown on p. 276 of the EIR are in most cases the incremental addition, not the total space proposed for the function in the future. The EIR need not address impacts from already-existing facilities.

The EIR analyzes the physical environmental impact of the approved SFIA Draft Master Plan. Any comments or concerns United may have about the appropriateness of the SFIA Master Plan should be expressed to the Airports Commission and staff.

Phasing

Comments

"Master Plan: SFO proposes to 'shotgun' in 56 major projects between now and 1996 with only 11 to follow in the succeeding ten years (DEIR Vol. II CH. XI Table B.1). The obvious flaw in this so called schedule is that there is no phasing or sequencing of projects in order to test logic and feasibility. . ." (Alyn Lam)

". . . [I]f you did this plan to accommodate demand to the year 2006, when realistically would there be a phase-in for that starting? I think most people had hoped that after the phase completed in '88, that that might have held us for a while. I think I would be very curious to know, is the plan that -- something like this is done in the year 2006. Is that it for the next five years, ten years or what? And if it's only something that would be good for another five years, to what extent is this the right level for a 15-year period?" (Commissioner Sewell)

Response

According to SFIA Administration staff, the SFIA Master Plan program is designed to satisfy the air passenger demand and corresponding facility requirements for the airport over the next 15 years until 2006 (Chapters 7 and 8); these facility requirements were translated into a physical development plan (Chapters 9 and 10). The Master Plan contemplates the construction of terminals, cargo buildings, airline maintenance buildings, ground-transportation facilities, access roadways, light rail system and miscellaneous airport support facilities. The SFIA Master Plan (Chapter 10, pp.. 10.34, 10.35, fig. 10.3) describes the development schedule and phasing for the Master Plan program, based upon the anticipated need for these facilities (Chapter 10, fig. 10.23). The program is expected to start after certification of the Environmental Impact Report by the City of San Francisco Planning Commission and program approval by the San Francisco Airports Commission. The current program start date is estimated to be Summer, 1992.

PROJECT COSTS

Comments

"First of all, there is no information in here about costs, either in direct costs in terms of construction or transportation or in mitigation measures required under the law of CEQA and everybody else." (Dehnert Queen)

"Certainly this is going to be very expensive. I thought the person who asked for the costs has a good point and we should have something in here about that." (Commissioner Bierman)

"This is a public project. And I believe the public is entitled to know what the costs are and how they are to be met. I think the EIR ought to evaluate the proposed capital budget for this project. If I remember, San Francisco city government operates -- I believe the Mayor and Board of Supervisors have to approve the budget for this expansion. I think they would be most interested in how feasible this project is." (Charles Kroupa)

"The San Francisco Mayor and the Board of Supervisors rule annually on the airport's capital budget. While the airport probably will garner the necessary money for this project from federal subventions, assessments on airlines, and from revenue bonds, the faltering worldwide economy, decreasing passenger revenues, and rampant airline bankruptcies, coupled with the Master Plan's optimistic forecast, nonetheless, raise the issue of who might get stuck with bailing out this project. And, obviously, the City and County of San Francisco would step in to rescue the airport from imminent default on its revenue bonds by pledging San Francisco's own general obligation bonding and taxing capacity to the jeopardy of other projects and programs benefitting San Franciscans directly. Because this expansion is so huge and because it is a public project, San Franciscans and their elected representatives are entitled to a comprehensive financing plan. None has been presented." (Charles Kroupa, letter of 10/17/91 and public hearing of 10/17/91)

Response

SFIA Master Plan program costs are identified in the EIR (p. 76) and the SFIA Master Plan (pp. 11.1, 11.2). The SFIA Master Plan lists the budgetary development cost for each project in the Master Plan program. The total program cost in 1989 dollars (design, construction, and administration) is $1.68 billion. The current estimated total program

cost, escalated to the time of construction, is approximately $2.2 billion. The issue of the cost of the mitigation measures identified in the EIR is addressed on p. C&R.386 herein.

CEQA does not require evaluation of project costs. As noted in the CEQA *Guidelines* (Section 15124), the project description "should not supply extensive detail beyond that needed for evaluation and review of the environmental impact" (emphasis added). Economic issues are not to be treated as environmental effects (*Guidelines*, Section 15131).

The San Francisco Airports Commission is a financially self-supporting enterprise fund department of the City and County of San Francisco. The Airport/Airline Lease And Use Agreements, effective July 1, 1981, require the Commission to use Airport revenue bonds to pay for the SFIA Master Plan construction projects. No General Fund money from San Francisco would be pledged or would be available to fund the program. In the unlikely event of a default on Airport bonds, the City would have no obligation whatsoever to the Airport's revenue bond holders./10/

In conjunction with the Airport's planned refunding of a previously issued bond, an independent contractor has determined that the Airport would not have difficulty making debt service payments on the anticipated SFIA Master Plan bonds./11/ The debt service for Master Plan projects would be covered by revenues received from Airport tenants. Under the terms of the Airport's Lease & Use Agreements with fifteen major airlines, the Airport is allowed to charge landing fees and terminal rental rates sufficient to insure that total annual revenue equals total annual expenses. These agreements extend to 2010. The carriers that have signed these Agreements account for more than 80 percent of the Airport's passenger traffic. On the basis of the independent contractor's projections, Airport staff expect that landing fees will increase to $2.15 (1992 dollars) per 1,000 pounds landing weight. This fee level is significantly below the rates charged at most major foreign international airports and compares favorably to an existing fee of $3.15 at LaGuardia and $2.20 at JFK./12/ The independent contractor's analysis also shows that although the SFIA Master Plan program would increase airline fees, these fees would still represent only approximately three percent of the airlines' fare revenue from the San Francisco market. By comparison, the airlines currently spend 48 percent of fare revenue on labor, 17 percent on fuel, three percent on advertising and five percent on food.

SFIA is required under the Airport/Airline lease agreement to charge landing fee rates to ensure that total revenues equal total expenses. SFIA does not contribute to the City of San Francisco General Fund above and beyond reimbursements./13/

ACTIVITY PATTERNS AND FORECASTS

Passenger Origins and Preferences

Comments

"In my mind, what is the most important information, and Commissioner Engmann also touched on it, is who uses the airport. But I would go one step beyond that. It's not only who, but why they use the airport. Is it because only certain services are provided? Is it because of convenience of access? Is it because of marketing by the airlines? Why do the individuals use the airport? Where do they live?

"It seems to me that any accurate analysis of the impacts would do some type of survey of the customer usage of the airport so that we would have a base of information from which to make some determinations as to how to mitigate impacts caused by that high level of usage that is projected over the next several years." (Commissioner Morales)

"The population of San Francisco has been shrinking for 30 years or more. However, the population is growing in the overall Bay Area, which is not well serviced by this isolated airport crammed into an overbuilt, even full, peninsula." (Patricia Clark)

Response

According to SFIA Administration staff, 86.7 percent of total passengers using SFIA in 1990 had domestic destinations, and 13.3 percent had international destinations. Of the total passengers, 21.3 percent had Southern California destinations (Los Angeles area, San Diego, Santa Barbara, and Palm Springs)./14/

The MTC *1990 Air Passenger Survey* provides limited information on the link between passenger origins and destinations./15/ (A copy of this survey is available for review in the San Francisco Department of City Planning files, and at the MTC/ABAG Library in Oakland.) Table 2.10 on p. 34 of the survey shows that about 70 percent of SFIA

passengers had "domestic (U.S. outside California) and international" destinations, and about 30 percent had California destinations. Of the SFIA passengers with domestic and international destinations, about 34 percent were from San Francisco, 19 percent from San Mateo County, 13 percent from Santa Clara County, and 12 percent from Alameda County (the remaining 22 percent were from other Bay Area counties and outside the region). Of the SFIA passengers with California destinations, about 47 percent were from San Francisco, 20 percent from San Mateo County, nine percent from Santa Clara County, and seven percent from Alameda County (the remaining 17 percent were from other Bay Area counties and outside the region).

About 56 percent of Metroplitan Oakland International Airport (MOIA) passengers had California destinations, and about 44 percent had domestic and international destinations. Of the passengers with California destinations, about 42 percent were from Alameda County. Of the passengers with domestic and international destinations, about 53 percent were from Alameda County.

About 54 percent of San Jose International Airport (SJIA) passengers had domestic and international destinations, and about 46 percent had California destinations. About 82 to 83 percent of passengers (regardless of destination) were from Santa Clara County.

Table 9.1 on p. 85 of the MTC *1990 Air Passenger Survey* shows that about 36 percent of total Bay Area passengers had California destinations; about 59 percent had domestic destinations; and about five percent had international destinations. The percentages were roughly the same for each Bay Area county./15/

These data indicate that passengers using SFIA and MOIA come from a variety of locations, while most passengers using SJIA come from Santa Clara County. Passenger choice of airports is related to a variety of factors, the most important of which appear to be convenience of access and available levels of air service. Research by MTC and others has shown that flight frequencies are an especially important factor in residents' airport choice and are critically important to nonresident business travellers./3/ Currently, flight frequencies vary considerably among the region's air carrier airports, with SFIA offering the greatest frequency of flights to the greatest number of destinations.

It stands to reason that, in a hypothetical multiple-airport region with uniform levels of, and costs for, ground access and air service, passengers would use the airport nearest their

origin and/or destination. This would result in less severe traffic and associated impacts than would the more realistic situation, in which many passengers, for a complex variety of reasons, do not use the closest airport. Additional information on Bay Area air passenger characteristics and preferences has been developed for MTC by Mr. Greig Harvey, in conjunction with ACCESS, an airport-passenger-choice and ground-access computer package being used to help evaluate MTC RASP Update alternatives. Preliminary model results are discussed below, under Alternatives, pp. C&R.90-92 herein.

The results of the MTC *1990 Air Passenger Survey* were not available when the Draft SFIA Master Plan EIR was in preparation (the *Survey* was released in August, 1991, when the DEIR was out for public review). These results would alter some of the trip distribution patterns, but would not substantively alter the impact analysis in the EIR (this is discussed further below under Transportation, p. C&R.121 herein, and in C&R Appendix A).

Issues related to regional population patterns, air travel demand, and service requirements are also discussed below under Regional Planning and Coordination, pp. C&R.56-85 herein.

Forecast Methodologies and Validity

Comments

"Over the 15-year period, as you look at patronage being up 70 percent over that period of time, that was pretty much an assumption that you were given and you did your analysis after that? . . .Did we take any independent analysis to say whether or not we agree with that 70 percent projection? How reasonable is it? Obviously, there is an awful lot of international demand that generates a larger airport. If you just looked at domestic demand or domestic growth in this area 15 years from now, how does the population growth impact the need for a larger airport? I would be very surprised if we would expect that the Bay Area would be 70 percent larger 15 years from now." (Commissioner Sewell)

". . .The passenger and the cargo forecast in the Master Plan are highly simplistic, and what they amount to is simply a straight line projection of the 1980 population, employment, and economic growth and the commensurate airport business growth. And a project this size needs a much more sophisticated analysis and forecast." (Charles Kroupa, public hearing of 10/17/91)

"The passenger and cargo forecasts -- the reason for this whole projection in the first place -- are totally simplistic. If they prove to be reasonable, it will be by accident. When you strip away the statistical gobbledygook, all they amount to is a straight-line projection of 1980's population, employment and economic growth, and of commensurate airport-business growth. (See Master Plan, page 7.1 et seq.) The present recession already has discredited such folly.

"The 1980's was a unique consumer market for air passengers. Deregulation fostered cut-throat price competition, which boosted passenger volume enormously. The resulting shakeout has resulted in bankruptcy or assimilation for all but the most wily and aggressive carriers; and with the current recession, it seems only a handful of U.S. carriers will be flying by the mid '90's. Nonetheless the Master Plan extrapolates the airlines' halcyon prosperity of the '80's unabated into perpetuity." (Charles Kroupa)

Response

The passenger forecasts prepared for the SFIA Master Plan, completed in 1987 and supplemented in 1989, made use of linear regression and time series trend analyses, not "straight-line projection" of 1980's population, employment and economic growth. These methods are generally discussed in the Forecasts section of the SFIA Master Plan (Chapter 7); the EIR provides a summary discussion of the SFIA Master Plan's forecast methods and assumptions on pp. 61-72.

As described in the EIR on pp. 22-26, SFIA Master Plan projects were developed on the basis of forecast growth in all aviation activity categories except general aviation and military operations. Domestic passenger totals were forecast to grow by 68 percent, and international passenger totals by 96 percent, between 1990 and 2006 (EIR, Table 1, p. 24). However, it should be noted that, while the SFIA Master Plan anticipated continued growth in annual passenger totals through 2006, it forecast declining rates of growth in passenger traffic for the region as a whole and SFIA in particular (SFIA *Final Draft Master Plan,* Tables 7.1 and 7.2; Figures 7.1 - 7.5).

Forecasting is an art as well as a science, without reliable means of evaluating results except in retrospect. Aviation activity forecasts involve complex assumptions, variables, and judgments regarding the appropriateness of alternative methodologies. Thus, results of air carrier forecasts by different persons or agencies can vary considerably, as illustrated in graphs prepared by TRA Consulting for the MTC RASP Update. These graphs show that

forecasts of SFIA passenger and cargo activity from the SFIA Master Plan are not outside the presented range of forecasts for SFIA from a variety of sources. As is also apparent from these figures, substantial "disagreement among experts" exists regarding forecasts of passenger and cargo demand for SFIA (this is also true of forecasts of aircraft operations, as discussed in the EIR on pp. 61-72, and below under Airfield Capacity and Delay, pp. C&R.46-55 herein). Aviation activity forecasts from different sources for the region as a whole are similarly varied./2/

CEQA *Guidelines*, Section 15151, does not require that the decision-making body acting on an environmental impact report correctly solve a dispute among experts. All that is required is that in substance, the EIR provide information from all sides of the issue in question, particularly where opinion and not fact is at issue. However, the EIR must respond to the most significant questions presented. The SFIA Master Plan EIR addresses the environmental effects of implementing facilities projects proposed under the SFIA Master Plan which, in turn, was developed on the basis of aviation activity forecasts prepared by Airports Commission consultants. The EIR does not draw conclusions as to the validity of SFIA's forecast assumptions and methods, or "reasonableness" of the forecast results. For comparison, however, the EIR (pp. 61-72) summarizes forecast results from other sources, including the FAA and Caltrans Division of Aeronautics, and generally discusses how project impacts could differ under forecast scenarios other than those identified for the SFIA Master Plan. Thus, the other expert opinions on passenger growth are provided in the EIR.

In comparing existing Bay Area aviation forecasts, and assembling forecasts for consideration in the MTC RASP Update, TRA Consulting observed several trends that could affect air travel in the San Francisco region. Air travel trends considered most important include: international travel growth, domestic travel growth, the national economy, maturation of markets, airline yield, demographics and per capita travel, and telecommunications. According to preliminary Draft MTC RASP Update working papers, international air travel now represents about nine percent of total regional air carrier passenger traffic but (particularly to Pacific Rim nations) ". . . will be a very high growth market for the next 10-20 years . . . offsetting any weakness in the domestic market."/2/ As pointed out above, under Project Sponsor Objectives and Approach, on pp. C&R.13-14 herein, an important element of SFIA Master Plan objectives (and an assumption in SFIA Master Plan passenger forecasts) is that SFIA should and will capture a majority of the international component of total passenger growth.

According to preliminary Draft MTC RASP Update working papers, underlying some of the air travel growth projections for the Bay Area may be the effect of airline "hubbing," which inflates the actual Bay Area activity figures as connecting passengers change planes in Bay Area airports. San Francisco, Oakland, and San Jose have each become hub airports to a certain extent (United at SFIA, Southwest at MOIA, and American at SJIA). Another factor that could affect air travel demand, as noted by the commenter and the Draft RASP Update, is "maturation of markets." After rapid growth in the 1970s and early 1980s, some of the travel markets to and from the Bay Area appear now to be experiencing growth only in proportion to overall population and economic growth./2/

The historical downward trend in airfares may be slowed or reversed due to potential increases in fuel and labor costs; rising airfares could act to dampen air travel demand. Similarly, "decreasing population growth, a slowing in the growth in real disposable income, and a decreasing number of first-time flyers suggest a slower air travel growth rate in the future." Finally, the Draft RASP Update points out that advances in telecommunications may affect air travel demand by providing alternatives to business travel, particularly through video conferencing./2/

It is possible, as pointed out by one commenter, that some of the above factors could cause actual future passenger and aviation activity levels to be lower than forecast in the SFIA Master Plan. If the Master Plan were to be implemented, the effective result could be an "overbuilt" Airport. The implications of this are discussed above, under Project Sponsor Objectives and Approach, pp. C&R.15-17 herein; in sum, overall environmental effects would likely be less severe than for the project.

As another commenter correctly noted, the Bay Area's population is not expected to grow 70 percent in the next fifteen years. Passenger traffic can grow faster than population (or, per capita rates of air travel can increase) for a variety of reasons, many of which are identified above.

Cargo Forecasts

Comment

". . . [T]here was an article, I think, in the San Francisco Business Times about the airport's ability to attract cargo traffic vis-a-vis its efforts in attracting passenger traffic, and concerns that

cargo traffic was not getting a top priority at the airport and how that was essential to San Francisco businesses. And I would like just a brief analysis of cargo versus passenger and the relative importance of cargo traffic and what that means in terms of, particularly, traffic that passes around the airport." (Commissioner Engmann)

Response

It is difficult to analyze clearly cargo versus passenger traffic, for reasons that will be described below. However, it is important to remember that although cargo business is significant, the emphasis at SFIA has been on development of passenger services. The following discussion of cargo activities at SFIA and issues to consider in planning for growth in cargo and passenger services will be helpful in responding to this comment.

The EIR (p. 35) describes air freight, or cargo, operations at SFIA as being of two types: all-cargo and top-off. All-cargo carriers, which transport freight only, do not require access to the passenger terminal. Top-off carriers require proximity to the passenger terminal because they use excess capacity in scheduled passenger flights for transporting freight.

Table C&R.2 below, provided by SFIA Administration staff, shows the relationship between top-cargo and all-cargo tonnage and aircraft operations (landings) at SFIA in 1989 and 1991. SFIA does not regularly tabulate statistics on all-cargo versus top-off cargo traffic. The data in the table were extracted from landing fee reports and other operational data. /5/

The table shows that nearly all (98 percent) landings that included cargo were top-off. In terms of cargo tonnage in 1989 and 1991, roughly 73-79 percent was top-off, and the rest (21-27 percent) was all-cargo.

On-Airport All-cargo carriers, whose facilities are in the north and east field areas (see Figure 2, p. 34 in the EIR), include Flying Tigers (Federal Express), Japan Airlines (JAL), DHL and Evergreen. Most top-off carrier operations are concentrated in the north side of the passenger terminal in the west field area; the remaining facilities are adjacent to the South Terminal. Most of the top-off carriers lease space in shared facilities such as Cargo Building 7, or sub-lease space from another carrier. All-cargo and top-off carrier functions at SFIA together occupy approximately 868,000 square feet of building area. Of the 2.9 million square feet of new building area proposed for the near-term and long-term SFIA

Master Plan, approximately 785,000 square feet, or about 27 percent, would be used for additional air-freight area.

As the EIR notes, on p. 24, total cargo and mail tonnage is forecast to grow by about 32 percent between 1990 and 1996 and by a total of about 55 percent between 1990 and 2006. This growth can be described more exactly by looking at three basic categories: domestic cargo, international cargo and mail. Domestic cargo is forecast to increase by 45 percent (or 96,000 metric tons) by 1996 and by a total of about 55 percent (or 117,700 metric tons) by 2006. International cargo is forecast to increase by 14 percent (or 31,950 metric tons) by 1996 and by a total of about 46 percent (or 108,950 metric tons) by 2006. Mail cargo is forecast to increase by 47 percent (or 49,844 metric tons) by 1996 and by about 75 percent (or 80,922 metric tons) by 2006.

These forecasts reflect an assessment of past trends in the overall cargo market and in the division of market share among Bay Area airports. The SFIA Master Plan notes that SFIA's market share for domestic air freight has declined in the past ten years from 95 percent to 70 percent of the regional total, even though the overall regional market has grown by 37 percent. It is expected that this trend will continue, with the market share decreasing to 54 percent. The SFIA Master Plan anticipates that international air freight will continue to be the major growth component of air freight at SFIA, and that SFIA will continue to be the airport of choice in the Bay Area for international cargo.

TABLE C&R.2: COMPARISON OF ACTIVITY FOR ALL-CARGO AND TOP-OFF CARGO CARRIERS, 1989

	All-Cargo Carriers	All Major & Commuter	All-Cargo %	Top-Off Cargo %
# Landings	4,228	191,721	2.2%	97.8%
Total Freight/Mail (tons)	128,130	618,990	20.7%	79.3%
On	63,384	311,078	---	---
Off	64,746	307,912	---	---
		1991		
# Landings	3,921	190,361	2.1%	97.9%
Total Freight/Mail (tons)	178,733	653,009	27.4%	72.6%
On	80,536	319,755	---	---
Off	98,197	333,254	---	---

SOURCE: San Francisco International Airport, 1992

It is difficult to describe comprehensively or quantify the needs of and growth in cargo operations as opposed to passenger operations. A recent (August 1991) "Air Cargo Study" was issued by the California Department of Transportation, Division of Aeronautics, as an element of Phase II of the California Aviation System Plan (CASP). This report describes the difficulty of analyzing this situation by noting that when air cargo was deregulated in 1978, airlines were no longer required to submit or collect monthly statistics.

It is difficult to quantify the actual effects cargo activities have on general passenger traffic and/or surface vehicle traffic because good statistics are not available comparing the percentage of cargo that is carried all-cargo to that which is carried top-off. The CASP does point out some important considerations for understanding cargo versus passenger business. Airport cargo activities do compete with passenger activities in three major areas: airspace, ground access facilities and on-airport facilities.

The primary problem in the competition for air space is the need for noise abatement. The nature of the air cargo business requires that most cargo flights take place between 7:00 p.m. and 7:00 a.m. This will be increasingly true as trade increases between North America and Asia. At SFIA, cargo planes depart for the Far East between midnight and 5:00 a.m. to meet strict arrival windows. There are also passenger flights that must meet these windows. Competition for these time slots will increase as international flights, especially those to the Far East, increase. This need for scheduled nighttime departures coincides with the time when airport noise is the most disturbing.

Competition for ground-access facilities and on-airport facilities is discussed in the "Air Cargo Study" in conjunction with a "Ground Access Study", which is also part of the CASP report. The report notes that SFIA has reached its capacity to provide efficient cargo facilities on the Airport grounds and has waiting lists for its cargo facilities. The report discusses the SFIA Master Plan's call for additional air-freight area, but also explains two general options that are being considered state-wide to deal with this need. These are off-airport cargo facilities and all-cargo airports./16/

There is a movement toward off-airport cargo facilities in several airports around the U.S. At SFIA, Emery Worldwide has 30,000 square feet approximately three miles from the airport, and other carriers (Nippon Cargo Airlines, British Airways, Quantas) use the warehouse facilities of a third party located off-Airport./16/

The CASP report discusses the use of sites for cargo airports that are separated from passenger airports. "The thought is that the aviation resource already in place should be used for the good of the California aviation system. The facts, however, indicate that this issue is far more complex than it appears."/16/ The report notes disadvantages of this concept by stating that "passenger carriers handle approximately 80 percent of total air cargo volume and that it would be impractical and uneconomical to spin off the freighter activities to locate them at a remote all-cargo airport." However, in support of this idea the

report cites reduced air space congestion and road congestion at the existing airports, economic development of the new sites, and lower costs./16/

APPROVALS REQUIRED

SFIA Powers and Responsibilities

Comments

". . . [T]he airport seems to be an arcane, autonomous, proprietary enterprise, answerable primarily, if not exclusively, to no one but its customers, the airlines. The EIR should expose in detail the airport's powers, authority, and autonomy, and its responsibilities to San Francisco government, San Mateo County government and other government entities, and to the general public." (Charles Kroupa, letter of 10/17/91 and public hearing of 10/17/91)

"Page 167, Noise Abatement Program: . . .
"The SFIA Roundtable is an advisory forum only. It has no authority. The Roundtable made 12 suggestions to the Airport Commission when the current airport noise regulations were being evaluated for adoption. Eleven of the twelve were rejected. This has been the Airport Commission's pattern in response to the Roundtable. Suggestions are usually completely ignored. . .

"Page 169:
"With no authority in ALUC or the Roundtable, it is standard policy for the airport commission to overturn or ignore any policies initiated by these bodies." (Duane Spence, Airport Mitigation Coalition)

"Also, when you look at the development of this, and I don't know what the right forum is, but as we look at Mission Bay and some of the office buildings -- and those projects have made certain, or planned to make certain contributions to economic development, job opportunity, whatever -- to what extent can we be involved with the developer of this big project to look at the various populations of San Francisco participating in a project as huge as this?" (Commissioner Sewell)

Response

As one commenter points out, SFIA is a relatively autonomous enterprise and one that does have responsibility to its tenants, the airlines. But SFIA is responsible also to a wide

range of other organizations, agencies, and individuals, including the Federal Aviation Administration, the California Department of Transportation, various regional and local agencies, and the general public. As noted in the EIR (p.18), SFIA is owned by and under the jurisdiction of the City and County of San Francisco; the governing body of SFIA, the Airports Commission, is appointed by the Mayor of San Francisco. With regard to the SFIA Master Plan, SFIA's powers and responsibilities are identified in the EIR under SFIA Master Plan Approval Process (pp. 73-76), Land Use and Plans (pp. 78-124 and pp. 250-264), and applicable portions of EIR technical sections. SFIA powers, limitations and responsibilities are further explained in C&R Appendix A, Attachment D, Background to Airport Operations and above, under Project Sponsor Objectives and Approach, Public Participation in Master Planning Process, and Project Costs (pp. C&R.12, 17, 19-20, 26-28 herein).

As noted in the EIR on p. 167, the Airport /Community Roundtable is a community group that monitors SFIA implementation of SFIA's Noise Abatement Program, which includes actions identified in the 1981 Airport Noise Mitigation Action Plan. The commenter is correct in stating that the SFIA Roundtable is an advisory forum only. As explained in the EIR on pp. 168-169, the San Mateo County Airport Land Use Commission (ALUC) has authority regarding noise compatibility standards for land uses near SFIA, but has no authority over actual Airport operations.

The actions by SFIA in response to concerns expressed by the Airport /Community Roundtable or the ALUC are within the EIR's scope only to the extent that they are related to the physical environmental impacts of the SFIA Master Plan or the identification or adoption of specific mitigation measures. Responses to comments regarding noise impacts and mitigation measures appear below, on pp. C&R.194-313 herein.

As noted in the EIR on pp. 73-74, the Final EIR on the SFIA Master Plan will be presented to the San Francisco City Planning Commission for certification as to accuracy, objectivity, and completeness. The Planning Commission does not have approval authority over the SFIA Master Plan itself, because this authority rests solely in the Airports Commission. This relationship is unlike the Planning Commission's jurisdiction over private developers who need building permits or conditional use permits. The Planning Commission's powers vary from project to project, depending on the specific conditions, requirements of the City Charter, etc.; in the case of privately sponsored projects and some conditional use authorization for public projects, the Planning

Commission may have power to require changes in the project itself. However, with respect to the SFIA Master Plan, the Planning Commission is empowered only to decide on matters of CEQA compliance.

For clarification of approvals necessary, the following changes are made in Section II.E. of the EIR, under Master Plan Approval Process. The first sentence of the last paragraph on p. 73 is amended to read as follows:

> Publication of the DEIR will be followed by a 45- to 60-day public comment period, including at least one public hearing on the Draft EIR before the San Francisco City Planning Commission (the certifying body of the "lead agency" under CEQA).

The following text is added to the EIR, at the end of the first paragraph on p. 74:

> Approval of the SFIA Master Plan is a separate action from EIR certification, and will include public hearings to be held by the Airports Commission.

Concerned Agencies

Comment

"The proposed project is considered to be of major magnitude. It will have significant transportation impacts on the surrounding freeway network and on the arterial street network of surrounding communities. We have met with the Airport's consultant regarding proposals to modify existing highway facilities in Caltrans right-of-way. To date, we have seen only conceptual plans which do not consider Caltrans Design Standards and/or policy. Please contact Caltrans District 4, Project Development-Peninsula Branch regarding design details for highway facilities, and/or for any proposals that may affect existing Caltrans highways and/or right-of-way." (Preston Kelley, Caltrans)

Response

The comment above is consistent with, and further clarifies, the first paragraph on p. 75 of the EIR. Further relevant action is the responsibility of the Airports Commission and SFIA staff following action on the Master Plan.

Comment

". . . Under the California Environmental Quality Act (CEQA), the City and County of San Francisco is the Lead Agency and the [State Lands] Commission is a Trustee Agency.

"The State acquired sovereign ownership of all tidelands and submerged lands and beds of navigable waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all the people of the State for the statewide public trust purposes of waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. The landward boundaries of the State's sovereign interests are generally based upon the ordinary high water marks of these waterways as they last naturally existed. Thus, such boundaries may not be readily apparent from present day site inspections. The State's ungranted sovereign interests are under this jurisdiction of the State Lands Commission.

"The proposed project is located on historic and/or existing tidelands and submerged lands granted in trust by the Legislature to the City and County of San Francisco pursuant to Chapter 987, Statutes of 1943, as amended. Uses involving granted tidelands must be consistent with the public trust and the applicable granting statutes. The City, as grantee, has the day-to-day administration of these lands and the [State Lands] Commission retains oversight authority. A permit from the Commission will, therefore, not be required.

"We would appreciate being kept informed of this project as well as other proposed projects involving the use of tidelands and submerged lands affecting this grant." (Diane Jones, State Lands Commission)

Response

The following text is added to the EIR, as a new paragraph at the end of p.74:

> The proposed SFIA Master Plan project is located on historic and/or existing tidelands and submerged lands granted in trust by the California Legislature to the City and County of San Francisco pursuant to Chapter 987, Statutes of 1943, as amended. Uses involving granted tidelands must be consistent with the public trust and the applicable granting statutes. The City, as grantee, has the day-to-day administration of these lands and the State Lands Commission retains oversight authority. A permit from the State Lands Commission will, therefore, not be required. /20b/

The following footnote is added to the EIR, p. 77:

/20b/ Jones, Diane, State Lands Commission staff, letter, August 14, 1991.

Comment

"The [Bay Conservation and Development] Commission has jurisdiction over all areas subject to tidal action of San Francisco Bay and all areas within 100 feet of the Bay. From the information contained in the Draft EIR, it appears that the only facilities proposed by the draft Master Plan within the Commission's jurisdiction are the dock in Seaplane Harbor and portions of improvements to the North Field Access Road. Most other proposed improvements would be located outside the Commission's jurisdiction, but within an area designated in the Bay Plan for airport priority use.

"The Commission will consider applications for any work within its jurisdiction based on the policies of the McAteer-Petris Act and the Bay Plan. In considering the proposed dock in Seaplane Harbor, the Commission must find, among other things, that the use of the dock would be water-oriented, that the dock itself would be the minimum size necessary to achieve its purpose, that there was no feasible upland location for some or all of the dock, that the placement of the dock would minimize any harmful effects on fish and wildlife resources, water quality, and marshes and mudflats, and that any significant impacts on the Bay would be mitigated.

"In considering the expansion of the roadway, we understand that all work would occur on existing land. Therefore, the Commission must find that the use of the roadway would be consistent with the airport priority use designation and that the maximum feasible public access consistent with the project would be provided. All other proposed improvements outside the Commission's jurisdiction but within the Airport appear to be generally consistent with the airport priority use designation of the Bay Plan." (Steven A. McAdam, San Francisco Bay Conservation and Development Commission)

Response

The comment above is consistent with, and further clarifies, text on pp. 74, 117-118, and 259 of the EIR; the proposed multi-use harbor dock facility is noted on pp. 54 and 56 of the EIR. The following text is added to the EIR, at the end of the third full paragraph on p. 74:

In considering the proposed dock in Seaplane Harbor, BCDC must find, among other things, that the use of the dock would be water-oriented, that the dock itself would be the minimum size necessary to achieve its purpose, that there was no feasible upland location for some or all of the dock, that the placement of the dock would minimize any harmful effects on fish and wildlife resources, water quality, and marshes and mudflats, and that any significant impacts on the Bay would be mitigated./20a/

In considering the expansion of the roadway, BCDC must find that the use of the roadway would be consistent with the airport priority use designation and that the maximum feasible public access consistent with the project would be provided. All other proposed improvements outside BCDC's jurisdiction but within the Airport appear to be generally consistent with the airport priority use designation of the Bay Plan./20a/

The following footnote is added to the EIR, p. 77:

/20a/ McAdam, Steven A., San Francisco Bay Conservation and Development Commission, letter, August 5, 1991.

Other Agency Jurisdiction

Comment

"The California Department of Transportation, Division of Aeronautics, has reviewed the above-referenced document with respect to the Division's area of expertise as required by CEQA. Since no runway extension, relocations or additions are included in this proposal, the State Airport Permit for San Francisco International Airport should not be affected. . ." (Sandy Hesnard, Department of Transportation, Division of Aeronautics)

Response

The comment above is consistent with, and further clarifies, text on p. 75 of the EIR. The following text is added to the EIR, at the end of the second paragraph on p.75:

Since no runway extensions, relocations or additions are included in the SFIA Master Plan, the State Airport Permit for San Francisco International Airport should not be affected by the project. /20c/

The following footnote is added to the EIR, p. 77:

/20c/ Hesnard, Sandy, California Department of Transportation, Division of Aeronautics, letter, September 5, 1991.

NOTES - Project Description

/1/ U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular No. 150/5070-6A, June 1985.

/2/ Metropolitan Transportation Commission (MTC), Regional Airport System Plan (RASP) Update, preliminary draft working paper, "Chapter 6. Aviation Demand Forecasts," Draft presented by MTC's outside consultant, TRA Airport Consulting, at the December 4, 1991 quarterly meeting of the MTC Regional Airport Planning Committee (RAPC). Comparative Bay Area air carrier airport passenger forecasts were compiled from the respective airport master plans; the MTC RAPC; FAA San Francisco 1986 HUB Forecast; 1991 FAA National Forecast; 1990 FAA Terminal Area Forecast; and the 1989 Caltrans California Aviation System Plan (CASP).

/3/ Roddin, Marc, Manager of Seaport and Airport Planning, Metropolitan Transportation Commission, interview, April 22, 1992.

/4/ Brittle, Chris, Manager, Planning, Metropolitan Transportation Commission, letter to Barbara Sahm, September 16, 1991.

/5/ Costas, John, Assistant Administrator, Planning and Construction, San Francisco International Airport, letter, March 9, 1992.

/6/ Major U.S. airports such as LaGuardia and Washington National continue to operate despite severely congested ground access conditions.

/7/ Shoenfeld, W.M., LAX Deputy Executive Director, January 15, 1992 memo to LAX Board of Airport Commissioners.

/8/ Wells, Rick, Facilities Planning Bureau, Los Angeles International Airport, telephone conversation with SFIA staff, February 12, 1992.

/9/ Costas, John, Assistant Administrator, Planning and Construction, San Francisco International Airport, letter, March 6, 1992.

/10/ Board of Supervisors Master Bond Resolution #34-92 adopted January 6, 1992.

/11/ John F. Brown & Company, "Traffic and Engineering Report," February 28, 1992.

/12/ Buchbinder, Alan, Senior Financial Analyst, Port Authority of New York and New Jersey, telephone conversation with SFIA staff, February 3, 1992.

/13/ Costas, John, Assistant Administrator, Planning and Construction, San Francisco International Airport, interview, April 9, 1992.

/14/ Costas, John, Assistant Administrator, Planning and Construction, San Francisco International Airport, telephone conversation, October 2, 1991.

/15/ Metropolitan Transportation Commission, *1990 Air Passenger Survey*, August 1991.

/16/ California Department of Transportation, *California Aviation System Plan (CASP), Executive Summary*, August 31, 1991.

AIRFIELD CAPACITY AND DELAY

The Notes for this section begin on p. C&R.55.

RELATIONSHIP TO PROPOSED SFIA IMPROVEMENTS

Comments

"I didn't understand from the beginning why this doesn't deal with runways. Maybe there is some magic answer if you are going to have this much more traffic.

"One of my questions is, how does San Francisco Airport compare with other major airports in terms of delays? I think I have read that we are bad about flights being on time. If we are increasing by 2006 this much, I don't know how it can happen without increased runways. It seems to me we need to know how much more often planes will have to land, what is the spacing between the planes. If the planes are coming that often, even if they aren't louder, does the noise increase because the planes, two or three are coming in at once. Maybe it's in here. I have not read every word of this. I have tried to look at the kind of things I think will be a problem.

"It's hard for me to understand, I guess the Airport Commission makes the decision as to whether to expand or not. But for the public to support this expansion, I don't think they or a planning commission, for instance, have the information they will need." (Commissioner Bierman)

"There is no mention of -- there is no renouncement in effect of a new runway. I cannot fathom a $1.7 billion expansion proposal with no runway extensions or additional runways proposed. The FAA's policy is to encourage airports to develop to the capacity of their facilities. If they have a huge amount of the capital improvements in their land side facilities, terminals, et cetera, and the main point of congestion constriction -- the stricture point is the capacity of the runways, I am sure the FAA will encourage runway expansion. I think that ought to be examined in this EIR, albeit it isn't mentioned as part of the airport's capital improvement program." (Charles Kroupa)

". . . [T]he Master Plan deals with so-called land-side development only; that is, consideration of additional runways to deal with increased traffic is the subject of a separate study, the Runway Reconfiguration Study. The DEIR accepts an assumption in the Master Plan that additional or lengthened runways at SFIA are not necessarily dictated by implementation of the Master Plan. The Committee questions this assumption, notes the on-going Runway Reconfiguration Study

(which does consider new and lengthened runways at SFIA) and points out that additional environmental problems for San Francisco will be created by the addition of new or lengthened runways at SFIA. The DEIR should not simply accept the Master Plan assumptions in this respect." (Timothy Treacy, Airport Noise Committee)

Response

In 1989, SFIA had approximately 70 delays per 1,000 operations. Of 22 airports studied, those that had more delays were the three New York area airports (Kennedy, Newark, and LaGuardia International Airports), and Chicago O'Hare International Airport. Seven percent of SFIA operations were delayed 15 minutes or more in 1989; the airports with a higher percentage of delays were Newark, LaGuardia, and O'Hare. SFIA was one of 21 airports exceeding 20,000 hours of annual aircraft delay in 1988./1/

Nationally, weather was the primary cause of operations delayed 15 minutes or more in 1989. Terminal air traffic volume was the second most frequent cause of delays nationally. (The percent of total delays caused by terminal volume increased from 9 percent in 1988 to 29 percent in 1989.) Other causes of aircraft delays nationally included air traffic center volume, runway construction, and equipment interruptions./1/

The primary objective of the SFIA Master Plan is to provide the basis for implementing changes in the use of all Airport-owned landside facilities to improve the efficiency and cost-effectiveness of Airport operations (p. 1.1 of the SFIA Master Plan, emphasis added). The SFIA Master Plan evaluated the airside facilities (runways) and determined that runway extensions or additional runways were not necessary and that "the airfield capacity appears adequate to accommodate all of the scheduled air carrier traffic" (p 7.15 of the SFIA Master Plan). As discussed on p. C&R.51 herein, the EIR independently evaluated airfield capacity (pp. 65-72 of the EIR and Appendix J, pp. A.179-180) to determine "whether there could be airfield constraints that could cause additional environmental effects" (p. 72 of the EIR).

There are no federal monies contemplated, nor will federal monies be used for the development of, landside facilities under the SFIA Master Plan. Consequently, the FAA has neither approved nor disapproved the SFIA Master Plan for the purpose of receiving federal funding.

The FAA is co-sponsoring airport capacity task forces at major airports to assess how airport development and new technology could "optimize" capacity on a site-specific basis. The Bay Area Airports Capacity Task Force Study, completed in 1987, is discussed on pp.68 -70 and A.173 -A.177 of the EIR. Table I-1 on p.A.174 lists the Task Force's Recommended Action Plan for SFIA. The improvements included in the Action Plan range from airfield construction to air-traffic-control improvements, the installation of navigational aids, and user improvements (such as regional redistribution of air traffic, discussed on pp. C&R.77-84 herein) . The construction of a new runway at SFIA is listed as a recommended improvement "for which the benefits in delay reduction must be evaluated in terms of its environmental and economic consequences by groups outside the task force" (EIR p.A.177).

With regard to the Runway Reconfiguration Study, between 1977 and 1981 San Francisco Airport participated in a Joint Land Use Study with San Mateo County and Cities surrounding the airport. The purpose of the study was to define and solve the problems created by aircraft noise on residential areas. A number of solutions were proposed and many have been implemented under the Airport Noise Mitigation Plan and through the efforts of the Airport / Community Roundtable. One solution proposed during the Joint Land Use Study was a reconfiguration of the Airport runway system. However, it was never adopted or evaluated, primarily because of its potential impact on the Bay.

Since that time, the runway reconfiguration solution has been brought up several times. Consequently, on December 8, 1988, the San Mateo County Regional Planning Commission / Airport Land Use Commission (RPC/ALUC) voted to request the Airport to study a reconfiguration of the runway system as a potential noise abatement measure. They passed the following motion:

"The Regional Planning Commission endorses the initiation of a study to determine the feasibility of a runway reconfiguration at San Francisco International Airport as a noise abatement measure; provide that such endorsement shall not imply advanced approval of any findings of the study particularly any recommendation for the future filling of San Francisco Bay."

On December 13, 1988 the Airport/Community Roundtable unanimously voted to request the Airport to undertake this study.

On January 17, 1989, the Airports Commission considered the request of RPC/ALUC and the Roundtable and voted to undertake this feasibility study in the following resolution:

"That this Commission, in support of its policies for mitigating and abating aircraft noise on surrounding communities, wishes to undertake a study of reconfiguring the Airport's runway system to determine whether such reconfiguration will abate noise on surrounding communities, and to determine the cost and benefits thereof."

The primary objective of the study was to determine runway alternatives that would eliminate noise impact on surrounding communities within the criteria set forth by the State of California Noise Standards, Title 21 (zero impacted homes in the 65 CNEL noise impact boundary.) Secondary objectives include a) mitigation of single event, overflight, and backblast noise, b) minimization of other environmental impacts and economic costs, and c) enhancement of airspace/airfield safety and broad based economic benefits./2/

The study has three phases, each requiring Commission approval to proceed to the next phase:

Phase I Determine if noise impacts can be abated by reconfiguring the runways; preliminary identification of alternatives;

Phase II Develop engineering concepts and more detailed analysis of alternative(s) selected by Commission for further study; and

Phase III Preparation of environmental impact documents./2/

According to SFIA staff, the first phase of the study took approximately six months to complete. During the study there were nine public meetings, two of which were public workshops. The Phase I Draft report was completed and distributed in July 1990. It identified four possible runway reconfigurations that potentially could achieve the primary objective of the study. Many secondary objectives were achieved but not all. None of the alternatives would increase the maximum capacity of the existing runway system. The Airport/Community Roundtable held a public workshop at its regularly scheduled meeting on August 1, 1990 to review the preliminary results of the report and receive further input from the public. On the basis of comments made at the meeting and by members of the Roundtable on December 8, 1990, the Roundtable requested the Airport to conduct additional analysis under the Phase I portion of the study, to further identify the noise mitigation benefits of the proposed alternative runways. This additional scope of work is

currently being defined. If the Commission approves additional work, the Airport can redirect its resources to continue with additional analysis in the Phase I report.

SFIA staff notes that the Draft Phase I report does not conclude overall feasibility (technical, environmental, economic/financial) of reconfiguring the runway system. If upon completion of Phase I, the noise mitigation benefits of the proposed alternative runways warrant further study, as determined by the Airport Community Roundtable and the San Mateo City / County Association of Governments / Airport Land Use Commission (formerly RPC/ALUC), the Airports Commission, by request of these bodies, will consider proceeding with the next phase of the study to determine feasibility in further detail. If the benefits do not warrant further analysis, the study will conclude.

The EIR indicates how often planes would land every hour on the average day of the peak travel month in 2006 (Appendix J) to carry the forecast passenger traffic within the present conditions of airfield capacity. Aircraft separation is under the sole jurisdiction of the FAA. The FAA has to consider not only air traffic entering SFIA but traffic operating to, from, and transiting the airports located throughout the Bay Area. Different weather conditions warrant different flight rules (IFR, VFR) and different standards for aircraft separation. Aircraft separation can be controlled by time, distance, altitude and speed with all these factors operating simultaneously. The FAA's aircraft separation criteria were considered in the EIR's evaluations of runway capacity.

AIRFIELD CAPACITY, AIRCRAFT DELAY, AND ENVIRONMENTAL EFFECTS

Comments

". . .The DEIR treats the issue of airfield capacity and the cumulative effects of more flights inadequately. There is legitimate concern that the Master Plan improvements will lead to a situation of increased delay and congestion, thereby increasing demand for more airfield capacity through additional runways or other changes. Although the Master Plan states that capacity is sufficient until the year 2006, the DEIR should independently assess and verify this statement. Cumulative impacts of more flights on capacity needs examination." (Timothy Treacy, Airport Noise Committee)

". . . Although the airport claims that airfield capacity is sufficient, the DEIR should independently verify this claim. . . " (Curt Holzinger)

"One other thing that also is not discussed in here, and. . .there is no mitigation. . .and that is the relationship between runway capacity, delays and the further impacts on the environment. If you talk about some of the delays that they anticipate in the year 2006 in terms of airplanes stacking up, that has a direct effect on people, the parking capacity, the transportation capacity, people are waiting longer, it tends to congest the airport a lot more.

"One of the mitigations for that might be, in fact, increasing runway capacity. That may not be the only mitigation, certainly not the only mitigation. There is no discussion of that relationship as to how delays in the airport . . . as people are waiting longer, might affect the transportation and other aspects of that, which I think there should be some discussion on since they're not talking about runway expansion. Basically all we're talking about is expanding off site, and when they expand off site with existing runways and accommodating increased demand, it's going to cause increased delays." (Commissioner Engmann)

Response

The EIR (pp. 65-72) includes summaries of analyses of airfield capacity and delay prepared for the SFIA Master Plan, San Francisco Bay Area Airports Task Force Study, and California Aviation System Plan. It also independently evaluates the ability of the existing runway system to accommodate arriving and departing aircraft on an hourly basis in 1996 and 2006 (Appendix J, pp. A.179-180).

The EIR analysis in Appendix J is based on a conservative assumption that the 1990 pattern of peak flight schedules would increase proportionally over the next 15 years. Under this assumption, the existing runway system is able to accommodate the forecast level of aircraft operations in the future during good weather conditions (61 percent of the time) with 2.2 percent of the total daily (average day peak month) flights delayed, and during less-than-optimal weather conditions (25 percent of the time) with 5.7 percent of the flights delayed.

These potential delays could be further reduced or eliminated if airlines were to reschedule flights to off-peak hours. Current trends in the domestic airline industry indicate that the industry will be dominated by four to five major airlines that will transport the majority of future passengers in the U.S. This transition is now occurring by way of mergers and bankruptcies. This domination and consolidation would reduce the large number of airlines

that now schedule unprofitable flights during peak hours to maintain a competitive market presence. Thus, delays may be reduced as an indirect result of market forces.

The effects of average aircraft delays, as estimated in the FAA Capacity Task Force study, on aircraft noise, air pollution, and fuel consumption at SFIA are discussed in the EIR, in Sections IV.C., Noise, IV.D., Air Quality, and IV.E., Energy (beginning on pp. 335, 357. and 367, respectively). As the commenter suggests, there is no discussion in the EIR of the relationship between aircraft delays and transportation impacts. Accordingly, the following is inserted at the end of the Transportation Impacts section on p. 328 of the EIR:

Effects of Potential Aircraft Delays

It is possible that because of operational constraints and future delays, there would be changes in the forecast ground traffic using the Airport. Tables J-1 and J-2, in Appendix J, pp. A.179-180, show the existing number of flights per hour in 1990, and the forecast number of flights per hour in 1996 and 2006.

Using the information on Tables J-1 and J-2, in 1996 and 2006 there would be no more than one hour of delay for any flight under optimum visual flight rules (61 percent of the time). Under less-than-optimum visual flight rules (25 percent of the time), there would be no more than one hour of delay for any flight in 1996, and there would be more then one hour of delay for only five flights in 2006. Under more adverse weather conditions there could be additional delays to flights.

During instrument flight rules (IFR) conditions, which occur about 5.6 percent of the time, the existing SFIA airfield would not accommodate the number of flights forecast per hour in 1996 and 2006 with implementation of the SFIA Master Plan, if such conditions were to persist throughout a 24-hour period. (IFR conditions at SFIA generally occur over shorter periods; a review of SFIA weather summaries for 1990 showed that in the summer, IFR conditions generally occurred only in the early morning and late evening hours.) Even if the forecast flights were spread throughout the entire 24-hour period to maximize use of the airfield, the airfield could not accommodate the total number of daily flights forecast, even assuming that the airfield were to operate at capacity every hour. (Although Appendix J does not include an analysis of the airfield's ability to accommodate flights forecast for 2006 without the SFIA Master Plan, it is likely that the result would be similar to that described here.)

The effects of these delays on surface transportation impacts at or near SFIA cannot be estimated quantitatively. The delays could affect the hourly distribution of trips made by passengers, people going to the Airport to pick up passengers, and employees. It is possible that passengers aware of substantial flight delays would delay their trips to the airport; alternatively, these passengers would experience the aircraft delay in the SFIA terminal building. People travelling to the Airport to pick up arriving or drop off departing passengers might also delay their trips to the Airport, or wait longer in the terminal building for the flight to arrive or depart. The

number of airline or airline support employees working during a particular shift might change to accommodate the services needed by delayed aircraft.

The potential change in the hourly distribution of trips could result in the spreading out of peak forecast travel. The estimates of aircraft delay in Appendix J were developed assuming that the 1990 pattern of peak flight schedules would increase proportionally over the next 15 years. If the airlines were to reschedule flights to off-peak hours, such rescheduling would have a similar effect on the hourly distribution of forecast surface vehicle traffic.

The effects of this redistribution of trips on traffic impacts near the Airport would depend on the change in the number of trips during the peak hours on the surrounding roadway network. As noted on p. 280, the peak hours studied in the analysis of traffic impacts represent the peak hours on the network, not the air traffic peak hours. There could be more or fewer vehicle trips during the peak hours on the surrounding network, depending on when the aircraft delays occur and how long the delays are.

If people travelling to the Airport to pick up or drop off passengers wait at the Airport, the demand for parking spaces during certain hours could increase. The turnover of short-term parking spaces in the parking garage and the GTC would be affected by flight delays. Vehicles could be required to circulate for longer periods of time before finding an available space.

Because the impacts of aircraft delays on surface traffic impacts are not known, no mitigation for such impacts is idenitified in the EIR.

SFIA AND MTC ESTIMATES OF AIRFIELD CAPACITY

Comments

". . . I want to add to the Committee's comments requesting more accurate forecasts a statement of concern that the data on operations capacity contained in the SFIA Master Plan documents and in the DEIR do not comport with the Metropolitan Transportation Commission (MTC) data recently added to the DEIR on SFIA operations (departures and arrivals) for the Master Plan period. The MTC data projects that operations at SFIA will exceed present capacity well before the year 2006 (the end of the Master Plan period), while the Master Plan documents state that airport capacity is sufficient to handle the enormous expansion proposed up to the year 2006. This discrepancy must be addressed both in order to project as accurately as possible the consequences of airport expansion on the health and quality of life of San Francisco residents (and even on property values in the affected parts of our City and County), and to identify and assess the utility of available alternative means of mitigation. . . " (Carol Gamble)

"The DEIR treats the issue of airfield capacity and the cumulative effects of more flights inadequately. . . In Attachment B, which was provided by your office, the M.T.C. Regional Airport System Plan Update suggests that in fact airfield capacity will be exceeded during the Master Plan period. In that document, Exhibit 4.23 shows SFIA annual service volume to be 500,000 operations per year, with 86.1% of that volume currently in use. Since the Master Plan projects an increase of over 100,000 operations, the volume would appear to be exceeded before the year 2006." (Curt Holzinger)

". . . [I]n the new data that was provided from MTC -- and this gets to the question of capacity -- the airport has argued that capacity, airfield capacity at the airport, is adequate through the year 2006, for the Master Plan period. In the information provided by MTC on the chart in Appendix B on Page 4.23, that information indicates that the annual service volume, which is described as the annual runway capacity of San Francisco International Airport, is 500,000 aircraft, 500,000 operations. And, currently, it is operating at 86 percent capacity.

"The Master Plan says that there will be an increase of over 100,000 operations. If you take the MTC data and the Master Plan data, this would indicate that the annual service volume of the airfield will be exceeded, i.e., there is a capacity problem here that has not been addressed. We raised this issue two years ago, and it is still not addressed." (Curt Holzinger, Airport Noise Committee)

Response

As correctly stated by the commenters, Exhibit 4.23 of Attachment B, C&R Appendix A, "MTC Regional Airport System Plan" (excerpts), shows an estimated annual service volume for SFIA of 500,000 operations. The annual service volume for SFIA was also estimated at 500,000 operations in the California Aviation System Plan (CASP), as noted on p. 72 of the EIR. With these estimates of annual service volume used as a measure of airfield capacity, the numbers of aircraft operations forecast for 2006 with the SFIA Master Plan would exceed SFIA airfield capacity. According to the CASP, increases in aircraft operations beyond the annual service volume result in rapid increases in aircraft delays, and deterioration of levels of service on the airfield (as stated on p. 66 of the EIR.)

In the CASP, however, ". . . it is recognized that for many airports . . . the peak hour . . . capacity is a more important and relevant measure of an airport's airfield capacity than the annual service volume. . . " (p.66 of the EIR). For that reason, peak-hour capacity was

growth trends over the last 15 years, and makes reference to an Association of Bay Area Governments (ABAG) study suggesting that the region's growth rates are likely to continue. According to the SFIA Master Plan,

"In order to adjust to such growth patterns in a region as dynamic and economically healthy as the Bay Area, the infrastructure must be continually upgraded and extended to avoid congestion and inefficiencies.

"San Francisco International Airport is a key element of this infrastructural improvement program. Recent widenings and ramp additions to the Bayshore Freeway adjacent to the Airport have improved ingress and egress for both passenger and cargo traffic. However, if the Airport is to be capable of handing the additional traffic generated by the area's current scale of economic growth, these improvements must be matched by significant restructuring of circulation systems, parking, and passenger/cargo handling facilities within the Airport properties.

"Clearly, San Francisco International Airport is reactive to and acts only as a conduit to serve the economic growth of the Bay Area." (SFIA *Final Draft Master Plan* , p. 7.1)

As pointed out above, under Project Sponsor Objectives and Approach (p. C&R.8-18 herein), CEQA does not require analysis of economic or social impacts unless they are related to or caused by physical changes to the environment: "[T]here must be a physical change resulting from the project directly or indirectly before CEQA will apply" (State CEQA *Guidelines*, Section 15131). The EIR therefore does not analyze, nor draw conclusions regarding, the regional economic role of SFIA and its Master Plan. Similarly, the EIR does not critique the SFIA Master Plan's broadly-stated assumptions regarding future economic growth in the Bay Area. (It may be noted that the latest preliminary ABAG employment growth forecasts for the 1990s are scaled back relative to the employment forecasts for the 1990s contained in ABAG's *Projections '90*. However, the reduction in expected regional job growth is not statistically significant.)/1/

While not required in the EIR, an analysis of SFIA's role in the regional economy could be conducted by the Airports Commission in its capacity as the decision-making body of the Lead Agency (the City and County of San Francisco), if the Airports Commission decides to approve the SFIA Master Plan (and the EIR has been certified). According to CEQA, "[a] public agency may approve a project even though the project would cause a significant effect on the environment if the agency makes a fully informed and publicly disclosed decision that: (a) There is no feasible way to lessen or avoid the significant effect. . . and

(b) specifically identified expected benefits from the project outweigh the policy of reducing or avoiding significant environmental impacts of the project" (CEQA *Guidelines*, Section 15043).

Regional Future of Air Travel in California

Broad-based research, analysis and policy planning for the regional and state aviation systems are the subjects of the in-progress ABAG/MTC Regional Airport System Plan (RASP) Update and the Caltrans California Aviation System Plan (CASP), respectively (these plans are discussed in the EIR on pp. 108, 112-114 and 258). Additional information on how SFIA and the SFIA Master Plan fit into the regional and state aviation systems is provided below, under Regional Airport System Plan (RASP) Update, Regional Forecasts and Capacities, and Decentralization/Redistribution of Aviation Activity; Capacities and Plans of Other Regional Airports (pp. C&R.60-66, C&R.66-73 and C&R.75-85 herein).

According to the Federal Aviation Administration (FAA), airport planning in the United States is performed at several levels above the individual airport master planning level. The National Plan of Integrated Airport Systems is a ten-year plan, published biennially by the FAA, that lists public-use airports considered to be in the national interest and eligible for federal planning and development funding. Statewide Integrated Airport Systems Planning "identifies the general location and characteristics of new airports and the general expansion needs of existing airports to meet statewide air transportation goals."/2/ This function is performed in California by the Caltrans Division of Aeronautics, which prepares the CASP. Regional/Metropolitan Integrated Airport Systems Planning "identifies airport needs for large regional/metropolitan areas. Needs are stated in general terms and incorporated into statewide system plans."/2/ This function is performed in the San Francisco Bay Area by the Metropolitan Transportation Commission (MTC), which prepares regional airport plans in conjunction with ABAG and incorporates resulting policies into the Regional Transportation Plan. Airport master plans, according to the FAA, "are prepared by the operators of individual airports, usually with the assistance of consultants. They detail the specific long-range plans of the individual airport within the framework of statewide and regional/metropolitan system plans."/2/

According to the above-summarized FAA guidance, the SFIA Master Plan was prepared at the appropriate level: by the airport operator and its consultants. However, the SFIA

Master Plan is not formally "within the framework of statewide and regional/metropolitan system plans." This situation derives at least partly from lack of coordination and integration among the regional, state and federal planning levels. In relation to the Bay Area, regional and state aviation planning processes are not formally coordinated; consistency among the regional and state plans is not readily apparent, and neither the regional nor the state aviation planning agency has complete authority to fully implement all plan policies. In an effort to better coordinate aviation planning in California, a "plan for planning" concept is being developed by the Caltrans Division of Aeronautics and the Regional Transportation Planning Agencies Aviation System Planning Committee. The "plan for planning" concept has three basic objectives: 1) coordinate aviation system planning at the state and regional levels, including inter-regionally; 2) Make the best use of scarce system planning funds, in coordination with the FAA; and 3) encourage the equitable distribution of system planning funds throughout the state./3/ Obstacles to the implementation of comprehensive regional and state aviation system plans are discussed further below, under Regional Forecasts and Capacities (pp. C&R.70-73 herein). Thus, in theory, individual airport master planning in a complex, multi-airport region such as the Bay Area should be integrated with aviation planning at the regional, state and federal levels, and each should address problems appropriate to that level. In practice, without this degree of coordination, airport operators (by virtue of their site-specific knowledge and hands-on experience) generally perform the detailed facilities inventory and requirements analyses required for individual airport master planning.

It is not known whether a consortium capable of independent and comprehensive master planning for SFIA could be assembled, nor how such a body would be managed and financed. Other large metropolitan regions, such as Los Angeles and New York, conduct planning for multiple airport development within the auspices of a municipal or regional agency or authority which has decision-making power over several airports within the region. A regional agency similar to the Port Authority of New York and New Jersey, which operates a multi-airport system in a region also characterized by congested airspace and ground transportation conditions, could potentially be established for the Bay Area in the future. Even if the political conditions existed for establishment of such an authority in the Bay Area, the practical need for individual airport master planning would not likely be completely eliminated (however, the objectives of the individual airport operators could differ under a regionally controlled system from their objectives under the existing structure).

Existence of a Bay Area airport authority, moreover, would not necessarily lead to the outcome desired by the commenter--that is, a comprehensive Master Plan for SFIA that would also be [the most] "environmentally sound." If the authority could optimize system-wide resources by, for example, facilitating diversion of aircraft from more-congested to less-congested airports within the system, overall environmental effects of regional aviation operations could potentially be reduced. But in developing airport and regional master plans, such an authority, as do the individual airports currently, would need to balance environmental soundness with numerous other planning concerns and criteria (i.e., fiscal and economic factors; airline industry trends and airline business decisions over which the airports have minimal influence; government regulations; demand forecasts; levels of service to customers; relations with surrounding governments and communities; and competition with other airports, regional "hubs," technologies and inter-city travel modes).

The second commenter's assertion that SFIA is the Bay Area's designated Regional Airport is likely incorrect as no regional, state or federal authority is known to have made such a designation. As explained above, under Project Sponsor Objectives and Approach (pp. C&R.8-18 herein, SFIA is the region's largest airport in terms of passenger traffic and is larger than all of the other air carrier airports in the region combined. However, three other airports -- Metropolitan Oakland International Airport (MOIA), San Jose International Airport (SJIA) and Sonoma County Airport -- provide air carrier service to the Bay Area and can therefore also be considered Regional Airports.

REGIONAL AIRPORT SYSTEM PLAN (RASP) UPDATE

Comments

". . .As the regional transportation planning agency, MTC must develop and adopt a Regional Airport System Plan. The last regional airport plan was adopted in 1980, and the forecasts have been periodically reviewed and updated since that time . . . MTC is now engaged in the comprehensive review and updating of the 1980 plan. The new RAP will examine airport system alternatives for 2005 and 2010." (Chris Brittle, Metropolitan Transportation Commission)

". . .[I]n the project summary and then again in the alternatives, it does talk about MTC and other agencies thinking some of this business should go to other airports. But it doesn't flesh that out. We don't know what the traffic impacts are on San Jose or on Oakland. We don't know if their

traffic is so bad that we are wrong to say it should go there. It could be that it would be very advantageous for it to go there. But in this document, you can't tell that.

"It seems to cry out for a regional EIR, a regional discussion of airports. I would think MTC would almost be demanding that, or the state, somebody in control. I don't think it should be just be up to one individual airport who maybe can make more money. . . The stuff just isn't in here to make an unbiased decision. The Airport Commission, with this data, is just thinking about themselves and not the good of the other people. I think they will have to take that posture because they don't have the information." (Commissioner Bierman)

"First of all, the EIR essentially views this project in isolation. It views it as a separate project and makes just a cursory mention that other airports in the region are planning to expand. I think the entire picture of the entire region ought to be examined. Oakland and San Jose have equally, if not greater, ambitions for expansion than San Francisco. The FAA is encouraging smaller airports to expand for general aviation use. There are some proposed military base closures. And the future use of those air fields, we don't know.

"I think the entire regional picture ought to be examined before this EIR is adopted. This EIR chose not to examine that. Consequently, I think we ought to wait until the Regional Planning Committee of the Metropolitan Transportation Commission issues its revised Regional Airport Plan and an EIR is done on that. That will examine the entire regional picture, hopefully. And I think in that context, we can then examine the expansion plans of the San Francisco Airport. . .

"With the expansion of the various airports in the bay region, what we are . . . doing is creating a nice revenue generator. We are creating something to boost the economy of the bay region. But we are not looking at the effects of that in their entirety." (Charles Kroupa)

". . .I believe that the plan and the EIR approval should be withheld until a thorough investigation can be made by a regional agency, such as MTC, and pending the issuance of MTC's Regional Airport Plan, which should be forthcoming next year. To approve this EIR prior to that plan, I think, would be very premature." (Charles Kroupa, public hearing of 10/17/91)

". . .Considering the multiple impacts detailed in the EIR for the SFIA alone, it is imperative that

regional coordination must be involved for all airports, and that the Regional Airport Plan needs to be updated before expansions take place." (Onnolee Trapp, Leagues of Women Voters of San Mateo County)

"On page 4 a sentence reads 'Those plans [the Caltrans CASP, the FAA Capacity Task Force Study and the MTC RAP] do not include the same recommended means for meeting forecast demand.' After reading statements further along in the report, I suspect that the sentence means that only the SFIA report recommends use of the plan as outlined in the report, that all other reports conclude that SFO is a poor place to expand air service due to the overcrowded, overbuilt conditions, and the overwhelmed situation of ground transportation in and out of the area. . . " (Patricia Clark)

Response

The second paragraph on p. 108 of the EIR has been split into two paragraphs and revised as follows:

> *Regional Airport Plan (RAP)*. This Plan was prepared by MTC and ABAG to guide future aviation growth in the Bay Area, was adopted as an element of the MTC *Regional Transportation Plan* in March, 1975, and was subsequently revised as part of the 1980 edition of MTC's *Regional Transportation Plan* ./52,53/ Forecasts developed for the 1980 *Regional Airport Plan* have been periodically reviewed and revised./53a/ An update of the 1980 *Regional Airport Plan* , known as the Regional Airport System Plan (RASP) Update, is currently in progress and slated for publication by the end of 1992. An Environmental Impact Report on the RASP Update is scheduled for completion in early 1993./53b/
>
> The RASP Update [ ] will include historical, current and forecast levels of aviation activity in the Bay Area, data on Bay Area aviation facilities, capacities and requirements, including ground access, terminals, airfields, airspace, etc.; environmental and other constraints affecting the regional airport/aviation system; and a range of alternatives [ ] for coordinating regional aviation planning, investments in capacity-increasing and other airport projects, and operations. The RASP Update will examine airport system alternatives for 2005 and 2010./53a/

The following notes are added to p. 123 of the EIR:

/53a/ Brittle, Chris, Manager, Planning, Metropolitan Transportation Commission, letter to Barbara Sahm, September 16, 1991.

/53b/ Roddin, Marc, Manager of Seaport and Airport Planning, Metropolitan Transportation Commission, interview, April 22, 1992.

The following text replaces the last paragraph on p. 258 of the EIR:

> MTC's Regional Airport System Plan (RASP) Update is scheduled for completion in 1992. When complete, the RASP Update will provide a body of information on the existing regional system and its operations, expected future requirements, and recommendations for accommodating those future requirements. This information can be used by decisionmakers within the region, including the airports themselves, in guiding capital improvement programs and related policy decisions./1, 1a/ SFIA and the other air carrier airports in the region are members of the Regional Airport Planning Committee (RAPC), and therefore have access to information that becomes available through the RASP Update process regarding the optimization of regional aviation resources and the minimization of overall environmental effects.
>
> No authority currently exists that can enforce the RASP; implementation of its policies and recommendations therefore depends principally on voluntary actions by the airports and airlines. MTC's own authority to implement elements of the RASP is generally indirect, in that MTC has responsibility for environmental review and funding approval on regional ground transportation projects, and authority to prioritize applications from airports within the region for limited California State aeronautics Capital Improvement Projects (CIP) funds (the statewide fund estimate for the next cycle, 1995-96, is only $2.1 million)./1b/ MTC can thus potentially influence regional airport planning and operations primarily through its role in major ground transportation projects affecting specific airports. MTC can also use the RASP to educate and thereby potentially influence other agencies with more direct authority over airport systems and operations in the region (e.g., the FAA, airlines, airports and the U.S. military)./1,1a/
>
> The level of detail in the final RASP, moreover, will likely be at a programmatic level. Cooperation by the airports with the RASP would therefore not eliminate the need for development of individual airport Master Plans./1a/

The following note replaces footnote /1/ on p. 260 of the EIR:

/1/ Steve Kiehl, TRA Airport Consulting, telephone conversation, September 16, 1991.

The following notes are added on p. 260 of the EIR:

/1a/ Roddin, Marc, Manager of Seaport and Airport Planning, Metropolitan Transportation Commission, interview, April 22, 1992.

/1b/ Roddin, Marc, Manager of Seaport and Airport Planning, Metropolitan Transportation Commission, Record of CIP Advisory Committee Meeting, October 24, 1991.

As required under CEQA (*Guidelines* Section 15125), the EIR (pp. 107-110, 257-258) addresses inconsistencies between the SFIA Master Plan and the existing (1980) ABAG/MTC Regional Airport Plan (RAP). The EIR notes that the regional plan is in the process of being updated, but does not discuss the potential inconsistency of the SFIA Master Plan with the yet-to-be-completed RASP Update. Similarly, the SFIA Master Plan EIR analysis does not incorporate results of the RASP EIR analysis, since the latter is not yet even started. Discussion in the EIR of the specific contents of these unpublished documents would be speculative.

According to MTC staff, in comments on the SFIA Master Plan EIR (listed and responded to on pp. C&R.66-71 herein), ". . .the Regional Airport System Plan will be looking at in which SFO's share of regional traffic will most likely vary between the current 70 [percent and] a lower share of about 55 [percent], reflecting a substantial redistribution of air service to other airports."/4/ As pointed out by one commenter, if such air service redistribution were to occur, it would likely result in traffic impacts different from those identified for the SFIA Master Plan, including more severe traffic impacts in San Jose and Oakland. The potential traffic impacts resulting from redistribution of some future SFIA air passenger demand and aircraft operations to other airports in the region are discussed qualitatively in the EIR on pp. 473-474, under the Offsite Alternative. On the basis of limited information available during analysis of the SFIA Master Plan EIR Offsite Alternative, and the extent of disagreement among experts regarding future airport system capacities and air travel demand in the Bay Area, quantified traffic impacts for a regional redistribution scenario (or other regional airport system scenarios) cannot be reasonably ascertained for inclusion in the SFIA Master Plan EIR, given its timetable for completion. (These issues are further discussed below, under Decentralization/Redistribution of Aviation Activity; Capacities and Plans of Other Regional Airports, and Offsite Alternatives: Regional Redistribution, pp. C&R.75-85 and C&R.88-93 herein.)

According to CEQA standards for adequacy of an EIR (CEQA *Guidelines*, Section 15151), "An EIR should be prepared with a sufficient degree of analysis to provide decisionmakers [in this case, the San Francisco Airports Commission] with information which enables them to make a decision which intelligently takes account of environmental consequences" of the project (in this case, the SFIA Master Plan). As the certifying body of the Lead Agency, the San Francisco City Planning Commission may have to make a determination on the EIR's adequacy in the absence of analysis from the completed RASP Update and its EIR.

As correctly pointed out by one commenter, a detailed examination of the entire regional aviation picture, including other planned airport expansions and potential military base closures, is not included in the EIR; these items are addressed in the EIR at a general level for two reasons. First, the purpose of the EIR is to examine, and identify ways to avoid or reduce, the environmental effects of *the project,* which is defined as the SFIA Master Plan. Second, as with the RASP Update, the master plans or CEQA analysis of the master plans of the other major air carrier airports are in progress, making detailed analysis of their effects speculative. Draft data and information are available, however; some elements have been incorporated into this document and C&R.Appendix A. Although various possible civilian-aviation-use scenarios for Travis Air Force Base, Hamilton Air Force Base/Army Airfield, Moffett Field Naval Air Station, Alameda Naval Air Station, and other facilities have been studied by the FAA, MTC, Caltrans Division of Aeronautics and other groups, actual closure and reuse plans, and the overall regional and cumulative effects of implementing those plans, are not fully known at this time.

The commenter is also correct in stating that the EIR does not address the effects, in their entirety, of boosting the economy of the Bay Area through expansion of various airports in the region. According to CEQA requirements, airport expansion as a revenue generator, like other broad economic objectives and impacts, does not need to be evaluated in the EIR unless that would directly or indirectly result in a physical change to the environment (CEQA *Guidelines*, Section 15131). However, the role of airports (particularly that of SFIA) in the region's economy could be an important consideration for the City of San Francisco Airports Commission if it approves the SFIA Master Plan on the basis of findings that economic, social or other benefits outweigh the significant environmental effects of the project (see discussion above, under Regional Planning and Coordination, General, pp. C&R.56-60 herein).

One commenter's understanding, that the Caltrans CASP, the FAA Capacity Task Force Study and the MTC Regional Airport Plan "conclude that SFO is a poor place to expand air service due to the overcrowded, overbuilt conditions, and the overwhelmed situation of ground transportation in and out of the area," is partially correct, in that all three studies identify airfield facilities, airspace congestion, and/or ground traffic congestion as the primary capacity constraints at SFIA, in contrast to the SFIA Master Plan, which addresses terminal facilities, and boarding gates in particular, as SFIA's primary capacity constraint (*SFIA Final Draft Master Plan,* pp. 7.4, 7.10-12 and EIR, pp. 257-258, 439). However,

none of the three studies appear to conclude that "overcrowded, overbuilt conditions" in the area (Airport environs cities) is a major determinant of whether SFIA is a good place to expand air service.

REGIONAL FORECASTS AND CAPACITIES

Comments

"For clarification, the current regional airport plan air passenger forecasts and airport traffic assignments are different than those shown on page 110 (see attached excerpts for the MTC Regional Transportation Plan).

"The regional air passenger forecasts were last revised in 1986, and the airport traffic assignments were last revised in 1987. Note that the actual 1990 airport traffic shares for the Bay Area airports (page 120) are quite close to the recommended traffic allocations in the regional airport plan, i.e., the traffic allocations associated with a Bay Area traffic level of 43 Million Annual Passengers (MAP).

"The current regional airport plan recommends that Oakland and San Jose Airports serve a larger share of regional air traffic as air travel demand increases in the future. These recommendations stem from extensive previous analysis showing this strategy is essential to: balance available runway and airspace capacity (i.e., reduce excessive aircraft and passenger delays), provide more convenient and accessible air service to the Bay Area's population, provide noise relief to Bay Area residents, and to minimize vehicle travel and air pollution for ground trips to and from Bay Area airports. One of the reasons the Plan is now being revised is to coordinate ongoing airport master plan proposals for SFO, Oakland and San Jose Airports. San Francisco's master plan, for example, proposes to serve 51.3 MAP in 2006, whereas the current policy limit in the regional airport plan is 31 MAP; similar conflicts with the regional airport plan exist at the other Bay Area airports. The question of how much additional airport capacity is needed and the optimum share of traffic for each airport is the subject of the current Regional Airport System Plan update due to be completed in . . . 1992. Airport system alternatives for the update study are now being defined through discussions with the ABAG/MTC Regional Airport Planning Committee (RAPC). San Francisco Airport's Master Plan should be consistent with the regional plan.

"MTC's 'expected' forecast for the Bay Area is 62.6 MAP in 2005 and 70.7 MAP in 2010; these projections employ different methodologies than either the FAA forecast or the CASP forecast.

However, the ABAG/MTC Regional Airport Planning Committee has also recommended that the plan update consider the long-term (20-25 year) capacity implications of an air passenger demand level of 84 MAP -- which is similar to the forecast in the California Airport System Plan.

"In terms of airport system alternatives, the Regional Airport System Plan update will be looking at alternatives in which SFO's share of regional air traffic will most likely vary between the current 70% to a lower share of about 55%, reflecting substantial redistribution of air service to other airports. The Master Plan forecasts would be more consistent with retention of the current share." (Chris Brittle, Metropolitan Transportation Commission)

"The DEIR points out (pg. 258) that SFIA passenger forecasts for the near-term (42.3 million annual passengers in 1996) and for the long-term (51.3 million annual passengers in 2006) exceed MTC/ABAG-recommended allocations for SFIA (27 to 31 million annual passengers in 1997). The Regional Airport Plan is currently being updated. In view of the major regional impacts of the expansion sought in the Master Plan, we recommend any decision await the development, public debate and final approval of the Regional Airport Plan. The magnitude of the proposed expansion makes conformity with the Regional Airport Plan imperative." (Gary Binger, Association of Bay Area Governments)

Response

The following text is added to the bottom of Table 14 on p. 110 of the EIR:

> Source: Metropolitan Transportation Commission, *Regional Transportation Plan*, 1980.

The first paragraph following Table 14 on p. 110 of the EIR is amended as follows:

> A comparison of MTC's 1980 Regional Airport Plan-recommended shares of regional passenger traffic with actual 1989 shares for the five Bay Area air carrier airports is presented in the discussion of regional aviation activity and regional capacity issues, beginning on p. 118.

The following text and tables are added after the first paragraph following Table 14, on p.110 of the EIR:

Tables 14A and 14B, below, reflect the most recent MTC regional airport plan passenger forecasts (revised in 1986) and airport traffic assignments (revised in 1987). Anticipated total regional air passenger demand in the most recent forecasts is higher than in MTC's 1980 Regional Airport Plan forecasts, and the most recent forecasts are extended to 2005 (whereas the previous forecasts extended to 2000). The recommendation that SFIA's passenger share should decrease relative to shares of the airports at Oakland, San Jose and Concord as total Bay Area air passenger demand increases, is inherent in both the 1980 and the 1986-1987 Regional Airport Plan airport traffic assignments.

[TABLE 14A]

PROJECTED BAY AREA AIR PASSENGER DEMAND
(Millions of annual passengers - on & off)

Time Frame	Total Bay Area Air Passengers
1995	40.8 - 46.8
2005	48.7 - 58.7

Source: Metropolitan Transportation Commission, *Regional Transportation Plan for the Nine-County San Francisco Bay Area,* 1988.

[TABLE 14B]

AIRPORT TRAFFIC ASSIGNMENTS
(Millions of annual air passengers - on & off)

	Level 1		Level 2		Level 3	
Airport	Demand	Share	Demand	Share	Demand	Share
San Francisco	19.9	78.7%	30.0	69.3%	31.0	55.1%
Oakland	2.6	10.1	6.0	13.9	15.0	26.6
San Jose	2.8	11.2	7.0	16.2	10.0	17.8
Buchanan Field	--	--	0.3	0.6	0.3	0.5
Total	25.3	100.0%	43.3	100.0%	56.3	100.0%

Level 1 represents the 1981 traffic level and traffic distribution among the airports. Levels 2 and 3 represent shares derived from policies in the RAP and airport master plans. Air passenger assignments for intermediate levels of Bay Area demand may be determined by interpolation between the three levels of demand shown in the table.

Source: Metropolitan Transportation Commission, *Regional Transportation Plan for the Nine-County San Francisco Bay Area,* 1988.

In 1990, SFIA's actual passenger level (about 30.4 MAP) and regional share (about 70.4 percent) were relatively close to MTC's recommendations for SFIA's component of regional passenger demand Level 2, shown in Table 14B. At regional demand Level 2 (43.3 MAP for the region), MTC recommended 30 MAP and 69.3 percent of the regional passenger market for SFIA. The actual regional total in 1990 was about 43.8 MAP. Thus, SFIA's 1990 passenger level and regional market share were consistent with MTC's most recent (1987) airport traffic assignments.

However, the passenger levels and market shares anticipated in the SFIA Master Plan are not consistent with MTC's airport traffic assignments. As shown in Table 14B, MTC assumed a 13 MAP or 30 percent increase in total passengers for the region between demand Levels 2 and 3, but recommended that SFIA's passenger total increase by only one MAP (to 31 MAP) and that its market share decline from 69.3 percent to 55.1 percent of the regional total. The SFIA Master Plan, in contrast, assumes that SFIA would serve between 70.5 and 72.8 percent of regional passenger demand at Level 3, or 56.3 MAP. (The basis of this comparison is SFIA Master Plan Table 7.1, "Total Passengers -- Regional San Francisco-Oakland-San Jose Area Passenger Forecasts" and Table 7.2, "Total Passengers--San Francisco Airport Passenger Forecasts." Forecasts in SFIA Master Plan Table 7.1 show the 56.3 MAP level being reached between 1994 and 1995; according to SFIA Master Plan Table 7.2, SFIA's "unconstrained" passenger total would be about 39.7 MAP in 1994 and about 41 MAP in 1995. Thus, the data in the two tables reflect an expected regional share under the SFIA Master Plan of 70.5 to 72.8 percent for a regional passenger level of 56.3 MAP, MTC's Level 3).

MTC's most recent (1986) regional air passenger demand forecasts and most recent (1987) airport traffic assignments are being revised as part of the RASP Update.

A range of forecasts of total air passenger traffic for the Bay Area as a whole in 2005 and 2010 was compiled in the RASP Update process by extrapolating or interpolating as necessary from the respective airport master plans; the MTC/RAPC (forecasts done for the RASP); FAA San Francisco 1986 HUB Forecast; 1991 FAA National Forecast; 1990 FAA Terminal Area Forecast; and 1989 Caltrans CASP./5/ (Note: EIR Table 10, p. 64, provides comparisons of 1996 and 2006 SFIA Master Plan forecasts in several categories of aviation activity with CASP and 1989 FAA Terminal Area Forecasts for SFIA in the same categories.)

Of the regional forecasts compiled for the RASP Update, the CASP forecasts are the highest: about 80 MAP in 2005 and 90 MAP in 2010. The combined airport master plan forecasts total about 79 MAP in 2005 and 89 MAP in 2010 for the region (SFIA's Master Plan forecasts were adjusted to provide figures for 2005 and 2010). It can be seen that this pair of aggregated master plan forecasts is close to the CASP's pair of regional forecasts for

2005 and 2010; however, the CASP forecasts reflect more growth at SFIA and MOIA, and less at SJIA, than do the combined Master Plan forecasts./5/

Two sets of forecasts, low and high, were developed by MTC/RAPC and TRA Airport Consulting for the RASP Update. The MTC/RAPC high forecasts are about 75 MAP for 2005 and about 85 MAP for 2010; low forecasts are about 62 MAP for 2005 and about 71 MAP for 2010 (these "low" forecasts are referenced by the commenter as MTC's "expected" forecast for the Bay Area). The FAA Terminal forecasts for the region, about 64 MAP in 2005 and about 72 MAP in 2010, are close to the MTC/RAPC low forecasts.

The commenter from MTC is correct in stating that the SFIA Master Plan market share assumptions contrast with previous MTC RAP recommendations. SFIA Master Plan market share assumptions would also contrast with future RASP Update recommendations if the commenter's expectations (as MTC's Planning Manager) are correct. The forecasts surveyed for the RASP Update from federal, state, and regional agencies, as well as from the respective master plans, show SFIA maintaining from about 58 percent to 71 percent of the region's passenger market through 2005. (Some of these forecasts show constant market shares in the future because they used existing market shares to apportion forecast total Bay Area air passengers among the air carrier airports, rather than considering market shares to be a study variable.)

It is acknowledged in the EIR (p. 258) that the SFIA Master Plan is not consistent with the 1980 MTC RAP. As noted in the previous response (p. C&R.63 herein), the major Bay Area air carrier airports are participants in the RASP Update process through their membership in the RAPC and/or staff attendance at RAPC meetings. However, MTC cannot compel the airports and the airlines providing service in the region to bring their operations, or their respective master plans, into conformance with the previous RAP or the RASP Update.

Reducing or eliminating inconsistencies between the SFIA Master Plan and the existing MTC RAP (or the future RASP Update) is not mandated by CEQA. The CEQA *Guidelines* (Section 15125(b)) require that the setting of the EIR "shall discuss any inconsistencies between the proposed project and applicable general plans and regional plans," including regional transportation plans. Further, the *Guidelines* recommend that, "Where individual projects would run counter to the efforts identified as desirable or approved by agencies in the regional plans, the Lead Agency should address the

inconsistency between the project plans and the regional plans. As a result of this analysis, Lead Agencies may be able to find ways to modify the project to reduce the inconsistency" (CEQA *Guidelines*, Section 15125, Discussion).

The EIR, pp. 82-118 and pp. 253-259, discusses inconsistencies between the SFIA Master Plan and policies of applicable general plans (City of Brisbane, City of Burlingame, Town of Colma, City of Daly City, City of Foster City, Town of Hillsborough, City of Millbrae, City of Pacifica, City of San Bruno, City of San Mateo, City of South San Francisco, City and County of San Francisco, and County of San Mateo), and applicable plans and policies of state and regional agencies (ABAG, MTC, other airport master plans, Caltrans and the San Francisco Bay Conservation and Development Commission (BCDC)). Consistency of the SFIA Master Plan with applicable policies and plans of the Bay Area Rapid Transit District (BART), the Bay Area Air Quality Management District (BAAQMD) and the San Francisco Bay Regional Water Quality Control Board (RWQCB) are discussed in the EIR on pp. 134-136, pp. 267-270 and pp. 320-323 (BART), pp. 172-173 and pp. 354-364 (BAAQMD), and pp. 233-235 and p. 402 (RWQCB).

While the term "shall" in CEQA *Guidelines* Section 15125 indicates that discussion in the EIR of inconsistencies between a project and applicable plans is mandatory under CEQA, use of the term "should" indicates that addressing those inconsistencies is advisory and use of the term "may" indicates that finding ways to reduce the inconsistencies is a permissive element under CEQA. Public agencies are advised to follow CEQA provisions identified by "should" in the absence of compelling reasons to take another approach. Permissive elements are left fully to the discretion of the public agencies involved (CEQA *Guidelines*, Section 15005). Inconsistencies between a project and applicable plans and policies do not in themselves constitute significant physical environmental effects under CEQA; however, the presence of such conflicts may indicate or correspond to significant physical environmental effects, and may point to possible mitigations or alternative approaches that would avoid or reduce those effects.

Comment

"Finally, members of the Planning Commission at the August 29th hearing raised the matter of a regional discussion of airports, including SFIA, Oakland and San Jose. The Committee agrees with this criticism. The SFIA Master Plan and its EIR should include consideration for future activities at all three airports, incorporating at the least:

"1. Forecast passenger and cargo demand for the whole Bay Region based upon rigorous macro-economic analysis which incorporates a realistic and thorough examination of the Bay Region's participation in the United States, Pacific Rim, Latin American and European economies.

"2. Forecast passenger and cargo demands for individual air-carrier airports based upon thorough micro-economic analysis.

"3. Inventory all existing buildings, facilities and equipment at all airports (including military) in the region which might be capable of servicing air carriers.

"4. Inventory present use of airspace in the Region by altitude, time-of-day, day-of-week, season-of-year and weather conditions.

"5. Analyze present management practices and resource husbandry at individual air-carrier airports, and specify action necessary to optimize them. . .

"7. Create a plan for airspace use by altitude, time-of-day, day-of-week, season-of-year and in view of weather conditions which minimizes flight over urban areas. Useable airspace over non-urban areas seems to be a significant constraint on airport operations in the Bay Area.

"8. Using Item 7 above, match Items 2, 3, 4, and 5 to determine local excess and shortfalls vis-a-vis forecast passenger and cargo requirements.

"9. Create policies based on Items 3, 6 [moved to comments and responses on Alternatives (see pp. C&R.96-97 herein)], 7, and 8 which optimize use of existing infrastructure, and which optimize benefits from new management practices and from new and replacement construction at the lowest cost.

"10. Develop a cost-benefit analysis, capital budget and regionwide plan for implementing Item 9." (Timothy Treacy, Airport Noise Committee)

Response

CEQA does not require that the SFIA Master Plan EIR create a regional airspace plan, a regional airfield, air terminal and airport ground access infrastructure plan, or associated budgetary plans. The EIR could be required to evaluate these items if they were defined as part of the project. However, as noted previously, the EIR's purpose is to evaluate potential effects of the SFIA Master Plan (the project as proposed), and to identify feasible mitigation measures and alternatives that would avoid or substantially reduce any significant effects identified. The City of San Francisco Airports Commission, as the project sponsor and the decision-making body of the Lead Agency under CEQA, could elect not to approve the project (even if the EIR has been certified by the Planning

Commission), or could require substantial revisions to the project, including expansion of the SFIA Master Plan to make it more regional or comprehensive in scope. This action could not be takenby the Planning Commission, which in this situation is empowered only to evaluate the adequacy of the EIR under CEQA.

Many of the tasks outlined by the commenter have been, or are being, undertaken by the individual airports in their master planning efforts, the FAA, the Northern California Airspace Users Working Group, Caltrans, or MTC. Both the MTC RASP Update and the Caltrans CASP are comprehensive ongoing planning programs; coordination between state and regional planning efforts is being improved (as noted above, under Regional Planning and Coordination, General, pp. C&R.58-60 herein).

However, even as coordination of the regional and state comprehensive planning programs improves, the problem of implementation remains. Caltrans, which currently has a limited role in statewide aviation operations, has identified barriers to implementation of the CASP and the development of an Integrated Airport System for California. From Caltrans' perspective: 1) policy/financial issues need to be separated from the ownership/operation function, since airport owners currently have relatively little incentive to respond to state, regional or national goals; 2) legislation mandating state and regional oversight of airport master plans and grant programs is needed to insure consistency with CASP and regional airport plans; and 3) funding levers are needed to provide that oversight, but there is currently no direct state or regional role in federal funding decisions./6/ To remedy these problems, Caltrans recommends consideration of legislation requiring that all federal funding for airport capital improvements be channeled through Caltrans, and advocates a more significant state role in funding airport ground access and capital improvement projects./6/ The outcome of this Caltrans initiative is unknown at this time.

AIR PASSENGER DATA AND REGIONAL TRAFFIC IMPACTS

Comment

"One of the biggest problems I have with this EIR is that there is no analysis as to where the people are coming from. While you can discuss what the impacts can be with or without the project in a very localized area, there's absolutely no impact -- you can't analyze what an alternative might be, if, for example, they opened up an airport at Hamilton Air Force Base as to what the impacts are going to be on the Golden Gate Bridge and traffic through San Francisco,

for any policy-maker to be able to analyze what the impact is of following the MTC's recommendation of having Oakland expand and therefore perhaps create a decrease in traffic that is going cross the San Mateo Bridge and the Bay Bridge, all of which is tremendously important in terms of the future of San Francisco's ability to accommodate office workers who want to commute into town.

"I find that a really big deficiency in the EIR, both in terms of traffic impacts and policy planning, as to trying to make some tradeoffs, given the fact that this EIR describes really, you know, the worst case. I mean, it's like reading the downtown EIR. And that is the freeways are going to be jammed to capacity on 101 starting in 2006. And basically the answer to this EIR is, well, we only contribute marginally to it, so there is nothing we can do about it, so let's just add -- we are going to expand and not really worry about it, which is, I think, the approach to this.

"I don't think we can take that approach. I think we have got to look at -- I am a big supporter of regional planning in this area. But it's very hard to do regional planning when there is no analysis in here about where the people are coming from to take the planes and what alternatives there might be to serve those people, and, correspondingly, what should be the role of San Francisco Airport, should it be an international connecting airport, or should it service local flights down to L.A.

"And maybe that data has been collected and it is not in here. But to me, when you're talking about a huge regional project like this, it's deficient not to look at the regional-wide transportation impacts. It's certainly not helpful for policy-makers to try and make those kinds of decisions." (Commissioner Engmann)

Response

The fundamental concern expressed by the commenter appears to be that, because of the regional nature of the SFIA Master Plan project, a regional understanding of passenger travel patterns and the related regional traffic impacts is needed to understand the potential effectiveness of mitigation measures and alternatives. As noted on pp. C&R.39-40 herein, the San Francisco City Planning Commission must make a determination on the EIR's adequacy on the basis of CEQA standards. While CEQA requires that an EIR provide decision-makers with information that allows them to make a decision which intelligently takes account of environmental consequences (CEQA *Guidelines*, Section 15151), it also states in the same section that "An evaluation of the environmental effects of a proposed

project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible."

Regional airport planning within the Bay Area is under the purview of MTC and Caltrans. However, as explained previously, these agencies do not have the authority to require airports in the region to fully implement regional and state aviation plans. Individual airports have the authority to implement their own development plans whether or not these plans are consistent with regional or state planning efforts. Given that the plans of MOIA and SJIA are still under development and/or environmental review, and that there are no adopted development plans for Hamilton Air Force Base, it would be speculative to analyze cumulative impacts from potential future airport development in these locations at this time. If "a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impacts" (CEQA *Guidelines*, Section 15145).

The traffic analysis in the EIR does identify significant impacts and mitigation measures for several regional transportation links from San Francisco to Redwood City. In addition, on pp. C&R.133-34 herein, the EIR examines capacity on the Golden Gate and Bay Bridges. In general, the area of traffic-impact analysis was limited to locations where the traffic impacts of the SFIA Master Plan could be expected to be measurable or statistically significant.

The reasons for limiting the scope of the EIR traffic analysis are discussed further below, under Transportation Setting and Impacts, Regional Traffic Impacts (p. C&R.133 herein). Information from the 1990 MTC Air Passenger Survey is summarized in C&R.Appendix A and above, under Project Description, Activity Patterns and Forecasts (pp. C&R.28-30 herein).

DECENTRALIZATION/REDISTRIBUTION OF AVIATION ACTIVITY; CAPACITIES AND PLANS OF OTHER REGIONAL AIRPORTS

Comments

"The DEIR notes that the Metropolitan Transportation Commission in its Regional Airport Transportation Plan has determined that 31,000,000 passengers per year is San Francisco Airport's 'fair share' of regional air traffic. The DEIR should address as an alternative, diverting

domestic air travelers to other regional airports to accommodate San Francisco's increase in international air travel." (Janet Fogarty, Mayor, City of Millbrae)

"Please consider the following recommendations: . . .

> "Decentralization of SFO is necessary for the 1990's and 21st Century. Airport branches are needed on the ocean shore at Half Moon Bay to service the Peninsula; in the north bay at Hamilton Airfield to service Marin, Sonoma and Napa Counties; and in the South Bay at Moffett Airfield to further service the Peninsula. Impact from traffic, noise, pollution and population along Highways U.S. 101, 380, 280 and CA I should not increase." (Leonard Lundgren, Lakeside Property Owners Association)

"The EIR must address the issue of sharing in the region's air traffic growth with other regional airports, including Oakland and San Jose airports. In other words, Oakland and San Jose should receive their fair share of the region's air traffic growth rather than expanding SFIA to handle the brunt of the growth and the accompanying impacts." (George Foscardo, City of San Bruno)

"Also, as we look at the airport plans for San Jose and Oakland, to what extent does this major expansion impact plans in those other areas, or is this a plan selfishly by itself?" (Commissioner Sewell)

"It is respectively requested that approval be given to the plan for the expansion of the San Francisco International Airport. This matter is now pending before you and the announced hearing date is October 17, 1991. For convenience and reliability I am of the opinion that there exists only one first class airport in the San Francisco Bay Area. The excellent service level has continued since 1932. The airport at Oakland has always been a step behind San Francisco International Airport. At San Jose anything can happen there, such as:

"1. Certain citizens of the City of San Jose complain about commercial airplane noise and the. . . managers approval, on a test basis, of a police helicopter. I have no problem with noise from any type of aircraft but helicopters whether military to news broadcasting are a problem. Commercial airplanes are descending to San Jose International Airport over my home (South of San Jose International Airport) most of the time and I have no noise problem. When it is raining or there is the threat of rain the commercial airplanes are climbing and over the last twenty-five years there has been a substantial reduction in noise. . .

"4. The prevailing wind at San Jose International Airport is from the North and these . . . managers are proposing to locate a stadium for the Giants (national professional baseball team) in North San Jose. If the Giants come to San Jose would there be an issue as to whether flights from San Jose International Airport would be restricted during the time for home games.

"And, 6. Pricing for tickets out of San Jose is not competitive. American says the fliers would pay the price for the convenience to fly out of San Jose. Yes, if you are the President of Apple but not a retired person." (James Palma)

Response

Determining the extent to which future Bay Area air passenger traffic could be more evenly distributed among air carrier airports than at present is a complex problem that encompasses numerous "disagreements among experts." This issue is currently under investigation as part of the MTC RASP Update process; according to MTC comments on the SFIA Master Plan EIR (see pp. C&R.66 herein), "[t]he question of how much additional airport capacity is needed and the optimum share of traffic for each airport is the subject of the current Regional Airport System Plan update due to be completed in . . . 1992 . . . One of the reasons the Plan is now being revised is to coordinate ongoing airport master plan proposals for SFO, Oakland and San Jose Airports."/4/ As noted above, under Regional Airport System Plan (RASP) Update, (pp. C&R.60-66 herein), the EIR cannot incorporate the final results of this effort because the work is still in progress. However, a discussion of the difficulties involved in merely *defining* an optimum share or regional redistribution scenario is included here to help illustrate why impact evaluation for such a scenario is speculative at this time.

Even if the optimum share or regional redistribution scenario and its environmental effects could be reasonably ascertained prior to completion of the RASP Update, the "feasibility" of this scenario as an Offsite Alternative for the SFIA Master Plan EIR must still meet CEQA criteria (CEQA *Guidelines*, Sections 15364 and 15126(d)). Feasibility, in this context, means "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." This and related issues are discussed further below, under Offsite Alternatives: Regional Redistribution, (pp. C&R.88-93 herein).

The EIR (pp. 439-463) includes two variants of the No-Project Alternative: one that assumes little or no future growth in passenger traffic at SFIA, and one that assumes a moderate level of growth even without facility expansion. The Offsite Alternative (EIR pp. 468-475) is an extension of the second No-Project variant; it explores the possibility that some air passenger demand not met at SFIA (due to the absence of expanded facilities) could be redistributed (without any specified intervention in the market) to other airports or other transportation modes. However, the EIR (p. 473) notes that the Offsite Alternative is not sufficiently defined to permit specific identification and calculation of associated impacts at this time.

To evaluate how future air passenger traffic could be distributed or redistributed among Bay Area airports, numerous variables need to be understood individually and in relation to each other. These variables may be grouped roughly into three major categories: air travel demand, airport capacity (including airport access), and air service supply. These are subjects of ongoing study, not only for planning and policy documents such as the CASP and the RASP Update, but also to support the day-to-day business operations and strategic planning decisions of airports and airlines. Many of the questions about demand, capacity and supply that would need to be studied in developing an optimum share or regional redistribution scenario are posed in the public comments on the EIR. The EIR, in conformance with CEQA requirements for evaluation of the project and a range of reasonable alternatives, does not attempt to answer in detail a majority of these questions; the listing below is included to illustrate the complexity of defining a regional redistribution or optimum shares scenario.

The starting point for this inquiry is essentially: if the air passenger demand that is forecast in the SFIA Master Plan were to materialize, and it were not provided for at SFIA, what would happen to it? This question may be more broadly framed as: how much, how fast and where can passenger demand within the region be expected to increase or decrease in the future, and why? These questions lead to others regarding the nature of air travel demand, such as: what makes passengers choose to travel by air in the first place, and what makes them select one airport versus another? If they actually prefer a particular airport, why? Are they most concerned about location, convenience of access, airfares, flight schedules, or other considerations? What factors underlie the existing patronage patterns of the various airports in the region? Where are people coming from and going, and why? Do SFIA demand forecasts and those of the other airports reflect passenger preferences for the specific airport, or could total regional demand be considered relatively flexible,

flowing in one direction or another in response to various capacity/access and supply/cost conditions?

These questions lead to further questions about air travel demand characteristics, such as: how do various types of passengers (business, tourist; resident, non-resident; older, younger; high- or low-income; etc.) differ from one another in their behaviors and preferences? How might passenger demand be affected by changes in the overall economy, airfares, traffic congestion near airports, availability of alternative technologies such as teleconferencing, or availability of alternative transportation modes, such as high-speed rail? How much delay will different types of air passengers tolerate--on their way to the airport, at the terminal, on the runway, or waiting to land at their destination? How does air passenger demand vary by time of day, week, month, or year? What are the characteristics of demand for air cargo services, and how does this relate to passenger demand, airport capacities and airline services? (Background information on air travel demand characteristics is included in C&R. Appendix A, Attachment D, Background to Airport Operations.)

Another set of questions one might ask concerns airport access and capacity. First, if in the future, more Bay Area air passengers would be willing to go to airports other than SFIA (whether they actually prefer SFIA or not), would those passengers be able to get to the other airports as conveniently, and if so, could their air travel needs be as well accommodated? How are people getting to and from the respective airports at present? To what extent do ground access conditions in the region (roadway congestion, lack of convenient transit services) or parking availability limit utilization of airport capacities? How, why and where might those problems worsen in the future? What are the existing physical capacities of Bay Area airports (terminals, gates, runways and airspace)? How much unused capacity, of what type, exists at present airports in the region, including SFIA? What is each airport's maximum capacity? If one more plane, or one more passenger, wanted to use an airport beyond that "maximum capacity," what would happen -- more congestion, more delay, an increase in the duration of the peak hours of operation? How efficiently are the various aviation resources in the region being used at present? What are the obstacles to utilizing or expanding airport capacities?

These questions, also, lead to further airport access and capacity questions, such as: how are the functions (general aviation, air carrier, cargo, heliport, military, etc.) of different airports within a region established and how are those roles changed over time? How do

airports finance their operations and capital improvements? How do airports coordinate with one another? How do the airports' physical capacities and management practices relate to airline service decisions? How do government regulations, such as air traffic controls, affect existing or potential capacities of airport landside facilities? (Information on airport operations and related government regulations is included in C&R. Appendix A, Attachment D, Background to Airport Operations.)

On the air service supply side, one might ask: if demand could be considered flexible and the respective airports could provide sufficient capacities, would the appropriate air services be available to support a regional redistribution scenario? To what extent can airports or local government agencies affect the business decisions of airlines? How does air passenger demand affect the services offered by airlines, and vice versa? What other factors (competing services, operating costs, aircraft load factors, etc.) determine the types and frequencies of service offered by the airlines? How do the airlines decide what capacity airplane to utilize for a particular flight at a specified airport on a given day? What have been, and will be, the effects of changes to government regulation of the airline industry? What are the implications for the Bay Area of the trend toward hub-and-spoke operations by the airlines? How do conditions and regulations at destination airports (domestic and overseas) influence flight schedules to and from Bay Area airports, and how might those conditions change in the future? How do changes in the overall economy affect airline service decisions? (Information on airport operations and related government regulations is included in C&R.Appendix A, Attachment D, Background to Airport Operations.)

As noted previously, many of the above questions have been, or are currently being, researched extensively. Comparative passenger forecasts were discussed in the EIR (pp. 61-64) and above, under Project Description, Activity Patterns and Forecasts, and Regional Forecasts and Capacities (pp. C&R.28-38 and C&R.66-73 herein). SFIA airfield capacity issues are discussed in the EIR (pp. 65-72). Capacities of airports region-wide have been assessed as part of the RASP Update./7/

The RASP Draft Inventory chapter summarizes the existing physical, operational, environmental, and policy conditions for each public-use and military airport in the region, and for the system as a whole. The preliminary draft Capability Assessment working paper compares each airport's existing capacity with existing levels of demand, and provides an analysis of potential constraints on future aviation activity at each airport. The preliminary

Draft RASP Update working paper's comparison of runway capacity with demand found that "The commercial service airports are constrained considerably in the peak hour. Demand for runway access exceeds capacity in IFR [poor weather] conditions."/7/ (See C&R.Appendix A, Attachment B, MTC Exhibit 4.23 for percentage of annual runway capacity currently used at each airport.) Other factors MTC is considering in its analysis are the frequency of IFR conditions, and the potential for IFR conditions locally or at other airports to affect capacity/demand relationships at Bay Area airports./8/. The preliminary draft Capability Assessment working paper's comparison of "landside" (including passenger terminal) capacity with demand found that SJIA "...has a terminal capacity shortfall"; SFIA "...has insufficient domestic and international terminal capacity"; and MOIA "...has an adequate terminal capacity availability."/7/

The Draft RASP Update constraints analysis notes that "There are additional factors beyond the airports' physical capacity...which place limitations on how much activity can and will take place at each airport." The constraints are categorized as airspace-, environmental-, physical-, and policy-related.

Airspace constraints "...relate to regional airspace issues." The airspace used by the Bay Area airports overlaps, and procedures are in place where flights from one airport "interact" with (operate in the same airspace as) flights from another airport. Because SFIA has the largest share of the region's air traffic, SFIA has been established at the top of the "user's hierarchy." This designation means that the operations of other airports in the region (in the airspace) must conform with the operations at SFIA./7/

Environmental constraints are those related to the natural environment, such as wildlife, wetlands, and San Francisco Bay. According to the MTC RASP Update preliminary draft Capability Assessment working paper, two of the major commercial airports, Oakland and San Francisco, are situated on the Bay, and host a variety of wildlife. Development at Oakland is also affected by the presence of non-Bay wetland areas. Wetlands exist to a lesser degree at other airports as well. Construction of new runways which affect wetlands or require Bay fill will meet with public opposition that may be strong and well organized./7, 8/

Physical constraints include such things as "limited airport size or the presence of physical barriers to growth." The constraints analysis notes that SFIA "is constrained by the absence of sufficient land area for a new runway and passenger terminal development," but

has undeveloped parcels that could accommodate support facilities. MOIA "has considerable land area" for development, but also has "significant areas of environmentally sensitive property." Future development at SJIA is "highly constrained," given the airport's location and small site./7/

Policy constraints "...include noise, safety, and other community compatibility issues." The constraints analysis notes that noise regulations are in place at SFIA, MOIA, and SJIA. SJIA has a curfew on all operations from 11:30 p.m. to 6:30 a.m.; "[t]his limits the total daily activity which can occur at the airport, and also creates some congestion during the morning hours. If continued into the future, the curfew will constrain activity at the airport and cause increased congestion within the available operating time envelope."/7/ The RASP preliminary Draft Capability Assessment working paper includes further discussion of the constraints on future development at the airports in the region (see C&R.Appendix A, Attachment B, pp. 37 through 44).

Capacity expansion plans of the two other major air carrier airports in the region, MOIA and SJIA, are the subject of their respective ongoing master planning efforts. The Port of Oakland is proceeding with plans to increase existing landside capacity to match existing airside capacity as part of its "2002 Airport Development Program." According to the Port of Oakland, the proposed development has been designed to minimize impacts on wetlands and other biotic communities. Some of the components of the "2002 Airport Development Program" include:

- construct up to twelve additional aircraft gates;
- reconfigure access roads serving the passenger terminal complex;
- construct a new parking garage;
- enhance airline and airfield support facilities; and
- improve and expand existing and displaced air cargo operations./9/

Minor airside improvements, such as a taxiway bypass and an extension of Runway 29/11, are also being explored as part of that plan./9/

The master plan process for SJIA has been extended by at least two years, in order to respond to the direction of the San Jose City Council (the process would now be complete

or nearly complete under the original schedule). Through the master plan process, begun in 1988, SJIA and its consultants developed a range of development alternatives and selected a preferred plan. In January 1991, the Airport took the plan to the San Jose City Council. After a series of contentious public meetings, the City Council (in May 1991) decided not to endorse any of the master plan alternatives. The Council directed the Airport to address a specific list of additional issues and develop three or four master plan alternatives incorporating those issues. The San Jose City Council has directed the Airport to begin work on the master plan EIR, which is to address all of the master plan alternatives in equal detail. A preferred plan will then be selected, incorporating the results of the environmental review. It is expected that this process will take about two years to complete./10/ A memorandum from the San Jose Director of Aviation to the City Council outlining the current master plan work program is included in C&R.Appendix A, Attachment C. According to the Draft RASP Update, the SJIA Master Plan may include the following:/7/

Airfield

Extension of runway 12L-30R to 8,900 feet (included in previously adopted master plan and also the subject of a recent Draft EIR/Environmental Assessment)/8/
Reworking of the taxiways
Pavement management rehabilitation work on the airfield.

Terminal

Reconstruction of passenger terminal C and construction of new passenger terminal B
Construction of a new air traffic control tower (in progress).

Parking

Construction of new parking garages.

General Aviation (GA)

Relocation of all GA to west side of airport
Reduction in total number of GA based aircraft.

Air Freight

New air cargo facilities.

Other

Installation of a fuel farm.

Roadway

Terminal area roadway improvements.

On the basis of the above discussion, references in the second full paragraph on p. 469 of the EIR to the "MTC RAP" are changed to "MTC RASP." The first paragraph under Impacts, p. 473 of the EIR, is revised to read as follows (new text is underlined and deletions are shown by brackets):

> The Offsite Alternative [ ] assumes that, without implementation of the SFIA Master Plan, a portion of the future air travel demand the project would have served] (the difference between the proposed project passenger levels and those in the No-Project Alternative, Variant 1) would be distributed to the other Bay Area airports and long-distance transportation modes (intercity rail). The transportation impacts in the SFIA vicinity would be the same as those for the No-Project Alternative, Variant 1. Because the assumed [ ] "distributed" passenger demand has not been split among the other Bay Area airports and transportation modes, and because a determination of future passenger levels at those facilities is pending the outcome of the [ ] RASP Update now underway at the Metropolitan Transportation Commission, a specific identification and calculation of the impacts of the [ ] "distributed" SFIA passenger demand and the level of significance of these impacts at these other locations would be premature.

NOTES - Regional Planning and Coordination

/1/ Brady, Ray, Director of Research, Association of Bay Area Governments, telephone conversation, April 14, 1992.

/2/ U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular No. 150/5070-6A, June 1985.

/3/ Kemmerly, Jack D., Chief, Division of Aeronautics, California Department of Transportation, letter (with attachment), March 3, 1992, to Mr. Herman Bliss, Manager, Airports Division, Federal Aviation Administration.

/4/ Brittle, Chris, Manager, Planning, Metropolitan Transportation Commission, letter to Barbara Sahm, September 16, 1991.

/5/ Metropolitan Transportation Commission (MTC), Regional Airport System Plan (RASP) Update, "Chapter 6. Aviation Demand Forecasts," preliminary draft working paper presented by the consulting team (TRA Airport Consulting) at the December 4, 1991 quarterly meeting of the MTC Regional Airport Planning Committee (RAPC).

/6/ California Department of Transportation materials provided to the March 16, 1992 Regional Airport Planning Committee Meeting, Metropolitan Transportation Commission, Oakland, California.

/7/ Metropolitan Transportation Commission, Draft MTC Regional Airport Plan Inventory and Definition of Alternatives, TRA Airport Consulting, May 1991.

/8/ Roddin, Marc, Manager of Seaport and Airport Planning, Metropolitan Transportation Commission, personal communication, April 24, 1992.

/9/ Meyer, Loretta, Supervisor, Environmental Review, Port of Oakland, letter, January 30, 1992.

/10/ Greene, Cary, Airport Planner, San Jose International Airport, telephone conversation, September 25, 1991.

ALTERNATIVES

The Notes for this section begin on p. C&R.100.

REDUCED LEVEL OF EXPANSION

Comments

"Only three alternatives are analyzed in the DEIR: the no-project alternative, the on-site alternative and the off-site alternative. It would be helpful if another alternative were included that would serve more passengers than the no-project alternative but less than the Master Plan." (Gary Binger, Association of Bay Area Governments)

"The EIR must address the issue of project alternatives, which includes reducing the Airport expansion to the degree that would be consistent with the mitigation measures and their time frame of implementation." (George Foscardo, City of San Bruno)

Response

According to the CEQA *Guidelines*, (Section 15126(d)), an EIR must describe "a range of reasonable alternatives to the project, or to the location of the project, which could feasibly obtain the basic objectives of the project. . . The range of alternatives . . . is governed by the 'rule of reason' that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The key issue is whether the selection and discussion of alternatives fosters informed decision-making and informed public participation. An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative."

The EIR (pp. 439-475) actually evaluates four alternatives, not three, as stated by the commenter. These include two variants of the No-Project Alternative, an Onsite Alternative, and an Offsite Alternative. The analysis emphasizes the No-Project Alternatives and the Onsite Alternative as the more "reasonable" in the range of possible alternatives because their effects can be reasonably ascertained. This is not among the characteristics of the Offsite Alternative, as discussed below, under Offsite Alternatives: Regional Redistribution, pp. C&R.88-93 herein.

The three on-airport feasible alternatives examined in the EIR are variants of a "reduced scale" alternative, although the Onsite Alternative reduces the scale of construction only, not longer-term Airport operations. The No-Project Alternative, Variant 1 (moderate growth), which would serve more passengers than the No-Project (near-no-growth) alternative but fewer than the SFIA Master Plan, is the closest to that requested by the commenter.

A major California court case on the range of alternatives that must be included in an EIR is Village Laguna of Laguna Beach v. Board of Supervisors (4th Dist., 1982) 134 Cal. App. 3d 1022, 1028 [185 Cal.Rptr. 41, 44], in which the Court emphasized that the alternatives considered must be kept to a manageable number. The project in question was a proposed land development that would include up to 28,000 homes, but probably 20,000. The Court noted that "there are literally thousands of 'reasonable alternatives' to the proposed project. Certainly, if the building of zero homes and 25,000 homes are reasonable alternatives to the proposed 20,000 dwelling unit plan, then the building of 1,000, 16,000, 22,500 and 20,001 homes are reasonable alternatives. But, no one would argue that the EIR is insufficient for failure to describe the 20,001 home alternative."/1/

As noted on p. 74 of the EIR, the SFIA Master Plan is a composite of proposed projects that are evaluated together in a Program EIR. Its various components could be implemented relatively flexibly, in accordance with changing requirements and conditions perceived by the project sponsor. Some components could be left unimplemented, but development could not exceed the overall amount included in the Master Plan (and evaluated in the EIR), within the Plan period. Thus, numerous variants of the Master Plan program as a whole could be considered "reasonable alternatives," ranging from minimal construction (which would result in impacts slightly more severe than those of the No-Project Alternative, Variant 1), to nearly all the construction assumed for the project (which would result in impacts slightly less severe than those of the full Master Plan program). Thus, although the EIR does not evaluate every conceivable variation of the project, it does extensively analyze both ends of a range of "reasonable alternatives" to the SFIA Master Plan.

The phasing of mitigation measures is discussed below, under Mitigation, General, pp. C&R.385-390 herein. As noted above, the SFIA Master Plan is a composite of proposed projects that could be implemented relatively flexibly. This flexibility makes possible, but does not guarantee, phasing of development or an overall reduction in the

scale of Master Plan development, as suggested by the second commenter. CEQA does not require, however, that the scale or timing of a project be "consistent with mitigation measures" (full mitigation of significant impacts). When an EIR has identified significant adverse environmental effects (as it has for the SFIA Master Plan), CEQA does require for project approval that the Lead Agency's decision-making body (the San Francisco Airports Commission) make written Findings that disclose and justify any significant impacts that would not be mitigated (see discussion below, under Adequacy/Feasibility of Alternatives and EIR Process, pp. C&R.97-100 and 393-413 herein).

OFFSITE ALTERNATIVES: REGIONAL REDISTRIBUTION

Comment

"The EIR would benefit from an expanded discussion of regional airport system alternatives including the compatibility of SFO airport improvement proposals with improvement proposals being developed in other ongoing airport master plan studies at Oakland and San Jose Airports. The DEIR should provide some discussion of how airline and airport facility investments and airline service decisions (such as creating new airline 'hubs' for connecting flights) could either reinforce or change air service patterns at Bay Area airports." (Chris Brittle, Metropolitan Transportation Commission)

Response

To determine if the EIR's examination of an offsite (regional airport system) alternative is adequate under CEQA, three questions need to be addressed. First, should an offsite alternative be included in the EIR at all -- is it necessary for a "range of reasonable alternatives" that would eliminate or reduce one or more significant effects of the proposed project? Second, can the environmental effects of such an alternative be "reasonably ascertained"? Finally, is the alternative feasible, or is its implementation "remote and speculative"?

Should the EIR include an offsite alternative to the SFIA Master Plan? As noted in the previous response, CEQA states that the range of alternatives an EIR must investigate is governed by the "rule of reason." But CEQA also requires that "the discussion of alternatives shall focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level of insignificance, even if these

alternatives would impede to some degree the attainment of the project objectives, or would be more costly"(CEQA *Guidelines*, Section 15126(d)(3)).

Interpreted literally, the Airports Commission's two-fold objectives for the SFIA Master Plan (noted in the SFIA Master Plan on p. 2.1 and in the EIR on p. 18) would preclude consideration of an offsite alternative, since both objectives are framed as desired outcomes *at the Airport.* The first objective is "to provide a coordinated development plan that will *consolidate and relocate many of the existing landside facilities* in order to increase the efficiency and cost effectiveness of landside operations" (emphasis added). The second objective is, "To respond to the projected economic growth of the Bay Area and ensure that the future development required to meet that demand *at the airport* is implemented in a manner compatible with the plan" (emphasis added).

However, if the emphasis of the second SFIA Master Plan objective is shifted to "*respond to the projected economic growth of the Bay Area and . . . meet that demand,*" an offsite alternative could potentially be considered that would avoid or reduce significant effects of the project, in conformance with CEQA. Because the possibility exists that future regional air travel demand could be met by different means than proposed in the SFIA Master Plan, and with potentially less severe overall environmental effects, an offsite alternative is included in the EIR (pp. 468-474).

Can the environmental effects of the alternative be "reasonably ascertained"? CEQA states that "an EIR need not consider an alternative whose effect cannot be reasonably ascertained"(CEQA *Guidelines* (Section 15126(d)). With respect to the SFIA Master Plan Offsite Alternative, a prior question is whether the alternative can first be defined well enough to permit reasoned analysis of its potential environmental effects. As discussed above, under Decentralization/Redistribution of Aviation Activity; Capacities and Plans of Other Regional Airports (pp. C&R.75-85 herein), defining an "optimum shares" or "regional redistribution" scenario for the airports in the Bay Area is a complex problem, requiring numerous guesses and assumptions as well as hard data collection and analysis. Identifying the impacts of a speculative alternative necessarily involves even more uncertainty than defining the alternative itself. Moreover, to permit a comparison between the impacts of a regionally defined Offsite Alternative and the impacts of the SFIA Master Plan, the setting and impacts of the latter would have to be defined equally broadly. Because substantial disagreement among experts currently exists regarding future Bay Area

aviation system requirements and the ways to meet those requirements, the EIR's definition and analysis of the SFIA Master Plan Offsite Alternative are general and qualitative.

The in-progress Regional Airport System Plan (RASP) Update involves an extensive research and analysis effort by MTC, its consultants, and affiliated agencies and individuals that is aimed at addressing the region's future aviation needs. This effort may eventually produce a "Preferred Plan" of sufficient detail to use (or adapt for use) as an alternative means of serving SFIA Master Plan-forecast growth in air travel demand. Although neither the completed RASP nor the findings of the RASP EIR are yet available and it would be speculative to discuss their specific contents, preliminary draft working papers and other preliminary data suggest that the net regional environmental effects (particularly traffic-related effects) under a "redistribution" scenario may be found to be less severe than the net regional effects under a "combined airport master plans" scenario. The likelihood that the RASP Update will result in this conclusion is underscored by MTC's comments on the SFIA Master Plan EIR, including reference to "extensive previous analysis" showing that a redistribution strategy "is essential to: balance available runway and airspace capacity (i.e., reduce excessive aircraft and passenger delays), provide more convenient and accessible service to the Bay Area's population, provide noise relief to Bay Area residents, and minimize vehicle travel and air pollution from ground trips to and from Bay Area airports."/2/ If the RASP Update and its associated EIR analysis reach this conclusion, they would not contradict, but would instead elaborate and quantify, the qualitative impact analysis presented in the SFIA Master Plan EIR under the Offsite Alternative.

Preliminary results of three computer model runs using ACCESS, a software package developed for MTC's use in analyzing airport access and airport competition in a multiple airport region, appear to advance the process of defining a reasonable "optimum shares" or "regional redistribution" scenario for existing and possible additional Bay Area airports./3/ The ACCESS model is being used by MTC to assist in refining and evaluating the RASP Update alternatives. Developed for MTC by Greig Harvey of Deakin, Harvey, Skabardonis, Inc., ACCESS:

"... is a tool for studying policies and trends that influence 1) the distribution of air travellers among airports; and 2) the patterns of use for airport access modes. It permits the user to quickly and easily analyze current patterns of airport choice and access mode use, and to test the effects of alternative traveler and service attributes. . . .ACCESS incorporates a set of models of airport choice developed for the San Francisco Bay Region,

using data from a survey of air travellers as well as a detailed representation of ground access and airline service at each airport. . . . The models and passenger sample are used with a database of access and airline service characteristics to obtain mode and airport choice probabilities for each traveling party. . . . By modifying the database, the user can assess the effects of a variety of scenarios involving different traveller characteristics, airport access services, airline services, and even airport locations."/4/

In addition to studying the effects that airport location and other access variables have on passengers' airport choice, the model can help to forecast the traffic (and air quality) effects of various future airport system scenarios by calculating total Vehicle Miles Traveled (VMT).

Like any demand model, ACCESS must be interpreted by reference to the supply characteristics postulated./5/ For example, the model "runs" on alternative BART extensions are based on assumptions as to speed, fare basis, number of stops, etc. If other assumptions are used, the results will differ accordingly.

For the RASP Update, ACCESS has so far been run on three regional scenarios, using 1990 existing conditions data (including the 1990 MTC Air Passenger Survey) and MTC/Regional Airport Planning Committee (RAPC) passenger forecasts for 2010./6/ The scenarios explore "maximum" passenger shares for the three major air carrier airports, (referred to herein as "the first model run"), potential "maximum" passenger shares for civilian air carrier service jointly with military traffic at Travis Air Force Base (referred to herein as "the second model run"), and alternative airport BART extensions (not discussed herein). The potential applicability and limitations of the ACCESS model with respect to evaluation of SFIA Master Plan traffic impacts are discussed below under Transportation, p. C&R.135-36 herein.

The three model runs assumed a 2010 regional air passenger total of about 75 Million Annual Passengers (MAP). This is the MTC/RAPC "high" 2010 forecast (84.76 MAP), less transfer passengers (who do not use ground transportation in the Bay Area). The assumed distribution of passenger origins in 2010 was derived from the passenger origins within eight geographic areas (mainly within the Bay Area), slightly modified to reflect anticipated differential population growth rates (i.e., East Bay counties are expected to grow faster than others).

The first model run was intended to establish the hypothetical upper boundary ("Maximum Share") of each of the three major Bay Area airports' passenger markets, by geographic area of passenger origin and for the region as a whole, in 2010. This was accomplished by instructing ACCESS to eliminate differences in the levels of air service available at the three airports. The ground access conditions inherent in the database were not altered. For the region as a whole in 2010, "Maximum Shares" were found to be roughly 50 percent for SFIA, 27 percent for Metropolitan Oakland International Airport (MOIA) and 23 percent for San Jose International Airport (SJIA) (The "natural market" for Oakland could be higher than 27 percent, but it is constrained by ground-access conditions, primarily Bay Bridge congestion and the temporary loss of the I-880 / I-80 connection due to earthquake damage at Cypress Street.)/3,5/ Calculated VMT for this hypothetical scenario totaled about 3.8 million miles per day, compared to about 4.3 million miles per day when the 1990 shares of the airports (71 percent at SFIA, 12 percent at MOIA, and 17 percent at SJIA) are projected to 2010. This model run assumed that airlines served each of the three major airports approximately equally; this is not now the case.

As a variant of the first model run, more-realistic 2010 passenger shares ("Equilibrated Shares") for the three major air carrier airports were derived by applying "adequate yield" (passenger load factor) criteria to eliminate flights that are assumed to be uneconomical for the air carriers. That is, for this variant, some differences in the level of available air service were introduced. From the standpoint of identifying the potential environmental effects (especially traffic and related air quality effects) of "redistributing" future air passenger demand from SFIA to MOIA and SJIA, the "Equilibrated Shares" scenario provides the most useful output from the completed ACCESS runs./5/ In other words,this part of the model run provides a view of how passengers' patterns of airport choice might look in the future if air carrier levels of service at the three major Bay Area airports were more similar to each other than at present, but not absolutely equal. "Equilibrated Shares" were found to be about 60 percent for SFIA, 21 percent for MOIA and 19 percent for SJIA. Calculated VMT for this scenario totaled about 4.0 million miles per day.

The second model run generated 2010 "maximum shares" for the respective major Bay Area airports, with an equal level of air service provided at Travis Air Force Base (equal to air service at SFIA, MOIA, and SJIA -- that is, each of the four airports would provide 25 percent of the regional air-carrier service). The results showed that Travis could attract as much patronage as MOIA or SJIA does now./3/

Discussions of the potential effects of airline hubbing strategies, and of other trends in the aviation industry, are included in Activity Patterns and Forecasts (pp. C&R.28-38 herein), and Attachment D: Background to Airport Operations, in C&R Appendix A herein.

Is the Offsite Alternative feasible? As noted previously, CEQA's definition of feasible is "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors" (CEQA *Guidelines*, Section 15364). As discussed above, under Regional Planning and Coordination (p. C&R.58-64 herein), even if the completed RASP Update "Preferred Plan" constitutes an "environmentally superior" alternative for the region (relative to the SFIA Master Plan, combined with other airports' development plans), MTC would not be fully empowered to implement every component of the RASP./3/ If SFIA and the other airports were to agree to bring their master plans into conformance with the RASP, such agreement would not ensure successful implementation of the RASP either, because the airports are subject to government regulation of their operations (primarily by the Federal Aviation Administration (FAA)) and have extremely limited control over airline business decisions. Attachment D in C&R Appendix A herein contains a discussion of the limited powers granted to airport owners, the potential areas of control airports do have, the requirement that airport restrictions be reasonable and not discriminate unjustly, and the meaning of "unreasonable" and "discriminatory" when applied to restrictions imposed at several U.S. airports.

Thus, while an offsite alternative is discussed in the EIR, it is discussed at a general level with primarily qualitative analysis, due to the wide range of assumptions necessary to define the alternative and ascertain its environmental effects, and due to the limited feasibility of the alternative.

ALTERNATIVE POLICIES / MANAGEMENT SYSTEMS

Noise

Comment

". . .Broad alternatives to the SFIA Master Plan need to be analyzed to see if there are not alternatives that would greatly reduce the impacts of noise. . .

"Why has this EIR not even mentioned limiting the hours of airport operations? It seems like an obvious alternative to analyze in this Master Plan EIR. It would be an environmentally superior alternative under which the project objective would still be achievable.

"We suggest that the EIR needs to analyze an alternative that would limit [nighttime] arriving and departing flights to near zero (except perhaps for emergency situations). The night flights are somewhat low now -- why not analyze a Master Plan alternative that would allow people in the surrounding cities to sleep?" (Fred Howard, Pacifica Noise Abatement Committee)

Response

EIR project alternatives should not only be "capable of eliminating any significant adverse environmental effects or reducing them to a level of insignificance"; they must also, except the "No-Project" alternative, generally meet the objectives of the project. In the case of the SFIA Master Plan EIR, none of the alternatives meeting the basic project objectives would substantially reduce noise impacts. Both variants of the No-Project Alternative in the EIR would reduce the impacts of aircraft noise, as they assume reduced levels of aircraft operations in comparison with the SFIA Master Plan. The Onsite Alternative assumes the same future levels of passenger traffic and aircraft operations as the Master Plan, so it does not provide for substantially reduced aircraft noise impacts. The Offsite alternative, while potentially reducing aircraft noise impacts near SFIA (relative to the SFIA Master Plan), would not likely result in a net regional reduction in aircraft noise effects.

Mitigation measures, in contrast to project alternatives, are more focused means of reducing project impacts, and may also be included to reduce the impacts of project alternatives. The EIR (pp. 424-426) contains a range of measures to mitigate the aircraft noise impacts that would result from the project. Limiting night-time arriving and departing flights to zero or near-zero, as the commenter suggests, would be essentially the same as a curfew, which is a mitigation measure discussed below, under Aircraft Noise Mitigation (pp. C&R.268-71 herein).

System Optimization

Comment

"The EIR alludes to some items in the mitigation and/or alternatives which I think ought to be investigated further, and that is, just very briefly, a system management plan to determine how existing equipment facilities and systems can be optimized to their fullest use. I think that ought to be a subject of a separate investigation so that the decision-makers on this know exactly what they're dealing with, so they know if there is an alternative to do a better system management, they know it's available and they can encourage that." (Charles Kroupa)

Response

As referenced by the commenter, Airport System Management (ASM) is listed in the EIR (p. 469) among the preliminary range of alternatives to address future aviation requirements in the region, as developed for the MTC RASP Update. This strategy would aim at "matching supply and demand and making maximum use of existing facility capacity." In its preliminary form, this list of measures does not constitute a feasible alternative to the SFIA Master Plan. (The evaluation of RASP Alternatives is still in progress; the extent to which ASM will be incorporated into MTC's "Preferred Plan" is unknown at this time.) However, even if they were more fully developed and integrated, most of the listed ASM measures would not be within SFIA's control to implement nor meet the objectives of the SFIA Master Plan, and therefore they would not likely constitute a reasonable project alternative.

The emphasis of the listed ASM measures is on avoiding major new construction by maximizing existing airside facilities in the region. Most of the ASM measures would either require changes in FAA policies or increased cooperation between the airports and the airlines. Some of the measures proposed, such as market share shifts between airports, fleet mix changes and flight schedule changes (by airlines) would be outside of the airports' control while others, such as development of reliever General Aviation airports or joint use of existing military airports, would likely require establishment of planning partnerships and implementation measures by government agencies. The only listed ASM measure that could potentially be implemented by SFIA, congestion pricing, could help to increase the efficiency of *landside* facilities (by spreading the airline peak demand for terminal gates)

but would not be within SFIA's ability to implement in the near term (see discussion of financial incentives on pp. C&R.279 herein).

Revising the existing aircraft gate lease structure is a system management measure that could potentially reduce the need for SFIA Master Plan projects that aim to increase terminal capacity. This is not among the listed ASM measures, and is not in SFIA's control to implement in the near-term (see the discussion of exclusive-use leases in Attachment D, C&R Appendix A, herein).

With respect to optimization of efficiency at an individual airport, and with regard to maximizing efficiency of its existing landside facilities and operations, SFIA already has several advanced system management programs in place. For example, SFIA has a computerized maintenance control system for all airport equipment, operating systems, and facilities. The maintenance control system identifies, on a weekly basis, what facility/equipment/system needs service, what service is needed, and what resources are required (materials and labor). Work orders are then produced and work is scheduled and performed by the Airport's Facilities Operation and Maintenance staff./7/

ALTERNATIVE TECHNOLOGIES

Comment

"Finally, members of the Planning Commission at the August 29th hearing raised the matter of a regional discussion of airports, including SFIA, Oakland and San Jose. The Committee agrees with this criticism. The SFIA Master Plan and its EIR should include consideration for future activities at all three airports, incorporating at the least: . . .

"6. Analyze and forecast the extent to which video conferencing, alternate transportation modes (e.g., high-speed rail) and other technology might reduce the need for air transport." (Timothy Treacy, Airport Noise Committee)

Response

At a regional or state planning level, the potential benefits of new technologies such as videoconferencing or high-speed rail may be incorporated in actual plans and policies. At the individual airport planning level, however, such new technologies may be considered

remote, exogenous influences on the aviation market, whether beneficial (relieving excess air service demand) or detrimental (competing with airports and airlines). As explained above, under Reduced Level of Expansion and Offsite Alternatives: Regional Redistribution, (pp. C&R.86-93 herein), CEQA does not require an EIR to consider an alternative "whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (CEQA *Guidelines*, Section 15126(d)). The EIR (pp. 472-473) includes the "New Technology" category in its summary of the preliminary range of alternatives developed for the MTC RASP Udate, but because it does not meet the above-cited CEQA implementation criterion, "New Technology " is not considered a reasonable alternative to the project for the purposes of environmental review.

ADEQUACY/FEASIBILITY OF ALTERNATIVES

Comments

"As to the required exploration of alternatives to this vast expansion plan, the DEIR appears simply to repeat the conclusions of SFIA administration and staff that there are no viable alternatives. This approach to exploring alternatives certainly cannot be what the California legislature contemplated for an environmental impact report on a major project such as this." (Carol Gamble)

"The DEIR section on alternatives is particularly weak, with no meaningful discussion of viable options. Furthermore, in many cases, the DEIR simply accepts the Airport's assessment about the inadequacy of alternatives. The Committee believes the DEIR should provide independent, unbiased examination of options, so the public and decision makers are adequately informed." (Timothy Treacy, Airport Noise Committee)

". . .The alternatives offered seem to be restricted to Offsite: the MTC Regional Plan, Onsite: some vague, illusory FAA runway development plan, and no development at all (DEIR Vol. I Ch. §D). These alternatives are not even economic alternatives, much less environmental impact mitigating alternatives. Consequently, there simply is no way to determine when any of the proposed mitigating measures are to be applied. I get the feeling again that no real mitigation is ever intended." (Alyn Lam)

"While the use of other airports in the Bay Region to handle future air passenger growth is identified as an alternative, the basis for its rejection needs to be expanded." (Roger Chinn, Airport/Community Roundtable)

"Finally, reading through the alternatives, I was struck -- now, I am not familiar with EIR's and what is an adequate EIR. In the alternatives, if you read the alternatives that are explored to this project, there is a description called 'reason for rejection'. Each of these says the sponsor has rejected this. Basically, that is what the EIR is saying. I would look to the EIR to explore alternatives that maybe the sponsor hasn't considered, alternatives that might shed new light on it. To say, well, gee, we can do no growth and the airport doesn't want to do that, therefore that is not a viable alternative, it seems to me it's not quite fulfilling the role, at least as I anticipate, of any EIR. I think we ought to have some real alternatives examined, not simply put something out and say: Well, the airport has already rejected this, therefore it's not a viable alternative." (Curt Holzinger)

"The alternatives, I think, are given pretty short shrift. It's kind of like developer responses which say: We have rejected this idea because it doesn't meet the demand. To me, that is not adequate for a public agency, particularly when other public agencies are recommending something different. There has got to be a better analysis and a better discussion as to why and what are the policy purposes so policy-makers can make decisions about the tradeoffs and the choices. It's not like a developer saying: I've got this land and I've got to build a 30-story building. It's in my economic interest to do so. Sorry, I am not going to consider any other alternatives.

"This is the city. The city has got to say: The reason we have made this choice and we made these tradeoffs, and here are costs and here are the benefits, therefore these are why we rejected the alternatives. Otherwise, how is the public going to be able to -- or other policy-makers going to be able to -- have any kind of understanding of what the decision points are here?" (Commissioner Engmann)

"I agree with Doug, that the alternatives are pathetic and not fair to decision-makers. They may be fair to San Francisco Airport Commission, but not to the region." (Commission Bierman)

Response

The EIR does not simply repeat the conclusions of the SFIA Administration and staff that there are no viable alternatives to the SFIA Master Plan. In accordance with CEQA requirements, the EIR considers a range of reasonable alternatives and identifies why the alternatives were rejected by the project sponsor in favor of the proposed project (CEQA *Guidelines,* Section 15126(d)). As explained above, under Decentralization/Redistribution of Aviation Activity; Capacities and Plans of Other Regional Airports, Reduced Level of Expansion, and Offsite Alternatives: Regional Redistribution (pp. C&R.75-85, 86-88 and 88-93 herein), and acknowledged in the EIR (pp. 468-475), viable alternatives *may* exist which would, on a regional level, be "environmentally superior" to the SFIA Master Plan combined with other airports' master plans. However, CEQA does not require an EIR to consider an alternative "whose effect cannot be ascertained reasonably and whose implementation is remote and speculative." CEQA also requires that project alternatives be described that "could feasibly obtain the basic objectives of the project" or, would only "impede to some degree the attainment of the project objectives. . . ."(CEQA *Guidelines*, Section 15126(d)).

The quality and scope of the EIR alternatives analysis is constrained, first, by the nature of the project objectives (which are defined in terms of the SFIA site itself), and second, by the complexity of the regional system. The EIR does not, and cannot, provide a Regional Aviation System Plan, and because the RASP Update has not been completed, the EIR does not, and cannot, evaluate the environmental impact of the RASP or its alternatives in relation to the impacts of the SFIA Master Plan. (It is not known at this time how well the completed RASP could be adapted to serve as an EIR alternative to the SFIA Master Plan, since the former is a regional plan, and the latter is an individual airport plan. The objectives, geographic scopes and levels of detail in the respective plans would likely differ substantially.)

As one commenter correctly points out, the alternatives considered in the EIR (except for the No-Project variants) would not substantially reduce the environmental effects of the project. The Onsite Alternative would primarily result in reduced construction effects, which are not considered as important as the longer-term operational effects of the project. The Offsite alternative could potentially reduce net regional environmental effects in comparison to the project, but this cannot be ascertained reasonably at this time. The Offsite alternative would also merely shift some effects to locations other than the SFIA

vicinity. The commenter's statement that the alternatives are not "economic" is unclear; CEQA does not require economic analysis of project alternatives or that alternatives be economically comparable to the project.

The Airports Commission is required under CEQA (*Guidelines,* Section 15091) to consider alternatives and mitigation measures that would "substantially lessen or avoid" significant adverse environmental impacts (Public Resources Code, Section 21002), and when rejecting them as infeasible, supporting the rejection with substantial evidence (CEQA *Guidelines,* Section 15091). Further, if the EIR shows there to be unavoidable significant impacts resulting from the SFIA Master Plan, or if mitigation measures adopted by the Airports Commission would not reduce impacts below a level of significance, the Airports Commission must, under CEQA (*Guidelines*, Section 15093) fully disclose its rationale for project approval (through a Statement of Overriding Considerations). Through this process, the "tradeoffs" involved in the Commission's decision would be disclosed to the public.

NOTES - Alternatives

/1/ Remy, Michael H., Tina A. Thomas, and James G. Moose, *Guide to the California Environmental Quality Act (CEQA)*, 1991 Edition, Solano Press Books, Point Arena, California, 1991.

/2/ Brittle, Chris, Manager, Planning, Metropolitan Transportation Commission, letter to Barbara Sahm, September 16, 1991.

/3/ Roddin, Marc, Manager of Seaport and Airport Planning, Metropolitan Transportation Commission, interview, April 22, 1992.

/4/ Harvey, Greig, *ACCESS: Models of Airport Access and Airport Choice for the San Francisco Bay Region* (Deakin, Harvey, Skabardonis, Inc.), December, 1989.

/5/ Harvey, Greig, telephone and facsimile communications, March 4-6, 1992.

/6/ Data runs provided by Marc Roddin, Manager of Seaport and Airport Planning, Metropolitan Transportation Commission, March 4, 1992.

/7/ Costas, John, Assistant Administrator, Planning and Construction, San Francisco International Airport, letter, February 28, 1992.

WEST OF BAYSHORE LANDS

The Notes for this section begin on p. C&R.103.

Comments

"West of Bayshore Airport Lands should be declared very valuable Open Space lands separating surrounding Cities from Airport in perpetuity as protection against further vehicle and Pollution problems and listed as a necessity against more Pollution." (Jessie Bracker)

"West of Airport Lands being currently used for Airport, lies a large needed Open Space surrounding the Easterly sides of San Bruno and Millbrae cities. As a Mitigation Action to insure protection against further Vehicle and Airport Pollution Problems those lands should be designated, as a necessary requirement, Open Space in Perpetuity and many trees should be planted there for purpose of helping to lessen the Pollution and Noise problems created because of this large Airport. . .

". . .[T]here is nothing in your document that tells of those lands planned for the possible BART station -- that they are the habitat lands of the endangered San Francisco garter snake, and especially where they plan to put the tail track storage area." (Jessie Bracker, letter of 8/27/91 and public hearing of 8/27/91)

"The BART Station should not be placed in or near vacant Airport Lands west of 101 Hwy because of added Traffic Vehicle Pollutants, new roads that would have to be built and Parking lots that would have to be built, all generating more Pollutants which would make a farce of the purported reason for getting BART in the first place, which was to have cleaner air. BART is the only one that would benefit. . . " (Jessie Bracker)

"There is no discussion of a potential ballpark at that location. It may or may not be a reality, but it may be something that needs to be mentioned, just as the ballpark had to be mentioned in the Mission Bay EIR." (Commissioner Engmann)

"West of Bayshore Area. The development of this 180 acre property for airport-related purposes is essential to the long term development of SFIA. The final EIR should state the intent of the City to (a) proceed with the necessary environmental studies; (b) take the required mitigation

measures; and (c) reserve the remaining available site for future SFIA development." (Thomas Brown, United Airlines)

Response

Page 20 of the EIR indicates that the "West of Bayshore site" is not included in the SFIA Master Plan Project Area. The EIR Project Description further states, "This site was removed from the SFIA Master Plan process because it is a habitat for the San Francisco garter snake, an endangered species, and the red-legged frog, a candidate for the endangered species list." According to the SFIA Master Plan, forecast long-term demand (until 2006) for aviation services would be satisfied at SFIA without the use of the West of Bayshore site. SFIA would not be precluded from developing the site; however, development of the West of Bayshore site for Airport (or other) use would be subject to additional CEQA review and regulatory approval by responsible agencies such as the California Department of Fish and Game. The environmental studies and mitigation measures mentioned by one commenter would be a part of that CEQA review. No development of the West of Bayshore site is proposed as part of the SFIA Master Plan Project.

One commenter suggests that the West of Bayshore site be designated as permanent Open Space "as protection against further . . . pollution," presumably to mitigate the project's pollution impacts and to prevent additional pollution impacts (due to site development) from occurring. Because the site is currently vacant and is not planned for development, the designation of it as Open Space would not mitigate the project's air or noise pollution impacts, as identified in the EIR. A discussion of the effectiveness of tree planting in mitigating air pollution appears in Air Quality Mitigation, p. C&R.332 herein. The designation of the West of Bayshore site as mitigation for the site's own development would not be appropriate because, as noted above, site development is not a part of the project. (The removal of the site from the SFIA Master Plan has already eliminated the potentially significant impacts that would occur as the result of the site's development under the SFIA Master Plan.)

Several alternative BART station locations and layouts, including alternatives located on the West of Bayshore site , are under consideration for the construction of a BART extension./1/ Discussions of the BART station alternatives and the Alternatives Analysis/DEIS/DEIR are in the SFIA Master Plan EIR (pp. 269 and 415) and in BART

Extension to SFIA, pp. C&R.139-145 herein. The AA/DEIS/DEIR discusses the potential impacts of a BART station and associated access structures on the West of Bayshore site. A decision on the BART - San Francisco Extension "preferred alternative" will be made by a committee composed of representatives of BART, MTC, and SamTrans./2/ The public comment period for the BART AA/DEIS/DEIR was initiated in March, 1992.

The BART AA/DEIS/DEIR indicates that construction of some of the San Francisco Airport BART Extension alternatives would result in significant impacts on the San Francisco garter snake, San Francisco forktailed damselfly, and the California red-legged frog, endangered species that occur on the West of Bayshore site. The San Francisco Airport BART Extension could also result in impacts on wetlands located on the West of Bayshore site. These impacts would depend on the preferred alternative selected, the actual design of the facilities, and results of an accurate delineation of the wetland areas./1,3/ The BART AA/DEIS/DEIR indicates that a total of approximately 35 acres of wetlands exist on the West of Bayshore site and states that, "[a]t worst, 10 to 15 acres of wetlands would be eliminated, while at best only 3 to 5 acres would be affected."/3/

The characteristics and impacts of a BART station west of US 101 are discussed in the SFIA Master Plan EIR only to the extent they relate to the characteristics and impacts of the SFIA Master Plan. BART station characteristics and impacts are not evaluated in the SFIA EIR because the siting and construction of the station are not part of the Master Plan. The SFIA Master Plan EIR acknowledges the presence of endangered species on the West of Bayshore site but it is not a function of the SFIA Master Plan EIR to mitigate the effects of the proposed BART extension. BART station siting and construction are actions under the authority of BART (and MTC and SamTrans), not the Airports Commission.

The West of Bayshore site is not currently under consideration as a ballpark site. A ballpark was considered in the Mission Bay EIR because the ballpark was a pending proposal and was on the City of San Francisco ballot. Consequently, discussion of such a development proposal in this EIR would not be appropriate.

NOTES - West of Bayshore

/1/ BART - San Francisco Airport Extension AA/DEIS/DEIR, March 1992.

/2/ Wallsten, Karen, Senior Planner, Parsons Brinckerhoff Quade & Douglas, Inc., telephone conversation, March 13, 1992.

/3/ BART - San Francisco Airport Extension AA/DEIS/DEIR, March 1992, pp S-20, and 5-20 to 5-24.

LAND USE AND PLANS

The Notes for this section begin on p. C&R.111.

LAND USE REGULATIONS APPLICABLE TO SFIA

Comments

"The draft EIR states that the Airport is not subject to county of San Mateo and adjacent cities land use and zoning regulations. . ." (Richard Gee, SamTrans)

"The Federal Government has given much aid to this Airport. They added more than $12 million by 1945 with Massive Improvements. How much of the Land and Fill was paid for with Federal Money?? As many as 2,000 people a day were employed by WPA and other relief agencies 1933-1940 working at the Airport. In World War II the Military took over the Airport Supervision and completed Massive Improvements by 1945. By War's end the Airport had 700 acres in use and another 2,000 acres under Development. Consequently SFIA emerged as a major crossroads of the World. Isn't it true that if Federal Government helped purchase land for Airport it must be kept for use of that Airport only? No ball parks." (Jessie Bracker, letter of 8/27/91 and public hearing of 8/27/91)

Response

The first comment refers to a statement in the second paragraph on p.78 of the EIR. The statement is taken directly from the SFIA Master Plan, and is supported by information in the SFIA Master Plan (pp. 3.1-3.2) regarding the powers and responsibilities of Airport Land Use Commissions (ALUCs). The ALUC for San Mateo County is discussed on pp.103-105 of the EIR.

Article 3.5, Section 21674 (e) of the State Aeronautics Act (which establishes the Airport Land Use Commission "to provide for the orderly growth of airports and surrounding areas") states, "The powers of the commission [ALUC] shall in no way be construed to give the commission jurisdiction over the operation of any airport."

The second comment requests an account of parcels purchased with federal dollars and whether such land must remain in Airport use. According to the Federal Aviation

Administration (FAA), the title holder for each parcel of land at SFIA has not been determined, including whether such parcel(s) were purchased with federal dollars (but owned by SFIA) or whether title is still held by the Federal Government./1,2/

Title to specific parcel(s) of an airport's land may or may not be required prior to the implementation of an approved master plan. Whether any portion of SFIA property is restricted to Airport land uses can be determined after researching the federal branch that purchased the parcel(s), the terms and conditions of the purchase agreement (including any agreements with the City and County of San Francisco), and the authority for the purchase. Such research could produce an account of the parcel(s) affected by the proposed SFIA Master Plan, from which a determination could be made as to whether such parcel(s) would be restricted to Airport uses./1,2/

As shown in the Project Description section of the EIR, the SFIA Master Plan does not include any "non-Airport" (non-aviation-related) uses. Therefore, an assessment of federal restrictions on land use is not relevant to the assessment of environmental effects in the EIR.

EXISTING LAND USE

Comment

"P. 21 Fig 1 - does not show that some Airport lands are within Millbrae. Map P. 83, Fig. 11 - several designated land uses are shown incorrectly for City of Millbrae, for instance - 1) Airport lands within City of Millbrae are zoned Open Space. 2) Land you show as electric utilities is part of that Airport Open Space Lands and P.G. and E. Towers for Electric Lines. The P.G. and E. Substation is adjacent to that and you show it as Vacant. 3) There is also a Kennel and a Private Tennis Club Courts in that same land parcel you show Vacant. 4) There is a Sheltering Pines Convalescent Hospital at north side of area just across the R.R. Tracks from west side of that where you show Single Family. 5) There is a small Power Unit Bldg. located just South adjacent to Marina Vista Park alongside Bay St. that supplies power to Airport. 6) There is a Sewer-Lift Station at Madrone and Bay St. 7) There is a Storm Drainage Pump Station just north of City Boundary Line in Airport field, across from Lomita Park School by Lomita Canal.

"P. 75 last of par 4 - should add - and Southwest - just after "West" because elsewhere in text it states Millbrae lies "Southwest"; and east of Millbrae St., Airport lands are also habitat of the

endangered San Francisco Garter Snake and of the red legged frog within City of Millbrae Boundary lines all along Lomita Canal.

"P. 92-93 - says nothing about Airport lands zoned Open Space in Millbrae and nothing about the snake and frog habitat nor Millbrae's Sphere of Influence on any Airport Lands, also on Pages 255 and 256 - you left out the same things but yet wrote about all 3 as for San Bruno area! Why? There are more of the Snakes located in Millbrae." (Jessie Bracker)

Response

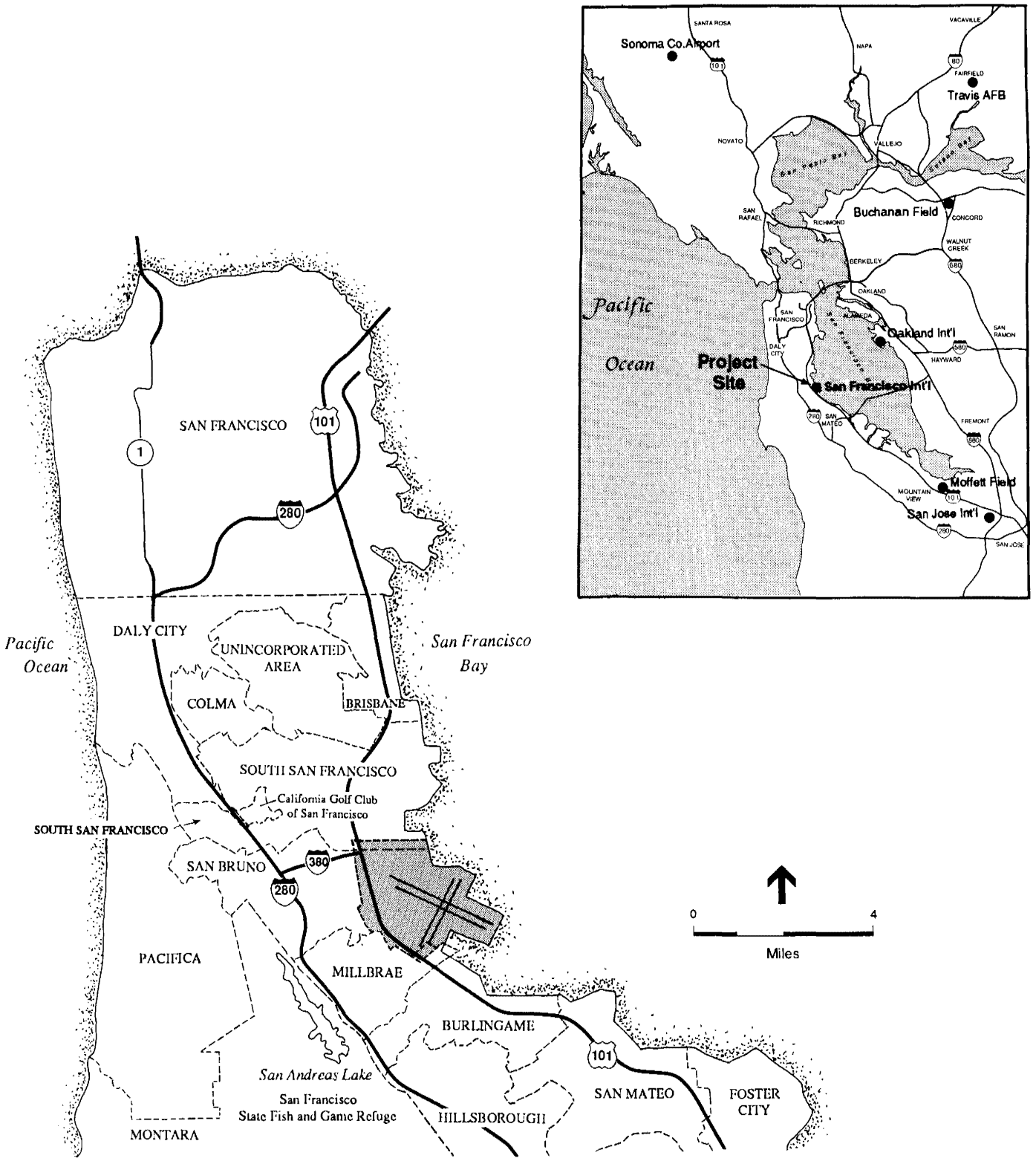
Figure 1, Project Location, on p. 21 of the EIR is revised to depict the approximate area of the City of Millbrae that is within the SFIA boundary.

Figure 11, Existing Land Use and City Boundaries Adjacent to SFIA, on p. 83 of the EIR is intended to depict existing land uses. The legend and shaded areas on Figure 11 are intended to illustrate the predominant existing land use for the areas covered. The zoning designations for those areas may differ from the existing land use. Figure 11 is not intended to show the City of Millbrae's zoning designations.

In some instances, a particular legend designation may be meant to represent multiple land uses. To clarify the land use designations depicted on Figure 11, the "Electric Utilities" designation in the legend is revised to "Electric Utility Facilities."

The comments regarding the P.G. and E. substation, kennel and private tennis club, power unit building, sewer-lift station, and storm drainage pump station are correct. However, these land uses are not the predominant use within the respective areas depicted on Figure 11. The Sheltering Pines Convalescent Hospital is added to Figure 11.

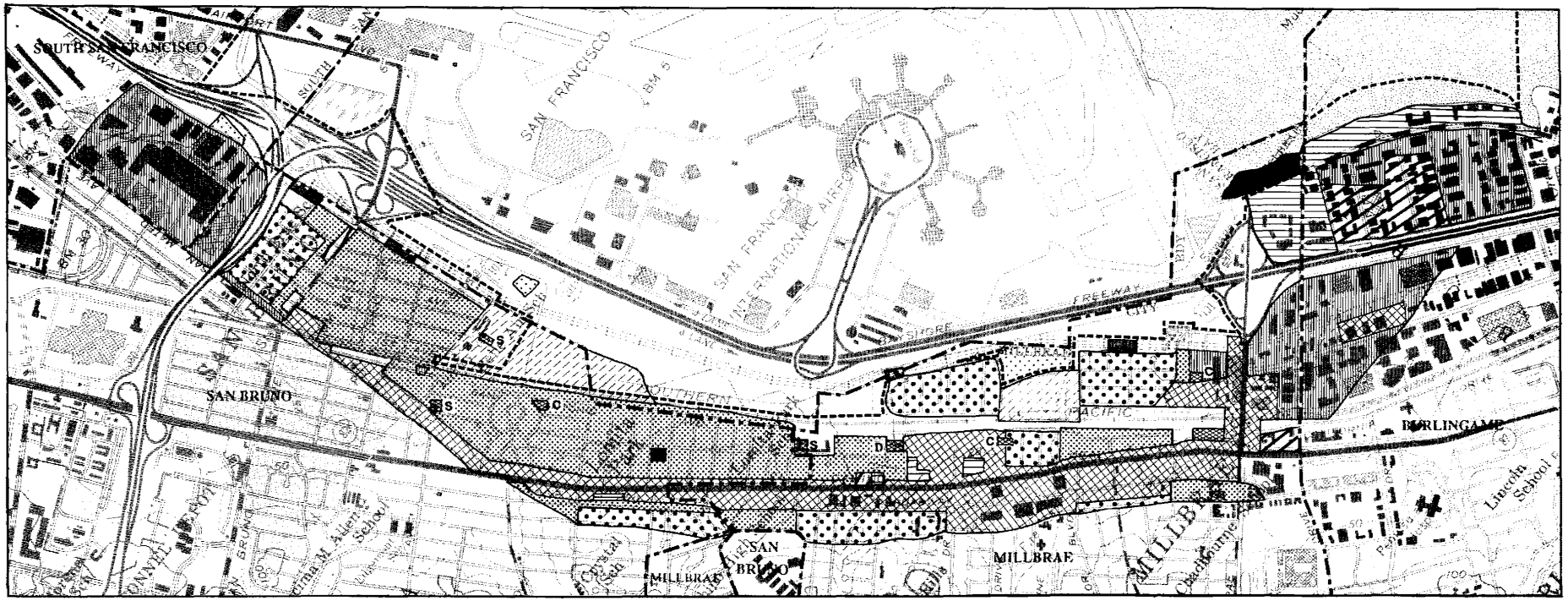
The commenter requests the addition of the words "and Southwest" after the word "West" in the last sentence of paragraph 4 on p. 75 of the EIR. The word "West" is part of the title "West of Bayshore" and is not referring to a direction but a portion of SFIA property. The title "West of Bayshore" should be consistent throughout the EIR, and therefore, is not changed on p. 75.



SOURCE: Environmental Science Associates, Inc.

San Francisco International Airport ■

Figure 1
Project Location



SOURCE: Environmental Science Associates, Inc.

San Francisco International Airport ■

Figure 11
Existing Land Use and
City Boundaries Adjacent to SFIA

The commenter notes that the City of Millbrae lands within the Airport boundary are zoned Open Space by the City of Millbrae and within the City of Millbrae's Sphere-of-Influence, and that there are more [San Francisco Garter] snakes located in [the part of the West of Bayshore site in] Millbrae [than in the remainder of the site]. To further clarify the discussion of the existing land use conditions in the environs of SFIA, the following sentences are appended to the first paragraph on p. 93 of the EIR:

> SFIA lands within the City of Millbrae are designated Industrial/Utility east of US 101, and designated Open Space west of US 101, by the City of Millbrae General Plan. These lands are zoned Industrial east of US 101, and zoned Open Space west of US 101, by the City of Millbrae Zoning Ordinance./26a/ These SFIA lands are within the City of Millbrae's Sphere-of Influence.

On p. 255 of the EIR, the following paragraph is inserted after the fifth paragraph :

> SFIA's West of Bayshore parcel is within the City of Millbrae Sphere of Influence. As stated on p. 20, the parcel is habitat for the San Francisco garter snake, an endangered species, and the red-legged frog, a candidate for the endangered species list. The number of San Francisco garter snakes inhabiting the Millbrae or other portion(s) of the West of Bayshore is not known. As stated on p. 20, the West of Bayshore parcel is not included in the SFIA Master Plan Process.

The following note is inserted after note /26/ on p. 121 of the EIR:

/26a/ Ironside, Robert, Millbrae Director of Community Development, telephone conversation, March 5, 1992.

GENERAL PLAN NOISE ELEMENTS

Comments

"Although we agree that the Pacifica Noise Element may state that aircraft noise is not considered a problem for Pacifica (pp. 94-95), the noise element is over 10 years old and in obvious need of revision. The activities of our committee of the past three years is evidence that airport noise is now (in 1991) considered a problem in Pacifica. . ." (Fred Howard, Pacifica Noise Abatement Committee)

". . . [T]he description of community setting, land use, and noise compatibility for the City of Pacifica as included in the DEIR is incomplete. Although the DEIR correctly states that our Noise Element does not recognize aircraft noise as a problem, the City of Pacifica has been

participating in the Airport Roundtable for many years and has repeatedly expressed concern about aircraft noise. In particular, our response to the Notice of Preparation and our response to working papers for the Master Plan indicated a concern about the noise impacts which would result from the planned increase in the number of flights. The DEIR should be revised to acknowledge that the City has serious concerns about aircraft noise, particularly in regard to single-event noise impacts and overflight patterns." (Wendy Cosin, City of Pacifica)

Response

Both comments refer in part to the statement on p. 94 of the EIR that ". . . aircraft noise is not considered a problem for Pacifica." The EIR's discussion of the environmental setting for Land Use and Plans is primarily based on adopted plans and policies such as the Noise Element of the General Plan for the City of Pacifica. Responses to the Notice of Preparation, participation in the Airport/Community Roundtable, and other community involvement meetings indicate that the City of Pacifica and the Pacifica Noise Abatement Committee have "serious concerns" regarding existing aircraft noise levels and the potential single-event noise levels and overflight patterns under the SFIA Master Plan. The last paragraph on p. 94 of the EIR is revised as follows (revisions are underlined):

> The adopted Noise Element of the General Plan states that aircraft noise is not considered a problem for the City of Pacifica./29/ The SFIA 1976 65 dB CNEL contour did not cross into Pacifica's city limits. However, participation in the Airport/Community Roundtable (see p. 167) and at other community meetings concerned with aircraft noise has indicated that noise, particularly single-event noise levels and overflight patterns, is currently perceived as a problem by some City of Pacifica residents./29a/
>
> Nevertheless, the primary source of surface noise in Pacifica is the arterial / collector street system. According to the Noise Element of the 1980 City of Pacifica General Plan: . . .

The following note is inserted after note /29/ on p. 121 of the EIR:

/29a/ Cosin, Wendy, Planning and Building Director, City of Pacifica, telephone conversation, March 5, 1992.

NOTES - Land Use and Plans

/1/ Cross, David, Federal Aviation Administration, telephone conversation, March 5, 1992.

/2/ Hopkins, Les, Federal Aviation Administration, telephone conversation, March 9, 1992.

TRANSPORTATION SETTING AND IMPACTS

The Notes for this section begin on p. C&R.151.

SETTING

Roadway Network

Comment

"On page 127 the document states that Millbrae Avenue is 'a four-lane arterial running east-west from I-280 to Old Bayshore Highway. It provides access to SFIA for areas west and south of SFIA. . .'

"As anyone who has travelled on Millbrae Avenue from I-280 to Old Bayshore Highway can tell you, the road is two lanes, winding, steep, and peppered with stop signs for most of the distance. It passes through residential areas where high speed, high volume traffic would not be appropriate." (Patricia Clark)

Response

The first sentence of the third paragraph on p. 127 of the EIR is changed as follows (new text is underlined and deletions indicated by brackets):

> Running east - west, Millbrae Avenue is a [ ] two-lane arterial between I-280 [ ] and El Camino Real and a six-lane arterial between El Camino Real and Old Bayshore Highway.

Existing Ground Transportation Services

Comment

"P. 131 AC/BART Plus passes, etc. Technically, passage on MUNI or AC Transit is not free; the passenger pays seven dollars twice monthly in addition to BART fare for the privilege of riding the bus lines involved. More importantly, the BART Plus Pass is not valid for passage on SamTrans lines 7F/7B - it is only worth a 50¢ credit toward passage. It is therefore of limited value for SFO tripmaking.

"A separate joint SamTrans/MUNI pass arrangement is, however, currently at the discussion stage which is expected to offer users a discount on the order of $10 from the combined $75 price of passes ($30 MUNI, $45 SamTrans SF/SFO). (SamTrans prices may rise shortly.)" (Peter Straus and James Lowe, MUNI)

Response

The BART Plus Pass is currently good for full credit on SamTrans lines 7B and 3B, and $0.85 credit on SamTrans line 7F. Therefore, the BART Plus Pass could be used for trips to SFIA. A separate SamTrans/MUNI pass would also make trips to SFIA more accessible.

The last two sentences in the third paragraph on p. 131 of the EIR are changed to:

> SamTrans recently entered into a fare-coordination agreement with BART that provides free rides on some SamTrans buses (and credits on others) to passengers who present semi-monthly AC/BART Plus passes. These passes, subject to additional monthly fees, are good for free passage on MUNI routes also.

SFIA MASTER PLAN TRANSPORTATION ASPECTS

On-Airport Circulation (GTC/APM/Roadways)

Comments

"The Division supports the proposed plans for an Automated People Mover (APM) system at San Francisco International Airport. However, we do note that it appears that with the exception of private automobile passenger drop-off, vehicles that previously proceeded directly to the terminal buildings (taxi/limo, shuttle van, shuttle bus and Sam Trans bus) would now go to the Ground Transportation Center, with the occupants then using the Automated People Mover to access the terminal buildings.

"Will all curb side drop-off be discontinued for these alternative modes of travel? If so, we suggest that further consideration be given to the potential impact on the shuttle, bus and taxi/limo services if private vehicles are still allowed to drop-off passengers at the curb." (Sandy Hesnard, Department of Transportation, Division of Aeronautics)

"Terminal Roadway System. The Master Plan correctly states on Pg. 10.9 that 'additional planning will be required to determine the optimum design' of the roadway system. The schematic design depicted in the DEIR (IV.B., pgs. 265-272) should not be taken as a final configuration of the new roadway system required to interconnect the existing and new terminals with Highway 101 and other roads." (Thomas Brown, United Airlines)

"... There are some comments on widening the road R-3, which is commonly called McDonnell Road, between 101 and San Bruno Avenue. Now, I am not sure I understand that, because R-3 doesn't run between 101 and San Bruno Avenue. But the road seems awful narrow now..." (Edwin Works)

Response

The functions and operations of the Ground Transportation Center (GTC) and the Automated People Mover (APM) are described on DEIR pp. 265-268. The GTC would house most of the ground transportation vehicles, including shuttle vans. The objective of the GTC and APM (Light Rail System) is to provide a comparable level of service to patrons who use this system to access the terminals and to those who drive to the terminal curbside. For the convenience of Airport patrons, the Light Rail System would be designed to operate on the upper and lower level roadways in front of the terminals. It would connect and transport passengers, meeters/greeters and employees to and from the terminals, Ground Transportation Center, hotel, remote parking lots, aircraft maintenance and cargo facilities and future mass transit facilities. The DEIR analyzed the APM and the GTC with the understanding that the design was conceptual, and has not been finalized. The Caltrans commenter is correct in stating that private automobiles would retain passenger pick-up/drop-off privileges at curbside directly in front of the air passenger terminal buildings. The impacts associated with this configuration are that private auto use would continue to be encouraged, and shuttle, transit and other alternative transportation modes might be discouraged. The EIR anticipates no measurable impact of the APM on the modal split for passengers and employees entering and leaving the Airport in the future (pp. 283-285, Tables 27-29). The final design of the APM and the GTC should consider providing at least equivalent service levels for all modes, and if possible, incentives for using alternative modes (e.g., HOV lanes directly into the GTC, preferential treatment of transit, etc.).

The roadway design described in the EIR (Figure 27) diagrammatically represents the roadway configuration to interconnect the existing and new terminals with US 101 and other roads. Although the design and configuration of the roadway connections to US 101 are under the jurisdiction of the California Department of Transportation, the Airport would participate in the design and fund this project. The configuration analyzed in the EIR is the result of a joint effort between the Airport staff and Caltrans during the past three years. The final design would be subject to Caltrans approval. The EIR (pp. 265-272) and Master Plan (pp. 10.8 - 10.9) describe the traffic circulation and rationale of the Terminal Roadway System.

Road R-3, which is also known as McDonnell Road, is a two-lane connector roadway that runs between San Bruno Avenue and Road R-18, near the US 101 interchange. It would be widened to four lanes as part of the near-term (1996) Master Plan.

On-Airport Parking

Comment

". . .We are also working with SFIA staff on a joint public/employee parking facility immediately adjacent to the MOC [Maintenance Operations Center] (Lot DD) which would, in part, support future additional MOC employee parking requirements. . .

"Lots C and CC. Due to space restrictions and already existing traffic congestion in the terminal area, United is opposed to the use of Lots C and CC for commercial development and automobile parking (II.C., Section 11, pg. 58), unless necessary to accommodate those businesses already at SFIA being displaced from existing leaseholds. Parking 1,200 cars in this restricted area near the terminal will not serve to relieve either parking or traffic problems at SFIA. . .

"Parking. The parking provisions described in the DEIR (II.C., Section 9, pg. 56; IV.B., pg. 324; and Tables 46 and 47, pg. 325 and 326) need to be adjusted to reflect the following:

> "United plans to develop, in conjunction with SFIA, the entire ground level of Lot DD, the capacity of which is 3,500 spaces, in order to replace the present United employee parking lots being demolished as listed in Paragraph 2 above [Airport Support Area Facilities, p. C&R.21 herein].
>
> "United plans to construct parking deck(s) above our existing MOC West Lot in order to increase the capacity of this lot from the present 1,750 spaces to approximately

4,000 spaces. Again, a majority of these additional spaces will serve to replace those being demolished as part of Master Plan development.

"Due to the configuration of the new International Terminal, it will not be possible to park cars on the roof of the North Terminal. The Master Plan deleted this parking [capacity]." (Thomas Brown, United Airlines)

Response

The parking garage DD would be developed as noted in the EIR (p. 27, second paragraph; p. 57, Table 9; p. 58, first paragraph) to support replacement parking and serve additional MOC employee parking requirements. This project is also described in the Master Plan (pp. 10.9 and 10.10). The relation of this garage to potential BART passenger needs is discussed on p. C&R.143 herein.

The commercial development and a parking structure project for Lot C-CC are intended to provide replacement space for Airport tenants that would be displaced because of the Master Plan program. The expansion of Lot D would require the relocation of the Bank of America facility to the Lot C-CC commercial office building. This building would house other aviation-related businesses, such as charter operations and aviation-support/airline-administration offices. United Airlines submitted a letter dated August 18, 1989, commenting on the SFIA Master Plan Working Paper C (p. II-70 of the "Response to Comments and Addendum to Master Plan Working Paper C") stating, "In any case, both Lot C and CC should be reserved for vehicle parking requirements." Vehicle parking is one of the proposed uses for this location.

Any comments or concerns United Airlines may have about the appropriateness of features of the SFIA Master Plan should continue to be expressed to the San Francisco Airports Commission and Staff. The EIR analyzes physical environmental impacts.

The parking provisions described in the EIR reflect the SFIA Master Plan and do not need to be adjusted. The SFIA Master Plan includes replacement for demolished facilities as United Airlines requested in its letters of October 28, 1988 and August 18, 1989. These replacement facilities include parking as described in the SFIA Master Plan (Chapter 10, Fig. 10.4 and 10.5) and the EIR (p. 39). The EIR states, "Projects under functional Parking categories 1.0 through 10.0 are summarized in Tables 4 to 7, pp. 46-49, and are presented in further detail in Appendix B . . ." The parking garage on Lot DD is intended to replace

United employee parking that is not otherwise being replaced at relocated facility sites. Lot DD would be developed as necessary for the garage DD parking facility described in the EIR (p. 58, Section. 11.0 Parking Facilities).

The SFIA Master Plan does not contemplate the construction of parking decks above the MOC West Lot. The SFIA Master Plan includes replacement for demolished tenant facilities and parking. This project was not requested by United Airlines during development of the SFIA Master Plan (United Airlines October 28, 1988 and August 18, 1989 letters - Comments on Master Plan Working Papers B and C, respectively).

The Airport staff eliminated the proposed North Terminal roof parking project in the early stages of the SFIA Master Plan study. The North Terminal roof parking had been intended to provide close-in additional parking for terminal employees and had not been intended to replace parking for demolished tenant facilities. The New International Terminal concept, as presented in the third Master Plan Working Paper and as adopted in the SFIA *Draft Final Master Plan,* physically precludes development of the North Terminal roof parking. However, it does provide additional close-in terminal parking on the top floor of the Ground Transportation Center adjacent to the New International Terminal.

The analysis for the DEIR assumed that the projects in the previously approved SFIA Capital Projects Plan (dated 1989) would be built. The 420 parking spaces on the roof of the North Terminal are part of this plan, and were therefore assumed to be existing by the build-out year of the 5-year Capital Projects Plan (1994).

If the Master Plan would preclude the provision of these 420 public parking spaces, then the following impacts would occur:

- In 1996, the projected parking deficit for public short-term spaces would increase from 1,131 to 1,551 (a 37 percent increase). The projected total parking surplus would decrease by 420 spaces, from 2,252 to 1,832, but the surplus is projected only for Airport employees and not air passengers. Vehicles would circulate for a longer time in the short-term garage or the Ground Transportation Center before finding a parking space.

- In 2006, the projected parking deficit for public short-term spaces would increase from 4,616 to 5,036 spaces (a 9 percent increase). The overall parking deficit at SFIA would increase from 4,391 to 4,811 spaces. With the BART station at SFIA, the parking deficit would increase from 1,171 to 1,591 spaces.

Please see the responses on pp. C&R.177-183 herein, for further discussion on parking deficits and suggested mitigation measures.

ASSUMPTIONS

Comments

"The EIR indicates several highway segments and local intersections will deteriorate to Level of Service F as a result of projected future air traffic growth resulting from the master plan. MTC has reviewed the traffic data and assumptions in the DEIR and finds the methodologies and assumptions to be reasonable, given the air passenger forecast, including such factors as the air passenger and employee mode split, the projected use of the proposed BART extension to SFO, and the impact of the BART extension on airport parking requirements." (Chris Brittle, Metropolitan Transportation Commission)

". . .In summary, it is my view that both local and regional agencies develop EIR reports that justify large-scale, high-density development projects while the MTC and city agencies develop EIR reports that justify the large-scale transit system extensions required to transport people from counties where they can afford to live to counties where they work. Unfortunately, the land use plans are expensive (costly) to the public as are the transportation projects developed. Moreover, the transportation plans are inefficient and generally obsolete about the time they are completed. In sum, the participating local and regional agencies use one another's data in their planning activities, and thus, white elephants are set in concrete.

"If anybody wishes to question this statement, I refer you to the referenced reports that I have prepared and delivered to both local and regional officials. The public record shows that these reports have been wholly ignored by elected officials and/or deleted from EIR reports - with rare exception in their entirety.

"The SFO Master Plan DEIR is inextricably linked to the MTC's Regional Transportation Plan DEIR because of MTC's definition of future land use and transportation plans and BAAQMD's Clean Air Plan in terms of the draconian Transportation Control Measures (TCMs) required to address the serious environmental problems created by the high density land use and transportation projects.

"Certification and implementation of the policies and projects defined by ABAG, the MTC and BAAQMD and SFO Airport will have substantial impact upon the future of the Bay Area for well into the 21st Century. For example page 16.8 of MTC's RTP EIR states:

> 'The Project would require an irreversible commitment of financial resources to the development of the Project elements . . the Project would require an irreversible commitment to satisfying mobility needs primarily through automobile accessibility.'

"In short, the Project defined in MTC's RTP EIR establishes that Bay Area transportation requirements are programmed to be 'solved' with an expected increase in the use and density of automobiles in already high traffic areas - and once the Project is underway, it is irreversible. What happened to the 'transit first' policy and the strict requirements codified in the Clean Air Act. The BAAQMD's EIR is also fatally flawed because it merely 'reacts' to land use and transportation plans in a manner much like a frazzled mother reacts to the antics of an errant child. The SFO Airport EIR is even worse. It attempts to define a large-scale project in a vacuum - much like the errant child thinks only of itself." (Dehnert Queen, Small Business Development Corporation)

Response

The MTC comment is noted, with appreciation.

The EIR, under CEQA guidelines, is intended to determine potential impacts of the project and to identify feasible measures to mitigate its impacts; this information is presented in the EIR. Certification of the EIR would not constitute justification or approval of the project.

Regional impacts of the SFIA Master Plan are discussed throughout the EIR, for example on pp. 68-72 (potential impacts); pp. 257-260; pp. 320-322; pp. 306-313, including Table 41; pp. 320-322; pp. 339-351, including Tables 53-54; and pp. 362-365, including Table 61.

Regional impacts of the SFIA Master Plan are further addressed in the responses on pp. C&R.133-137 herein.

Under CEQA, it is not the role of this EIR to comment on the quality of EIRs on other projects.

FUTURE TRAFFIC CONDITIONS

Cumulative Growth

Comment

"The DEIR has taken the anticipated growth in communities immediately adjacent to it and utilized that in connection with its own growth as factors for projecting future circulation conditions. We believe that this clearly underestimates the impacts on the 101 corridor. A large percentage of the traffic problem on the 101 corridor will be north of the airport and most of the off airport development will occur north of the airport in the cities of Brisbane and San Francisco. The cities immediately adjacent to the airport are largely built out and there is more growth projected in Brisbane than in all those cities combined. While the uses on some 600 acres of that is undetermined, a development agreement exists dating back to 1984 which will permit approximately 1.7 million square foot commercial development and 1100 hotel rooms. These impacts should be reviewed.

"The DEIR states as fact that for every on airport job that is created, one half a job is created immediately off airport. In doing traffic projections, the increase in on airport employment was used, but no factor was made for the additional one half person generated off airport by the airport expansion. If it is true that the airport expansion will create this additional half job, it should be factored in for traffic impact purposes." (Stephen Waldo, Mayor of Brisbane)

Response

Assumptions regarding developments in the vicinity of SFIA that might affect the traffic operations in the study area (the area in which local intersections could be affected by the SFIA Master Plan) were obtained from the cities of Brisbane, Burlingame, Millbrae, San Bruno, and South San Francisco, and reviewed with respect to the project's potential impacts on study-area intersections. Brisbane project locations are over six miles from SFIA, so that it is unlikely that these projects would affect the study area intersections in a statistically significant way. Therefore, they were not included in the list-added-growth analysis. However, Brisbane development's cumulative impacts on US 101 were considered, as the forecast growth factors (in effect, additions to the list-added growth) came from the North San Bruno Areawide Traffic Model (a year-2005 travel-demand model).

As stated on p. 275 of the EIR, the year-2005 traffic model, which covered an area from San Francisco to SR 92 on the south (including San Mateo, Burlingame, Millbrae, San Bruno, South San Francisco and Brisbane), incorporated approved projects, and Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) zonal land use data. Since the model's analysis year was 2005, a straight-line projection was used to determine 1996 and 2006 traffic conditions.

ABAG has compiled projections of housing and employment by census tract throughout the Bay Area (ABAG Projections 1987). The MTC traffic model has assigned these land use forecasts to 550 analysis zones, which form the basis for the MTC regional transportation model. (The MTC regional transportation model that was used in the analysis was based on ABAG's Projections 1987. The DEIR incorrectly states that ABAG's Projections 1985 were used. [The EIR has been corrected to read "1987" on all appropriate pages.] The most recent version of the MTC regional model uses ABAG's Projections 1990, which differs only slightly from Projections 1987 in housing and employment figures. The results of the analysis would not be expected to change if the more recent version of the model was used, as the model was used only for trip distribution and background growth factor purposes.)

The year-2005 North San Bruno Areawide Traffic Model was derived from MTC's 550-zone regional transportation model. The MTC model now contains 700 zones, but contained 550 zones at the time the North San Bruno Areawide Study was completed. The North San Bruno Areawide Traffic model has a base year of 1986 and a forecast year of 2005. It is consistent with the General Plans of communities in San Mateo County, and covers an area greater than the local-intersection study area of the EIR.

The traffic analysis accounts indirectly for additional off-site jobs generated by the Airport. The forecast growth factors derived from the year-2005 traffic model were used to forecast traffic growth in the larger (San Francisco to San Mateo) area around the Airport, which includes the local-intersection study area.

Trip Generation

Comment

"P. XI-A-165 Table G-4 - Vehicle Trip Generator - Shouldn't the two Hotels, Clarion and Westin and Hertz Car Rental have been added there?" (Jessie Bracker)

Response

All of the uses mentioned by the commenter were already in existence when the EIR traffic counts were taken; thus, the EIR setting analysis included the traffic generated by these uses (and other existing hotels).

The traffic-impact analysis included the lists of approved (but not yet built) projects for the cities of South San Francisco, San Bruno, Millbrae and Burlingame. Each of these cities' planning departments had been consulted and asked to provide the list of projects that they wanted to include in the analysis. The analysis was performed in 1990; it is not unusual for project lists to change as projects are cancelled or changed in some way and new projects are proposed.

The forecast growth analysis for years 1996 and 2006 takes into account the unforeseen factors by using forecast growth factors. The forecast growth factors are based on general plan buildout information, which includes the maximum amount of potential development for each municipality. If a project was not recognized in the list-added-growth analysis, it would be (implicitly) included in the forecast growth analysis.

TRAFFIC IMPACTS

At Specific Locations

Comments

"In reviewing the traffic impacts section it was noted that additional traffic generated on Highway 101 will cogenerate or force traffic onto other north-south corridors such as El Camino Real. The EIR evaluates impacts to segments of Highway 101 from Whipple Avenue in Redwood City to Holly in San Carlos and includes a segment from Hillsdale Boulevard north.

However, the EIR fails to analyze the impacts upon the segment of Highway 101 lying within Belmont. Segments both north and south of Belmont are analyzed and the entire segment along Highway 101 within Belmont is completely overlooked." (Ed Everett, (then) City Manager, City of Belmont)

"The Draft EIR indicates that the intersections at El Camino Real / Millbrae Avenue, California Drive / Millbrae Avenue and Rollins Road / Millbrae Avenue will all drop to LOS F during A.M. and P.M. peak periods by 2006 if SFIA's master plan is accomplished in the time frame conceived. The report does not adequately address the Old Bayshore Highway / Millbrae Avenue interchange. However it does note the additional congestion on 101 will increase the use of parallel roadways to access SFIA, including Old Bayshore Highway which is now impacted with parallel traffic destined for the airport. How will these trips diverted from 101 increase with implementation of each phase of the SFIA Master Plan? What will be the impact on the service level of the Millbrae / Old Bayshore intersection?. . ." (Dennis Argyres, City Manager, City of Burlingame)

Response

The DEIR analyzed segments along US 101 both south and north of SFIA. Although not every segment was covered in the analysis, the DEIR presented a sampling of freeway segments. The freeway mainline analysis was recalculated to include the US 101 segments immediately north and south of Ralston Avenue in Belmont.

Currently the segment of US 101 between Holly Street and Ralston Avenue operates at LOS D in both the a.m. and p.m. peak hours. In 1996, with the addition of forecast-growth traffic, the Holly Street to Ralston Avenue segment of US 101 would degrade from LOS D to LOS E during the a.m. peak hour and remain at LOS D during the p.m. peak hour. With the addition of project traffic, this US 101 segment would continue to operate at LOS E during the a.m. peak hour and degrade from LOS D to LOS E during the p.m. peak hour.

The segment of US 101 between Ralston Avenue and Hillsdale Boulevard currently operates at LOS E in both the a.m. and p.m. peak hours. In 1996, with the addition of forecast-growth traffic, the Ralston Avenue and Hillsdale Boulevard segment would degrade from LOS E to LOS F during the a.m. peak hour and would remain at LOS E in the p.m. peak hour. With the addition of project-generated traffic, this US 101 segment would operate at LOS F during both the a.m. and p.m. peak hours.

In 2006, with forecast growth traffic, the US 101 segments immediately north and south of Ralston Avenue would operate at LOS E during the a.m. peak hour and LOS F during the p.m. peak hour. With the addition of project traffic, these segments would operate at LOS F during both the morning and afternoon peak hours. Tables 40 and 41 are revised as follows to reflect the additional analysis of these freeway segments.

The segments of US 101 in Belmont would experience the same kinds of increases in traffic as would those in San Mateo and San Carlos. Freeways that are projected to operate at LOS F in the future would actually experience longer peak periods to spread out the projected demand, so that the volume-to-capacity ratio on the freeway remains below 1.0 (the theoretical maximum operating point).

In the EIR, the Old Bayshore Highway / Millbrae Avenue intersection is analyzed for future conditions in 1996 and 2006, with forecast growth, with the near-term and long-term development of the project and with list-added growth. Figures 29 and 30 (EIR pp. 290-291) show the distribution of traffic along Old Bayshore Highway in the future. The traffic analysis projected that fewer than one percent of airport employees and two percent of air passengers would use Old Bayshore Highway in the future. These percentages do take into account, however, trips that would have used the freeway but are now projected to divert to parallel roadways because of congestion or perceived travel-time advantages. The intersection level of service summaries presented in Tables 35 through 39 (EIR pp. 296-308) account for the additional trips that would divert off US 101 onto Old Bayshore Highway and other parallel roadways.

During the a.m. peak hour in 1996, the project would add 336 trips at the Old Bayshore Highway / Millbrae Avenue intersection, including 39 additional vehicles onto Old Bayshore Highway. During the p.m. peak hour in 1996, the project would add 364 trips at the Old Bayshore Highway / Millbrae Avenue intersection, including 43 additional vehicles onto Old Bayshore Highway. During the a.m. peak hour in 2006, the project would add 514 trips at the Old Bayshore Highway / Millbrae Avenue intersection, including 64 additional vehicles onto Old Bayshore Highway. In the p.m. peak hour in 2006, the project would add 554 trips at the Old Bayshore Highway / Millbrae Avenue intersection, including 70 additional vehicles onto Old Bayshore Highway.

TABLE 40: EXISTING LEVEL OF SERVICE - FREEWAY MAINLINE SEGMENTS

Segment		1990 A.M. Peak Hour/a/			1990 P.M. Peak Hour/b/		
From	To	Total Volume/c/	Vol. Per Lane	LOS	Total Volume/c/	Vol. Per Lane	LOS
U.S. 101 (Bayshore Freeway)							
Willow Rd. (SR 84)	Marsh Road	5,575	1,394	A-C	5,302	1,326	A-C
Whipple Ave.	Holly Street	6,388	1,597	D	6,075	1,519	D
Holly Street	**Ralston Avenue**	**6,773**	**1,693**	**D**	**6,440**	**1,610**	**D**
Ralston Avenue	**Hillsdale Blvd.**	**7,269**	**1,817**	**E**	**7,102**	**1,776**	**E**
Hillsdale Blvd.	SR 92	7,859	1,965	F	7,474	1,869	E
3rd Ave.	Poplar/Dore Ave.	8,363	2,091	F	7,953	1,988	F
Broadway	Millbrae Ave.	8,169	2,042	F	7,769	1,942	F
Millbrae Ave.	SFIA	8,517	2,129	F	8,100	2,025	F
SFIA	San Bruno/I-380	9,059	2,265	F	8,616	2,154	F
I-380	Grand Ave.	7,588	1,897	F	7,216	1,804	E
Oyster Pt. Blvd.	Candlestick Park	6,911	1,728	D	6,572	1,643	D
Candlestick Park	Third Street	6,930	1,733	D	6,591	1,648	D
I-280	Army Street	7,046	1,762	E	6,701	1,675	D
I-280 (Junipero Serra Freeway)							
SR 84/SR 114	Farm Hill Blvd.	3,040	760	A-C	3,480	870	A-C
Edgewood Road	SR 92	3,205	801	A-C	3,668	917	A-C
Hayne Road	Trousdale Drive	3,369	842	A-C	3,856	964	A-C
Larkspur Drive	SR 35	4,232	1,058	A-C	4,843	1,211	A-C
San Bruno Ave.	I-380	4,191	1,048	A-C	4,796	1,199	A-C
I-380	Sneath Lane	6,204	1,551	D	7,100	1,775	E
Sneath Ln.	Avalon Drive	6,122	1,531	D	7,006	1,752	E
Serramonte Blvd.	SR 1 South	7,889	1,972	F	9,028	2,257	F
SR 1 North	Alemany/SR 82	5,259	1,315	A-C	6,019	1,505	D
St. Mary's	US 101	6,368	1,592	D	7,288	1,822	E

Key:	LOS	Per-Lane Volume
	A-C	up to 1,460
	D	1,461 - 1,740
	E	1,741 - 1,880 (capacity = 1800)
	F	1,881 and above

(Continued)

TABLE 40: EXISTING LEVEL OF SERVICE - FREEWAY MAINLINE SEGMENTS (CONTINUED)

NOTES:

/a/ For US 101 & I-280, A.M. Peak Hour Volumes shown are for northbound traffic only. Northbound is generally the heavier direction of traffic flow on US 101 and & I-280 during the A.M. Peak Hour and therefore represents the worst-case traffic condition.

/b/ For US 101 & I-280, P.M. Peak Hour Volumes shown are for southbound traffic only. Southbound is generally the heavier direction of traffic flow on US 101 & I-280 during the P.M. Peak Hour and therefore represents the worst-case traffic condition.

/c/ Existing freeway volumes were factored from two-direction peak hour volumes presented in Caltrans' 1988 Volumes on California State Highways, based on actual counts taken by Caltrans on November 3, 1989, on U S 101 at Army Street in San Francisco, and at 3rd Avenue in San Mateo. That is, the distribution in volumes along the entire freeway, from San Francisco to San Mateo, as shown in the 1988 Caltrans book, was assumed to remain the same, but volumes at intermediate points were adjusted to be consistent with the actual 1989 counts at the two endpoints.

SOURCE: Caltrans District 4, and DKS Associates.

As shown in the tables, critical-movement traffic at the Old Bayshore Highway / Millbrae Avenue intersection is projected to increase by 29 percent in the a.m. peak hour and 12 percent in the p.m. peak hour, with the addition of project traffic in 1996. With list-added growth (i.e., development in Burlingame), the critical-movement traffic would increase by another 12 percent in the a.m. peak hour and an additional 16 percent in the p.m. peak hour. In 2006, the percentage of project-generated additional traffic would be comparable to that in 1996. The additional list-added-growth traffic, however, would increase the critical turning movements at this intersection by another 50 percent in the a.m. peak hour and 36 percent in the p.m. peak hour. These relatively large increases in critical movements would not cause this intersection to operate at an unacceptable level of service in the future, as there is sufficient excess capacity today to accommodate additional traffic.

TABLE 41: 1996 AND 2006 PROJECT IMPACTS ON FREEWAY MAINLINE SEGMENTS

YEAR 1996		A.M. Peak Hour/a/ Northbound --Forecast Growth--			A.M. Peak Hour/a/ Northbound --Plus Project--			P.M. Peak Hour/b/ Southbound --Forecast Growth--			P.M. Peak Hour/b/ Southbound --Plus Project--		
From	To	Vol	VPL*	LOS	Vol	VPL	LOS	Vol	VPL	LOS	Vol	VPL	LOS
U.S. 101 (Bayshore Freeway)													
Willow Rd (SR 84)	Marsh Road	5,798	1,450	A-C	6,231	1,558	D	5,514	1,379	A-C	5,970	1,492	D
Whipple Avenue	Holly Street	6,644	1,661	D	7,099	1,775	E	6,318	1,580	D	6,798	1,699	D
Holly Street	**Ralston Avenue**	**7,044**	**1,761**	**E**	**7,476**	**1,869**	**E**	**6,688**	**1,674**	**D**	**7,153**	**1,788**	**E**
Ralston Avenue	**Hillsdale Blvd.**	**7,560**	**1,890**	**F**	**8,015**	**2,004**	**F**	**7,386**	**1,847**	**E**	**7,866**	**1,966**	**F**
Hillsdale Boulevard	SR 92	8,173	2,043	F	8,653	2,163	F	7,773	1,943	F	8,278	2,069	F
3rd Avenue	Poplar/Dore Avenue	8,698	2,174	F	9,202	2,301	F	8,271	2,068	F	8,803	2,201	F
Broadway	Millbrae Ave.	8,496	2,124	F	9,027	2,257	F	8,080	2,020	F	8,639	2,160	F
Millbrae Avenue	SFIA	8,858	2,214	F	9,417	2,354	F	8,424	2,106	F	9,013	2,253	F
SFIA	San Bruno Av/I-380	9,421	2,355	F	9,534	2,384	F	8,961	2,240	F	9,096	2,274	F
I-380	Grand Avenue	7,892	1,973	F	8,414	2,103	F	7,505	1,876	E	8,152	2,038	F
Oyster Pt. Blvd	Candlestick Park	7,187	1,797	E	7,683	1,921	F	6,835	1,709	D	7,450	1,862	E
Candlestick Park	Third Street	7,207	1,802	E	7,678	1,920	F	6,855	1,714	D	7,439	1,860	E
I-280	Army Street	7,328	1,832	E	7,775	1,944	F	6,969	1,742	E	7,524	1,881	F
I-280 (Junipero Serra Freeway)													
SR 84/SR 114	Farm Hill Boulevard	3,162	790	A-C	3,472	868	A-C	3,619	905	A-C	3,956	989	A-C
Edgewood Road	SR 92	3,333	833	A-C	3,654	913	A-C	3,815	954	A-C	4,162	1,041	A-C
Hayne Road	Trousdale Drive	3,504	876	A-C	3,834	959	A-C	4,010	1,003	A-C	4,369	1,092	A-C
Larkspur Drive	SR 35	4,401	1,100	A-C	4,742	1,185	A-C	5,037	1,259	A-C	5,406	1,352	A-C
San Bruno Avenue	I-380	4,359	1,090	A-C	4,710	1,177	A-C	4,988	1,247	A-C	5,369	1,342	A-C
I-380	Sneath Lane	6,452	1,613	D	6,642	1,661	D	7,384	1,846	E	7,616	1,904	F
Sneath Ln.	Avalon Drive	6,367	1,592	D	6,551	1,638	D	7,286	1,822	E	7,511	1,878	E
Serramonte Blvd	SR 1 South	8,205	2,051	F	8,383	2,096	F	9,389	2,347	F	9,607	2,402	F
SR 1 North	Alemany Blvd/SR 82	5,469	1,367	A-C	5,643	1,411	A-C	6,260	1,565	D	6,472	1,618	D
St. Mary's	US 101	6,623	1,656	D	6,791	1,698	D	7,580	1,895	F	7,785	1,946	F

(Continued)

TABLE 41: 1996 AND 2006 PROJECT IMPACTS ON FREEWAY MAINLINE SEGMENTS (Continued)

YEAR 2006		A.M. Peak Hour/a/ Northbound						P.M. Peak Hour/b/ Southbound					
		--Forecast Growth--			--Plus Project--			--Forecast Growth--			--Plus Project--		
From	To	Vol	VPL*	LOS	Vol	VPL	LOS	Vol	VPL	LOS	Vol	VPL	LOS
U.S. 101 (Bayshore Freeway)													
Willow Rd (SR 84)	Marsh Road	6,188	1,547	D	6,967	1,742	E	5,885	1,471	D	6,692	1,673	D
Whipple Avenue	Holly Street	7,091	1,773	E	7,910	1,978	F	6,743	1,686	D	7,593	1,898	F
Holly Street	**Ralston Avenue**	**7,518**	**1,880**	**E**	**8,296**	**2,074**	**F**	**7,148**	**1,787**	**E**	**7,955**	**1,989**	**F**
Ralston Avenue	**Hillsdale Blvd.**	**8,069**	**2,017**	**F**	**8,888**	**2,222**	**F**	**7,883**	**1,971**	**F**	**8,733**	**2,183**	**F**
Hillsdale Boulevard	SR 92	8,723	2,181	F	9,586	2,397	F	8,296	2,074	F	9,190	2,298	F
3rd Avenue	Poplar/Dore Avenue	9,283	2,321	F	10,191	2,548	F	8,828	2,207	F	9,769	2,442	F
Broadway	Millbrae Ave.	9,068	2,267	F	10,023	2,506	F	8,624	2,156	F	9,614	2,404	F
Millbrae Avenue	SFIA	9,454	2,363	F	10,460	2,615	F	8,991	2,248	F	10,034	2,509	F
SFIA	San Bruno Av/I-380	10,055	2,514	F	10,212	2,553	F	9,564	2,391	F	9,747	2,437	F
I-380	Grand Avenue	8,423	2,106	F	9,387	2,347	F	8,010	2,002	F	9,203	2,301	F
Oyster Pt. Blvd	Candlestick Park	7,671	1,918	F	8,587	2,147	F	7,295	1,824	E	8,428	2,107	F
Candlestick Park	Third Street	7,692	1,923	F	8,562	2,141	F	7,316	1,829	E	8,393	2,098	F
I-280	Army Street	7,821	1,955	F	8,648	2,162	F	7,438	1,860	E	8,461	2,115	F
I-280 (Junipero Serra Freeway)													
SR 84/SR 114	Farm Hill Boulevard	3,374	844	A-C	3,855	964	A-C	3,863	966	A-C	4,374	1,094	A-C
Edgewood Road	SR 92	3,558	889	A-C	4,053	1,013	A-C	4,071	1,018	A-C	4,599	1,150	A-C
Hayne Road	Trousdale Drive	3,740	935	A-C	4,250	1,063	A-C	4,280	1,070	A-C	4,824	1,206	A-C
Larkspur Drive	SR 35	4,698	1,174	A-C	5,224	1,306	A-C	5,376	1,344	A-C	5,936	1,484	A-C
San Bruno Avenue	I-380	4,652	1,163	A-C	5,195	1,299	A-C	5,324	1,331	A-C	5,902	1,475	A-C
I-380	Sneath Lane	6,886	1,722	D	7,249	1,812	E	7,881	1,970	F	8,330	2,083	F
Sneath Ln.	Avalon Drive	6,795	1,699	D	7,148	1,787	E	7,777	1,944	F	8,212	2,053	F
Serramonte Blvd	SR 1 South	8,757	2,189	F	9,098	2,275	F	10,021	2,505	F	10,444	2,611	F
SR 1 North	Alemany Blvd/SR 82	5,837	1,459	A-C	6,169	1,542	D	6,681	1,670	D	7,091	1,773	E
St. Mary's	US 101	7,068	1,767	E	7,390	1,847	E	8,090	2,022	F	8,487	2,122	F

(Continued)

TABLE 41: 1996 AND 2006 PROJECT IMPACTS ON FREEWAY MAINLINE SEGMENTS (Continued)

Key: LOS Per-Lane Volume (VPL)*

A-C	Up to 1,460
D	1,461 - 1,740
E	1,741 - 1,880 (Capacity = 1880)
F	1,881 and above

/a/ For US 101 & I-280, A.M. Peak Hour Volumes shown are for northbound traffic only. Northbound is generally the heavier direction of traffic flow on US 101 and & I-280 during the A.M. Peak Hour and therefore represents the worst-case traffic condition.

/b/ For US 101 & I-280, P.M. Peak Hour Volumes shown are for southbound traffic only. Southbound is generally the heavier direction of traffic flow on US 101 & I-280 during the P.M. Peak Hour and therefore represents the worst-case traffic condition.

SOURCE: DKS Associates

Level of Service

Comments

". . .It's not really clear how this ground transportation center is going to work and what its capacity is and what the potential impact of that getting into overcapacity, flooding the roadways that are going into the airport. Anybody who has gone to the airport knows how overloaded the access roads happen to be." (Commissioner Engmann)

"As I was coming down tonight, speaking about environment, .how are they going to accommodate the traffic coming and going out of this airport? They built a few ramps; even the few ramps are outdated today. One comes into the airport for either departure or arrival, you are playing Russian roulette in order to get into the proper lane if you're coming from San Francisco or from the southern part of the Peninsula." (Bruno Bernasconi)

"I just drove to the airport recently, Monday night. It's not easy as you get to the airport. I wasn't frightened because I know how to do it. But with the traffic increasing, I notice some of the ramps, they are already at F. And it's my old argument, aren't you ever going to say double F, triple F. It's F now. That means it's bad. That is why it's a little frightening when you try to get over. Some people . . . just from San Francisco take that -- at San Bruno there is an exit. Some of us still do [use] the old exit. As those two merge and people are whizzing, it's scary. How much worse is that going to be with this kind of increase? I don't think this document tells all those things." (Commissioner Bierman)

"The Draft EIR states that the proposed airport expansion will result in an increase of vehicular traffic from approximately 110,700 daily in 1990 to 151,000 daily in 1996 (an increase of 36.4 percent) and to 179,700 in 2006 (an increase of 62.3 percent). Similar increases would occur during peak-hour traffic.

"With a rail extension to the vicinity of SFIA, it is projected that SFIA would generate 168,000 vehicular traffic daily in 2006. This would still amount to an increase of 52 percent over 1990 traffic.

"Highway 101 from Third Avenue to I-380 currently operates at Level of Service (LOS) F during peak hours. Route 101 between Millbrae Avenue and Airport Interchanges is currently carrying an average Daily Traffic of 265,000 vehicles. The airport expansion would cause further

deterioration of level of service on the freeways and on the arterial streets in the surrounding communities. The Airport projects proposed for 1996 would cause El Camino Real at Millbrae Avenue and Rollins Road at Millbrae Avenue to operate below LOS E during the a.m. peak hour." (Richard Gee, SamTrans)

Response

Tables 42 through 44 (pp. 314-318 of the EIR) summarize the ramp volumes and service levels for the existing and future conditions. The issue of merging and driver confusion would be improved with the addition of the Ground Transportation Center. The access to and egress from the Ground Transportation Center is described in further detail on pp. C&R.114-115 herein.

The Ground Transportation Center (GTC) would improve the merging of vehicles coming into SFIA. By separation of the traffic streams by function (e.g., buses, taxis, shuttles, drop-offs, etc.), the flow of vehicles would be better maintained. The GTC would reduce driver confusion, as vehicles would not be competing for the same space on the entry roadways. Signs directing motorists to specific locations would be posted at spots well ahead of the GTC entry ramps.

By provision of separate entry ramps into different levels of the GTC, vehicles entering the GTC would be separated from the main traffic stream heading on the ground level for the arrival and departure roadways. While more vehicles would be using the GTC and internal roadway system, there would be less merging and lane changing, and therefore less driver confusion.

The last comment correctly summarizes the information presented in the EIR. Although large increases in traffic are projected, several mitigation measures were formulated that would contribute to minimizing the impacts. For SFIA traffic, mitigation measures are presented in Section V of the EIR that address intersections, roadways, transit and parking, which collectively would minimize the impacts of SFIA traffic.

The traffic level of service on US 101 is already at LOS F along many segments, and the SFIA Master Plan would add traffic to congested segments. However, with or without the SFIA Master Plan, US 101 would require mitigation measures to address existing deficiencies and future congestion resulting from forecast and list-added growth in the

region. Several mitigation measures are presented in Section V of the DEIR for freeway mainline segments and freeway ramps. Along with the previously mentioned mitigation measures for intersections, roadways, transit and parking, and with the suggested TSM measures, freeway congestion impacts and the required mitigation measures have been addressed.

Intersection impacts in the local study area have been identified and several intersections would require mitigation measures. The intersections of Millbrae Avenue with Rollins Road and El Camino Real require mitigation today to address existing deficiencies during the a.m. peak hour. Both of these intersections currently operate at LOS E during the a.m. peak hour. The additions of forecast growth and list-added growth contribute in a statistically significant way to the level of service deterioration projected in the future. The increases resulting from the SFIA Master Plan would also contribute to the LOS degradation, but to a lesser extent. Tables 36 and 38 of the EIR (pp. 300, 304, respectively) show the impacts of the project compared to those of the forecast and list-added growth that would occur in any event.

Indirect Impacts

Comments

". . . There will also be adverse economic impacts in San Mateo County and the cities in the airport vicinity if the projected vehicular traffic impacts occur. . ." (Onnolee Trapp, Leagues of Women Voters of San Mateo County)

". . . Adding of the required over-6,800 dwelling units in the area of the airport would make life in nearby cities such as Millbrae unbearable due to, especially, water and transportation problems." (Patricia Clark)

Response

It is true that growth in enplanements (independent of the SFIA Master Plan), and implementation of the SFIA Master Plan itself, would contribute to worsening of traffic in San Mateo County as a whole and the Airport's immediately neighboring cities. Most of the worsening of traffic would be the result of forecast and list-added growth. It would

therefore be speculative to try to quantify the Master Plan's (secondary) adverse economic impacts in the County and the neighboring cities.

As the location of the "required" dwelling units would be diffuse and unpredictable, it would be speculative to try to quantify the water and transportation problems noted in the second comment. It is a matter of individual judgment as to whether "life in nearby cities such as Millbrae" would be "unbearable."

REGIONAL TRAFFIC IMPACTS

Freeways

Comments

"About freeways, our Downtown Plan EIR talks about the need for increased freeway lanes, increased bridges. There is nothing in here, it seems to me, that fits in with that. It talks about need for more ramps. Maybe the increase isn't that much as compared with our office traffic. Maybe our 19 or 20 million or 25 million office increase makes this seem infinitesimal on the freeway. I'd like more information on that." (Commission Bierman)

". . . [Y]ou said that commute problems plague Highway 101. I don't know when you found problems getting to the airport, but I go there regularly and can't recall an airport-generated freeway problem. The alternative that your remarks imply is to force San Franciscans to go to Oakland via the Bay Bridge, the truncated Nimitz Freeway, and Hegenberger Road at commute times, hardly a better choice. . ." (Stanford Horn)

Response

The transportation impact analysis for the EIR focuses on the area which would be most affected by Airport growth. Traffic impacts are shown for US 101 as far south as Willow Road (SR 84) and as far north as Army Street. Traffic impacts on I-280 are shown as far south as Woodside Road (SR 84) and as far north as the US 101 interchange. Farther from the Airport, traffic increases due to the Airport would be lower in magnitude as traffic diffuses onto other routes, and still lower as percentages of total traffic growth.

The Mission Bay EIR (superseding the *Downtown EIR*) identifies potential impacts of projected downtown growth at regional screenlines as follows: Bay Bridge (I-80), Golden Gate Bridge (US 101), US 101 (at the San Francisco / San Mateo County line), and I-280 (at the San Francisco / San Mateo County line). At the Bay Bridge, the *Mission Bay EIR* showed an increase of only 250 vehicles (three percent) in the p.m. peak hour between 1990 and 2000; this low increase is because demand on the Bay Bridge would be constrained by the estimated capacity of 9,700 vehicles, so that almost all new trips were assumed to be shifted to public transit (BART and AC Transit). By comparison, additional (worst-case) calculations for the SFIA Master Plan EIR show a total increase of up to 670 vehicles on the Bay Bridge in the p.m. peak hour between 1990 and 2006; this assumes a modest mode shift, as described in the *Downtown EIR*, but does not reflect capacity constraints on the Bay Bridge. Since the Bay Bridge is at capacity during the p.m. peak hour, the Airport trips would likely displace non-Airport vehicle trips (e.g., those by downtown commuters) which are more easily diverted to alternative modes or travel periods. Similarly, Airport growth between 1990 and 2006 is projected to add up to 480 vehicles to the Golden Gate Bridge during the p.m. peak hour, whereas the *Mission Bay EIR* projected a 700-vehicle-trip increase (11 percent) between 1990 and 2000, taking into account capacity limitations and resulting shifts to public-transit modes. Again, the likely effect of the Airport traffic growth would be to shift still more downtown commuters to public transit and alternative times, since they are more easily shifted than Airport users.

On the basis of standard methods of calculation from the *1985 Highway Capacity Manual*, the existing level of service on US 101 between Hillsdale Boulevard (San Mateo) and Grand Avenue (South San Francisco) is E-F (EIR Table 40), indicating congestion during a.m. and p.m. peak hours. However, as noted in the EIR (p. 150), field observations show that traffic flows well (LOS D or better), even during peak periods.

Table 40 is modified as follows, to reflect this:

Footnote /d/ is indicated next to the column heading for LOS for both the a.m. and the p.m. peak hours.

Footnote /d/ is added as follows:

> /d/ Even in segments where the calculations indicate LOS E or F, field observations show that traffic flows well (LOS D or better).

In 1988, MTC sponsored a research project (elaborating on work sponsored by the National Science Foundation from 1983 to 1985) that led to the creation of an Airport access and choice model called ACCESS. The model, created by Greig Harvey of Stanford University and Deakin, Harvey, Skabardonis, Inc., is a tool for studying policies and trends that influence the choice of airports by air passengers in a region and the patterns of use for airport access modes. ACCESS used the 1985 MTC air passenger survey and considered such factors as flight choices, travel times, value of time for business and non-business travellers, hotels, parking fees, and rail and shuttle services. The software is capable of estimating the number of passengers who would use each Bay Area airport, the passenger's county of residence, the total vehicle miles travelled, and the impacts of extending BART to any of the airports. The ACCESS model has several useful applications in regional transportation analysis (MTC, ACCESS Models of Airports Access and Airport Choice for the San Francisco Bay Region, Version 1.2, December 1989)./1/

Clearly, in any given year, the actual distribution of enplanements over the Bay Area's airports, and over time of day at each airport, would determine the generated ground traffic in the vicinity of each airport, and its distribution over the course of the day.

The ACCESS model forecast about 7,600 daily BART riders to SFIA in 2010, using a forecast of 40 million annual passengers. The DEIR estimates the BART ridership to be about 12,000 air passengers and 9,000 Airport employees each day in 2006, using a forecast of 51 million annual passengers. This works out to roughly the same proportion of air passengers using BART; however the comparison does not consider Airport employees, as the ACCESS model does not treat Airport employees, and can therefore not be considered (by itself) to be a general-purpose travel-forecasting model.

For the purposes of this EIR, several important features would enhance the model and its reported results to date. As noted, the model does not take into account Airport employees, who make up over 30 percent of SFIA trips. Also, it is configured for Airport conditions in August 1985 (but has been run for 1990 and future projections with appropriate adjustments). The model would have to be updated continually (as would any forecasting model) to reflect the changes in airline competition, ground access, air travel trends, trip purposes, vehicle occupancy, aircraft load factors and aircraft changes. For example, if one airline offers a discount fare in a heavily travelled market (e.g., San

Francisco to Los Angeles) but offers the flights only out of Oakland Airport, then significant shifts in air passenger behavior would be observed. The updated model would have to consider the airport's capacity to support additional flights, or the number of gates each airline may operate at each airport.

Downtown San Francisco Arterials

Comment

"pp. 125-152 Environmental Setting: Transportation [and] pp. 265-330 Environmental Impacts: Transportation, General Comment. Any major facility such as SFO has broad regional impacts, not just impacts in the immediate proximity of the facility. It appears to us that a major flaw in the transportation analyses is the apparent treatment of impacts on the roadway system as localized to San Mateo County.

"In fact, a significant amount of travel to and from SFO is associated with San Francisco trip-ends. This is clearly suggested by materials such as Table 41 (pp. 310-311) which show project impacts in the northernmost freeway link evaluated -- 101 south of Army -- as being reduced from LOS E to LOS F as an impact of the project. It follows as probable that such impacts carry into San Francisco north of Army Street as well -- and we believe the critical linkages in terms of capacity constraints are north, not south, of Army Street.

"Impacts of traffic growth on major arteries within the City -- such as but not limited to US-101, I-280, CA-1 (19th Avenue), Portola/Market, etc.) -- should be evaluated and mitigated as appropriate." (Peter Straus and James Lowe, MUNI)

Response

The study area for detailed transportation analysis is sufficiently broad to identify the primary impacts of the Airport. It is true that an important amount of travel to and from the Airport is associated with San Francisco trip ends. However, the net impacts of the Airport relative to total traffic volumes decline with distance from the Airport, particularly within San Francisco, for two reasons. First, traffic disperses off the mainline freeway onto arterial streets for access to ultimate destinations within city neighborhoods. Second, traffic increases due to the Airport begin to overlap with traffic increases due to non-Airport growth, which would occur with or without Airport growth. For example, some of

the Airport-generated trips would be by new downtown or Mission Bay commuters or visitors already accounted for in downtown growth projections. In the absence of Airport expansion, these trips would still be generated but would be made to other locations; this would not necessarily cause a net increase in US 101 mainline freeway volumes relative to the No-Project alternative.

For similar reasons, potential traffic impacts on city arterials such as 19th Avenue, Portola/Market, etc. were not analyzed in the EIR. It would not be possible to quantify reliably the dispersion of traffic to individual arterials within San Francisco, and net traffic increases of the project would not likely be statistically significant on these routes.

CALTRAIN

Comment

". . . I have had an alternative plan to take Caltrain rail service directly to the airport passenger terminals for over five years now. I have taken it to the MTC, the Joint Powers Board, this body, and the Board of Supervisors, and have had it buried every time. . .

". . . [T]hey're trying to say they're going to set it up where it's just going to be a skeleton and then get down to the meat later. I think that makes it [this EIR] fatally flawed right off the bat. . .

"I'd also like to point out that our plan takes Caltrain type service. It will actually be a PCC type car, or equivalent, directly to the airport passenger terminals in a loop, which will provide direct service to the airport passenger terminals from downtown San Francisco, downtown San Jose and the Peninsula. And then Phase 2, across the Dumbarton Bridge into the East Bay, into the Hannigan proposal, which will take you to Sacramento and Los Angeles and points east.

"I have already documented, using the MTC's own numbers and the City and County's numbers, that our proposal can be built in three years instead of 11 years and save taxpayers in excess of $2.7 billion. And by now it's even probably higher than that.

"I would also like to point out that during the EIR process, from what this document says, is that the Airport Commission asked SamTrans: Is there anybody else interested in doing this? And they said 'no.'

"Well, they know full well that we have been arguing this, that we have had a letter of intent in to take over the Caltrain operation. And in recent days, June 30th was the day that the letter of intent for the JPB to take over Caltrain expired. And I went to the JPB and I said: I want a letter of no prejudice so that we may formally discuss takeover of Caltrain from SP. And they just fobbed it off.

"The next thing I knew, Mr. Hsieh at the Board of Supervisors quietly sneaked through another little piece of paper without any public hearing whatsoever and made it so that they can just continue playing their games.

"Well, this document lays out the numbers fairly well, and I am no longer willing to play the nice guy, okay? We are going to do this one the hard way. There is a better plan. The vehicular transportation systems in here are out of scale. It's not going to work. I just want to put it on record that you'll have a substantial number of documents come in. If you don't address them this time, I guarantee we are going to go to court. There is a better way." (Dehnert Queen)

Response

The alternative transit system being advocated by the commenter is a regional rail system that extends CalTrain service north to Justin Herman Plaza in downtown San Francisco and, in later phases, extends service across the Dumbarton Bridge for service to the East Bay and across the Golden Gate Bridge into Marin and Sonoma Counties.

Under the alternative transit proposal, the currently proposed BART extension from Daly City to the Airport vicinity would be eliminated and, instead, the CalTrain route would loop (above ground) through the Airport. The savings in time and cost of construction that are claimed for the alternative transit proposal are due to eliminating the BART extension. The decision as to whether to extend BART service to the Airport is a regional issue, more appropriately addressed in the ongoing BART SFIA Extension Alternatives Analysis/Draft EIR/EIS.

The SFIA Master Plan considers a multi-modal station west of the Airport along with a fixed guideway transit system (Automated People Mover or APM) to connect this station to Airport destinations. The station could be served by both BART and CalTrain. Therefore, the SFIA Master Plan does not preclude the regional aspects of the alternative transit proposal. If there are comparable patronage levels for either the BART extension or

the alternative transit proposal, impacts of the SFIA Master Plan would not be significantly different under either regional transit alternative.

The SFIA Master Plan would preclude the CalTrain aerial loop through the Airport that is included in the alternative transit proposal. Instead, Airport travellers would use the proposed APM for access from CalTrain at the multi-modal station to final Airport destinations. The aerial loop envisioned in the alternative transit proposal would add travel time to all regional trips on CalTrain. Also, as a regional system it would not serve the majority of SFIA employment locations (e.g., United Airlines Maintenance Facility); unless stations were provided at each passenger terminal building, most air passengers would still have to transfer to the APM or walk to their final destinations. Non-terminal-area Airport employees would also have to transfer to the APM to reach their employment locations. Therefore, the aerial loop is viewed as potentially penalizing all non-Airport transit users while benefiting only a portion of the Airport travellers. The APM system proposed in the SFIA Master Plan provides the flexibility to serve both BART and CalTrain passengers to the Airport without penalizing through travelers, and the flexibility to serve more Airport destinations directly with frequent service than does the aerial loop.

BART EXTENSION TO SFIA

Comments

"Since the DEIR was prepared two additional BART extension alternatives were added to those previously under study by MTC: Alternative 5 (I-380 corridor to an 'external' BART station on the airport's West of Bayshore property) and Alternative 6 (I-380 corridor to an 'internal' station under the Airport's main garage). The decision on which alignment will be the preferred alignment to SFO will be a joint decision by MTC, BART, and SamTrans. This study assumes the Airport will finance, construct and operate an Automated People Mover system to the 'External' SFO BART/CalTrain Station if this alignment is selected as the preferred alternative. Potential airport contributions to the capital and operating cost of the proposed BART extension will be evaluated by MTC in the ongoing BART extension study." (Chris Brittle, Metropolitan Transportation Commission)

"Since the writing of the Master Plan DEIR, two additional BART extension alternatives have been developed. Descriptions of the new alternatives are given below and should be included in the alternatives descriptions on page 267.

> "Alternative 5 - External SFIA Station via I-380. This alternative would be identical to Alternative 3 but would continue underground from the Tanforan Station and pass under the CalTrain tracks paralleling I-380 on the north side. It would bypass part of San Bruno to the east. The alignment would proceed under I-380 and run south in a cut-and-cover or at-grade profile until it links up with the CalTrain corridor. It would become ground level at the same station designation as in Alternative 3.
>
> "Alternative 6 - Internal SFIA Subway Station with UAL Station. This alternative would be similar to Alternative 5 until just west of Highway 101 where the alignment continues under the freeway to the airport. A CalTrain station would be located east of the Tanforan BART Station. A shuttle bus service would transfer passengers between the BART and CalTrain stations. A BART station [would] be located east of U.S. 101 and south [of] I-380 near the United Airlines maintenance base with a surface parking lot nearby. The BART line would continue underground to the Airport Station and connect to the same alignment as Alternative 4." (Joan Kugler, BART)

"As you may be aware, the BART Extension Study Policy Committee added another alternative to their study at about the same time the DEIR was published. Titled 'Alternative 6', this new alignment includes a station to serve commuters located in the vicinity of the United Airlines Maintenance facility and a station located in the existing SFO main parking structure. As the station at the UAL Maintenance Facility will be serving the commute market, potential traffic impacts to South San Francisco streets, primarily South Airport Boulevard, should be discussed." (Jack Drago, Mayor, City of South San Francisco)

". . . [BART] is only discussed in relation to local intersections and parking demand; a discussion of the impacts on freeway segments would also be warranted." (Chris Brittle, Metropolitan Transportation Commission)

"However, increasing the track for BART from Colma to the area of Highway 101 at a cost of nearly ONE BILLION DOLLARS to be PAID BY THE PEOPLE OF SAN MATEO COUNTY for an airport serving SAN FRANCISCO is the most outrageous local boondoggle ever to have come to my attention." (Patricia Clark)

"Caltrans supports SFIA's plans for an Automated People Mover (APM) system to circulate people and their luggage between airport terminals, parking facilities, as well as to serve Lot D, Lot DD, and the maintenance area. We recommend that both routes connect directly to a

CalTrain/BART station west of Highway 101, in order to provide direct public transit access to the largest number of people. This is particularly important during hours of congestion on the adjacent highway/freeway and street network.

"The perceived disadvantage of transferring between modes at a station external to an APM would be offset by the much greater convenience provided by the APM in distributing passengers throughout the various terminals. Frequent and direct access to the maintenance area, the largest employment center in San Mateo County, via an APM from a CalTrain/BART station should provide a sufficient incentive to attract a significant number of daily commuters.

"Conversely, an internal BART station may not encourage transit usage by maintenance employees, and would require airport passengers to carry luggage great distances, both horizontally and vertically.

"The encouragement of convenient public transit access to both the terminals and the maintenance area is consistent with Caltrans policy to reduce vehicle miles traveled (VMT) on the State Highway System." (Preston Kelley, Caltrans)

"The DEIR does not identify any potential impacts from the proposed Automated People Mover on the Lomita Park residential area in San Bruno. If either pedestrian or vehicular access is provided to the APM from the Lomita Park area via Huntington Avenue, then in essence, Huntington Avenue and Lomita Park become another direct access point to the airport. Passengers could be dropped off on Huntington, walk a very short distance across BART and CalTrain platforms and access the APM to the airport. This would avoid Highway 101 at a significantly adverse impact on the Lomita Park residential area." (George Foscardo, City of San Bruno)

Response

Two additional BART extension alternatives have been developed since the preparation of the DEIR. The alternatives descriptions on page 267 of the EIR are augmented to include the following (inserted after the second bulleted item):

- Alternative 5 - External SFIA Station via I-380. This alternative would be identical to Alternative 3 but would continue underground from the Tanforan Station and pass under the CalTrain tracks paralleling I-380 on the north side. It would bypass part of San Bruno to the east. The alignment would proceed under

I-380 and run south in a cut-and-cover or at-grade profile until it links up with the CalTrain corridor. It would become ground level at the same station designation as in Alternative 3.

- Alternative 6 - Internal SFIA Subway Station with UAL Station. This alternative would be similar to Alternative 5 until just west of US 101 where the alignment continues under the freeway to the Airport. A CalTrain station would be located east of the Tanforan BART Station. (Under Alternative 6A, there would be a CalTrain/BART connection at Tanforan.) A shuttle bus service would transfer passengers between the BART and CalTrain stations. A BART station would be located east of US 101 and south of I-380 near the United Airlines maintenance base with a surface parking lot nearby. The BART line would continue underground to the Airport Station and connect to the same alignment as Alternative 4.

The impacts on intersections of the project with these alternatives to SFIA are similar to those stated on p. 306 of the EIR. If BART were extended to SFIA in 2006, vehicle trips to/from the Airport would be reduced. With either of the two additional alternatives, none of the study area intersections would experience a change in LOS compared to the 2006-without-BART scenario.

BART Alternative 5 patronage would be similar to that under BART Alternative 3, as the stations are in the same locations. The public-transit impacts of 2006-with-BART Alternative 5 scenario would be the same as those stated in the 2nd paragraph on p. 320 of the EIR. The project would add to transit loadings on BART, CalTrain, and SamTrans. Direct rail service (APM) between the terminal Ground Transportation Center and a transit center west of the Bayshore Freeway would provide linkages between the Airport and BART and CalTrain. These linkages would reduce vehicular travel by approximately 11,250 daily, 520 a.m. peak-hour, and 560 p.m. peak-hour vehicle trips.

The patronage estimates for BART Alternative 6 show that the number of daily air passengers using transit as access to/from the Airport would be slightly greater than for BART Alternatives 3 and 5, approximately 400 additional trips (Metropolitan Transportation Commission, *BART San Francisco Airport Extension Alternatives Analysis / Draft EIS/EIR Patronage Forecast Results*, Draft, July 1991). Since BART Alternative 6 would serve the UAL maintenance facility, the use of BART by these employees would increase. However, the connection between CalTrain and BART would be moved from San Bruno (the existing San Bruno CalTrain station) to Tanforan, thereby decreasing other work trips on BART in this area. The vehicular travel reductions would be approximately the same as those under scenarios with an external BART station.

The design of BART Extension Alternative 6, which is still conceptual and not final, would provide a parking lot near the United Airlines Maintenance Facility. This parking facility would be located in Lot DD, which is proposed in the SFIA Master Plan to be a long-term-passenger- and employee-parking garage. A potential problem that could arise would be that BART provides free parking at its commuter stations, whereas the new garage on Lot DD at SFIA would be a fee parking lot. Also, it has not been determined whether there is sufficient space for two parking structures, or how a joint parking structure would operate.

The impacts on local roadways in South San Francisco resulting from a potential BART station and parking garage near the United Airlines Maintenance Facility are more appropriately addressed in the BART to SFO AA/DEIS/DEIR (on pp. 4-1 to 4-66). Impacts that are associated with the SFIA Master Plan are addressed in this EIR.

Impact of BART on Freeways

The impact of the BART extension on freeways in the vicinity of the Airport would be to slightly increase traffic volumes south of the Airport and to reduce them north of I-380./1/ Under scenarios with BART alternatives which have a CalTrain/BART connection at San Bruno, the northbound freeway volumes on US 101 would have increases between 450 and 600 vehicles south of the Airport and have reductions of about 200 vehicles north of the Airport during the a.m. peak hour. These changes would not result in changes to LOS. (The ongoing study of the BART San Francisco Airport Extension includes traffic analysis for the a.m. peak hour only. The MTC regional travel model used in the BART study provides travel projections for the a.m. peak hour.) Under the scenario with BART Alternative 6A (CalTrain/BART connection at Tanforan) the northbound freeway volumes on US 101 would have a slight increase (about 70 vehicles) south of the Airport and a slight decrease (about 100 vehicles) north of the Airport.

With and without the BART extensions, the northbound freeway level of service would be LOS F between the Broadway and Millbrae Avenue exits on US 101 during the a.m. peak hour. The northbound freeway level of service during the a.m. peak hour between Oyster Point Boulevard and Candlestick Park would be LOS F without a BART extension and LOS D with a BART extension. Contributing to this LOS D would be the planned reopening of I-280 and SR 480 within San Francisco, and other TSM program elements./2/

Costs of BART

The preliminary estimates of capital costs for the BART extension from Colma range from $627 million to $1,168 million, depending on the alternative./3/ The estimates of costs are part of the BART San Francisco Airport Extension Alternatives Analysis (AA) study, which is ongoing and being conducted by MTC, BART, SamTrans and the Urban Mass Transit Administration (UMTA). The AA study provides information about the financing structure of the proposed BART extension and is separate from this EIR. The *BART San Francisco Airport Extension Alternatives Analysis / Draft EIS/EIR* was released in March 1992, and is undergoing public review as of early May 1992.

APM/BART Connection

At the time of preparation of the SFIA Master Plan DEIR, only two BART extension alternatives were known to be under serious consideration; it was expected that the SFIA Automated People Mover (APM) would be designed to accommodate either alternative. Therefore, the SFIA Master Plan EIR does not analyze in detail the localized impacts of the APM west of US 101 (or east of US 101, as the APM design is still conceptual). It would be speculative to attempt to quality the impacts of the APM at this time, given that the design is only conceptual. (See p. C&R.114 herein.)

The APM would connect the BART station, if it were located west of US 101, to the Ground Transportation Center (GTC). At the GTC, air passengers would continue on the APM to the terminal buildings. Airport employees might have to change to an APM travelling to the long-term parking area (Lot DD). Master Plan concepts now undergoing refinement could allow for separate trains from the BART station, one going only to the GTC and returning, the other making the entire loop, thus allowing employee trips to the Lot DD areas without changes. If the BART station were located internal to SFIA, Airport employees would not have to transfer to a separate APM, and air passengers would still be able to access the APM to circulate throughout the terminal buildings.

The level of detail for the APM/BART connection in this EIR is conceptual and design has not yet detailed all services that would be provided at this connection. The EIR notes that departing air passengers could benefit from the convenience of a baggage-handling facility at the BART station prior to boarding the APM to the terminal. Arriving air passengers could also benefit from the convenience of picking up baggage at the BART station, but

since departures are more time-sensitive to air travelers, more benefit would be gained by providing baggage service for departing air passengers than arriving air passengers. It is not currently known whether baggage handling would be accommodated for both arriving and departing passengers at the SFIA BART station; most likely this will be determined when a more accurate BART-to-SFIA passenger profile is developed. The information presented in this EIR is based on what is currently known about the APM and the SFIA BART station alternatives. If a BART extension is chosen following the ongoing BART SFIA Extension study, the detailed design of an APM/BART connection would consider feasible types of services to the patrons.

APM Connection Between BART and SFIA

The APM connection between a BART external station west of US 101 and SFIA would require an exclusive right-of-way for the APM. This APM connection would have visual impacts for motorists on US 101, neighborhood impacts, and possible ecosystem impacts, but would not likely have adverse impacts on traffic or noise. If a BART extension is chosen following the BART SFIA Extension Study, the design of the connection would involve an analysis of these impacts.

Impacts on Lomita Park

The extension of the Automated People Mover (APM) and the location of the BART station have not been finalized as yet. The BART alternatives, and the connection to the APM, are discussed in detail in the response on pp. C&R.141-142 herein. The Lomita Park area of San Bruno would most likely not become a drop-off area for air passengers, even if the APM is extended to a west-of-Bayshore BART station. The APM connection in the Ground Transportation Center (GTC) would be better suited for passengers being dropped off, particularly if there was direct access to the GTC from HOV lanes on US 101.

Since access to CalTrain and the free areas of BART would not be restricted, it would be possible for non-transit-riders to come into the mass-transit station and then take the APM into the Airport. Motorists on US 101 would most likely continue into the Airport to drop off passengers rather than exit the freeway toward the mass-transit station. While potential neighborhood impacts would result if the mass transit station were used as a drop-off area for SFIA, it is likely that residents of the Lomita Park neighborhood would be the only non-transit-riders who would find this access to SFIA convenient.

PEDESTRIAN AND BICYCLE ACCESS

Comments

"This letter comments on the Draft Environmental Impact Report (DEIR) for the San Francisco International Airport Master Plan, specifically to the lack of attention and consideration related to pedestrian and bicycle access in the Master Plan.

"There are only brief mentions of bicycle access on pages 136/7 and 323 of the text of the DEIR. The apparent perspective expressed in the DEIR seems to be something like 'Getting to the airport on foot or on a bicycle is such a pain in the ass that practically nobody would ever want to do it, so we don't have to think about providing for pedestrian or bicycle access.'

"For most of the period from 1975 to 1979 I used to commute between Berkeley, Oakland Airport, and San Francisco Airport. Sometimes I drove a car. Sometimes I would take my bicycle with me on BART from Berkeley and Daly City, and then I would pedal 9 miles downhill and downwind to the obscure aircraft hangar by the bay where I used to work overnight. Sometimes, instead of pedaling back uphill and upwind to the Daly City BART station in the morning, I would load my bike on the C-47 aircraft that I had just unloaded and then fly with it over to the Oakland airport maintenance base. From there I would pedal either 3 miles to the Coliseum BART station or 12 miles back to Berkeley if I was too late to avoid BART's peak period bicycle prohibition. At other times I loaded my bicycle on top of the freight in airfreight trucks, and then drove or rode as a passenger in the trucks. Occasionally I would combine taking buses and walking as a commute. In the course of the more than three years that I did variations on this commute I learned a great deal about using bicycles to get to and from airports.

"Aside from my commuting, on other occasions I have brought my bicycle packed in a box in a car to an airport, then taken the bicycle with me as excess baggage on a flight, then assembled the bicycle and pedaled away from the airport. I would have preferred to have been able to ride my bicycle to the airport, and then at the airport been able to pack the bicycle in the box.

"There have been yet other occasions where my preferred mode of ground transportation would have been to have left my bicycle parked at the airport, but I didn't have a safe place to park it to await my return flight.

"I believe that the airport's Master Plan should realize that providing for bicycle and pedestrian access is allowing for the most environmentally benign means for people to get to and from the airport, and that it is desirable and cost effective to provide better pedestrian and bicycle access. I would suggest the following measures to facilitate bicycle and pedestrian access:

"First, provide a bicycle and pedestrian path parallel to the old Bayshore Highway frontage road between San Bruno Avenue and Millbrae Avenue, with a separate path leading to the general area of the passenger terminals. (My route to the airport from Daly City BART was via or parallel to Mission, El Camino Real, Mission Road, Grand Avenue, Airport Boulevard, South Airport Boulevard to the North Access Road). If I had to go to the terminal I would come down South Airport Boulevard to the old Bayshore Highway frontage road, then follow the main entrance road into the terminal. I would have preferred having a separate path to get to the terminal. If demand develops, it might also be desirable to provide a pedestrian and bicycle path on a new structure over the freeway in the general area of the Airport interchange, leading to the general area of El Camino Real near the San Bruno / Millbrae City Limits.

"The other necessity is a safe and secure place to park bicycles. The minimum bicycle parking facility would be covered for weather protection, and would have controlled access to prevent bicycle theft and vandalism. Probably the most inexpensive way to provide such parking would be to have a caged in area by a parking lot exit, with the lot attendants controlling access to the cage. The lot attendants could also rent out tools and provide boxes for those bicyclists who wanted to pedal to the airport, then pack their bikes and ship them as excess baggage on departing flights. An air hose would be useful for those bringing their bicycles on arriving flights, as it seems to be a general practice to let some air out of the tires to allow for the pressure changes in airplanes.

"On a longer term basis it could be very desirable for the airport to offer inexpensive space to try and attract a business operation that could serve potential bicyclist patrons who might be attempting to use the airport. That business could provide safe and secure bicycle parking for both airport employees and passengers, provide boxes and boxing services to those bicyclists bringing their bicycles with them on flights, not to mention selling, renting and servicing bicycles to airport patrons. Perhaps the business could offer other services to attract customers, and have the bicycle facilities be a sideline. (An athletic club with showers, lockers and exercise equipment could attract customers who had to spend some time between flights.) Perhaps instead of charging high rent the lease terms should require the business to be open for long hours to assure more public service.

"Once bicycle access and parking facilities are in place, they should be publicized. Perhaps the airport already has some place where airline patrons can safely leave their bicycles over a few days or weeks, but we just don't know about those facilities. Can I now legally park my bicycle with safety and security at the airport? How?

"Given an initial capital cost of well over $10,000 for each additional automobile parking space in new parking structures, it seems like providing for pedestrian and bicyclist access would be a desirable and cost effective strategy, even if only a few potential airport patrons were to shift to a pedestrian or bicycle mode of airport ground access.

"I believe the Master Plan and the DEIR should address pedestrian and bicyclist access with much more detail, responding to the issues listed in this letter." (Bob Berry)

"One of the most obvious, and ready-made, places for safe bicycle parking is with existing parking lots or garages where an attendant is present.

"An attendant-operated lot is recognized as probably the safest place for bicycle parking because the bicycles are always under surveillance. Having an attendant just for the bicycles would be too expensive, so bicycle parking must fit into parking for automobiles.

"Some lots which have provided bike parking have allowed the bicycles to be fastened to a railing. Others have actually made up locked cages for bikes, with controlled access to the cage.

"A nominal fee of 25 to 50 cents per day would be nearly sufficient to cover the same rental income as for an automobile parked in the same amount of space -- about 300 square feet (15' x 20') needed for each automobile and the turning area it needs (14 bicycles can be put in the same space as is needed for an automobile).

"The owners of parking lots and the owners of buildings with parking lots should see the benefits of providing bicycle parking, as it makes best use of existing space, reduces the need for more parking in short supply, and is good public relations. Bicycles can be fitted into odd-shaped areas which often go to waste with automobile parking. . .

"The bicycle organizations should lobby with individual parking lot operators and governmental agencies for this first step toward safe bicycle parking." (Charles Smith)

". . .And I notice there are quite a few bikers, that people use bicycles to transport themselves back and forth to work. I am not sure that that was addressed at all in any studies that I have looked through so far." (Edwin Works)

Response

Several bicycling and pedestrian mitigation measures are identified in Section V of the EIR. These include:

- Providing a minimum four-foot striped bicycle travel lane for each direction of travel on McDonnell Road;
- Providing signed bicycle travel lanes or a Class I bikeway, as appropriate, from the Burlingame Recreation Lagoon west of Coyote Point north along Old Bayshore Highway, Road R-2, McDonnell Road (Road R-3), South Airport Boulevard and Bayshore Boulevard to existing bike lanes near San Bruno Mountain. Class I facilities could also be developed in wider parts of the Southern Pacific right-of-way (where adequate space exists for both BART and a bikeway) and parallel to US 101 between Candlestick Park and the South San Francisco CalTrain Station; and
- Including bicycle travel lanes as an integral part of any connection between SFIA and the multi-modal transfer station (BART, CalTrain, SamTrans) west of US 101.

No bicyclists were noted in any of the recently conducted air passenger surveys (traffic, parking and mode-split surveys were conducted for the EIR). The reasons for this are most likely that it is inconvenient or impractical for air passengers to get to the Airport on bicycles. There are a large number of vehicles coming into and out of the Airport throughout the day, including automobiles, vans, taxis, limousines, trucks and buses. Added to this fact is that the Airport is located in a very confined and remote space that limits the access and egress. The SFIA Master Plan is designed to maximize the use and efficiency of the confined space in which the Airport lies. Because of the relatively remote location required for a major airport, the commute distances for bicyclists and pedestrians are fairly large. The nearest neighborhoods around the Airport are over 2 miles from the internal Airport property, by way of San Bruno Avenue or Millbrae Avenue.

When BART is extended to SFIA, it is expected that its normal bicycle provisions would prevail. BART provides bicycle lockers at its stations and allows bicycles on board trains during off-peak hours. This service would help both air passengers and airport employees. Because BART is being extended to SFIA, bicyclists could bike to BART from their

residences or offices and take BART for the remainder of their journey. Bicycle provisions would have to be implemented at the SFIA BART station and also on the automated people mover (APM). The APM design, although not formalized at this time, could consider bicycle access so that bicyclists could take their bikes to the terminal or employment location at SFIA.

Bicycle parking in the short-term parking garage would not be feasible. The short-term garage accommodates over 6,000 vehicles on busy days. The potential for conflicts between bicycles and circulating vehicles would provide too great a safety risk for both modes. Parking-lot attendants would be hard pressed to provide tools and boxes for bicyclists while still controlling the flow of vehicles within the garage. Many airports, including SFIA, have adjacent service stations which have many of the necessary items that bicycle travelers require, such as an air hose, tools, and trained mechanics who could assist with minor repairs.

Of the Airport employees, only a few bicyclists were observed during the surveys. Currently these bikers make use of the surface roadways and secure their bicycles at their place of employment. The suggested bikeways noted in the mitigation measures section of the EIR would serve the employment areas of SFIA as well as the passenger terminals. TSM program elements include provision of shower and changing facilities, secure places for bicycles and protected bikeways. United Airlines, the largest Airport tenant, currently has 40 bicycle racks at its maintenance/administration and employee-parking facilities. TSM provisions are the responsibility of the individual employer and would be based on the demand for these services and the exact requirements of the TSM program. (A discussion of the Airport's TSM program is on pp. C&R.171-173 herein.)

Regarding pedestrian access to SFIA, several factors have to be considered, including sidewalks, walk distance and safety. The distances to the terminal buildings are important. The terminal buildings at SFIA are set back from the freeway by approximately one-half mile, and from the nearest neighborhoods by well over two miles of walking distance. These factors would lead to a long and tiring walk, even if protected walkways were to be provided. There is no way to shorten the walk distances without moving terminals or neighborhood locations, and thereby compromising aviation, vehicular and pedestrian safety.

For Airport employees who choose to walk to and from work, safety measures noted in Section V of the EIR address the impacts to pedestrians. Employees may elect to walk along San Bruno Avenue or Millbrae Avenue to get to the Airport from the surrounding neighborhoods or nearby parking areas, and therefore need to be protected from vehicular traffic. Currently, sidewalks exist along San Bruno Avenue and McDonnell Road, where most of the employment at SFIA is located. For example, United Airlines provides an elevated protected walkway above McDonnell Road directly into its maintenance facility, so that employees do not have to cross the traffic on the roadway. The Automated People Mover (APM) would serve to separate pedestrians from vehicular traffic by providing direct access between the Ground Transportation Center and the air passenger terminal area (in 1996) and the long-term parking area (in 2006).

NOTES - Transportation Setting and Impacts

/1/ Metropolitan Transportation Commission, written communication to DKS Associates, February 24, 1992.

/2/ Metropolitan Transportation Commission, written communication, op. cit., based on information from Parsons Brinkerhoff, 1991.

/3/ Metropolitan Transportation Commission, *Train to Plane*, Issue No. 3, October, 1991.

TRANSPORTATION MITIGATION

GENERAL

Comments

"The Master Plan should not move forward unless all the necessary transportation improvements are funded by the Airport. The Draft EIR should fully discuss the capital costs for all transportation improvements." (Raymond Miller, C/CAG)

"SFIA must assist in funding the planned improvements at the I-280/I-380 interchange as a mitigation to help reduce the substantial impact SFIA traffic will cause on this area.

"SFIA must contribute funds for improvements to San Bruno arterials pursuant to the North San Bruno Area Wide Traffic Study as a mitigation to help reduce the substantial impact SFIA traffic will cause on San Bruno arterial streets, including San Bruno Avenue, El Camino Real, Huntington Avenue, and San Mateo Avenue.

"SFIA must contribute funds for a proportionate share of maintaining San Bruno arterials as a result of the substantial traffic created by SFIA." (George Foscardo, City of San Bruno)

"C/CAG has endorsed the attached comments from the San Mateo County Transit District (SamTrans) staff regarding traffic and transportation impacts. C/CAG strongly supports the SamTrans staff position that transportation projects by other implementing agencies should not be considered as mitigation for the SFIA expansion without the concurrence of the implementing agency, and that an assessment should be made of the cumulative effectiveness of the transportation mitigation measures which can be accomplished by the Airport, together with an indication of the trip demands that cannot be accommodated." (Raymond Miller, C/CAG)

"Many of the mitigations listed in the draft EIR are ascribed to others as implementing agencies without indication of concurrence by those agencies. Mitigation measures should not be included in the EIR until written concurrence by the implementing agencies (other than SFIA) have been obtained. The EIR should also include the probability of implementation of the mitigations within the time frame of the Airport expansion, an assessment of the cumulative effectiveness of the measures and the number of trip demands that cannot be accommodated. The Airport expansion should be reduced to the degree that would be consistent with the

mitigation measures and their time frame of implementation. This process and proposal is in keeping with the Congestion Management Plan requirements which was approved by the voters in November 1990 in conjunction with State Proposition 111." (Richard Gee, SamTrans)

"The Board concurs with the comments of C/CAG and SamTrans staff that indicate transportation projects by implementing agencies other than the City and County of San Francisco should not be considered mitigation for airport expansion without the concurrence of the implementing agency." (County of San Mateo Board of Supervisors)

"We find the proposed mitigations to be inadequate, vague and many are probably not implementable by the Airport. . .The EIR should include an assessment of the cumulative effectiveness of the mitigation measures that can be implemented within the time frame of the planned Airport expansion and the number of trip demands that cannot be accommodated. The expansion should be confined to the degree that would be consistent with the mitigations." (Richard Gee, SamTrans)

"The EIR must include the probability of implementation of the mitigations within the time frame of the Airport expansion, an assessment of the cumulative effectiveness of the measures and the number of trip demands that cannot be accommodated. This process and proposal is in keeping with the Congestion Management Plan requirements which was approved by the voters in November 1990 in conjunction with State Proposition 111." (George Foscardo, City of San Bruno)

"We request that the following mitigation measures identified in the DEIR be adopted by the Airport Commission either for their own implementation or to actively promote the implementation by the appropriate jurisdiction:

> "Encourage airlines and travel agencies to encourage passengers to take transit.
>
> "Provide SFIA employees with incentives for transit use.
>
> "Provide economic disincentives for SFIA employees to commute by single-occupant vehicles.
>
> "Provide a share of the transit operating costs for SamTrans, CalTrain and BART, each of which is necessary to support increased SFIA operations.

"Work with airlines to design the Automated People Mover/Terminal connections to minimize air passenger pedestrian circulation, with baggage service available where departing air passengers exit the BART station or parking areas.

"If a decision is made to place the SFIA BART station west of U.S. 101, in lieu of a station in the terminal parking garage, build an exclusive right-of-way, bus or rail connection between the SFIA BART station and the Ground Transportation Center with connecting service to the terminal and major employment areas, and operate service on this facility in a manner coordinated with BART/CalTrain arrivals and departures.

"Concurrently with the extension of BART to SFIA, increase the frequency of CalTrain service, especially during non-commute hours, so that there is minimal transfer time between CalTrain and BART. As an alternative, extend BART south to San Jose in the CalTrain right-of-way and provide MUNI light rail in the Bayshore Freeway/Third Street corridor as a replacement for CalTrain service.

"Increase Sam Trans service to BART and CalTrain station in San Mateo County to encourage use of both systems, both by reducing headways on existing routes and by adding new routes to serve both residential and employment centers.

"Improve MUNI transit capacity in San Francisco so that new BART and CalTrain riders destined for locations outside the Financial District would find transit a viable alternative.

"Monitor parking demand throughout the year. In the event the annual mode split targets of the TSM program outlined under 'TSM/Transit/Ridesharing' are not being met, no additional parking can be provided at SFIA until the annual target is met, reevaluate the program for possible implementation of other measures to meet targets before providing additional parking." (Joan Kugler, BART)

"The mitigation measures recommended in the Draft EIR for the San Francisco International Airport are inadequate. This Draft EIR should not be approved until adequate measures are developed which will mitigate the unacceptable air quality and traffic impacts. Rather than doing its planning as an isolated facility, SFIA should become a member of the San Mateo County Community and coordinate expansion plans with the surrounding communities and transportation agencies." (Jim Wheeler, Sierra Club, Loma Prieta Chapter)

"3. <u>Participation in Capital Costs of Transit Expansion</u>

"The Airport should participate in the capital costs of required transit infrastructure to serve Airport passengers and employees i.e. BART Extension." (Robert Treseler, City of Millbrae).

"The DEIR proposes that SFIA share in the operating costs of BART, SamTrans, etc. in proportion to the increased number of passengers and employees. The DEIR does not propose any share in the construction cost for BART. Because the proposed BART extension would

significantly relieve SFIA expansion traffic impacts and because available Federal funding for the extension may be insufficient, SFIA should contribute funds for constructing BART to or near SFIA and for reducing the associated impacts of the BART extension." (George Foscardo, City of San Bruno)

"3. Participation in Capital Costs of Transit Expansion

"Another mitigation should be the Airport's participation in the capital costs of required transit infrastructure to serve Airport passengers and employees.

"If BART is extended to the Airport, the Passengers Facility Charge may be used to extend BART from a multi-modal commuter station to an internal airport station in a direct link. The Passenger Facility Charge may be used to contribute to the construction of a Caltrain multi-modal station to serve the Airport.

"It should be noted that the EIR mentions in passing that an internal SFO-BART station would generate more BART passengers than an external station (pg. 306), but the assumptions for the BART modal split are extremely low (pg. 269), and such assumptions are not explained.

"It should be noted that such transit improvements would all be on Airport property, so would be on-site mitigation measures." (Janet Fogarty, Mayor, City of Millbrae)

"Mitigations Proposed by SFIA"	"SamTrans Staff Comments"
"8. Requiring SFIA to provide a share of SamTrans, CalTrain and BART operating costs.	"Depending on the amount of funding provided by SFIA, this could be a factor in the expansion of transit service to the Airport." (Richard Gee, SamTrans)

"The most significant mitigation measures available to reduce vehicular traffic congestion and emissions would be to provide adequate transit services for passengers and employees. Pages 413-416 list mitigation measures related to Transit/Ridesharing. SFIA proposes to provide a share (based on patronage) of transit operating costs for SamTrans, CalTrain, and BART, and, if the SFIA BART is built west of 101 rather than in the terminal, to build an exclusive right-of-way, bus, or rail connection between said BART station and the proposed Ground Transportation Center. It would be equally appropriate for SFIA to also provide a share (based on projected patronage) of the capital costs necessary to provide the needed transit services by SamTrans, CalTrain, and BART, in order to provide the means for increased operating capacity of the transit providers; the proposed mitigation would then be more realistic." (Onnolee Trapp, Leagues of Women Voters of San Mateo County, letter of 8/27/91 and public hearing of 8/27/91)

"The DEIR assigns the responsibilities of several mitigation measures involving capital expenditures (such as rail extensions) to other agencies. It is important to note that SFIA can fulfill its obligation to mitigate the project impacts by contributing financially to the proposed traffic mitigations with capital as well as operating costs." (Joan Kugler, BART)

Response

Several comments noted that SFIA should be responsible for implementing and financing all of the mitigation measures, or that several mitigation measures should be removed unless agreements (i.e., written concurrence) have been reached with the implementing agencies cited. Also, many comments mentioned that mitigation measures should be implemented within the time frame of the planned airport expansion, or identified as not being able to be so implemented.

It is the responsibility of the EIR to identify feasible mitigation measures, even those measures that are not within the jurisdiction of the Lead Agency (in this case, the Airports Commission). The EIR has done just that. The mitigation measures presented in Section V are feasible and address the impacts of the proposed project. The identified entity or agency for implementation does not necessarily have to be the Lead Agency or the project sponsor, as not all impacts are solely or even primarily attributable to the project; many are attributable to forecast general areawide growth (non-Airport) and/or list-added projects (those specific projects that are currently known and identified by each individual municipality as scheduled for completion in the near future). Written concurrence does not have to be obtained from the implementing agency prior to identification of a feasible mitigation measure.

Furthermore, the EIR is not responsible for identifying the funding source or the amount of funding required to implement the mitigation measures, so long as the measures are feasible from technical, planning and engineering standpoints. In the case of the proposed SFIA Master Plan, SFIA is prohibited (by Section 3.691 of the Airports Commission Charter) from contributing to the construction, operating, or maintenance costs of any off-Airport transportation improvements.

The Airports Commission is obligated to consider the severity of the impacts of the proposed project and the availability of alternatives and mitigation measures (including

both of which bracket the El Camino corridor, were evaluated. Mitigation measures for impacts in the El Camino Real corridor are identified in Section V of the EIR, on pp. 412 and 413. Given the expected numbers of through vehicles on El Camino Real north of San Bruno Avenue and south of Millbrae Avenue, the project's impacts would not be measurable at intersections beyond (north of) San Bruno Avenue and (south of) Millbrae Avenue.

The programmed improvements of Caltrans, BART, CalTrain and SamTrans can be used as project mitigations as well as mitigations for forecast growth and list-added-growth impacts. The programmed improvements would contribute to mitigating the impacts generated by each of these. The BART programmed improvement of extending to SFIA is related directly to the Airport expansion. While there is an existing need for BART and other transit services at SFIA, the programmed improvements would contribute significantly to alleviating project impacts.

The EIR includes several mitigation measures that deal directly with project-generated traffic on facilities that are included in the San Mateo County and San Francisco County Congestion Management Programs. Impacts to freeway mainline segments and ramps are addressed in Section V of the EIR. Project impacts on downtown arterials in San Francisco are not identified in the EIR as the contribution that the project makes is indiscernible. With the availability of many parallel arterials to choose from, airport shuttles, buses, taxis, and private vehicles would disperse throughout the downtown roadway network and spread the impact over many streets.

The fact that the mitigation measures identified in the EIR would not necessarily reduce the project impacts to a level of insignificance does not negate their value as mitigation measures. The Airports Commission, in its considerations of project approval, would be required to issue Statement of Overriding Considerations for any residual significant impacts of the project.

For the remaining comments regarding the El Camino Real Corridor and Vicinity, please see the responses on p. C&R.157 herein.

Millbrae

Comments

"The first has to do with the fact that the EIR says that the impact on the Rollins Road-Millbrae Avenue intersection is not mitigable. And we feel that with the proper concern for the impacts on the jurisdictions neighboring the airports that that can be mitigated in consultation with the City of Millbrae. And we have some ideas on that matter that we would like to share." (Janet Fogarty, Mayor of Millbrae)

"Although significant [transportation] effects on Millbrae streets would result from Airport expansion, no mitigations by the Airport are proposed. Mitigation by others is unacceptable lacking assurance that another agency would implement the mitigation.

"We request appropriate contributions to the improvement of the Millbrae Avenue / Rollins Road intersection, improvement of Millbrae Avenue, between Hwy. 101 and El Camino Real; and analysis of and appropriate improvement of the intersection of Old Bayshore and East Millbrae Avenue, and contribution to required signal improvements.

"We do not agree that degradation of California / Millbrae and Rollins / Millbrae intersections are unavoidable effects (pg. 435). Appropriate mitigation should be proposed." (Janet Fogarty, Mayor, and Robert Treseler, City of Millbrae).

"P. 417 - Top of page - There are already 6 lanes on Millbrae Ave. to El Camino Real." (Jessie Bracker)

Response

For comments regarding feasibility and funding of mitigation, please see the response on pp. C&R.156-158 herein.

The intersection of Old Bayshore Highway and Millbrae Avenue is not projected to deteriorate to an unacceptable level and would not require mitigation as a result of the project. No traffic signal upgrading would be required. The intersection is projected to operate at either LOS A or LOS B during the peak hours in 2006. For other information on this and other Millbrae intersections, please see pp. C&R.123-126, 131-132, 157-159 herein.

The comment regarding the number of lanes on Millbrae Avenue is correct. Accordingly, the first bulleted item on p. 417 of the EIR is deleted.

HOV Lanes

Comments

"The document fails to mention any financing mechanisms for the proposed mitigations. San Francisco International Airport (SFIA) improvements which affect State facilities should be mitigated by SFIA, or the lead agency. The document needs to address impacts on State facilities due to the project and cumulative area development. Mitigation measures must be discussed. For example, who will fund improvements such as High Occupancy Vehicle Lanes (HOVLs), freeway and highway (Route 101 and 82) modification, widening, and construction of freeway ramps?

"We have the following questions and comments regarding details of mitigation measures:

"High Occupancy Vehicle Lanes (HOVLs):

"Please state if the City and/or Traffic Authority are planning to fund the construction of an HOVL (Second to last paragraph on p. 417). Caltrans does not unilaterally decide whether to construct/implement HOVLs. Other agencies, such as the Federal Highway Administration (FHWA), Metropolitan Transportation Commission (MTC), and the local traffic authority are also involved. Caltrans policy is against converting an existing mixed flow lane to HOVL.

"The suggestion that the proposed HOVL be for 3+ occupancy from San Francisco to San Jose is not compatible with the existing HOVL along US 101 in San Mateo and Santa Clara Counties. In Santa Clara County, these HOV facilities are for 2+ occupancy in Santa Clara. The policies of HOVL occupancy are incompatible.

"Proposed HOVLs from San Francisco to existing HOVLs along Route 101 beginning at Whipple Avenue are not in MTC's Master Plan.

"Referring to the discussion on page 421, in the last paragraph, if ramps need redesign/widening as a result of this project's build out, the improvements should be funded by the project proponents and should be conditioned to identify funding responsibility.

"For cumulative impacts, more realistic mitigation measures are recommended for implementation. The concept of a 3+ HOVL facility is not a valid mitigation measure, since it is not programmed or funded." (Preston Kelley, Caltrans)

"Mitigations Proposed by SFIA"	"SamTrans Staff Comments"
"6. Create HOV lanes out of existing traffic lanes on Highway 101.	"This is not a valid mitigation by the Airport as SFIA has no control on its implementation. In addition, Caltrans policy prohibits the conversion of existing mixed flow lanes into HOV lanes." (Richard Gee, SamTrans)

Response

The authors of the DEIR recognize that Caltrans policy currently prohibits the conversion of mixed-flow lanes to HOV lanes and that current HOV facilities along US 101 in Santa Clara County are for 2+ occupancy. Previous San Mateo County transportation plans and State Transportation Improvement Plans (STIP) included the implementation of HOV lanes in San Mateo County. Currently, the San Mateo County Congestion Management Program (CMP) includes only auxiliary lanes along US 101 throughout San Mateo County. The auxiliary lane projects are identified as part of the County's Transportation Authority Program, but are not in the CMP Capital Improvements Plan, the 1990 STIP or the 1991 Transportation Improvement Program (TIP). It is important to note that under CEQA, the EIR is not required to address funding. See p. C&R.156 herein for additional discussion of the funding issue.

The intent of the mitigation measures described in Section V of the DEIR is to provide reasonable and implementable measures that address forecast growth, project and list-added-growth impacts. High Occupancy Vehicle (HOV) lanes are a reasonable mitigation measure.

HOV lanes would encourage carpools by employees of SFIA and use of shared taxis and shuttles by air passengers. This would be part of a Transportation System Management (TSM) program designed to reduce travel throughout the day by private automobiles, especially single-occupant vehicles. The HOV lanes should be signed to accommodate any

vehicle carrying three or more persons, including all buses and airport shuttles. Only those taxis carrying three or more persons (including the driver) should use the HOV lanes.

The City of San Francisco Transportation Authority is not likely to have any involvement in the decision-making process regarding HOV lanes as it is out of the Authority's jurisdiction. Agencies other than Caltrans that would be involved include MTC and the San Mateo County Transportation Authority.

The differences between implementing 3+ occupancy HOV lanes and 2+ occupancy HOV lanes are hard to quantify without a traffic model of the entire corridor. A 3+ occupancy HOV lane would not serve many taxis coming to SFIA, which often carry only one passenger. Shuttle vans and buses would still benefit from either a 3+ or 2+ HOV lane but a 3+ HOV lane would probably be less congested than a 2+ HOV lane and therefore travel times would improve for these vehicles. The Bay Area, except for the bridges, has mostly 2+ HOV lanes, or is planning for 2+ rather than 3+ HOV lanes. A travel demand model for the US 101 corridor in San Mateo County would predict which type of HOV lane would have the most success, based on the traffic volumes in the mixed-flow lanes and the levels of congestion experienced.

Airport Access and Circulation

Comments

"Mitigations Proposed by SFIA"	"SamTrans Staff Comments"
"3. Widening two SFIA roads.	"This would only benefit the internal Airport circulation without mitigation of the traffic on the freeways and local agencies' streets.
"10. Modify freeway ramps to serve the Ground Transportation Center, and providing direct ramp connections to the HOV lanes.	"To be viable, written approval should be obtained from Caltrans and included in the EIR.
"11. Installing variable message signs internal to the Ground Transportation Center and Short-Term Garage.	"This measure would be a benefit to internal Airport traffic circulation with little effect on the freeways and local streets." (Richard Gee, SamTrans)

"P. 12 - How can a new Ground Transportation Center be called a Mitigation to Neighboring vicinities?" (Jessie Bracker)

"Increased Traffic - The new traffic circulation proposed in the EIR would sufficiently handle all the vehicles and bus traffic for the entire facility, old and new." (Stan Moy, Finger & Moy Architects)

Response

Widening the SFIA internal roadways and installing variable message signs in the Ground Transportation Center would mitigate internal airport circulation. It would also help circulation on local area roadways and freeways as traffic would not back up onto the freeways and local roadways from the airport internal roadways. The mitigation is directed mainly, however, at dealing with the impacts to SFIA internal circulation.

Direct ramps to the Ground Transportation Center from HOV lanes would allow buses, shuttles, taxis and carpools preferred access into the airport and perhaps encourage more passengers and employees to use the HOV lanes. It is a reasonable mitigation measure that would require the cooperative efforts of many agencies and entities. It is identified as an implementable mitigation measure even though prior agreements have not been made.

The Ground Transportation Center (GTC) is not referred to in the EIR as a "mitigation to neighboring vicinities." It is designed to serve internal SFIA circulation, and the access to and egress from US 101 and I-380. Neighboring facilities, such as roadways in Burlingame, Millbrae, San Bruno and South San Francisco would benefit from the GTC's operation as vehicles would be less inclined to back up onto local roadways, park on them, or divert on and off of them.

Widening US 101

Comment

	"Mitigations Proposed by SFIA"	"SamTrans Staff Comments"
"7.	Widen Highway 101 to eight lanes south of San Carlos.	"The widening has been completed. Because of its distance from SFIA, the widening has no significant mitigation of the traffic in the Airport area." (Richard Gee, SamTrans)

Response

The commenter correctly notes that the mitigation measure has been implemented since the preparation of the DEIR. Increases to the capacity on US 101 in San Mateo County help both airport and non-airport traffic. Having an eight-lane freeway throughout the County, and not a combination of an eight-lane and six-lane freeway, helps to reduce the number of bottlenecks and potential for congested areas. Also, as most freeway congestion is incident related, having an additional through lane helps keep traffic moving even when there is an incident blocking one or more lanes.

General

Comments

"That the mitigation measures [should] convincingly demonstrate the ability to mitigate the increased number of trips to be generated not only at the Airport, but on the local roads and freeway segments so important to our overall transportation system." (Bob Bury, Chair, Inter-City TSM Authority)

"The Transportation Impacts section does not adequately describe the mitigation of airport surface traffic impacts other than the impact of the proposed BART extension. . ." (Chris Brittle, Metropolitan Transportation Commission)

Response

Mitigation measures to address surface traffic impacts are identified on pp. 412-424 of the EIR. Impacts that could not be eliminated or reduced to an insignificant level are discussed on p. 435 of the EIR. Further information can be found in the responses on pp. C&R.156-158 herein.

CONGESTION MANAGEMENT PLAN

Comments

"C/CAG believes San Francisco International Airport should be subject to the requirements of the San Mateo County Congestion Management Plan. C/CAG requests the San Francisco

Airports Commission to prepare a plan to mitigate all projected traffic increases, which is consistent with the San Mateo County Congestion Management Plan prepared by C/CAG in July 1991." (Raymond Miller, C/CAG)

"2. Congestion Management Program

"The Airport should participate in the San Mateo County Congestion Management Program." (Robert Treseler, City of Millbrae)

"Also, along the same lines, we would like to work together with the airport within the San Mateo County City County Association of Governments Congestion Management Plan to provide a forum for producing a deficiency plan. Because under the congestion management plan, the impacts that are associated with transportation will be greater than Level F on the surrounding roads, and a deficiency plan will be called for by state law." (Janet Fogarty, Mayor of Millbrae)

"The Board concurs with the comment of the City/County Association of Governments of San Mateo County (C/CAG) that San Francisco International Airport should be subject to the requirements of the San Mateo County Congestion Management Plan. The Board supports C/CAG's request that the San Francisco Airports Commission prepare a plan to mitigate all projected traffic increases in San Mateo County, which is consistent with the San Mateo County Congestion Management Plan." (County of San Mateo Board of Supervisors)

"2. Congestion Management Program

"In addition, the Airport should participate in the San Mateo County Congestion Management Program. Airport passenger trips, as well as employee trips will be included in the Congestion Management Plan. The CMP could serve as the forum to develop the necessary Deficiency Plan to provide off-site mitigation for the increased congestion the Airport expansion will cause on San Mateo County freeways and arterials." (Janet Fogarty, Mayor of Millbrae)

"Specific mitigation measures that need greater elaboration include:

- airport coordination activities with local agencies, including the San Mateo County Congestion Management Agency (CMA), to establish and maintain traffic LOS standards on key freeways and airport access routes as well as participation with the

CMA in the development of deficiency plans to address unacceptable levels of service at intersections near the Airport." (Chris Brittle, Metropolitan Transportation Commission)

"The [San Mateo County Transportation] Authority believes that the Airport should definitely be subject to the Congestion Management Plan for San Mateo County." (Richard Gee, SamTrans)

" . . . Mitigations addressing cooperative funding of needed improvements like participation in the San Mateo County Congestion Management Plan should be included in the Final EIR." (Dennis Argyres, City of Burlingame)

Response

The state law requiring the adoption of Congestion Management Plans ("CMP") took effect on August 1, 1990 (Cal. Gov't. Code Section 65088 et seq.). The law requires each county that includes an urbanized area to adopt and annually update a CMP (Section 65089a). The CMP must contain (1) a designation of a CMP roadway system; (2) traffic level of service standards; (3) transit level of service standards; (4) a trip reduction and travel demand analysis; (5) land use impact analysis; and (6) a seven-year capital improvement program (Section 65089b).

Once the CMP is adopted, cities and counties must take certain actions to conform to the CMP. These include (1) adopting and implementing a trip reduction and travel demand ordinance; (2) adopting and implementing a land use analysis program; and (3) maintaining the established levels of service and performance standards (Section 65089.3). If service and performance standards are not met, the city or county must adopt a deficiency plan for those individual segments or intersections which fail to meet the standards and implement an action plan for improvements (Section 65089.3). The State Controller is required to withhold specified transportation apportionments to a city or county which is not in conformance with the CMP (Section 65089.3).

The San Mateo County CMP calls for land use restrictions and a trip reduction ordinance that would force private employers to comply with CMP trip reduction objectives such as staggered work hours, telecommuting, parking management programs, and required use of public transportation. In accordance with the CMP, San Mateo County adopted its Transportation System Management ("TSM") ordinance in September, 1990 (Ordinance

No. 03261, adopted September 11, 1990, codified as Part II, Division V, Sections 5870-5876 of San Mateo County Ordinance Code).

The CMP statute itself does not contain specific requirements related to the compliance of property owners within a particular city or county with the applicable CMP for the city or county. Rather, the statute describes only the responsibilities of the cities and counties in developing the plans, and assumes that cities and counties will achieve the goals contained in their CMP's by adopting ordinances that apply to local employers. Indeed the San Mateo County CMP, adopted by the City/County Association of Governments of San Mateo County (C/CAG) discusses SFIA only with respect to the County's TSM program. Therefore, whether the CMP applies to the San Francisco Airport depends more generally on whether San Mateo County can legally adopt ordinances that affect operations of the Airport.

The San Francisco City Attorney has taken the position that the application of the San Mateo County TSM ordinance to the Airport would violate state law (letter from Louise Renne, San Francisco City Attorney, to Michael Murphy, San Mateo County Deputy County Counsel, dated June 21, 1990). The City Attorney has stated that a local ordinance is invalid if it conflicts with state law or occupies a subject of statewide concern; she takes the position that the operation of the Airport is a matter of statewide concern because it is subject to extensive federal regulations as well as comprehensive state laws. In addition, the City Attorney has pointed out that, by virtue of state law authorizing a local agency to "regulate the use of the Airport and facilities and other property or means of transportation within or over the Airport," the operation of the Airport has been vested solely in the City and County of San Francisco by virtue of state law.

In response to San Francisco's legal position, San Mateo County agreed specifically to exclude the San Francisco Airport from its TSM ordinance, in exchange for the commitment of the Airport to implement a comprehensive TSM program for Airport employees (San Mateo County TSM ordinance, Chapter 21, Section 5872). In response, the Airport, in preparing a trip-reduction ordinance, is adding to its TSM activities that have been in place for many years. Most of these activities have been organized by airport tenants and have included ridesharing and transit-incentive programs. This ordinance, which is expected to be completed in 1992, will require large Airport employers with 100 or more employees to appoint a transportation coordinator and establish policies that would

increase use of transit alternatives by 20-25% over the next five years. This goal is consistent with San Mateo County's TSM goals.

The Airport also participates in other Countywide efforts aimed at reducing traffic congestion. The Airport has representatives on the County's TSM committee, and on the City/County Association of Governments task forces for congestion management and implementation of the Bay Area Air Quality Management District Clean Air program. The Airport also has a representative on a Samtrans subcommittee which is working to improve its service scheduling for better transit service to the Airport.

TRANSPORTATION SYSTEM MANAGEMENT

Comments

"Although we disagree that the proposed incentives and disincentives to promote public transportation are adequately addressed, we do feel that the airport's support of the Transportation Systems Management plan is well founded. We would like to see that folded into the Transportation Systems Management plan for San Mateo County so that we can work together to help alleviate some of the traffic." (Janet Fogarty, Mayor of Millbrae)

"The significant effects of Airport expansion on regional highways are identified, however the DEIR suggests mitigation measures be implemented by other agencies. The Airport should participate in mitigation of the traffic impacts caused by the expansion.

"The following are suggested mitigation measures in which the Airport may participate:

"1. Transportation System Management Program

"I recommend the Airport be included in the San Mateo County TSM Program. The Airport employers should meet the 25% TSM goal to mitigate the impact of the increase in employee traffic if this cannot be demonstrated as effectively accomplished already." (Robert Treseler, City of Millbrae)

"On page 413, the DEIR proposes various aspects of Transportation System Management. The TSM must be part of the San Mateo County TSM program and not that of the City and County of San Francisco." (George Foscardo, City of San Bruno)

"The significant effects of Airport expansion on regional highways are identified, however the DEIR suggests mitigation measures be implemented by other agencies. The Airport should participate in mitigation of the traffic impacts caused by the expansion.

"The following are suggested mitigation measures in which the Airport may participate:

"1. Transportation System Management Program

"Although we disagree that the proposed incentives/disincentives are adequate, we support the Airport's participation in Transportation System Management and recommend the Airport be included in the San Mateo County TSM Program. The San Mateo County TSM Program requires all employers to meet a goal of a 25% reduction in employee trips. The Airport, and its tenants are the largest employers in San Mateo County, and destined to grow larger under the Airport Master Plan. The Airport employers should meet the 25% TSM goal to mitigate the impact of the increase in employee traffic." (Janet Fogarty, Mayor of Millbrae)

"In regard to another issue, the DEIR recognizes that vehicular traffic will increase. A mitigation measure should be included to require the Airport to reduce trips through transportation systems management (TSM). The Airport could also consider participating in one of the existing San Mateo County groups with a Joint Powers Agreement to implement a TSM Program." (Wendy Cosin, City of Pacifica)

"Mitigations Proposed by SFIA"	"SamTrans Staff Comments"
"4. Establish a TSM Program for SFIA.	"Airport staff has informed us that a TSM Program is underway. However, we are not aware of any activities of coordinated overall TSM programs by SFIA. Addition of parking in the Airport would be inconsistent with the goals of TSM." (Richard Gee, SamTrans)

"Specific mitigation measures that need greater elaboration include...

"– defining a workable and effective commute alternatives program for airport employees given past experience which has shown how difficult it is for a majority of employees with different shifts and work hours to use carpools and transit." (Chris Brittle, Metropolitan Transportation Commission)

"That the TSM Program Evaluation, as a mitigation measure, [should] be based on the same level of commitment and participation currently required of business and as prescribed in the San Mateo County TSM Plan administered by the San Mateo County Transportation Authority." (Bob Bury, Chair, Inter-City TSM Authority)

Response

As noted on p. C&R.168 herein, SFIA is not required by law to participate in the San Mateo County Transportation System Management (TSM) Plan. Nonetheless, the Plan contains many elements in which SFIA could participate. Chapter 4 of the TSM Plan contains evaluation tables for various TSM techniques and their applicability in San Mateo County. The following TSM techniques were listed as having a high applicability to San Mateo County and a medium or high chance of reducing congestion:

- Freeway Ramp Metering along US 101;
- Park and Ride Lots at various locations;
- Shuttle Buses along the US 101 and El Camino corridors;
- Transportation Coordinators at large employment concentrations;
- Long Range Planning/Cooperation among public and private agencies; and
- Development Review/Enforcement of TSM requirements.

Many other TSM program elements were listed as having medium applicability for San Mateo County with medium or high potential for reducing congestion. Section V of the EIR contains many of these same TSM suggestions.

SFIA is currently preparing a trip reduction ordinance. It would require large airport employers (100+ employees) to appoint a transportation coordinator and establish policies that would increase transit use. The County's TSM goal of having 25 percent of all employees commute to work by means other than a single-occupant automobile within the next five years is also under consideration. Given the nature of airport employment, with different shifts throughout the day, it may be difficult to achieve the 25 percent goal. However, SFIA should make every effort to reach this goal. It is important to note that the Bay Area Air Quality Management District (BAAQMD) is currently working on a regional air quality plan which would establish average vehicle ridership rules for individual

municipalities, which would supersede the 25 percent goal. The BAAQMD rules are expected to be finalized in a report by the fall of 1992.

SFIA currently has one transportation coordinator, in the Landside Operations Division, who is overseeing the development of the Airport's TSM program and its Trip Reduction Ordinance. The SFIA Trip Reduction Ordinance must be approved by the Airports Commission before it is implemented. The Trip Reduction Ordinance would require airport tenants with more than 100 employees to implement TSM program elements in order to meet specified goals. The employers would be able to choose the most appropriate measures for their employees (e.g., transit incentives, ridesharing organizations, etc.) in order to meet the goals. With so many different employers at the airport, the coordinator could establish TSM program elements for smaller employers (fewer than 100 employees) and help merge the efforts of several employers into a single SFIA TSM program.

The TSM elements that SFIA would use include:

- Staggered Work Hours;
- Telecommuting (e.g., employees working at home one day (or more) a week);
- Compressed Work Weeks (e.g., four 10-hour days);
- Ridesharing;
- Increasing transit attractiveness (e.g., information availability, shuttles, reduced-fare cards, etc.);
- Priority for high-occupancy vehicles (HOV);
- Establishing congestion management goals, monitoring and enforcing them;
- Incorporating TSM features into physical design (e.g., lockers for bicycles, shower and changing facilities, bicycle paths, pedestrian paths, HOV lanes); and
- Incorporating TSM features into SFIA employers' policies (e.g., parking rates and spaces favorable to carpools and vanpools, subsidies to employees for transit fares, transportation coordinator contact with employees).

The role of the transportation coordinator is to tailor the appropriate TSM program elements to the needs of the employer. SFIA currently has a representative on San Mateo

County's TSM Committee, which should ensure that the County's concerns are being addressed by employers at SFIA. (See also pp. C&R.168-169, herein)

The first task listed under the third bulleted item on p. 413 is revised as follows (revisions are underlined):

> A TSM Manager would develop the specific program and coordinate it with activities of SFIA, San Mateo County, the City and County of San Francisco, SamTrans, BART, CalTrain, shuttle/van/taxi companies that serve SFIA, and other public agencies whose services or regulatory functions would affect the mode of travel chosen by employees and air passengers. The objective of the TSM program would be to reduce travel throughout the day by private automobile, especially single-occupant vehicles.

TRANSIT MITIGATION

Transit Service, General

Comments

"To achieve pedestrian and transit sensitive development for SFIA, public and private agencies must plan and coordinate more efficient, effective, and reliable transit and transportation systems." (Preston Kelley, Caltrans)

"Mitigations Proposed by SFIA"	"SamTrans Staff Comments"
"14. Generally enhancing transit services.	"This measure calls for increased transit service by BART, CalTrain, MUNI Metro and SamTrans." (Richard Gee, SamTrans)

Response

The comments are consistent with the information provided in the EIR.

MUNI Service to SFIA

Comment

"p. 320 SF MUNI SFO Service via 19th Avenue. MUNI, SamTrans, MTC and SFO staff have been exploring the feasibility of extending MUNI's 28-NINETEENTH AVENUE service south thru Daly City and via 280 to the airport. The extension proposal has obvious benefits for regional travel in general and for employees and travelers in particular. (The extension would also serve other major destinations along the way, such as Seton and Serramonte.) The implementation of this proposal would probably be in conjunction with the discontinuance or restructuring of SamTrans' 3B line.

"It is important to note that this service is not seen as competitive with BART as few riders from western San Francisco neighborhoods, where significant numbers of Airport employees do live, could be expected to utilize local transit to reach BART to take BART to SFO; this would typically be a time-consuming and circuitous, three-transfer/four-ride trip, including the connector from the proposed BART SFO Station site to SFO destinations.

"Because of its potential attractiveness to riders for whom BART would not be a realistic option, the 28-to-SFO proposal may have value as mitigation to western SF traffic impacts.

"p. 416 Mitigation Measures: Other Agencies. Improving MUNI capacity to BART/CalTrain as a possible mitigation measure is desirable for trips to/from the Financial District. However, as noted above, expecting people from western neighborhoods to ride to BART or CalTrain to get [to] the airport is unrealistic. A much more realistic mitigation measure is discussed above.

"The 28-extension proposal should be identified as a potential mitigation measure in this section. However, committed funding sources to implement this proposal--or any other involving improvements to MUNI service--have not been identified." (Peter Straus and James Lowe, MUNI)

Response

Extending MUNI's 28-NINETEENTH AVENUE bus line to SFIA would provide a useful transit connection from the airport to neighborhoods in western San Francisco. By reducing the number of transfers required to make this trip it would make transit a more

attractive option. This line currently terminates at the Daly City BART station, and with the proposed extension of BART to SFIA, only one transfer would be required. However, until the BART extension has been completed, extending this line would serve as a valuable link for both air passengers and airport employees. Even after the completion of the BART extension to SFIA, the extension of the 28-NINETEENTH AVENUE would continue to serve airport employees, who otherwise would not have good access to public transit. MUNI has no plans to extend the 28-NINETEENTH AVENUE line at this time; its short range transit plan states that the extension of this line is under consideration.

APM Connection to Transit

Comments

"P. 13 - Under additional measures to address impacts (to be added) . . . If BART is built to Airport Internal Station, Airport commits responsibility to serve Millbrae Caltrain Station with Free Shuttle Bus service for people going to Airport from the South of County. . .

"P. 323 - mentions baggage handling at BART Station to get to Airport but not from Airport to BART to go home. It has to go both directions, you know! . . .

". . .Also although document says Passenger "Bags" can be taken care of to get to Airport. There is no way to get the Bags from Airport to Bart (if station isn't internal at Airport!) . . ." (Jessie Bracker)

"On page 415, reference is made to provision of 'an exclusive right-of-way, bus or rail connection between the SFIA BART station and the Ground Transportation Center.' It is critical that this mitigation be detailed. David Calver from Parsons Brinckerhoff stated that the proposed Automated People Mover (APM) system to be constructed by SFIA was definitely a dedicated rail line, not a bus line." (George Foscardo, City of San Bruno)

	"Mitigations Proposed by SFIA"	"SamTrans Staff Comments"
"1.	Build a new Ground Transportation Center, served by a People Mover that distributes air passengers and employees to the terminal buildings.	"This would be an effective mitigation only if BART is extended to the vicinity of SFIA with a convenient connection to the CalTrain. Without the rail service, the People Mover would only benefit internal Airport traffic. . .

"9.	Requiring an exclusive right-of-way rail or bus facility to connect SFIA to the BART Station west of 101.	"This would be desirable if the BART Station is located west of 101 along with a CalTrain cross-platform transfer facility." (Richard Gee, SamTrans)

Response

The BART extension to SFIA is discussed on pp. C&R.139-145 herein. Many of the details have yet to be designed, and are still in the planning, or conceptual stage. These details include baggage handling on BART trains and at BART stations, the extension of the Automated People Mover to the BART station (if it is located west of US 101), and connections to CalTrain stations in Millbrae and San Bruno (particularly if the BART station is not a joint BART/CalTrain station). As noted in another response, BART baggage handling is more important for departing passengers (because of flight schedules) than for arriving passengers. Additional discussion on the subject of baggage handling appears on p. C&R.144 herein.

The Ground Transportation Center (GTC) would serve as an important mitigation measure regardless of the BART extension to SFIA. The GTC would serve rental cars, buses, shuttles, parking, and the new International Terminal as well as the Automated People Mover. Improving internal circulation at SFIA could reduce traffic backups onto US 101. The People Mover would provide access to all areas of SFIA, and provide a connection to any mass transit station that comes into the vicinity of SFIA. The consolidation of these functions would make the GTC an efficient multi-modal transit center, both in 1996 when the near-term development has been completed and in 2006 when the long-term development and the mass transit station have been completed.

The exclusive right-of-way between SFIA and the west-of-US-101 property would be important if the BART station were to be located west of US 101. If a joint CalTrain/BART station were to be built west of US 101, then CalTrain commuters would also benefit from the direct connection into SFIA. However, even without CalTrain service, the right-of-way would be necessary to provide unrestricted access between SFIA and the BART station.

CalTrain Service

Comments

"On page 5 the report states 'The proposed project would affect existing transit and shuttle services to SFIA such as that both systems would require expansion to serve the increased demand.' It is already true that transit services in particular do not meet the needs of passengers and persons passing the airport to go into or out of San Francisco. Increasing the length of the CalTrain run into downtown San Francisco would increase CalTrain's ridership and make it a real boon for people who would prefer not to drive to work." (Patricia Clark)

"I was told that the Master Plan of the Airports Commission is diligently working towards trying to see if we can have more public transit use to the airport. It has been actively working on this. I was told that they are really interested and anxious about . . . the possibility of a CalTrain station at the airport, much of which is not clear from the Environmental Impact Report." (Commissioner Engmann)

"Attached is a copy of a report delivered as part of my presentation to the Department of City Planning/Embarcadero Plaza Advisory Committee on March 26, 1991. [The report is available in the files at the San Francisco Department of City Planning.] This report summarizes the contents of numerous detailed reports that have been delivered to the Department of City Planning on prior occasions regarding my proposed extension of rail service via an aerial loop extending from the CalTrain Right-of-Way directly to the SFO Airport Passenger Terminals. Please note that page 16 of my March 26, 1991 report documents (using MTC and City and County of San Francisco data) that my Transit Link System proposal provides superior service compared to BART in that it can be built in three rather than eleven years and save taxpayers more than $2.7 billion." (Dehnert Queen, Small Business Development Corporation)

Response

The Master Plan includes a transit (APM) connection to a multi-modal station west of the Airport. The EIR notes that this station should include both BART service (if it is extended) and CalTrain service. It is true that if CalTrain service were extended into downtown San Francisco, CalTrain would be attractive to a larger number of Airport travellers. An aerial loop is not proposed in the Master Plan nor is it proposed as a

mitigation measure in the EIR, since it would penalize non-airport travellers and would not effectively serve enough Airport destinations (see response on pp. C&R.138-139).

Airport Staff confirm that there has been no consideration by SFIA of plans to bring CalTrain into the terminal area (East of Bayshore).

The Airport has indicated that it would connect the Automated People Mover to any form of mass transit that comes into the "West of Bayshore" property on the west side of US 101. CalTrain, BART, SamTrans and other transit riders would benefit from this connection. In addition, discussions with CalTrain and SamTrans regarding shuttle service from the Millbrae CalTrain station have taken place previously. SamTrans bus line 3B currently provides transfer service from the Millbrae CalTrain station to SFIA.

The Airport is prohibited from providing competing service with public transit operators, and therefore has not pursued plans to provide free shuttles for airport employees. Airport tenants are presumably not subject to the Airport's charter, and could provide shuttle services as part of any TSM program.

Encouraging Transit Use, Improving Service

Comments

". . .[O]ne way of mitigating the traffic impacts is to, 'encourage passengers to use transit.' Once again, I don't think there is a meaningful analysis of how we are going to encourage passengers to do that. Would giving some incentives, some rebates in terms of ticket prices if the person is using mass transit or perhaps some expedited check-in service for those who use transit, would those work? Those are the types of things that I think should be analyzed in this document." (Commissioner Morales)

"Specific mitigation measures that need greater elaboration include: . . .

- development of a pricing policy for parking which reduces auto access to the airport and encourages the use of transit and other high occupancy vehicle services.
- preferential access for public transit operators to the terminal curbside to place public transit on a competitive footing with auto access." (Chris Brittle, Metropolitan Transportation Commission)

"Traditional reliance on the automobile must be discarded, and SFIA staff must work with the mass transit agencies to develop alternatives to the automobile. This applies to airport employees as well as travelers. SFIA staff should work with SamTrans staff to modify airport buses so they can handle carry-on luggage. Also, SFIA staff should be working with CalTrain staff to improve CalTrain service. This should include more frequent trains, better access to downtown San Francisco, and shuttle service between SFIA and the nearest CalTrain station." (Jim Wheeler, Sierra Club, Loma Prieta Chapter)

"P. 414 - Economic disincentives for Single Occupants should not happen. That is discrimination on Workers." (Jessie Bracker)

	"Mitigations Proposed by SFIA"	"SamTrans Staff Comments"
"5.	Adding park and ride lots on Highway 101.	"This is not a valid mitigation by the Airport as SFIA has no control of its implementation. If SFIA has definite locations and intends to finance the projects, more information should be provided." (Richard Gee, SamTrans)

Response

Many of the mitigation measures are aimed at encouraging transit use to the Airport and increasing the occupancy of vehicles coming to the Airport. These measures would be achieved by many different programs, operated by the Airport and by public and private agencies. The EIR identifies these measures as a way of mitigating the impacts related to the project and to the other growth that would occur in the region. The specific components of these programs would be worked out later among the implementing agencies.

Some of the components, which would fall under a Transportation System Management (TSM) program, include: a parking pricing strategy which encourages carpooling and discourages single-occupant vehicles, baggage handling capabilities on public-transit vehicles and at public-transit stations, and economic incentives for transit use or for carpooling of airport employees (this is not discrimination, as alternative modes of transportation are readily available from most locations in the Bay Area). Elements of TSM programs are discussed in the response on pp. C&R.171-173.

Providing preferential access for public-transit operators is being considered within the framework of the GTC design, HOV lanes and incentives for transit usage. Whether access to the terminal curbside would still be allowed or concentrated in the GTC, preferential treatment of transit operators would still be encouraged. Page 413 of the EIR mentions many transit/ridesharing mitigation measures.

Improving transit service and encouraging its use are implementable mitigation measures that would alleviate the impacts generated by the project and the other growth in the area.

Park-and-ride lots are a suggested mitigation measure that would serve to alleviate congestion along the US 101 corridor. With or without the airport project, congestion on US 101 is projected to worsen. This mitigation measure would reduce airport traffic impacts as employees would make use of the lots rather than continue individually into the congested airport area. Also, commuters to San Francisco who travel along congested segments of US 101 would benefit from the park-and-ride lots. Exact locations for park-and-ride lots have not been identified, but that does not discount their potential value as an implementable mitigation measure.

Transit Use and Proposed Parking in SFIA Master Plan

Comments

"We have some concerns regarding the five proposals to increase on-site parking in the near-term SFIA Master Plan, as outlined on page 324. We would rather have employers develop incentives to encourage people to use transit or ridesharing rather than to drive alone." (Preston Kelley, Caltrans)

"The EIR should address alternatives to adding 7,000 parking stalls to accommodate the airport expansion. Providing far fewer stalls would utilize a market base approach to assist or induce airport users to choose other modes of transit. Assistance and inducements for employers and employees to use other transit modes such as car pooling or van pooling, etc. would be a progressive alternative to encouraging and accommodating auto traffic through the provision of additional parking spaces. The mitigation measures to decrease traffic generation are totally inadequate. Many alternatives are available to reduce and mitigate traffic impacts which are commonly being used in other jurisdictions and are being required of private developers." (Ed Everett, (then) City Manager, City of Belmont)

"Mitigations Proposed by SFIA"	"SamTrans Staff Comments"
"2. Adding stalls in Airport parking facilities (7,000 by 1996, 930 more by 2006).	"This would be counter to any traffic mitigation by encouraging the use of private vehicles to the Airport. This does not mitigate the increased traffic on the freeways and local streets." (Richard Gee, SamTrans)

"Parking at SFIA should be discouraged. Employees who drive alone should be charged for parking. The short-term parking garage fees should be increased dramatically for parking longer than five hours. The construction schedule of the People Mover should be accelerated so the entire system would be operational by 1996. United Airline employees and other airport employees would be able to use CalTrain or SamTrans to get to the External Station and then take the People mover to their workplace. This would negate the requirement for additional parking spaces." (Jim Wheeler, Sierra Club, Loma Prieta Chapter)

"The recommendation of adding 7,000 parking stalls is of great concern as it is inconsistent with TSM goals here in the San Mateo County as well as those goals and 'rules' soon to be adopted by the Bay Area Air Quality Management District." (Bob Bury, Chair, Inter-City TSM Authority)

Response

Increasing the parking at SFIA can be implemented so that TSM goals are still met and the use of single-occupant vehicles is discouraged. Several areas have to be looked at in conjunction with one another, and not just increasing parking in and of itself.

The parking demand analysis that was conducted for the EIR used demand ratios based on 1991 levels of enplanements and employees. A straight line projection was used to estimate the future parking demand. This provides a worst-case scenario, as reductions in the parking demand ratios were not considered in the future, when BART and other transit services that do not exist today are made available.

The projected parking deficit in 2006 is for air passengers and not employees (no parking space deficit is forecast for 1996). However, the potential for successful implementation of carpool and vanpool programs and increased transit ridership lies mainly with Airport employees. Also, the extension of BART to SFIA would result in a reduction in the demand for parking spaces of 3,220 spaces (see discussion in EIR on p. 327). With the

BART station, there would be a projected deficit of only 1,171 spaces instead of 4,391 spaces. If the employees, rather than the air passengers, were faced with the parking deficit, long-term trip reduction goals would be achieved. In order for this to occur, the allotment of parking spaces would have to be altered so that fewer spaces are assigned to airport employees and the corresponding number reassigned to air passengers. Parking spaces in the proposed new parking facilities should therefore be reallocated in favor of air passengers, as TSM program elements could be expected to reduce employee parking demand more than air passenger parking demand. The expansion of parking supply at SFIA should be phased to allow evaluation of the effectiveness of expanded TSM programs and transit improvements before the addition of parking (adding parking before or simultaneous with TSM programs and transit improvements may itself undermine the relative attractiveness of alternatives to single-occupant automobile travel).

Add the following mitigation measure on EIR p. 418, as the first bulleted item under Project-Impact Measures (1996) Identified in This Report (SFIA):

> Reallocate parking spaces in the proposed new parking facilities in favor of air passengers, as TSM program elements could be expected to reduce employee parking demand more than air passenger parking demand. Phase the expansion of parking supply at SFIA to allow evaluation of the effectiveness of expanded TSM programs and transit improvements before the addition of parking (adding parking before or simultaneous with TSM programs and transit improvements may itself undermine the relative attractiveness of alternatives to single-occupant automobile travel).

Add the identical mitigation measure on EIR p. 419, as the first bulleted item under Project-Impact Measures (2006) Identified in This Report (SFIA).

For air passengers, there are a number of mitigation measures suggested that would help alleviate the demand for parking spaces at SFIA. The parking mitigation measures, the parking pricing policy, the transit/ridesharing measures, HOV lanes on US 101, dedicated ramps into the GTC, roadway improvements, and the GTC design are all measures that would reduce unnecessary inter-lot and intra-lot circulation and reduce the total number of vehicle miles traveled by air passengers. The parking pricing policy, as noted by the mitigation measures on p. 414 of the EIR, would be adjusted so that carpool and high occupancy vehicles have preferential parking rates and spaces. If the trip reduction goals set forth on p. 413 of the EIR are not met, then the parking pricing policy would be adjusted until they are achieved. This market based incentive approach would discourage people from using a single-occupant vehicle and parking at SFIA.

Table 45 on p. 321 of the EIR shows the projected transit use in the future. With the extension of BART to SFIA, the percentage of single-occupant automobiles would decrease from 83.7 percent today to 74.2 percent in 2006 for employees, and from 20.1 percent today to 18.8 percent in 2006 for air passengers This fact, combined with the use of the Automated People Mover, a CalTrain connection to BART, and other TSM measures, would reduce the demand for parking at SFIA in a statistically significant way. Another methodology for conducting parking analysis would have been to apply the reduced automobile mode shares to the future parking demand ratios. However, it was decided to conduct a worst-case analysis and not adjust the future parking demand ratios.

By provision of additional parking spaces at SFIA to meet the demand, overall circulation throughout the Airport area, including local roadways and neighborhoods, would be reduced. The number of days on which the long-term parking lot is closed would be reduced, as sufficient parking would be provided. This would negate the need for vehicles to circulate into the Airport and then, upon getting turned away, travel to one of the off-Airport parking lots, which do not plan any capacity increases in the future. One measure suggested in the EIR, the use of low-frequency radio broadcasts, and signs along nearby freeways, would be useful in directing motorists to the nearest available parking location, thus minimizing circulating vehicles (this has proven successful around the Oakland - Alameda County Coliseum and along I-80 in the Sierra during the winter).

Realistically, people would still drive and park at the Airport. A number of measures have been suggested that, in combination, would alleviate the parking demand at SFIA. None of these measures individually would have major effects on traffic generation, but in combination they would all contribute towards the goals of trip reduction and parking reduction at SFIA.

Off-Site Registration

Comments

"I personally think that the mitigation section is the worst mitigation section I have ever seen in an EIR. I don't think it's the fault of the Planning Department, but it's an indication of how hopeless it is for the Airports Commission to deal with mitigations. For example, one mention of one mitigation that really might work, and that would really perhaps encourage people not to take cars, and that is the off-site registration. I don't know what they call it, the off-site facilities

where you can check actually your baggage and take a bus, like they can do from the Marin Airporter, other particular locations. That is mentioned once, but not really mentioned as a significant mitigation. That might be explored." (Commissioner Engmann)

"Specific mitigation measures that need greater elaboration include:

- assistance in the planning and development of off-airport terminals (page 114 discusses this concept, but it is not listed on pages 12-13 which summarize potential transportation mitigation measures)." (Chris Brittle, Metropolitan Transportation Commission)

"The DEIR mentioned an off-site passenger facility as an alternative, but there was little serious discussion of the impact this alternative would have on reducing the significant impacts of the full expansion. Greater consideration should be given to this alternative." (Janet Fogarty, Mayor, and Robert Treseler, City of Millbrae)

Response

In response to these comments, the following discussion of the potential for off-site air terminals to mitigate traffic congestion in the vicinity of the Airport is added at the end of EIR Appendix G, p. XI.A.167:

OFF-SITE AIR TERMINALS

Technical Aspects

The term "off-airport terminal" encompasses a variety of possible arrangements to get air passengers to (and from) an airport from remote locations. Depending upon the layout of the airport, characteristics of travellers, origins and destinations of travellers, and space available at remote locations, some or all of the following services could be provided:

- Scheduled coach or van express service from a remote location;
- Competitively priced (or free) parking;
- Comfortable waiting area;
- Ticket sales;
- Seat selection; and
- Baggage check-in.

The first three of these are the minimum characteristics of an "off-airport terminal". There is really little difference between this level of service and typical airport express transit service. On the basis of this definition, SFIA already has some level

of off-airport terminal capability. The Marin Airporter has the most extensive service. It runs coaches from several locations. The Larkspur Landing location had, until 1991, provided space for airline ticket agents from United and American Airlines to sell tickets, check in bags, and have customers select seats. The basic coach service and one airline ticket agent still remain. Other airporter services to SFIA are described in Section III (Environmental Setting) of the EIR, on pp. 130 - 134.

Issues Affecting Feasibility

The potential effectiveness of diverting auto traffic to the off-Airport operation would depend on a number of factors, including:

- Frequency and reliability of bus or limo service;
- Accessibility of the remote location;
- Adequacy and price of parking, versus Airport parking characteristics;
- Efficiency of check-in services (if any) versus that of the airline terminal service; and
- Density of the market near the off-Airport terminal.

The recent experience of the Marin Airporter at the Larkspur Landing terminal , where ticketing and baggage check services were added to an established airport express transit service, highlights several issues relating to off-airport terminal operation. When ticketing and baggage check-in services were added, the following difficulties arose:

- Since coaches left every half-hour, passengers tended to arrive with about ten minutes to spare. This put a severe burden on the check-in agents who were not adequately equipped to handle such peaking of traffic.

- The ticket service was used mostly as a local ticket office rather than a convenience for same-day airline passengers. There was also a conflict between handling of ticket purchasers who were not flying that day and baggage check-in operations.

- The service did not really attract additional patronage to the Marin Airporter.

Eventually, baggage check-in operations were curtailed, and one of the airlines closed its ticket office.

In the Los Angeles area, the Van Nuys FlyAway Service is operated by the Los Angeles Department of Airports. This is an express bus service from the San Fernando Valley to Los Angeles International Airport which has seven air carriers providing ticketing at the terminal; baggage cannot be checked. This service recently reduced fares from nine dollars to four dollars. Apparently, this reduction did not have an immediate effect on the number of airline passengers using the service; however, airport employees found it to be a convenient service. Recent reports indicate that air passenger service is up.

Potential Effectiveness in Mitigating Airport Traffic Congestion

Additional off-Airport terminal capacity for SFIA would need to accomplish some, or all, of the following:

- Provide additional frequency at existing off-Airport locations;
- Seek out current gaps in off-Airport terminal operation, and encourage new service in this market. This would include opening new terminals and starting new coach services.
- Determine the level of bonus services such as baggage check-in and ticketing that could reasonably be provided, and the potential to attract new riders as a result of this additional service; and
- Identify the level to which users of additional off-Airport terminal services would be diverted from private automobiles, or other transit services.

Caltrans is currently funding a research project at the Institute for Transportation Studies at the University of California at Berkeley, titled: Feasibility Study for a California Off-Airport Terminal Demonstration Program. In part of this research project, air passenger survey data taken by the Metropolitan Transportation Commission (MTC) will be evaluated to determine current gaps in express transportation services to Bay Area airports. Should the results of this research indicate that a potential market for additional off-Airport terminals exists, SFIA would then be in a position to participate in efforts to increase the level of off-Airport terminal activity.

If off-Airport terminal services were initiated successfully, it would have the potential to reduce vehicle congestion at Airport approaches and regional routes to and from the airport. It is impossible to quantify the effects of such actions without a specific service under consideration.

Institutional Feasibility

The San Francisco Airports Commission charter (Section 3.691) prohibits the Airport from offering a transit service to an off-Airport terminal. SFIA cannot operate a transit system in competition with existing ground transportation services. As a result of this prohibition, SFIA has not been able to take advantage of a Caltrans demonstration project relating to off-Airport terminals. Therefore, for SFIA to engage directly in any activity related to implementing an off-Airport terminal would involve an amendment to the Airport's charter.

Alternatively, it might be possible for Caltrans to work with a private operator or an existing transit agency (e.g., SamTrans, AC Transit) to improve transit/off-Airport terminal services to SFIA.

On the basis of available information, it appears that adding off-Airport terminal capacity could reduce automobile travel to the Airport. As noted above, however,

the Airport is prohibited by charter from offering, or being involved in such services. If additional services are to be offered, it would have to be the work of private- or public-transit operators. These operators would make decisions on whether to provide additional service, based on the potential profitability of the service.

Off-Airport terminals are part of the transit system to the Airport. Several mitigation measures related to increasing transit mode share are already suggested in the EIR. Any efforts to increase transit mode share would increase the attractiveness to private businesses to expand on or implement new off-Airport terminal services.

High-Speed Rail

Comment

"Mitigations Proposed by SFIA"	"SamTrans Staff Comments"
"12. Requiring right-of-way reservation for future high speed rail.	"There is no information in the EIR on the location of the corridor, financing, or who will be the implementing agency. This should not be included as a mitigation for the traffic generated by SFIA until more details are available." (Richard Gee, SamTrans)

Response

The right-of-way reservation through SFIA, referenced on pages 13 and 415 of the EIR, is for the BART extension if an SFIA internal station is chosen. The "West of Bayshore" property adjacent to US 101, across from SFIA, could also be considered for high-speed rail if BART were to be extended further south, or CalTrain were to be linked to BART at this location. See also the earlier response re implementation, on pp C&R.156-158.

The mitigation measure suggested on page 415 of the DEIR that mentions reserving right-of-way for future high-speed rail comes from several documents. In July 1991, the State Department of Transportation (Caltrans) Division of Rail published a report entitled California Rail Passenger Development Plan 1991 Through 1996 Fiscal Years, as required by Section 14036 of the Government Code. The report concluded that in order to provide a fully integrated rail system in the California Corridor, service ultimately should be provided to the Central Valley along with Southern Pacific, Sante Fe, and Union Pacific Rail Lines. The Southern Pacific portion of this rail system would be adjacent to SFIA along the US 101 corridor in San Mateo County.

In the California Transportation Commission's Eighth Annual Report to California Legislature, dated December 1991, high-speed rail was identified as an effective alternative to the state's airports and interregional highway system. The Commission, on the basis of a recommendation from its Technical Advisory Committee on Aeronautics, requested the Department of Transportation to include in its high-speed ground-transportation study a feasibility study analyzing linking high-speed rail lines to airport terminals.

A 1992 University of California Berkeley study on high-speed rail, sponsored by Caltrans and the federal Department of Transportation, concluded that high-speed trains could be traveling between San Francisco and Los Angeles in only two-and-a-half hours by early in the next decade. The study was conducted by UC's Institute of Urban and Regional Development, and established several potential routes that the trains could take. According to a recent article in the *San Francisco Chronicle* (March 12, 1992), the trains could cruise at lower speed and run on existing rail lines on the Peninsula. This would allow trains to leave San Francisco over a right-of-way shared with the existing Peninsula commuter trains and stop near San Francisco International Airport and Palo Alto.

The multi-modal connection among BART, Caltrans, SamTrans and the Airport would be enhanced with a connection to high-speed rail service. The suggested mitigation measure points out that high-speed rail is a viable issue that is currently being addressed by Caltrans and the California Transportation Commission.

PEDESTRIANS AND BICYCLES

Comments

"On page 136, the document states: 'Other than for the movement of air passengers and employees between the main garage and the terminal buildings, there is little pedestrian movement among the various buildings at SFIA.' Pedestrian movement should become a major mode of transportation as the SFIA Master Plan strives 'to provide a coordinated development plan that will consolidate and relocate many of the existing landside facilities in order to increase the efficiency and cost effectiveness of landside operations. . .' (page 18).

"We strongly urge adoption of pedestrian-sensitive development policies which would encourage walking and transit uses. The proposed 960,000-square-foot, multi-level Rental Car Garage/Ground Transportation Center, for example, should be multi-modal in nature, stressing

pedestrian facilities and amenities, an APM system, and transit services, not predominantly for automobile/rental car shops, garages, and parking spaces as the document proposes on page 55.

"The document should more aggressively promote integrating pedestrian facilities than the statement on page 323 indicates. It states: 'Design review should focus on minimizing any adverse impacts to pedestrians.' Future site plans and designs of all buildings and facilities should foster pedestrian and transit services, so that figures for transit usages could be much greater than those stated on pages 138 and 320. Page 138 states that according to a 1983 Sam Trans Employee Survey, less than five percent of SFIA employees use any mode of public transportation for their commute. This survey is dated, and should be reconducted to evaluate the current travel patterns of airport employees and patrons. Page 320 states, 'BART could attract six percent of air passenger trips and eleven percent of employee trips on both a daily and peak hour basis.' " (Preston Kelley, Caltrans)

"Mitigations Proposed by SFIA"	"SamTrans Staff Comments"
"13. Providing bicycle travel lanes.	"In view of the large transportation demand to be generated by SFIA, bicycle lanes would not be a significant mitigation." (Richard Gee, SamTrans)

Response

Pedestrian considerations should permeate every facet of the SFIA Master Plan project. While pedestrian amenities would be beneficial in the GTC, pedestrians are not expected to spend more than a few minutes in the building at any given time. The GTC would house many different services, and facilitate the movement of people throughout SFIA. The following is inserted after the first bulleted item on p. 421 of the EIR:

PEDESTRIANS

Project-Impact Measures (1996) Identified in this Report

SFIA

- Incorporate, into the GTC design, safe and convenient walkways, amenities, easy access to transit and other modal transfer points, and other measures that facilitate safe pedestrian movements.

Bicycle lanes would attract more people, particularly airport employees, to use bicycling as a commute mode. The Class I bikeways would provide a protected bike path that would make bicycling safer and more attractive throughout the airport area. Although the number of air passengers and airport employees who would actually bike to SFIA might be relatively small, every mitigation measure that contributes towards reducing automobile trips is valuable. With respect to the effectiveness of bicycle mitigations, their significance is a matter of opinion.

FLIGHT DISTRIBUTION

Comment

"Mitigations about having the airlines distribute their flights in perhaps a better pattern is not discussed at all, and the impact it might have on peak traffic. That is not discussed. There is really no crunch mitigations, things that really would be meaningful, discussed in here that the Airports Commission could have some control over. I would like to see that." (Commissioner Engmann)

Response

SFIA does not have the legal right to designate flight hours for individual airlines using the Airport. A discussion of legal restrictions on Airport Administration appears in Attachment D of C&R Appendix A, "Background to Airport Operations."

Appendix J of the EIR (pp. XI. A.179-A.180) includes a comparison of forecast hourly activity at SFIA in 1996 and 2006 with potential airfield capacity during visual flight conditions. The forecasts of hourly activity were developed assuming that the relative distribution of activity throughout the day would be the same in 1996 and 2006 as in 1990.

According to Tables J-1 and J-2 in Appendix J, in 1996 and 2006 there would (86 percent of the time) be no more than one hour of delay for any flight, under all visual conditions.

During less-than-optimal visual conditions, though, some flights would be delayed into other hours of the day because of airfield capacity constraints. During instrument flight conditions (5.6 percent of the time), the SFIA airfield could not accommodate the number of flights per hour forecast in 1996 and 2006.

The delays to aircraft during these conditions could be sufficient (and frequent enough) to prompt the re-scheduling of flights to off-peak hours. Staggering the flight distribution would have some impact on traffic in the vicinity of SFIA, but not much on commute peak-hour traffic on the regional transportation system. Peak flight hours at SFIA are in the early morning, generally during the early part of the morning commute, and in the early to late evening, after the afternoon commute period. Many international flights arrive during the middle of the day and leave during the evening. Domestic flights are spread throughout the day, generally based on travel-time demand, and desired landing time, considering time-zone changes and other factors. To be conservative, the analysis of traffic impacts in the EIR superimposed the SFIA-generated vehicular peak-hour traffic and the peak-hour traffic on the adjacent road network, even though they do not occur at the same time. The peak periods have increased on US 101; staggering the flight distribution schedule would contribute to extending the peak periods even further. Most airport employees would not be affected by a flight distribution change, particularly maintenance workers who work set shifts throughout the day.

Air passengers might be encouraged to use their automobiles even more because of the perception that their flights are during "off-peak" periods. This could result in increased automobile use and associated impacts, which are counter to all of the mitigation measures presented in the EIR.

IMPACTS OF MITIGATION MEASURES

Comments

(5e) P. 13 - Under additional measures to address impacts (to be added) . . .

"City and County of San Francisco, Cities and County of San Mateo Co, and Airport stop promoting foreign trade into this area.

"On p. 13 - Under Additional Measures to address impacts; from listed impacts measures to be addressed that I believe should be dropped. --- 2nd (Park and ride lots on 101 should be erased) - 3rd(HOV lanes) should not be created because they cause more traffic problems and more pollution because everyone but select few are not allowed to use traffic lanes otherwise available to all and that is discrimination. (In my belief) 6th Requiring exclusive rights-of-way rail or Bus facility that connects SFIA to BART's planned station west of US 101 -should be dropped. That

is only one of alternatives being studied and would be cause of much more traffic vehicle trips into area which in turn causes more Pollution - 9th Requiring right-of-way reservations for future high speed rail - should be dropped. Such station would bring even more congested Traffic and worse Pollution to an already overburdened area.

"P. 14 - 7th and 8th should be dropped - because it is not safe!" (Jessie Bracker)

"In my opinion many of the suggested Mitigation Measures listed would not be Mitigation Measures but instead would be additions to the Pollution Problem and should be listed as such. Some of those are - 1) Add more lanes and widen roads in the immediate vicinity of S.F.O. - 2) Provide Park and Ride Lots along Hwy 101 - 3) Create high occupancy-vehicle lanes on Hwy 101 from San Jose to San Francisco. - 4) Connect BARTs planned Station West of Highway 101 to Airport." (Jessie Bracker)

"On the top of page 415, the DEIR states: 'At as many locations as possible near US 101, I-280 and I-380 interchanges in San Mateo County, create park-and-ride lots for commuters through lot-construction and shared-use agreements with churches and shopping centers. Use uniform signage that clearly indicates lot location from the freeway and arterial roadways. Implementing Agencies: Caltrans, local governments.'

"Most of the sites available to implement this mitigation would be located in San Bruno. Thus, this mitigation could heavily impact San Bruno and add more cars to local streets. In effect, the mitigation will produce other substantial impacts which are themselves not properly identified nor adequately mitigated." (George Foscardo, City of San Bruno)

Response

Park-and-ride lots are a suggested mitigation measure that would serve to alleviate congestion along the US 101 corridor. With or without the Airport project, congestion on US 101 is projected to worsen. This mitigation measure would address Airport traffic impacts, as employees would make use of the lots rather than continue individually into the congested Airport area.

Exact locations for park-and-ride lots have not been identified, but that does not discount their value as an implementable mitigation measure. If the implementing agencies decide to create park-and-ride lots along the US 101 corridor, careful attention needs to be paid to

the impacts that the lots create. Park-and-ride lots are usually located near freeway ramps and adjacent to freeways, thus minimizing impacts to local roadways and neighborhoods. Park-and-ride lots along the US 101 corridor do not have to be located in the immediate SFIA vicinity in order to be effective; they should be located carefully where Airport employees or other commuters on similar schedules would meet, park and then carpool or vanpool to their work location. The locations could potentially be throughout the Bay Area, depending on schedules and residential locations.

The responses on pp. C&R.162-163 herein explain the pros and cons of HOV lanes. They do not discriminate against workers, as existing mixed-flow lanes would still be available, as well as alternative transportation modes. Also, HOV lanes can be used by all motorists during most of the day.

Widening roadways in the vicinity of SFIA is being done on Airport property and would not cause adverse impacts to local areas outside the Airport. The SFIA internal roadways (Roads R-2 and R-3) would not attract traffic from outside the Airport, as these roadways would not be used for trip diversion when US 101 is congested. The roads would continue to serve only Airport traffic, and are being widened to ensure that access and circulation among different areas of the Airport are maintained. Queuing and congestion along Airport roadways would disrupt the overall circulation throughout the Airport, including the terminal area and parking locations.

Exclusive right-of-way for a rail or bus connection from SFIA to a BART station west of US 101 would be a meaningful mitigation measure only if the BART and/or CalTrain station were to be located there. Detailed discussion of the BART alternatives, access to BART stations, potential for joint airport/commuter stations and impacts of BART are discussed in the response on pp. C&R.139-145 herein.

Other mitigation measures that would have impacts of their own include increasing the transit service on CalTrain, BART, MUNI and SamTrans. The impacts to each transit operator would have to be addressed in light of capital cost improvements, service frequencies, availability of existing services and the associated costs to provide additional services.

AIRCRAFT NOISE SETTING AND IMPACTS

The Notes for this section begin on p. C&R.265.

AIRCRAFT OPERATIONS FORECASTS

Comments

"Page 335:
"Historically, 65% load factors have prevailed over the years because there is no incentive for the airlines to improve. An assumption by the DEIR that significant changes in load factors will occur, and significantly influence total operations, is overly optimistic and appears to be an attempt to minimize the impact of the growth in operations." (Duane Spence, Airport Mitigation Coalition)

"The growth in aircraft size appears to be higher than current industry trends would indicate." (Chris Brittle, Metropolitan Transportation Commission)

Response

Page 335 of the EIR discusses the method used to develop forecast operations at SFIA. Forecasts of annual and average day operations by aircraft type were developed specifically for the EIR because no detailed operations forecasts were developed for the SFIA Master Plan. As noted in the EIR, the forecast of operations developed for the EIR was based on the SFIA Master Plan forecasts of passengers and load factors. Pages 61-65 of the EIR include a list of some of the key assumptions made in developing the SFIA Master Plan forecasts.

As noted in Table 10 on p. 64 of the EIR, the average load factor was forecast in the SFIA Master Plan to increase (from about 50 percent in 1986, the survey period) to about 59 percent in 1996 and about 65 percent in 2006. On p. 7.11 of the SFIA Master Plan, it is noted that "average load factors at other airports range from 40 percent at large, lower-utilized airports to as high as 65 percent at airports that have limited peak hour capacity." The SFIA Master Plan concludes that SFIA has limited peak hour capacity on the basis of the airfield capacity analysis on pp. 7.13-7.15.

When mentioning prevailing load factors, the commenter may be referring to airline (rather than airport) load factor statistics. According to Federal Aviation Administration (FAA) statistics for airlines in domestic and international service, total revenue passenger load factors for all airlines were about 63 percent for federal fiscal year 1990 (October 1, 1989-September 30, 1990), and about 62 percent for fiscal year 1991. Flights serving international destinations had higher load factors than domestic flights: 67 percent compared to 61 percent (in fiscal year 1991)./1/ FAA forecasts show systemwide passenger load factors increasing to about 64 percent in fiscal year 2001./2/

The FAA's estimated airline load factors reflect the proportion of the airlines' aircraft seating capacity (total seats on all aircraft) that is sold and utilized: that is, how full the aircraft are./1/ Airport load factors typically reflect the proportion of the total seats on all aircraft serving the airport filled by passengers *boarding the aircraft at the airport.* "Through" passengers - those passengers who stay on the plane for travel to the next destination (or beyond) - are not counted in the airport "boarding" load factor.

These through passengers must be added to the SFIA load factor in order to compare it to the airline load factor. Although there is no information in the SFIA Master Plan on through passengers, it is likely that adding them to the forecast 65 percent "boarding" load factor (for 2006) would produce a load factor higher than the load factor forecast by the FAA. (It should be noted, however, that airlines have a major economic incentive to increase their load factors, and that the 65 percent "prevailing" load factor mentioned by the commenter is not necessarily the airlines' upper limit.)

A direct comparison of the airline and SFIA load factors may not be valid, however. Systemwide airline load factors may be different from the load factors for a particular airport. For example, the proportion of international flights at a particular airport may be higher than the proportion of international flights nationwide; because load factors for international flights are typically higher than those for domestic flights, the airport's overall load factor would be higher than the systemwide airline load factor. Other factors that may influence an individual airport's load factor include the extent of competition at the airport, types of travellers served, and constraints on airside and landside capacity (which would result in increased load factors because the airport would have to serve a given number of passengers with fewer flights than would serve those passengers systemwide). As stated above, it is assumed in the SFIA Master Plan that load factors would increase due to limited airside capacity.

Table 10 of the EIR also shows the SFIA Master Plan forecast of aircraft size (defined as average seats per aircraft) during the average day of the peak month of aircraft activity. This forecast, which was based on a generalized mix of aircraft, was not used directly in developing the detailed mix of aircraft operations forecast for the EIR.

Rather, the forecast of operations was developed by use of the FAA forecast for the entire fleet of aircraft nationwide. The types of aircraft used in the FAA forecasts were condensed to correspond more closely with the types of aircraft operating at SFIA in 1990 (and to better reflect the forecasts of international passengers prepared by SFIA in 1987). These aircraft were categorized as "long range" and "medium and short range."

The passenger and load factor forecasts developed for the SFIA Master Plan were used to determine the total number of aircraft seats needed. Because the number of SFIA passengers is forecast to increase, and the FAA national forecast shows some of the older aircraft being retired, additional aircraft will be needed at SFIA in 1996 and 2006 to provide enough seats to serve forecast passengers. Within each of the range categories listed above, it was assumed that increases in the number of aircraft needed to serve future passengers would be proportional to FAA-forecast increases within the same range category of the national fleet. In this way, both the existing mix of aircraft at SFIA and national trends in aircraft acquisition were considered in the forecasts.

Operations by long-range aircraft (which are typically larger than short-range aircraft) accounted for about 25 percent of total operations at SFIA in 1990. This proportion is higher than that for the number of long-range aircraft in the national fleet (about 17 percent in 1989, as estimated by the FAA)/3/ (If the proportion of total operations performed nationally by long-range aircraft were known, it would probably be lower than 17 percent, because long-range aircraft typically fly fewer, longer flights than short-range aircraft.)

On the basis of this analysis, the EIR used an estimate of 179 average seats per aircraft in 1989 (used to represent 1990 activity), and forecasts of 186 seats in 1996, and 192 in 2006. The forecast increase in seats from 1989/90 to 1996 is about one seat per year; the forecast increase from 1996 to 2006 is 0.6 seat per year.

Pages 61-65 of the EIR include a discussion of other forecasts developed for SFIA. A comparison of those forecasts with the SFIA Master Plan forecasts is shown in Table 10, p. 64. As shown in the table, the number of aircraft operations forecast in the California

Aviation System Plan (CASP) is higher than the number forecast in the SFIA Master Plan. The CASP forecasts of operations are higher because they are based on a smaller average aircraft size and lower load factors.

Appendix C of the EIR includes an analysis of the sensitivity of cumulative noise impacts to differences in the number of aircraft operations. The analysis compared the SFIA Master Plan forecasts to forecasts prepared by the FAA and CASP, and included the development of CNEL contours and calculation of CNEL values. The number of operations in the FAA forecast was lower than the number in the SFIA Master Plan forecast. The noise analysis concluded that the higher number of operations forecast by the CASP would not have a substantial effect on cumulative noise levels. The main reason is that the CASP forecast includes more operations by small aircraft, which are generally the quietest aircraft in the fleet.

Therefore, even if future aircraft sizes and load factors are lower than forecast in the SFIA Master Plan and the EIR, there would not be a substantial change in cumulative noise levels from those shown in the EIR. However, the number of single events (flight frequency) would increase, though these additional flights would be performed by generally quieter aircraft.

SFIA FLIGHT PROCEDURES AND RUNWAY USE

Relationship to Information Presented in DEIR

Comments

"The discussion of flight tracks is inadequate. There is no explanation of how departures are handled at SFO. The DEIR states that flight tracks on Figure 19 (p. 159) were developed through discussions with the SFIA ATC personnel, reviewing radar data, and a review of the Standard Instrument Departures (SIDs). The Figure explains that the flight corridors it depicts are actually up to several miles wide and actual flight patterns are more widely disbursed [sic] than shown. What then is the point of having the figure?

"Actual SIDs can be accurately plotted. Only limited deviation from the centerline of the published SID is tolerated and aircraft weight, pilot technique, and weather conditions would rarely, if ever, be an excuse for a substantial deviation from the published track once the pilot has

accepted his clearance which is done prior to takeoff. Aircraft flying on SIDs can be, and are, expected to be on the track. In contrast, Figure 19 tracks are composites which no pilot is required to fly as depicted nor would a pilot be able to do so. Figure 19 mixes fixed route departures with radar vectored departures and provides a map that says you can expect to find aircraft flying anywhere in the airport vicinity.

"The fact is that all aircraft departing SFO on an IFR clearance are given and have accepted a departure clearance. It would be either in the form of a published SID or a verbal clearance to accept radar vectors. Often, and particularly during high volume traffic periods, while departing on a SID, ATC will modify the clearance for an aircraft and begin giving radar vectors. From that point on, the aircraft is no longer flying the SID. These distinctions are important to be made because it is when radar vectors are used, the track over the ground changes from a well defined area to essentially anywhere in the airport vicinity. . .

"Figure 19 shows that 32% of flights use a routing [that] closely follows the 'Shoreline Departure,' but that cannot be. That routing uses Runway 28 to depart and 28 was only in use about 7.6% of the time in 1989. If the Shoreline were used for 1/3 of all 28 departures, that would only be 2.53% of the time. Actual use of the Shoreline is numerically insufficient to create a noise impact area. This gross misrepresentation of traffic on the Shoreline results in a misrepresentation of traffic volumes on the other routes as well." (Stephen Waldo, Mayor of Brisbane)

"Figure 19 on page 159, Generalized Flight Tracks:
"This figure erroneously shows 32% of departures as using the Shoreline Departure from Runways 28. This is not true. Between 90 and 95% of departures currently use Runways 1. This should be represented in the diagram. Of departures using Runways 28, now less than 9% of total operations, only a small minority use the Shoreline Departure (0.3%)." (Duane Spence, Airport Mitigation Coalition)

Response

Figure 19 on p. 159 of the EIR shows generalized flight tracks for aircraft using SFIA. Pages 158 and 160 of the EIR include a discussion of Figure 19 and of some of the Standard Instrument Departures (SIDs) used at the Airport. Appendix C of the EIR includes a complete set of the SIDs used at SFIA.

Aircraft departing from SFIA use the services of several FAA air traffic control facilities, including the Airport Traffic Control Tower (ATCT) at SFIA, the Bay Terminal Radar Approach Control (TRACON) facility at Metropolitan Oakland International Airport (MOIA), and the Oakland Air Route Traffic Control Center (ARTCC) in Fremont. The ATCT at SFIA provides services for arriving aircraft within about five miles of the Airport. The Bay TRACON provides services in an area generally extending south to about Gilroy, west to near the Farallon Islands, north to Concord, and east to Livermore, and up to about 17,000 feet. The Oakland ARTCC provides services in areas of "controlled airspace" (airspace designated by the FAA, within which aircraft may be subject to air traffic control) not served by the ATCT./4,5/ The ARTCC has a service area extending south to Paso Robles, California, east to the middle of Nevada, north to the Oregon/California border, and west across the Pacific Ocean./4/

Prior to departure from SFIA, the aircraft pilot files a flight plan through the Oakland Automated Flight Service Station at MOIA. Among the information entered on the flight plan are the route of flight and the flight destination. If the pilot knows the appropriate SID for the route of flight, the pilot includes the SID on the flight plan. The computer at the Flight Service Station assigns the SID in some cases, on the basis of the runway and general flight route. Noise abatement ("preferential routing") is taken into consideration when the SID is assigned./4/

The pilot calls "Clearance Delivery" 30 minutes before takeoff to obtain clearance of the flight plan. Ground Control at the ATCT will clear the pilot to taxi to the appropriate runway. Local Control at the ATCT gives the pilot clearance to take off. After the aircraft is in the air, the pilot reports to the Bay TRACON for instructions. The pilot follows the instructions of the TRACON until the aircraft is out of the TRACON service area, when it is "handed off" to the ARTCC./4/

A vector is a radar heading issued to an aircraft to provide navigational guidance. Among other procedures, vectoring is used by air traffic controllers to maintain the required separation among aircraft./6/

Almost all of the airline aircraft departures from SFIA are assigned and use SIDs. According to ATCT staff, the ATCT uses vectoring for fewer than five percent of operations at SFIA. Airspace congestion, the topography of the area, and noise-abatement procedures limit the opportunities to use vectoring. A situtation in which vectoring is used

to separate aircraft is if two aircraft are flying on the same SID and it appears that the second aircraft will overtake the first. According to ATCT staff, vectoring is used at specific times for specific situations such as the one noted here; when it is used, it is of short duration./4/

The Bay TRACON uses vectoring for more SFIA operations than does the ATCT. For example, departures on Runways 1 and 28 headed for destinations in the Pacific Northwest are vectored when they reach the shoreline of the Pacific Ocean. The TRACON does not normally vector departing aircraft over the City of San Francisco, however. According to the TRACON, vectoring is not used for aircraft beyond five miles north of SFIA, because vectoring does not provide for efficient use of the airspace after that point./7/

As stated on p. 158 of the EIR, SIDs are coded descriptions of aircraft routes. These routes are preplanned, "standard" air-traffic-control departure procedures. Two aircraft following the same SID would not necessarily follow the same flight path, however. Aircraft have widely varying performance characteristics, and climb and turn at different rates. Wind, visibility, and other weather conditions can affect aircraft performance. Pilot decisions may also be a factor; the majority of the SIDs at SFIA are "pilot navigation" SIDs, which require the pilot to be primarily responsible for navigation on the SID route./6/

As an example, the EUGEN Four SID instructs aircraft to make a turn after reaching 1,600 feet altitude and a distance of 4 nautical miles from a beacon at the Airport. Because of the varying climb rates of different aircraft types and the varying weights of aircraft of the same type, each aircraft will reach 1,600 feet altitude at a different distance from the Airport. The turns the aircraft make will consequently be spread over a wide area.

Figure 19 is not meant to depict specific SIDs. Rather, the figure is meant to show where aircraft actually fly, in general, on average. (The flight paths must be consolidated into "generalized" tracks because the model used to develop the Community Noise Equivalent Level (CNEL) contours does not have the ability to process every one of the discrete paths flown by all of the aircraft using the Airport.) The generalized departure tracks on the figure were developed from SFIA's PASSUR system flight track data showing the actual paths of departing aircraft. As noted in the discussion presented above, these paths represent aircraft following SIDs and radar vectors. An aircraft departing from SFIA would not necessarily fly exactly one of the departure tracks shown in the figure. As the SFIA flight track data show, aircraft departing SFIA travel over wide areas in the airport

vicinity. (An exhibit showing a sample of the SFIA flight track data is available for review in the Department of City Planning files.)

To clarify the EIR's description of the development of the generalized flight tracks, the first sentence in the fourth paragraph on p. 158 is revised as follows (revisions are underlined and deletions shown in brackets):

> The flight tracks shown in the figure were developed through discussions with SFIA Airport Traffic Control Tower personnel; a review of Airport [] flight track data; and a review of standard instrument departures (SID) published by the FAA.

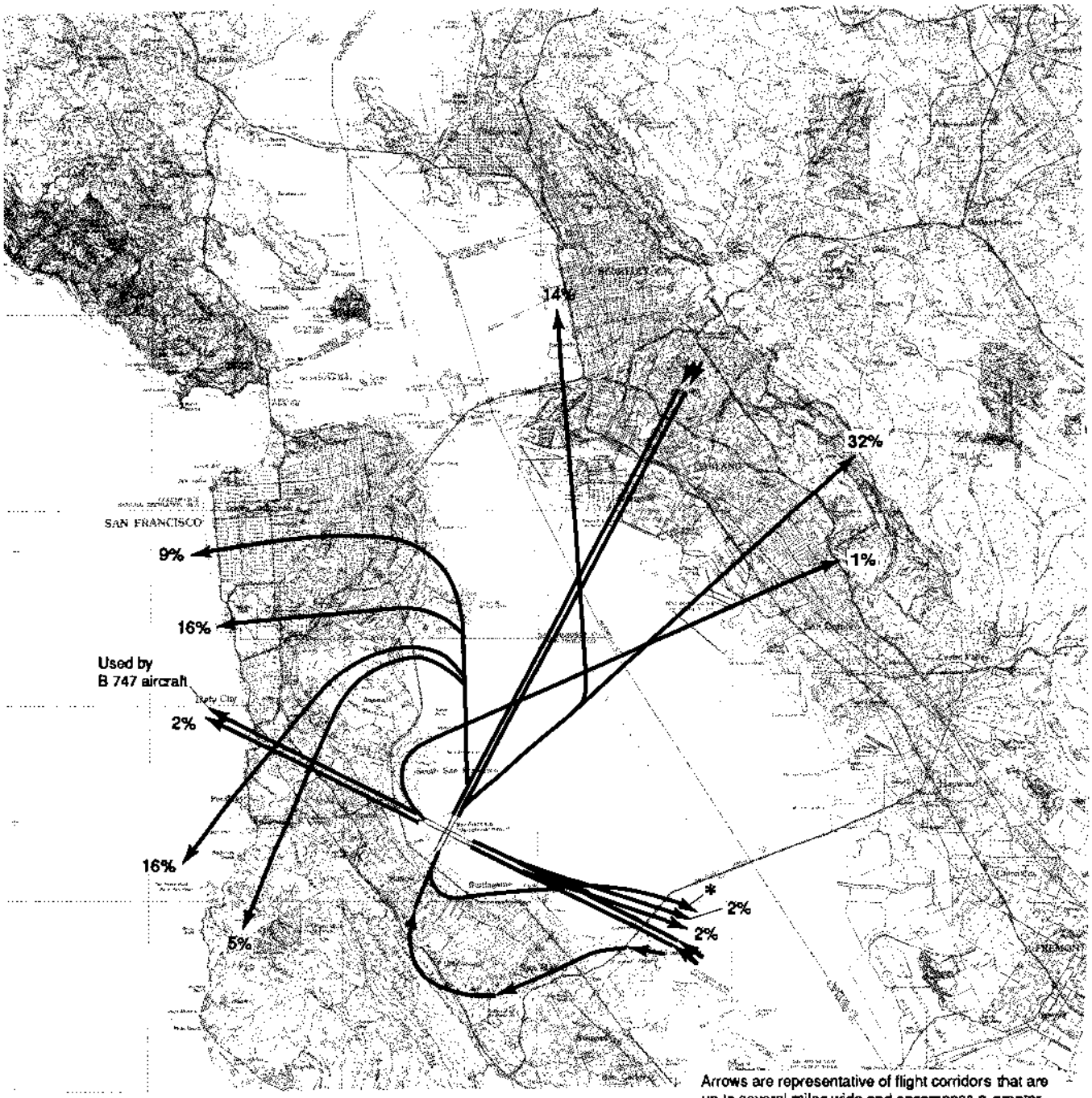
Some of the percentages assigned to the departure tracks in Figure 19 are incorrect. The "Shoreline Departure" from Runway 28R (the track that makes a right turn over the Bay) was used by aircraft other than B-747s approximately 1 percent of the time in 1990. The departure track from Runway 1R heading east over the East Bay was used approximately 32 percent of the time in 1990. Figure 19 on p. 159 of the EIR is revised to show the correct percentages. The CNEL noise contours shown in the EIR were developed using the correct percentages.

Federal Control Over SFIA Procedures

Comment

"Three years ago, Mr. Turpen promised noiseless aircraft. That is what he was alluding to. Reduce[d] noise aircraft. Nothing of the sort. I asked, Can you tell me how these planes are flying so low over this neighborhood? You know what, he is hiding behind, Mr. Turpen is hiding behind the FAA. I am given the answer, the airport has no jurisdiction over flight plans. The flight plans are dictated by FAA. I have been repeatedly and repeatedly told that.

"I want to see whether the EIR says there is any control of the airport of the flight plans. There must be. Who is he trying to kid? Now, this is just blatant lies, as far as I know. The airport has to work together with the FAA. The FAA has to work together with the airport. If they don't, let's scrap this complete extension if they can't work with the FAA to regulate the flight plans." (Bhimje)



Arrows are representative of flight corridors that are up to several miles wide and encompass a greater area than shown by these lines and arrows. Actual aircraft flight patterns are more widely dispersed than shown.

Percentages shown represent average annual use of the tracks by departing air carrier aircraft (except B 747's) during the daytime. Actual use of a track on a particular day depends on what runways are being used.

* Used by fewer than 1% of departing aircraft.

San Francisco International Airport ■

SOURCE: Ken Eldred Engineering and Environmental Science Associates, Inc.

Figure 19
Generalized Flight Tracks

Response

According to SFIA Administration staff, the authority to regulate flight patterns or routes of aircraft is vested exclusively in the FAA. Federal law provides that: "No state or political subdivision thereof and no interstate agency or other political agency of two or more states shall enact or enforce any law, rule, regulation, standard, or other provision having the force and effect of law relating to rates, routes, or services of any air carrier having authority under subchapter IV or this chapter to provide air transportation."/8/ (Emphasis added.) The purpose of these federal laws is to provide a uniform and efficient system for the use of the air space. The imposition of local regulations governing aircraft flight patterns would serve to frustrate flight scheduling and navigational patterns nationwide, thus hindering commerce, aviation safety, and the general management by the FAA of the National Air Traffic Network.

The responsibilities of the FAA (and aircraft pilots, who make the ultimate decisions regarding the operation of, or procedures used by, a particular flight) do not, however, preclude SFIA from working with those parties to develop noise abatement procedures, including preferential runway use, flight track locations, flight track procedures, and aircraft takeoff and landing procedures./9/ SFIA has already undertaken such efforts, as evidenced by the existing SFIA Noise Abatement Program and Airport Noise Abatement Regulation, described on pp. 167-168 of the EIR. Pages 424-426 of the EIR include noise mitigation measures, among which are measures involving flight procedures. Responses to comments regarding specific mitigation measures are on pp. C&R.267-295 herein.

AIRCRAFT OPERATIONAL ASSUMPTIONS

Comments

"As you are aware, noise impacts to our city are of serious concern. It is acknowledged in the Draft Airport Master Plan that a significant portion of the increased traffic resulting from the project will be serving the Pacific Rim. Most aircraft departing for these destinations use the Gap Departure Route and overfly our city at relatively low altitudes. It is unclear whether the projected noise contours in the DEIR were developed using existing runway usage figures or whether the potential increase in Gap Departures was included. If that potential increase was not included in the development of projected noise levels, the Noise Contour maps would not accurately reflect the future noise environment. Either way, a summary of the assumptions used

in developing projected noise levels would be helpful for readers of the document." (Jack Drago, Mayor, City of South San Francisco)

"The DEIR states that runway use is assumed to be the same in the future as in 1990. Additional information should be provided to document whether or not this is correct. In particular, if international traffic, especially to the Pacific Rim, is expected to increase more than other types of traffic, how might this affect runway use and the times of aircraft departures?" (Wendy Cosin, City of Pacifica)

". . .Increasing use of radar vectors on departure in the mid-1980's increased the overflights of Brisbane, which previously was completely out of any flight path. The use of radar vectors created both a safety and noise problem for Brisbane. It appears that the Master Plan's increased numbers of departures is likely to produce even more intense use of radar vectors and hence more overflights of our community which is not overflown when a SID is being used. . ." (Stephen Waldo, Mayor of Brisbane)

"Mr. Kroupa touched briefly on the issue of where will the new flights be accommodated. In San Francisco, we have always been told that as more aircraft use the airport, the planes have to fan out further and further north, which would imply that the bulk of the increase in new flights is also going to happen further north up the Peninsula. The noise analysis does not make that assumption at all. They assume that it will be a proportional increase along all the existing tracks, which strikes me as a fundamental flaw, or else we have not been told the facts for the last four years, since airplanes started appearing over these neighborhoods." (Curt Holzinger)

"The noise analysis provided in the DEIR is based on several assumptions which seem to reflect optimum operating conditions, rather than real conditions; thus skewing the results. For example, the analysis assumes that nighttime operations remain constant (page 335), while the DEIR shows that 25% of the time there is a 31% increase in nighttime operations (page 338). This fact points to important impacts which are given inadequate analysis.

"Moreover, runway and flight track usage are also assumed to stay constant (page 339). This assumption conflicts with explanations this Committee has been given about the increased air traffic over San Francisco. The Committee has been told many times that as flight tracks near the airport fill up, planes move further north into the city. This suggests that future increases in air traffic cannot be spread proportionally among flight tracks; but may in fact be concentrated in areas further from the airport. The DEIR needs to address these concerns and provide more

complete information about the noise analysis and its underlying assumptions." (Timothy Treacy, Airport Noise Committee)

"The assumptions which underlay the existing noise analysis should be made explicit and more complete. It appears that at least some of these assumptions are inadequate, and subject to question. For example, the analysis states that night time operations, runway use, and flight path use remain constant; yet the DEIR also shows that 25% of the time there will be a 31% increase in night operations (page 338); it proposes to use Runways IL/IR more than now, and the assumption that flight path usage will remain constant directly conflicts with explanations I have received from the airport and FAA as to where additional flights must be directed due to airspace limitations." (Curt Holzinger)

Response

As shown in Table 1, p. 24 of the EIR, international passengers using SFIA are forecast to increase by a greater percentage than domestic passengers (96 percent from 1990 to 2006, compared to 68 percent). As also shown in Table 1, however, domestic passengers would still constitute the majority of all SFIA passengers (86 percent in 2006, compared to 88 percent in 1990). In addition, domestic passengers would also constitute the majority of the increase in passengers: 83 percent of the increase from 1990 to 2006.

The table showing runway use on p. 157 of the EIR shows the percentage of all aircraft departures or arrivals using the various runways at SFIA. For the development of the CNEL noise contours, runway uses were estimated for several categories of aircraft. Boeing 747s (B-747s) were assigned to a separate category in these estimates. For 1990, it was estimated that 100 percent of the B-747 aircraft departing for long-haul destinations (over 1,500 miles from SFIA) used Runway 28R during the daytime. All of these aircraft followed the Gap Departure path.

As stated on p. 339 of the EIR, runway uses were assumed to be the same in 1996 and 2006 as in 1990. Therefore, as flights increase over time, use of the various departure routes would increase proportionately. Thus, the forecast increase in Gap departures is reflected in the CNEL contours for 1996 and 2006.

It is possible that some of the international passengers in 1996 and 2006 would not be flying on B-747 aircraft. Long-range, two-engine aircraft such as the B-767 could

increasingly serve SFIA-Pacific Rim routes. These aircraft have performance characteristics that allow them to use Runways 1L and 1R for takeoff. To the extent that future international passengers are served by these aircraft, use of Runway 28R and the Gap Departure could be less than shown in the CNEL contours.

Table C-1A is inserted after Table C-1 on p. A.45 of the EIR (Appendix C) showing runway use by time of day and aircraft category for 1990 (and assumed for 1996 and 2006). The percentages in the table were developed on the basis of SFIA runway use data for 1989.

As stated on p. 339 of the EIR, it was assumed that the use of flight tracks in 1996 and 2006 would be the same as it was in 1990. Several of the commenters challenge this assumption, stating that the forecast increase in flights would result in increased use of vectoring procedures, and/or a change in flight patterns.

The use of radar vectoring procedures is discussed on pp. C&R.199-200 herein. As noted in that discussion, vectoring is currently used for a small percentage of SFIA departures, for specific purposes. The conditions under which aircraft depart SFIA limit the opportunities to use vectoring.

According to the Bay TRACON, if SFIA traffic becomes more congested, the length of time vectoring is used could increase, but the number of planes vectored within a particular time would probably not increase, and aircraft would not be vectored to (or "fanned out" among) flight tracks further north on the Peninsula. According to the TRACON, it is more likely that aircraft would be held on the ground during more congested periods./7/ Given the conclusions of the TRACON, it would be speculative to assume that the use of vectoring would increase substantially in the future (with or without the SFIA Master Plan improvements).

TABLE C-1A: 1990 AND ASSUMED FUTURE RUNWAY USE BY AIRCRAFT CATEGORY AND TIME OF DAY

		Percent Departures by Runway End								
Type	Time/a/	1R	1L	10L	10R	19L	19R	28L	28R	Total
B-747 Short Range/b/	Day	25%	24%	1%	0%	1%	0%	0%	49%	100%
	Evening	25%	24%	1%	0%	1%	0%	0%	49%	100%
	Night	25%	25%	10%	0%	0%	0%	0%	40%	100%
B-747 Long Range/c/	Day	0%	0%	0%	0%	0%	0%	0%	100%	100%
	Evening	0%	0%	0%	0%	0%	0%	0%	100%	100%
	Night	0%	0%	20%	0%	0%	0%	0%	80%	100%
All Others/d/	Day	46%	46%	2%	2%	0%	0%	2%	2%	100%
	Evening	46%	46%	2%	2%	0%	0%	2%	2%	100%
	Night	41%	41%	8%	8%	0%	0%	1%	1%	100%

/a/ Day= 7:00 a.m. to 7:00 p.m.; Eve.= 7:00 p.m. to 10:00 p.m.; Night= 10:00 p.m. to 7:00 a.m.
/b/ With destinations of 1,500 miles or fewer from SFIA.
/c/ With destinations greater than 1,500 miles from SFIA.
/d/ All other airline aircraft.

SOURCE: Ken Eldred Engineering and Environmental Science Associates, Inc., based on SFIA runway use data for 1989.

As noted on p. C&R.200, aircraft departing SFIA travel over wide areas in the Airport vicinity. This characteristic of SFIA departures was factored into the operational assumptions, including locations and use of flight tracks, used to develop the CNEL contours in the EIR. The characteristic is reflected also in the SFIA noise monitoring data, against which the CNEL contours were compared to confirm the validity of the contours. Because available information indicates that flight track locations and uses are likely to be similar in 1996 and 2006 to their locations and uses in 1990, the CNEL contours for 1996 and 2006 incorporate the level and location of aircraft "fanning" likely to occur in those years.

Two commenters challenge the assumption in the EIR (stated on p. 335) that the percentages of operations occurring during evening and nighttime hours will be the same in 1996 and 2006 as 1990, and refer to the EIR's analysis of the effects of potential airfield capacity constraints. It is assumed in the EIR that the percentages of evening and nighttime operations will be the same in the future because the CNEL contours in the EIR were developed on the assumption that airfield capacity constraints would not result in a substantial increase in evening or nighttime flights. These assumptions about nighttime flights were made on the basis of the EIR's analysis of the effects of potential airfield capacity constraints (presented on pp. 335 and 338 and in Appendix J of the EIR).

As noted in the discussion of the capacity analysis on pp. 335-336 of the EIR, during optimal weather conditions (61 percent of the time), there would be an increase of two flights during the evening and no flights during the nighttime; during less-than-optimal weather conditions (25 percent of the time), there would be an increase of up to 31 percent of flights during the nighttime in 2006. The EIR also states (p. 336) that these increases in flights would not result in perceptible increases in cumulative noise levels. In addition, it should be noted that the capacity analysis employs several conservative assumptions that may result in an overstatement of the effects (such as a proportional increase in flights during peak hours, discussed on p. C&R.51 herein).

It should also be noted that the noise measurement data from the SFIA remote monitoring stations reflect aircraft operations during all types of weather conditions, including poor weather conditions (when there would most likely be aircraft delays). As demonstrated in the EIR, the 1990 CNEL contours agree substantially with the measurement data. On the basis of this agreement and the results of the capacity analysis, the EIR's use of the "average day" (good weather) to develop the CNEL contours is appropriate.

SHIFT TO STAGE 3 AIRCRAFT

Assumptions Behind Shift to Stage 3

Comments

". . .Also, the environmental document must comprehensively discuss what leads to the conclusion that larger, quieter aircrafts will be used in the future. If this assumption does not take place, it is possible that the CNEL may remain the same or may increase." (Maria Gracia Tan-Banico, City of Daly City)

"Another issue is, on Page 339, as I understand it, the San Francisco Airport Commission can take a stronger role in forcing the phase-out of Stage 2 aircraft. And the continual granting of waivers and variances, notwithstanding Lou Turpin's commendable stand on the 707 Q, which we are all thankful that he held the line on that one. The Stage 2 aircraft really are the culprits. The 727 is worse than a 747." (David Few)

"From the Roundtable's experience, it is clear that the only remaining action involving aircraft operations that will result in significant noise reduction is the attainment of a 100% Stage 3 fleet at San Francisco International Airport (SFO). While some opportunities for reduction in noise exposure may exist through additional modifications in flight tracks, preferential runway usage, etc., that reduction will be modest. Thus, community land use actions will be the only way of mitigating residual noise impacts after the benefits of Stage 3 are fully realized." (Roger Chinn, Airport/Community Roundtable)

"The DEIR attempts to provide assurances through its proposed mitigations that aircraft noise impacts resulting either from the project or from present operations will be within acceptable levels due to technological improvements expected to occur during this period. The achievement of these improvements depends on airline investment in alternative aircraft. . ." (Onnolee Trapp, Leagues of Women Voters of San Mateo County)

". . .From an environmental point of view, SAIA members have already invested US $ billions on new aircraft designed to reduce the noise impacts on surrounding communities and decrease our use of fossil fuels, while still providing the high level of safety the traveling public deserves." (Jerome Copelan, San Francisco Association of International Airlines)

Response

Federal Aviation Administration regulations, codified at 14 C.F.R. Part 36, established a federal noise certification program in 1969 for new aircraft designs. Since 1975, Part 36 has contained three levels of regulation; each level corresponds to established noise limits. Each level is identified as a "Stage" and applies to the dates applications for type certification are submitted to the FAA. The most stringent level is Stage 3, which applies to aircraft for which applications for type certification were submitted after November 1975. The less stringent Stage 2 level applies to aircraft for which applications for type certification were submitted between December 1969 and November 1975. Stage 1 aircraft do not have to meet any noise limits. All of the aircraft currently operating at SFIA must meet either Stage 2 or Stage 3 noise limits.

Requirements of both the Federal government and the Airport will result in the use of quieter aircraft in the future. The Airport Noise and Capacity Act of 1990 mandates the phaseout of Stage 2 aircraft at airports nationwide by 2003./10/ In addition, the San Francisco International Airport Noise Abatement Regulation, adopted in February 1988 and amended in June 1991, contains the following provisions (paraphrased):

A gradual scheduled phase-out of Stage 2 aircraft, including requirements that at least 25 percent of each operator's aircraft operations after January 1, 1989 must be performed using Stage 3 aircraft; at least 50 percent after January 1, 1994; at least 75 percent after January 1, 1999, and 100 percent as of January 1, 2000. (Section 4(B))

A requirement that the percentag of Stage 2 operations at SFIA performed by a particular airline cannot increase during a specified quarter, based on the same quarter during the previous year. (Section 4(B)1e)/11/

SFIA Administration staff state that at the present time, 65 percent of the total operations at SFIA use Stage 3 aircraft, which is well in advance of the 50 percent requirement for individual operators that must be achieved by January 1, 1994./12/

The language on pp. 338-339 of the EIR does not reflect developments in 1991 that resulted in established deadlines for the phasing out of Stage 2 aircraft at SFIA (and nationwide). The last paragraph on p. 338 and the first paragraph on p. 339 of the EIR are revised as follows (revisions are underlined, deletions are indicated by brackets):

> Since the preparation of the FAA national fleet forecasts and the adoption of the SFIA Noise Regulation, Congress has passed legislation providing for the phasing

out of Stage 2 aircraft nationwide./5/ The legislation includes a final deadline of December 31, 1999, for the operation of Stage 2 aircraft, with a possible extension through December 2003 if certain conditions are met. [ ] On September 24, 1991, the FAA issued regulations to implement the noise policy. The regulations include the deadlines established by the legislation, with interim deadlines of 55 percent (of an airline's fleet) by 1994, 65 percent by 1996, and 75 percent by 1998./5a/

[ ] As discussed on p. 168, the Airport Noise Abatement Regulation was amended in June 1991 to include a requirement for 100 percent Stage 3 operations as of January 1, 2000. Assuming that aircraft operators serving SFIA comply with by the SFIA and federal regulations, there would be no Stage 2 aircraft serving SFIA in 2006. [ ] With a 100 percent Stage 3 fleet in 2006, the CNEL contours shown in this section would probably be about one dBA smaller than forecast.

The following note is inserted after note /5/ on p. 352 of the EIR:

/5a/ "FAA Eases Plan to Phase Out Noisy Jets Amid Strong Pressure," *New York Times*, September 25, 1991.

As discussed in the EIR (pp. 339, 346-347), cumulative noise levels are forecast to decrease from 1990 to 1996 and 2006 because of the phasing out of Stage 2 aircraft at SFIA. The use of expanded sound insulation programs to mitigate residual noise impacts is discussed on pp. C&R.282-287 herein.

Page 335 of the EIR explains the conclusion that larger aircraft will be used in the future. Operations are forecast in the SFIA Master Plan to increase less than passengers because it is assumed that larger aircraft will be serving SFIA in the future and that more passengers would be on each aircraft. According to Airport staff, this trend is evidenced by current purchases and future orders by SFIA airlines of the B-747-400, the largest passenger aircraft manufactured in the U.S. This aircraft is considered to be the primary fleet plane to serve the Pacific Rim and other international markets.

The airlines are, in fact, investing in new quieter aircraft. According to Mr. John Casey, Avmark, Inc., at the beginning of 1990, the five major aircraft manufacturers had a backlog of 3,224 orders of Stage 3 type aircraft, and by January 1, 1991, that backlog had increased to 3,674 aircraft./13/

Relationship to Aircraft Size and Projected Noise Levels

Comments

"At several locations (pp. 6 and 165, as examples) it is stated that increased use of newer, quieter (Stage 3) aircraft should result in decreased single event levels. The statement may be correct, but it depends upon whether or not the take-off weights and the number of engines of the Stage 3 aircraft in 1996 and 2006 are equal to or less than those of aircraft used in 1990. This analysis follows from inspection of the Stage 2 versus Stage 3 noise level limits shown in the FAA's Advisory Circular (AC No.: 36-1D; Appendix 1, pp. 28 to 32), and the expectation in the EIR of more seats per aircraft and greater load factors, i.e., heavier aircraft (Table 10)[1]. ["(1) Table 10 should include data for 1990."] Most readers probably are unfamiliar with and don't have copies of the FAA figures, so copies might be provided in the EIR." (Jerome Lukas)

"Page 339:
"The expectation stated in the DEIR that stage 3 planes will diminish the noise impact of the existing fleet mix of Stages 2 and 3 is not consistent with the further stated conclusion that the fleet will consist of larger aircraft. Larger stage 3 planes can be louder than smaller stage 2 planes. Analysis is needed." (Duane Spence, Airport Mitigation Coalition)

"The DEIR relies heavily on Stage [III] aircraft being quieter than Stage [II] aircraft to account for lower noise levels. However, it is known that some Stage III aircraft are noisier than stage II, and produce noise levels which will be significant. This fact, the aircraft types involved, their expected flight paths and noise levels should be disclosed. . ." (Curt Holzinger)

"Mitigation through use of Stage III aircraft is suggested in the DEIR. The DEIR assumes that newer Stage III aircraft are quieter than older Stage II aircraft. While this assumption may have some validity, Table C-5 in the DEIR discloses that Stage III 747 aircraft are only marginally quieter than Stage II 727-200, one of the noisiest in the existing fleet. Stage III aircraft will continue to have significant impacts, especially single event, which are not disclosed." (Bruce Krell, Forest Hill Association)

"Mitigation through use of Stage III aircraft is suggested in the DEIR. The DEIR assumes that newer Stage III aircraft are quieter than older Stage II aircraft. While this assumption may have some validity, Table C-5 in the DEIR discloses that Stage III 747 aircraft are only marginally quieter than Stage II 727-200, one of the noisiest in the existing fleet. Stage III aircraft will

continue to have significant impacts, especially single event, which are not disclosed." (Carol Kocivar, West of Twin Peaks Central Council)

"To arrive at the conclusion that noise levels will decrease, the DEIR relies heavily on newer aircraft being quieter than existing aircraft. While this may generally be true, some Stage III aircraft will sound just as loud as Stage II aircraft, meaning that significant impacts may remain. For example, Table C-5 in the DEIR shows that even at a distance of several miles from the airport, the Stage III, 747 aircraft is only 2 to 3 decibels quieter than the Stage II 727-200, an aircraft identified as the loudest in the existing fleet, and cause of many noise impacts. Since a 3 decibel difference is considered barely perceptible, these noisy Stage III aircraft will continue to have significant impacts which are not disclosed. . ." (Timothy Treacy, Airport Noise Committee)

"Please identify the specific aircraft compared to state, on page 165, '. . . Stage 3 aircraft produced . . . (up to 23 dBA lower).' " (Jerome Lukas)

Response

Stage 2 and Stage 3 aircraft must meet noise limits established at three measurement points, known as "takeoff," "sideline," and "landing." The Stage 2 and Stage 3 noise limits for each of the measurement points generally increase as the weight of the aircraft increases. Because of this relationship between the noise limits and aircraft weight, a heavier Stage 3 aircraft may actually be noisier than a lighter Stage 2 aircraft.

The Stage 3 noise limits for takeoff are lower for 2-engine aircraft than 3-engine aircraft, and lower for 3-engine than 4-engine aircraft. The difference in noise limits accounts for the higher climb performance that can be achieved (at a given aircraft weight) by an aircraft with fewer engines. (The aircraft with fewer engines can climb faster because it is required to have enough engine power to continue to fly with one engine not working.)

As a general rule, for the same type of engine and noise control technology, the noise of a larger aircraft is greater than that of a smaller aircraft. The noise of a two-engine aircraft is less than that of a four-engine aircraft of the same weight. (Information documenting this relationship is available for review in the Department of City Planning files.)

Tables 17, 50, and 51 on pp. 156, 336, and 337, respectively, of the EIR show the average daily air carrier operations estimated for 1990 and forecast for 1996 and 2006 with the SFIA Master Plan. The operations forecasts reflect SFIA Master Plan assumptions about aircraft load factors and aircraft size (as discussed on pp. C&R.194-197 herein).

The operations are shown by type of aircraft, with the aircraft types categorized as Stage 2 or Stage 3. As shown in the tables, the Stage 3 aircraft forecast to operate at SFIA in 1996 and 2006 range in size from the BAe-146 to the B-747-400; the Stage 2 aircraft range from the DC-9 to the B-747. (The B-747 -100, -200, and -300 are classified as Stage 2 in the tables. However, many of these aircraft have been or will be recertificated as Stage 3.)

As shown in Tables 17, 50, and 51, the number of average daily operations by Stage 2 aircraft is forecast to decrease from 299 in 1990 to 199 in 1996 and 40 in 2006. Most of the operations forecast for 1996 and 2006 would be performed by Stage 3 aircraft that are quieter than the Stage 2 aircraft they would be replacing. These aircraft would produce lower single-event noise levels in communities near the Airport.

The Part 36 "sideline" measurement is the most appropriate basis for the comparison of the noise produced by various aircraft (because the "takeoff" measurement test permits a power cutback, and the "sideline" measurement test requires takeoff at full power). A comparison of the sideline noise levels for the aircraft serving SFIA shows that all of the Stage 3 aircraft serving the Airport are quieter than the Stage 2 aircraft. (This conclusion is based on a comparison of only the heaviest aircraft within each type.)

Operations by the B-747-400 are forecast to increase from 35 in 1990 to 73 in 2006; operations by the Stage 2 B-747-200 are forecast to decrease from 20 in 1990 to 0 in 2006.

On p. 344 of the EIR, it is stated that the noisiest aircraft overflights to and from SFIA would likely be by B-747 aircraft. To the extent that total operations by B-747-400 aircraft increase in the future, residents under the departure path for Runway 28R would experience an increase in the occurrence of the single-event noise produced by those aircraft. If current aircraft design trends continue, however, many of the aircraft used for long-range operations (the type performed by the B-747) will be quieter, two-engine aircraft (including aircraft currently under development, such as the Boeing 777). In that case, residents under the departure path for Runway 28R would experience a reduction of both single-event and cumulative noise (below what is forecast in the EIR).

As stated in the EIR, the increased use of Stage 3 aircraft at SFIA will result in lower cumulative noise levels. These lower noise levels are depicted in the CNEL contours shown on pp. 161, 340, and 345 of the EIR. The noise produced by large Stage 3 aircraft was taken into account in development of the contours.

The B-747-200 used as an example in Tables C-4 through C-9 of the EIR (pp. A.54-A.57 in Appendix C) is a Stage 2 aircraft, not a Stage 3 aircraft as stated by the commenters.

To clarify the comparison of the maximum single-event noise produced by selected aircraft, the first sentence of the fifth paragraph on p. 164 of the EIR is revised as follows (revisions underlined):

> Maximum single-event noise levels for <u>four</u> typical aircraft departing from SFIA were estimated for the 27 remote monitoring stations and the 20 study locations.

The second paragraph on p. 165 of the EIR is revised as follows (revisions underlined, deletions are indicated by brackets):

> Of the <u>four</u> aircraft studied, the Boeing 727 (B-727) produced the highest departure noise levels; the Boeing <u>747-200, a Stage 2 aircraft, and Boeing</u> 737-300 and 767 [ ], <u>both</u> Stage 3 aircraft, produced lower noise levels (up to 23 dBA lower). Aircraft such as the B-727 are gradually being replaced by aircraft such as the <u>B-737-300</u> and B-767. The increased use of quieter aircraft at SFIA will <u>generally</u> result in lower single-event (and cumulative) noise levels in communities near the Airport.

<u>Relationship to CNEL Contours and Land Use</u>

<u>Comment</u>

"On page 2 the report states that airlines will be required to use higher capacity aircraft. In a separate information release, the airport recently announced that future aircraft would be quieter to allow development (the suggestion was for new housing) of previously unusable land around the airport. This is an important point, as that part of the peninsula is already at or above capacity in residents and services." (Patricia Clark)

Response

SFIA's Director of Community Affairs has no knowledge of the information release mentioned by the commenter./14/ The potential for development of new housing in areas previously within the CNEL 65 contour would depend on the availability and current use of the land, the General Plan designation and zoning established by the community, and other factors. It is not possible to determine whether the forecast decrease in the size of the CNEL 65 contour from 1990 to 2006 would allow the development of additional housing in the SFIA environs.

AIRCRAFT NOISE CONTOURS AND CNEL IMPACTS

Aircraft Noise Contour Maps

Comments

"Re: Noise - Page XI-A-50-53 Noise diagrams shown are so different from Noise Contour lines adopted for Millbrae area which are so bluntly rounded. Which is correct?" (Jessie Bracker, letter of 8/27/91 and public hearing of 8/27/91)

"P. XI-A-50 to A-53 - Noise - If those diagrams are correct of Typical noise cone ends, how can Contour Line Maps of noise in Millbrae be correct?" (Jessie Bracker)

"Figure 20 (Page 161, Volume I) titled '1990 Aircraft Noise Contours' should conform with the Fourth Quarter 1990 Noise Report prepared by San Mateo County. Revising the 1990 map will maintain consistency with previously published Airport Noise Contour maps." (Arthur Wong, City of South San Francisco)

"Environmental Impacts: A great amount of environmental data has been included as extraneous 'filler' in this DEIR. Results generated by computer models or simulations can always be challenged as to the assumptions made and the algorithms used. Actual data gathered from fixed monitors, whether continuous or not, can always be challenged as 'not being representative.' I challenge the overall logic of both the aircraft noise and air quality impact data." (Alyn Lam)

Response

As discussed on p. A.48, Appendix C of the EIR, the contours shown on pp. A.50-A.53 represent the sound exposure levels (SEL) produced by four representative aircraft. Each set of SEL contours represents the single-event noise created by one aircraft; the CNEL contours shown on pp. 161, 340, and 345 of the EIR represent the average cumulative noise levels produced by all of the aircraft serving SFIA. The shape of the SEL contours is related to the fact that they represent the noise produced by one aircraft landing on and departing from one runway, and exhibiting one set of performance characteristics. The long narrow spike in the contour represents the landing noise; the rounder part of the contour represents takeoff noise. The generic nature of the SEL contours is explained on p. A.48, Appendix C of the EIR. To clarify that discussion of the SEL contours, the following sentences are added to the end of the first paragraph on p. A.48 of the EIR:

> Each SEL contour represents the noise produced by one aircraft landing on and taking off from one runway. The long, narrow end of the contour represents the noise produced during landing; the rounder end of the contour represents the noise produced during takeoff.

There are two ways to estimate the cumulative noise from aircraft operations in the vicinity of SFIA: the use of computer models, and direct measurement at the 27 remote monitoring stations. Computer models are used to estimate the historic, existing, and future noise environment (under forecast and alternative scenarios); the direct noise measurements are used to validate the computer estimates, and to provide primary input to the quarterly update of the noise impact boundary reported to the California Department of Transportation. (Direct noise measurements can be used to provide information on only historic and existing noise levels; computer modelling must be used to estimate future noise levels and to compare existing and future noise levels.)

As stated on p. 160 of the EIR, the CNEL contours developed for 1990 (and 1996 and 2006 under the SFIA Master Plan and alternatives) were calculated by the Integrated Noise Model (INM). The INM is used for almost all studies of civil airport noise in the United States. The results of the INM were compared with the measured CNEL values at SFIA's 27 remote monitoring stations, to determine the accuracy of the model. The results of the comparison are discussed on p. 163 of the EIR.

As also stated on p. 163, the calculated CNEL values at the remote monitoring stations, and the corresponding CNEL contours, may differ from the comparable calculated data presented to the State on a quarterly basis (including the Fourth Quarter Noise Report prepared by SFIA), because of adjustments made by the computer model used to prepare CNEL contours for submission to the State. These contours are required to be constructed from the actual measurement data to determine the Airport impact area, which is bounded by the CNEL 65 contour. Because of this difference in approach, modifying the CNEL contours in the EIR to match the contours presented to the State (as requested by the commenter) may result in greater inaccuracy in the EIR contours in locations far from the monitoring stations.

CNEL Impacts - Population and Dwelling Units

Comment

"It would also be helpful if the noise impact information is reported both in terms of population and dwelling units within various noise contours." (Chris Brittle, Metropolitan Transportation Commission)

Response

Table 52, Estimated Resident Population Exposed to Aircraft Noise CNEL 65 and Above, 1990, 1996, and 2006, on p. 341 of the EIR is replaced by the following table, which includes the estimated number of dwelling units within each of the CNEL contours.

CNEL Impacts - Sensitive Receptors

Comments

"P. XI-A-58 - Table C-10 Regarding Noise Sensitive in 65 to 70 CNEL contour, you left out - Homes areas in Millbrae, City Hall, Library, Millbrae Nursery School and 2 Convalescent Hospitals." (Jessie Bracker)

TABLE 52: ESTIMATED RESIDENT POPULATION/HOUSEHOLDS EXPOSED TO AIRCRAFT NOISE CNEL 65 AND ABOVE, 1990, 1996, AND 2006/a/

Noise Exposure Range (CNEL)/d/	Resident Population/Households Exposed/b,c/					
	Estimated1990		Forecast/e/			
	Population	Households	1996 Pop.	Households	2006 Pop.	Households
CNEL 75+	340	133	0	0	0	0
CNEL 70-75	1,980	777	1,500	618	760	321
CNEL 65-70	12,660	4,939	5,500	2,129	5,840	2,242
Total CNEL 65+	14,980	5,849	7,000	2,747	6,600	2,563

NOTE: Numbers shown reflect only the homes within the CNEL 65 contour. Some homes included in totals may no longer be "impacted" because they have been sound insulated.

/a/ Estimated on the basis of the CNEL contours shown in Figures 20, 32, and 33, pp. 161, 340, and 345.
/b/ Estimated on the basis of 1980 U.S. Census block data, and ABAG population growth factors by census tract. Some of the population growth would occur in new dwelling units with sound insulation installed according to local regulations.
/c/ Estimated on the basis of ABAG Persons Per Household (PPH) statistic for 1990, and projections for 1995 and 2005.
/d/ CNEL= community noise equivalent level.
/e/ Assuming implementation of the SFIA Master Plan.

SOURCE: Environmental Science Associates, Inc.

". . .I have a child in Lincoln school, and in February, during one of these episodes of bad weather, the children had to hold their ears during class while they were in the classroom because of the noise. And the school secretary told us that a number of children had to go home because of stomach aches and because of headaches directly related to the noise. And I don't know if our schools are covered in the Environmental Impact Report. But I would certainly encourage interested parties to take a close look at our schools and what it's doing to our children while they're sitting in the classroom and trying to learn. The teachers cannot be heard over the noise of those planes taking off down the Peninsula." (Jack Hickethier)

TABLE C-10: SENSITIVE RECEPTORS WITHIN 65 to 70 and 70 to 75 dBA, CNEL NOISE CONTOURS/a/

1990 Existing Base

70-75 dBA Contour

Millbrae Nursery School
Millbrae Serra Convalescent Hospital
Sheltering Pines Convalescent Hospital

65-70 dBA Contour

Chadbourne School
Fire Station
Belle Air School
Avalon School
Taylor School*
Green Hills School*
South San Francisco High School*
Los Cerritos School*
El Rancho School*
Alta Loma School*
Lincoln School*
Millbrae City Hall
Millbrae City Library

1996 Project and No-Project Alternative

65-70 dBA Contour

Chadbourne School
Mills High School*
Peninsula Hospital*
Fire Station*
Belle Air School*
Avalon School*
South San Francisco High School*
Los Cerritos School*
Millbrae Nursery School
Millbrae Serra Convalescent Hospital
Sheltering Pines Convalescent Hospital
Millbrae City Hall
Millbrae City Library

TABLE C-10: SENSITIVE RECEPTORS WITHIN 65 to 70 and 70 to 75 dBA, CNEL NOISE CONTOURS/a/ (CONTINUED)

2006 No Project Alternative

65-70 dBA Contour

Avalon School*
South San Francisco High School*
Los Cerritos School*
Sheltering Pines Convalescent Hospital*

2006 Project

65-70 dBA Contour

South San Francisco High School
Los Cerritos School
Southwood School
Avalon School*
Sheltering Pines Convalescent Hosptial*
Millbrae Serra Convalescent Hospital*

NOTES:

/a/ Other than residences.

*On border of contour.

SOURCE: Enviornmental Science Associates, Inc.

Response

Table C-10, Sensitive Receptors Within 65 to 70 dBA, CNEL Noise Contours, on p. A.58, Appendix C of the EIR is replaced by the above table, which includes the schools, hospitals, and public facilities noted by the commenters (additions to the table are shown in boldface type). The residential areas mentioned in the first comment are already reflected

in the estimates of residential population exposed to aircraft noise of CNEL 65 and above (Table 52, p. 341 of the EIR).

The effects of overflights on human activities are discussed in Appendix C of the EIR and on p. C&R.249 herein.

CNEL Impacts - Specific Locations

Comments

"Page 253 says Brisbane is in the 65 CNEL contour and the following page says it is not.

"Bottom of p. 343 there is no discussion of impact on Brisbane's monitoring station (#7) or San Francisco's station near Candlestick (#23). The DEIR states that CNEL will decrease in all 'selected study locations' due to quieter planes; however, in light of what we suspect will be greater use of radar vectors to handle additional traffic under the plan, we think some analysis of these locations as well as Brisbane's 'bowl effect' geography is warranted." (Stephen Waldo, Mayor of Brisbane)

"It should be noted that the CNEL noise exposure levels are expected to be reduced at all the monitor locations by the year 2006 with the exception of Monitor 4 in South San Francisco and Monitor 12 in Foster City. Since Stage 3 aircraft are not quieter on landing, there will be increases in the CNEL in Foster City in 1996 and 2006. This is the only location where this will occur." (Roger Chinn, Airport/Community Roundtable)

"On page 343 where the results of Table 53 are summarized, it should be noted that the Foster City remote monitoring station is one of two stations where noise is projected to increase. . ." (Leslie Carmichael, City of Foster City)

Response

The last sentence of the third paragraph on p. 253 of the EIR is revised to remove Brisbane from the list of cities within the 65 dBA, CNEL contour (deletion is indicated by brackets):

> The cities closest to the Airport, and those within the 65 dBA, CNEL contour ([ ] South San Francisco, San Bruno, Millbrae and Burlingame), would be most affected by airport-related safety and noise regulations.

The following sentence is added at the end of the first bulleted item on p. 343 of the EIR:

> (At station 4 in South San Francisco, noise levels are forecast to increase 0.1 dBA, CNEL from 1990 to 2006. Such an increase would not be perceptible.)

The following is inserted before the second bulleted item on p. 343 of the EIR:

> At station 7 in Brisbane, located near the "Shoreline Departure" flight path for Runway 28R, noise levels are forecast to decrease 3.3 dBA, CNEL from 1990 to 1996, and 5.9 dBA, CNEL from 1990 to 2006. Such decreases would be perceptible to most people.

The following is inserted after the second bulleted item on p. 343 of the EIR:

> At station 12 in Foster City, located near the arrival paths for Runways 28, noise levels are forecast to increase 0.6 dBA, CNEL from 1990 to 1996, and 0.9 dBA, CNEL from 1990 to 2006. Such increases would not be perceptible to most people. Noise levels would not decrease in Foster City because the reduction in the noise produced by Stage 3 aircraft as compared to Stage 2 aircraft is much less for landing than for takeoff.

The following replaces the third bulleted item on p. 343 of the EIR (revisions are underlined):

> At stations 20-21 and 23-26, located in Daly City and San Francisco, noise levels are forecast to decrease (on average) 3.0 dBA, CNEL from 1990 to 1996 and 4.9 dBA, CNEL from 1990 to 2006. Such decreases would be perceptible to most people.

Discussions of the existing and potential use of radar vectors to handle SFIA aircraft departures are on pp. C&R.199-200 and 206 herein. On the basis of the information on those pages, it is not appropriate or necessary to reanalyze the impacts at the noise monitors in Brisbane due to vectoring.

Table C-3 on p. A.47, Appendix C of the EIR shows the measured CNEL at the monitoring station in Brisbane (Station 7) to be 2.0 dBA higher than the calculated CNEL. This difference could be due to a number of factors, including the topography of the area. Partly because the computer model used to develop the CNEL contours in the EIR does not account for topographical differences, the model results were compared with the noise measurement data to determine whether the model needed to be adjusted. It was determined that the difference at the Brisbane monitoring station was not great enough to warrant an adjustment to the computer model.

CNEL Impacts - Project v. No-Project

Comments

"There are mixed messages in the section on Noise (IV.-C). This section continually determines that the Project will result in a decrease in noise (both CNEL and single-event noise). This conclusion is reached primarily because future operations would use more Stage 3 aircraft.

"But, how can the project be credited with decreasing noise levels. The document states that 'Noise levels would also decrease in the future without the proposed project because of the phasing out of the noisier, Stage 2 aircraft using SFIA' (DEIR, p. 346).

"What is really needed in this EIR is an analysis of the increased aircraft flights caused by the project. The EIR states (on pp. 346-347) that 'The effect of the SFIA Master Plan on aircraft noise exposure cannot be determined without comparing forecast aircraft noise levels in 1996 and 2006 with and without implementation of the SFIA Master Plan. (The No-Project Alternative is evaluated in Chapter IX. Alternatives, beginning on p. 439)'.

"What happens when one reads the alternatives is that we learn very little (page 452).

> " 'The increased aircraft operations (in 1996) under the project would require additional aircraft'.
>
> " 'In 2006 there would be fewer aircraft noise impacts (with the No-Project Alternative - Variant 1) than with the project.'

"Under No-Project Alternative, Variant 2 (near no-growth) we learn even more about the project in comparison to alternatives (page 457).

> " 'Even with the project, aircraft noise impacts would decrease due to quieter aircraft that will be used in the future. With Variant 1, noise impacts would further decrease from project impacts, and with Variant 2, noise impacts would decrease even more.'

"This information clearly indicates that the project really will increase noise levels and noise impacts. It is only the change to quieter aircraft (not a part of the project) that will help to stabilize or decrease future noise levels.

"The residents of Pacifica have anxiously awaited the quieter aircraft and are not pleased that the SFIA Master Plan will increase the number of flyovers and partially or fully nullify the benefits of the quieter planes.

"It is unfortunate that the noise analysis did not more clearly point out the fact that the project will increase future noise levels -- not decrease them. If the analysis had acknowledged more clearly that the project will be increasing future noise levels (not compared to 1991, but when compared to the No-Project scenarios) maybe more mitigations could have been identified that would have helped address the concerns of residents of Pacifica. . . " (Fred Howard, Pacifica Noise Abatement Committee)

Response

The EIR does not state that the proposed SFIA Master Plan would result in a decrease in noise. Rather, as the EIR acknowledges, "Noise levels would also decrease in the future without the proposed project because of the phasing out of the noisier, Stage 2 aircraft using SFIA." (EIR, p. 346)

The EIR acknowledges that average daily aircraft operations are expected to increase with or without the project. Page 344 notes a possible increase in average daily operations of 196 by 1996 and 298 by 2006 with the project. As noted on p. 347 of the EIR, ". . . implementation of the SFIA Master Plan would . . . allow SFIA to serve an increased number of passengers and aircraft operations." The increase in operations allowed by the implementation of the SFIA Master Plan (over the No-Project Alternative, Variant 1) is shown in Tables 68 and 69, pp. 441-446 of the EIR.

The comparison of aircraft noise levels with and without the project is analyzed in Appendix C of the EIR, discussed in the Alternatives section of the EIR (pp. 452, 457), and summarized on p. 347 of the EIR: ". . . the increase in operations allowed by the proposed project would have virtually no effect on cumulative noise levels because the additional operations would all be performed by quieter, Stage 3 aircraft." The EIR acknowledges (on p. 344) that in areas with overflights by aircraft serving SFIA, the number of times single-event noise occurs would increase, but that there would be a decrease in the number of overflights by noisier, low-bypass engine aircraft.

Tables 10 and 11 in the "Addendum to Noise Analysis" report in Appendix C show calculated CNEL values under the SFIA Master Plan "constrained" and "unconstrained" scenarios. (The constrained scenario corresponds to the No-Project, Variant 1 alternative analyzed on pp. 440-456 of the EIR; the unconstrained scenario corresponds to the proposed SFIA Master Plan.) Under the constrained scenario, there would be 881 average daily aircraft operations in 2006, compared to 1,131 under the unconstrained scenario, and 833 in 1990.

By comparison of the results in Tables 10 and 11, the increases in CNEL values with the SFIA Master Plan over the CNEL values without the SFIA Master Plan can be determined. The increases at the SFIA remote monitoring stations range from 0.6 to 1.2 dBA, with an average increase of 0.9 dBA. The increases are similar at the selected study locations. An increase of 0.9 dBA is considered imperceptible; thus, the conclusion on p. 347 of the EIR (that the increase in operations allowed by the project would not affect cumulative noise levels) is correct.

The issues of increases in single-event noise with the project and aircraft overflights in Pacifica are discussed on pp. C&R.234-248 herein.

SINGLE-EVENT NOISE

Setting

Comments

". . .Some years ago, I think it must have been three or four years ago, I attended these meetings when Mr. Turpen first unleashed his planes over our neighborhoods, over the Excelsior District and Bernal Heights. We complained and complained. For a whole year after that, I kept calling the noise abatement number that he lists in the white pages of the telephone book. I got only answers, well, we wrote down your complaints. That's all we got.

"Even now, every day, I am woken up every single night. I would like to know Mr. Turpen's telephone number so I can call him and wake him once a night. That is all I ask. So that I can ring his home phone, I don't wish to speak to him, just wake him once every night." (Bhimje)

"It seems like I am talking, singing an old, old song, because I have been trying to work within the system for over 25 years. We do still get a lot of noise after midnight. And even though it seems like noise has been shifted, it's the numbers because now the operations have increased so considerably." (Rose Urbach)

"I am mostly concerned with noise pollution. If this plan ever goes into effect, I am going to have to wear earmuffs. . . .The noise I am speaking about comes in at all hours of the day, night, and early a.m. It's continuous. One has to live under this umbrella of noise to really understand it. It's such a deafening noise that one cannot carry on a conversation in the living room without being interrupted by overflights.

"This started several years ago. Because I can understand the people in the Peninsula, they were having their problems, and, in the meantime, they shifted the noise up to the southern part of San Francisco. Prior to that, we only had very little overflights and the noise was bearable. But today, it isn't." (Bruno Bernasconi)

"Since 1987, our neighborhood has experienced a significant increase in commercial jet aircraft overflights from planes departing and arriving [at] the Airport. Our greatest concern is with the single-event noise generated by departing aircraft, which has contributed to an environmental deterioration in our neighborhood. This is particularly a problem early in the morning from 6:30 a.m. on." (Bruce Krell, Forest Hill Association)

" . . . The dramatic increase in the number of flights since 1980, the increased number of flights over Pacifica to southern California and the Far East, our finding that aircraft take shortcuts (over Pacifica) to southern California destinations, and the canyon topography of Pacifica (which holds and resonates noise from planes) are all factors that have changed the nature of aircraft noise over Pacifica since 1980. These concerns need to be analyzed in the EIR and appropriate mitigations need to be recommended. . . . " (Fred Howard, Pacifica Noise Abatement Committee)

Response

The comments relate primarily to the commenters' perceptions of existing noise problems near SFIA. Pages 153-170 of the EIR contain a discussion of the noise environment near SFIA in 1990; pp. 164-165 specifically address single-event noise in the vicinity of SFIA. The data and information used as the basis for the discussion of the noise setting in the EIR were collected from SFIA records and noise measurement data.

The role of the EIR is to assess the future environmental impacts of a project. As discussed in the Noise Impacts section of the EIR (pp. 331-352), future cumulative noise levels with or without implementation of the SFIA Master Plan would not be substantially different from existing levels. With or without the project, there would be an increase in the number of flights (and the frequency of single events), but the levels of single-event noise would decrease in most locations. Noise levels experienced today would be maintained or would decrease in the future because the additional flights would be performed by Stage 3 aircraft.

Adequacy of CNEL as Descriptor of "Noise Problem"

Comments

". . . [T]here are significant omissions [in the DEIR]. I congratulate Barbara Sahm on recognizing the major one, and that is that the noise analysis that is provided in the existing Draft EIR is inadequate. It is absolutely inadequate. It is based on a metric called the CNEL, which is an average measure. The issue in the area, in the Bay Area, if you talk to people on the Peninsula, here, everywhere, the issue related to aircraft noise is the single aircraft flying over that is incredibly loud. If you only look at the average measure, that doesn't show up.

"To put it in very graphic terms, this plan anticipates an increase of about 100,000 flights per year, from around 300,000 to 400,000. What the current document says in terms of noise analysis is -- and this is paraphrasing in a nutshell -- the newer aircraft are slightly quieter than the older aircraft, therefore the over-flights will be slightly quieter. Great. But we have 100,000 more. So, if you go from 90 decibels to 85, it may not show up in the CNEL. It doesn't show up in the metric at all, in the measurement. But you have added 100,000." (Curt Holzinger)

". . .I agree with the 'Airport Noise Committee's' objections to the Draft:

"1. The 'CNEL' is an inadequate standard for measuring noise impact." (David Deakin)

"We do not believe that the DEIR adequately analyzes noise impacts which will result from the increased number of flights. The DEIR fails to acknowledge that single-event noise levels are not recognized in the CNEL contours and that perceived noise levels will increase. . ." (Wendy Cosin, City of Pacifica)

"The CNEL method of noise measurement is not sensitive to the frequency of single-event noise and does not accurately represent increases in operations. This method however, has a one-for-one relationship to a change in decibel reading of each noise event. . ." (Maria Gracia Tan-Banico, City of Daly City)

"For unstated reasons, the DEIR limits consideration of the noise issue to the 65 CNEL contour. This contour is simply one measure of the noise problem with limited uses and applications. Other measurements of the noise generated by overflying jet aircraft, such as single event measurements (SNEL) are we submit, more meaningful criteria of the environmental issue. The 65 CNEL contour is arbitrarily set as the definition of the noise problem and the reviewed mitigation measures are discussed only in relation to the 65 CNEL contour. . .

"The CNEL is a measurement of the average noise level in an area. It forms the basis of the noise analysis in the DEIR. However, this method of noise measurement has several well documented flaws, and certain noise impacts are excluded, or understated by the CNEL measure. For example:

It does not describe single events, which cause sleep disturbance,
It is not a good measure of either low or high frequency sound,
It does not account for background noise variations,
It does not look at seasonal variations,
It does not address the frequency of aircraft overflights.

"Due to these flaws, it is possible to greatly increase both the number of overflights and the total amount of noise energy in an area, without any change being reflected in the CNEL number. This may happen, for example, if additional overflights are each slightly quieter than the existing average overflight. Obviously, the addition of hundreds of overflights constitutes a significant impact (even if each individual flight is slightly quieter); yet the CNEL measure would show no impact.

"The Committee finds that the CNEL measure is deficient and can not disclose all significant impacts. The noise analysis should be expanded and supplemented with additional noise descriptors." (Timothy Treacy, Airport Noise Committee)

"We view attempts of the DEIR to address the noise issue (DEIR, pages 331, et seq.) as completely inadequate. The DEIR recognizes that implementation of the Master Plan will result in additional aircraft operations. But the DEIR then attempts to limit consideration of this

increase to a discussion of its impact on the Airport's CNEL contour without reference to any impacts elsewhere. This is an unreasonable limitation for which there is no legal basis, or any other justification, to so limit the scope of the DEIR. . .

"CNEL forms the basis of the DEIR noise analysis. In this regard, the DEIR omits any consideration of single noise events (SNEL). The noise problem with overflights across San Francisco neighborhoods is created by individual aircraft and not some statistical average, which is what CNEL is. . ." (Bruce Krell, Forest Hill Association)

"CNEL forms the basis of the DEIR noise analysis. In this regard, the DEIR omits any consideration of single noise events (SNEL). The noise problem with overflights across San Francisco neighborhoods is created by individual aircraft and not some statistical average, which is what CNEL is. . ." (Carol Kocivar, West of Twin Peaks Central Council)

". . . I think the only way we are going to stop this is that enough angry people in Bernal Heights, enough angry people in Excelsior District, and we will start, if this plan goes through, civil disobedience of the type that is there in Atlantic City, the Pro Lifers. We will make sure that the airport becomes nonfunctional. We will be peaceful, but we will make sure that if you don't stop this right now and have a proper analysis in terms which the public can understand -- all this mumbo-jumbo of decibels. Let's find out. Let's compare noises.

"He has promised all sorts of noise studies: I will read the EIR. I will give you a detailed set of measures that will enable the EIR to be understandable to the people. I will do that for you. I don't have zillions of hours of time to analyze on your behalf or on the behalf of the airport so the airport can spend another million dollars hiring another expert to just do some more mumbo-jumbo. This is all mumbo-jumbo.

"I expect a lot of angry people in Bernal Heights and Excelsior District already, let alone with the expansion." (Bhimje)

Response

The CNEL method of noise measurement calculates average noise levels over a 24 hour period, with weighting applied to equivalent sound levels measured during the nighttime hours of 10:00 p.m. to 7:00 a.m. Because it measures the noise that occurs over a 24-hour period, CNEL takes into account the frequency of single-event noise occurrences during

that period, together with the sound resulting from each single aircraft flyover. However, because it calculates average noise levels, it does not explicitly identify noise levels from single aircraft flyovers (sound exposure levels, or SEL), although it incorporates them in the calculation.

The computer model used for the noise analyses in the EIR calculates the noise at a fixed location on the ground from each aircraft flight. When used to calculate the noise level from a single flight (in this case, defined as SEL) at the location, the model computes the contribution to the noise level of each "segment" of the flight as it travels along a specified path. When used to calculate the cumulative noise level (CNEL), the model adds the SELs, or single-event levels, calculated for each flight during a 24-hour day, and weights evening and nighttime flights. It then divides the total daily sound exposure by the number of seconds in a day, and converts the result to get CNEL. By definition, then, CNEL reflects the total noise energy produced by all flights.

The "conversion" of the sum of single-event noise levels to CNEL mentioned above is required because CNEL is calculated using a logarithmic scale (a logarithmic scale is used to describe sound levels because sound pressures extend over a very large range). Because CNEL is calculated logarithmically, each flight is not counted equally when all of the flights are added. Two general rules of thumb to use when thinking about "adding" noise levels are 1) adding two equal noise levels produces a total noise level 3dB higher than one of the noise levels, and 2) adding two noise levels that are substantially different produces a total noise level the same as (or slightly higher than) the higher of the two levels.

Because CNEL is calculated logarithmically, it is "dominated" by the noise produced by Stage 2 aircraft. If Stage 2 aircraft are serving an airport, it generally takes a relatively large number of additional flights by Stage 3 aircraft to increase the cumulative noise levels near that airport. Page 347 of the EIR describes how the CNEL contours for SFIA operations are affected by the forecast increases in Stage 3 aircraft operations, and the expected phase-out of Stage 2 aircraft.

The general concern of the commenters seems to be that, because the noise from each aircraft flight is heard separately, CNEL "hides" these "single-event" noise levels by adding them logarithmically, and the CNEL 65 contour is not an appropriate indicator of noise impacts. As explained in the EIR (p. 164), single-event noise caused by aircraft overflights can be disturbing to persons even at considerable distances outside the

CNEL 65 contour. However, the extent to which any individual single event affects persons depends on a variety of factors, including the sensitivity of the listener, the level of background noise during the single event, the duration of the event, the time of day and the attitude toward the source of the noise. There is no consensus among experts on the appropriate descriptor to be used to quantify single-event noise and the method to evaluate its impacts, and there is no standard that is generally applied to single-event noise.

The Day-night Sound Level (Ldn) and its variations (e.g., CNEL) have generally been adopted in federal and state regulations and guidelines as the most effective descriptor in evaluating environmental noise with respect to people. (See Appendix C of the EIR, Description of Noise and its Effects on People.) As explained on p. 153 of the EIR, CNEL is the only standard that has been adopted by the State of California in its regulation of airport noise. As a result, SFIA is not required to evaluate noise exposure in relation to single events.

It is also important to note that the State of California has been specifically prohibited from regulating single-event noise exposure levels. In the case of Air Transport Association of America v. Crotti, (N.D. Cal 1975) 389 F Supp. 58, the Federal District Court (Northern District, California) held that the state's effort to regulate single-event noise was an unlawful exercise of the police power into the exclusive federal domain of control over aircraft flights and operation and air space management and utilization.

Recent case law supports the use of 65 cnel data in evaluating airport-related noise impacts. In a recent case from the United States Court of Appeals involving the Seattle-Tacoma International Airport, No. 90-70253 Seattle Community Council Federation v. Federal Aviation Administration, 92 D.A.R. 4813 (9th Cir., April 9, 1992), the Court supported the decision of the FAA to use the 65 Ldn (comparable to CNEL) contour, rather than single-event noise data, as the threshold of significance for determining whether to prepare an Environmental Impact Statement for an FAA decision to alter aircraft flight paths. In a similar case from the United States Court of Appeals involving the Louisville, Kentucky airport, No. 91-3222 Communities, Inc. v. Busey v. Skinner, 1992 U.S. App. LEXIS 1746 (5th Cir. Feb. 13, 1992), the Court affirmed the FAA's decision to use the 65Ldn, rather than single-event noise data, to determine its statutory obligations under the National Environmental Policy Act, the National Historic Preservation Act or the Airport and Airway Improvement Act with reference to single-event information. (1992 WL 23222 at p. 4.)

SFIA staff note that, notwithstanding the above factors, the Airport's efforts to reduce aircraft noise have had and will continue to have the effect of reducing the level of single-event noise occurring both inside and outside the 65 CNEL contour. The Airport Noise Regulations have had the effect of excluding the proposed operation of a retrofitted Boeing 707 aircraft. This has resulted in the FAA's withholding of approximately $70,000,000 of Airport Improvement Funds from San Francisco. Since 1981, the Airport Community Roundtable has repeatedly placed the single-event issue, in one form or another, on its agenda throughout over 100 Roundtable meetings. Finally, the Airport has recently acquired a passive radar detection system which tracks flights to and from the Airport, and allows a better understanding of single-event noise. Additional information on the Airport's programs and regulations to reduce aircraft noise is contained in the EIR, pp. 167-169.

There is a detailed discussion of single-event noise in Appendix C of the EIR. This discussion provides information on the noise levels of individual aircraft flying over various sites in the central Bay Area. The information is summarized on pp. 164-165 of the EIR, but perhaps not clearly referenced in that text. The first sentence in the last paragraph on EIR p. 164 is expanded as follows (revisions are underlined):

> Maximum single-event noise levels for five typical aircraft departing from SFIA were estimated for the 27 remote monitoring stations and the 20 study locations (these estimates are shown in Appendix C, in Tables C-8 and C-9).

Duration of Flight

Comment

". . . [O]n the decibel levels that you have on some of the charts, I see a lot of decibel levels and a lot of figures that really don't mean a lot to me. Living in area impacted by the noise, one of the concerns that we have is not just how loud it is, but how long it takes to disappear.

"Airplanes -- a 727 taking off may take 30 seconds. A 747 taking off maybe takes three minutes for its sound to disappear. So I'd like to see some kind of a chart that is understandable to me that would display a time versus decibel level." (Edwin Works)

Response

Appendix C to the EIR contains a lengthy description of Noise and its Effects on People. Figure 4 of the description shows the time history of a typical single-event sound. A 727 or 747 taking off represents a single event. Figure 5 of the description shows an example of the time history versus decibel level of the ambient noise in a suburban neighborhood as well as for discrete events such as aircraft overflights.

The duration of a single aircraft noise event at a particular location is related to the speed of the aircraft and the noise produced by the aircraft at that location (which is related to the noise produced by the aircraft and the aircraft's distance from the location). A listener's sensitivity to the noise and some of the other factors listed in the previous response also influence the listener's perception of the duration of the event. Thus, there is no one "duration curve" for each type of aircraft serving the Airport and all locations. Relatively speaking, though, heavier aircraft such as the B-747 that take longer to gain alititude would produce events of longer duration than lighter aircraft such as the B-727.

As stated in the previous response, the calculation of the single-event noise levels produced by aircraft serving SFIA (and shown in Tables C-4 through C-9 in EIR Appendix C) incorporated each segment of the aircraft flight as it traveled past a specified location. Thus, the duration of the flight is accounted for in the single-event noise information presented in the EIR.

Description of Future Flight Activity

Comments

"Frequency has to be addressed in the new analysis, and I'm assuming there will be some new noise analysis. There should be a very thorough investigation of where these flights are, what the noise levels produced will be." (Curt Holzinger)

"By using percentages of operations, especially for noise sensitive hours, the report avoids stating the sharp increases in the actual numbers of operations. Many statistics and totals are based on 1989, or older, data, which unfairly diminishes the true impact that airport expansion will have on the environment. . .

"Appendix pages A.50-A.53:

"Figures C-1 to C-4, single event sound exposure contours, are of no value without being overlaid on scale maps of the airport and environs. Even after doing so, supporting text must be added to make sense of the information in the diagrams." (Duane Spence, Airport Mitigation Coalition)

"The City of San Bruno should be provided an easily understandable list of single-event activities and distribution of type of aircraft and times of day each occur over the City projected for 1996 and 2006." (George Foscardo, City of San Bruno)

"In particular, we are requesting that existing and future single-event noise activity be described based on the distribution of aircraft by time of day and runway use. The City of Pacifica's primary concern is the single-event noise characteristics generated by Runway 28 departures. Additional information regarding runway assignments by aircraft type is needed to further analyze the single-event noise level issue. Detailed information on aircraft type is particularly important since the large Stage 3 aircraft can be noisier than the Stage 2 aircraft. Therefore, utilization of Stage 3 aircraft is not necessarily an effective mitigation, especially for single-event noise problems. This request is consistent with the City of Pacifica's response to the Notice of Preparation, at which time we requested that the EIR include a definitive forecast of aircraft operations by aircraft type, time of operation, number of aircraft, and departure routes." (Wendy Cosin, City of Pacifica)

"The analysis in the report documents that overflight noise is audible in Burlingame on a regular basis. The analysis noted that while the fleet mix was going to change to include quieter airplanes, the total number of flights was going to increase.

"Therefore, the absolute number of overflights is going to be greater. What the report did not document was the absolute number of overflights by zone/area and time of day. They did note that the peak usage periods at the airport will be elongated because there will be more flights into and out of the facility. No comparative numbers for present with future were provided.

"The report also did not document the change in size of airplanes. The quieter planes are quieter because each engine produces less noise. However a Stage 3 plane with five engines may make as much noise as the present noisiest Stage 2 airplane. Therefore, in looking at single event noise we need to know the mix of planes by size flying overhead as well as the number.

"The analysis needs to be expanded to address the distribution of overflight activity documenting the size of plane and frequency by time of day comparing the present with the future, 1996 and 2006. Elongation of peak periods should also be addressed. . ." (Dennis Argyres, City of Burlingame).

"The importance of aircraft weight is acknowledged in footnotes for Tables C8 and 9. However, to demonstrate the magnitude of the single event noise level reductions, I think the EIR should include a table showing the weights, noise levels, and typical numbers of departures and arrivals in 1990 and, say, 2006, from aircraft most likely near specific monitor locations: Heavy 747, 747 sp, A330-340, and MD11 are most likely in the "Gap" for example (see Table 18 and Figure 19, or Table C-2). The single event contours (C-1 to C-4) simply don't provide the information needed by residents in San Bruno or Foster City, as examples, to understand how their environment is expected to change. . .

"On page 6 of the EIR it is acknowledged that the increased number of flights will be noticeable. I think the possible effects on people of this 'noticeable' increase should be discussed in greater detail in Appendix C. This discussion might account for times when the increases are most likely or most frequent. For example, a sharp rise in nighttime or early morning cargo flights might be expected as a result of recent federal legislation. What types are the cargo aircraft and what is the most frequent expected departure route; what city or which residential areas are likely to be affected; and what are the anticipated effects on sleep, speech interference, and/or annoyance? Alternative approaches might be to consider the most common aircraft in 2006 - MD80 or 90 - or the worst case - heavy aircraft departing on 28 right." (Jerome Lukas)

". . .To accurately represent the noise impact on Daly City residents, the DEIR must contain data on frequency of noise events. The DEIR should include a simulation of the noise events on an average day for areas within Daly City affected by single-event noise. This information should be broken down into time of day so that one could see when the increased number of flights will occur. This data is available since the simulation was necessary to prepare the CNEL noise contour map for the SFO Master Plan. . ." (Maria Gracia Tan-Banico, City of Daly City)

". . .The decision not to respond over a two-year period to the reasonable requests for information, for a reasonable and adequate Draft EIR, the decision not to respond to that information was made by the Department of City Planning staff. We have contacted them several times. I have provided that letter [of September 15, 1989], and you will see that our

comments and requests for information and data have not substantially changed over a two-year period, and the information is still not provided.

"The major areas that are still lacking are disclosure of noise impacts over the City and County of San Francisco, including single event information, numbers of aircraft expected to fly over the City and County of San Francisco, the noise levels expected, and the locations of those aircraft." (Curt Holzinger, Airport Noise Committee)

". . .The DEIR should add to the CNEL and SEL analysis currently presented. Neither of these analyses is sufficient for a fair assessment of the noise problem. The DEIR should disclose the number and location of additional flights expected over San Francisco, the expected flight paths, the time of day and the expected noise levels. A comparison between ambient noise levels and aircraft noise levels should also be provided." (Curt Holzinger)

"It is clear from the DEIR that we may expect increased overhead flights with attendant increased noise if the Master Plan proposed by the Airport is implemented. . .

"Aircraft departure and landing patterns that will cross San Francisco neighborhoods are inadequately discussed. The DEIR depicts flights tracks on Figure 19, then states that the flight corridors depicted are actually several miles wide. There is no analysis of the volume of increased flights, the extent that they will cross San Francisco neighborhoods, the frequency of the increased flights, nor the times the increased flights may be anticipated." (Bruce Krell, Forest Hill Association)

"Aircraft departure and landing patterns that will cross SF neighborhoods are inadequately discussed. The DEIR depicts flights tracks on Figure 19, then states that the flight corridors depicted are actually several miles wide. There is no analysis of the volume of increased flights, the extent that they will cross SF neighborhoods, the frequency of the increased flights, nor the times the increased flights may be anticipated." (Carol Kocivar, West of Twin Peaks Central Council)

". . . All operational data of overflying jet aircraft, such as numbers, times, elevations, etc., are excluded from consideration by the DEIR; yet this data will have serious environmental implications for San Francisco." (Timothy Treacy, Airport Noise Committee)

Response

As noted in earlier responses (see, for example, p. C&R.231), the EIR does explain that single-event noise can cause disturbance (EIR p. 164). The EIR also describes forecast increases in the number of flights by as many as 300 per day (EIR p. 344). Earlier responses also note that there is no standard applied by regulatory agencies to single-event noise.

The EIR and Appendix C do contain information regarding the single-event noise that can be expected in 1996 and 2006. First, Table 17 (p. 156 of the EIR), Table 50 (p. 336 of the EIR) and Table 51 (p. 337 of the EIR) show the existing and forecast average daily operations of the aircraft using the Airport by type of operation, time of day and aircraft type. Second, Figure 19 (p. 159 of the EIR) shows the generalized flight tracks and flight track use of aircraft using the Airport, and p. 339 of the EIR states that the flight tracks and flight track use are assumed to be the same in 1996 and 2006 as in 1990. (Information on existing and assumed future runway use by aircraft type is shown in Table C-1A on p. C&R.207, and has been inserted into the EIR.) Third, Tables C-8 and C-9, pp. A.56-A.57, Appendix C of the EIR show the typical maximum calculated sound exposure levels at the remote monitoring stations and remote study locations for representative aircraft using the Airport. As stated in the notes to C-8 and C-9, the sound exposure levels take into account the weight of the aircraft by assuming trip lengths (which are associated with aircraft weight) that are most frequently used by these aircraft.

An individual interested in the maximum amount of single-event noise that typically would be expected to occur in his or her community on an average day could use this information in the following manner: 1) first, the individual could refer to Tables 17, 50, and 51 to determine the total number of average daily flights that occurred in 1990 and are expected to occur in 1996 and 2006, and the times of day those flights did or are expected to occur (and could subtract the numbers in Table 17 from those in Table 50 or 51 to determine the increase from 1990 to 1996 or 2006); 2) second, the individual could refer to the generalized flight tracks and flight track use shown on p. 159 of the EIR to determine the percentage of daily flights (on average) that would be expected to fly over his/her community in 1996 and 2006; 3) finally, the individual could refer to Tables C-8 and C-9 to determine the typical maximum calculated single-event exposure levels that would be expected to result from representative aircraft making these flights. This process would enable the individual to determine, for an average day of the year, the maximum number of

single event flights that are expected to fly over his or her community during the day, evening and night and the maximum amount of single-event noise that would be generated from those flights.

The forecasts for aircraft operations by type and time of day are contained in EIR Tables 50 and 51 and do include cargo aircraft. The flight tracks shown on EIR Figure 19 are expected to resemble the flight tracks in 1996 and 2006. By use of this information provided on flight tracks, average daily operations, and typical maximum calculated sound exposure levels, it is possible to estimate the maximum frequency and magnitude of single events during the day, evening or night on an average day of the year.

SFIA staff note that the Airport Noise and Capacity Act of 1991 mandates the transition to Stage 3 aircraft. The Act does not specify the time of day the aircraft will fly. However, the SFIA Noise Regulations contain limitations on the nighttime and early morning operations of aircraft./10/

Information regarding the single-event occurrences over the City and County of San Francisco is contained in the EIR. First, Tables C-8 and C-9, pp. A.56-A.57, Appendix C of the EIR show the typical calculated maximum sound exposure levels at 27 remote monitoring stations and selected study locations. Six of the remote monitoring stations and three of the study locations are in San Francisco. Second, Tables 17, 50, and 51 (pp. 156, 336-337 of the EIR) provide information on the average daily operations in 1990 and the expected daily operations of aircraft in 1996 and 2006. Third, information on the expected flight paths of aircraft using the airport is contained on pp. 157-159 of the EIR, and the EIR assumes that these flight paths will be similar in 1996 and 2006. By reference to Tables 50 and 51 and assumption of similar runway use and flight tracks, it is possible to estimate the frequency and magnitude of the sound exposure levels at the San Francisco monitoring stations in 1996 and 2006.

The typical calculated maximum sound exposure levels shown on Tables C-8 and C-9 include those for one remote monitoring station in the City of Pacifica and three selected study locations in the City of Pacifica. These tables demonstrate the typical maximum sound exposure that could occur as a result of aircraft overflights over the City of Pacifica. The maximum number of overflights that could occur on an average day in 1996 and 2006 (and the increase over the number of flights that occurred in 1990) can be determined by

reference to Tables 17, 50, and 51 and the generalized flight tracks shown on p. 159 of the EIR.

This response details ways in which a person at a general location could obtain general information about the potential single-event noise levels at that location. The information in the EIR does not and cannot provide an accurate indication of the exact number of flights, types of aircraft, times of flight, or single-event noise levels that would actually be experienced in a specific location. The reasons for this include: 1) information on aircraft operations used in noise analysis (such as shown in Tables 50 and 51 in the EIR) is based on the "average" day of the year, and derived from annual forecasts; 2) assumed average runway and flight track uses are based on operating conditions over the entire year, not on any one particular day; 3) aircraft flight tracks used for noise analysis (such as those shown in EIR Figure 19) are generalized and are meant to represent the "average" paths flown by aircraft that are actually dispersed over wide areas; and 4) calculated SEL values (such as those shown in EIR Appendix C) reflect the noise levels that would be produced by a representative aircraft of a representative weight, following an assumed flight path and a standard set of flight procedures. Because of these factors, it would be speculative to determine, and misleading to present detailed information in the EIR on, future flight activity over a specific location (such as the tables and numbers requested by the commenters).

Several of the commenters refer to the "sound exposure contours" in the EIR, Figures C-1 through C-4 in Appendix C. Each of the SEL contours represents one aircraft landing on and taking off from one runway, travelling straight in and out. The contours were included in Appendix C of the EIR to show generally how the noise produced by the aircraft serving SFIA varies by aircraft type. Because the contours are generic, they are not a good indicator of the actual single-event noise levels experienced at a particular location near SFIA. As stated on p. A.48, Appendix C of the EIR, the actual single-event noise levels experienced near SFIA would depend on specific factors related to Airport and aircraft operations.

Several commenters request that information on operations by aircraft type be provided in the EIR because Stage 3 aircraft can be noisier than Stage 2 aircraft. The noise produced by Stage 2 and Stage 3 aircraft is addressed under Shift to Stage 3 Aircraft, pp. C&R.212-215.

Impacts of Increase in Overflights

Comments

"In the DEIR, it is important to distinguish between evaluations that involve analysis, impact and mitigation. Unless noise factor analyses are carried forward and specific impacts are identified, mitigations are not considered. This is the case with single-event and backblast noise; impacts are not documented in the Draft EIR and as a result mitigations are not specified. In contrast, there is an analysis of the Community Noise Equivalent Level (CNEL) and impacts are identified and mitigations are offered. . .

"Single-Event Noise Impacts. Single-event impacts have been repeatedly identified as being the most onerous to the communities near the Airport, particularly during nighttime hours.

"- The impacts of single-event noise are not included in Appendix C or in the text. Noise from Stage 3 aircraft is likely to exceed ambient noise levels in residential neighborhoods by 30 to 60 dBA; this is significant.

" -Average daily aircraft operations from 1990 to 2006 will increase by nearly 300 per day which is equal to an additional 110,000 operations per year. This, together with the single-event analysis, indicates that there are important impacts that are not identified." (Roger Chinn, Airport/Community Roundtable)

"Though the DEIR claims the noise levels will decrease from the present through 2006 because of the phasing out of Stage 2 aircraft, for many people and locations, the DEIR also states that single event noise occurrences will increase.

> " 'The increase in aviation activity allowed by the project would have virtually no effect on overall noise levels because the additional flights would be performed by the quieter aircraft. The increase would contribute to single event noise in a noticeable way although each noise event would be somewhat quieter than at present.' (p. 6).

" 'In areas with overflights by aircraft serving SFIA, the number of times single-event noise occurs would increase.' (p. 344).

"It is misleading to state that noise levels will be reduced when specifically talking about CNEL because frequently people assume that 'noise level' and 'noise problem' are one and the same. Clearly the 'noise problem' is created by individual aircraft and not some statistical calculation which is what CNEL is. The noise problem will be increased under the SFIA plan by virtue of the increasing numbers of aircraft operations." (Stephen Waldo, Mayor of Brisbane)

". . . [W]e are particularly concerned about single-event noise and overflights. We feel that the issue of single-event noise levels was not adequately analyzed and that additional mitigation measures should be provided. . .

". . .Especially given the significant increase in daily aircraft operations, single-event noise will likely exceed ambient noise levels in residential neighborhoods by 30-60 dBA. Given this potentially significant environmental impact, additional analysis is needed to fully disclose likely impacts. . .

"The DEIR also inadequately describes the noise impacts which result from aircraft flying out of the established flight paths. As has been previously indicated by the City of Pacifica, noise impacts have been created throughout the City due to overflights from north to south. Rather than heading south over the ocean after departing through the San Bruno gap, aircraft cross the length of the City. The increase in the number of flights will exacerbate this problem. . ." (Wendy Cosin, City of Pacifica)

"The EIR does not clearly point out the noise impacts on areas of Pacifica caused by the GAP departure route. The northern areas of Pacifica (especially the Fairmont district) are severely affected by aircraft noise from the GAP departure route. This route, which serves many of the flights to the Far East, is characterized by very large aircraft that are full of fuel. Because this area of Pacifica is more than 600 feet above sea level, the aircraft are quite low when they pass over. Although we have not made noise measurements as part of this response, the peak noise levels from this route in northern Pacifica are certainly higher than 80 decibels (dBA) and probably reach or approach 90 dBA for the loudest flights. The EIR contains no description of this type of impact on Pacifica -- nor does the EIR determine if an increase in this type of single-event noise would be a significant environmental impact. Many individuals in northern Pacifica are certain that any increase in the number of these flyovers would be a significant adverse impact of the project. Although the Stage 2 aircraft are the worst, the Stage 3 aircraft will still cause speech interference and sleep disturbance. . .

"Secondly, the City of Pacifica is, of course, the furthest city west of the airport. And one of the problems that we have is, of course, the transcontinental air flights that fly over the northern part of Pacifica, which is called Fairmont. Through our analysis, we found that we will have at least a 20 to 25 percent increase in the evening flights. We strongly feel that the measurements of the CNEL at 65 in that area is not adequate enough. Because the ambient noise does drop at night

because we are out close to the ocean and that the 65 CNEL is even greater -- maybe not in the measurement, but in the impact -- in the homes in the Fairmont area.

". . .You'll be having about another 200 to 300 increased flights over the City of Pacifica, run down the spine of Pacifica, which then affects another close to maybe 1,000 homes. In Fairmont, you're affecting 1,500 homes. You're affecting better than 1,000 homes down in the very, very quiet part of Park Pacifica, which is the southern end and inland quite a bit, and surrounded by hills. We strongly feel that the increase in flights will increase the impact of noise in that area." (Fred Howard)

"This noise analysis raises two concerns relevant to Daly City. The impact of an increased number of flights, albeit with quieter aircraft, must be addressed by the EIR. . ." (Maria Gracia Tan-Banico, City of Daly City)

". . .We are concerned that the increased traffic may result in more aircraft straying out of their assigned areas, causing additional noise over Foster City." (Leslie Carmichael, City of Foster City)

"Daly City, Foster City, Hillsborough, Millbrae, South San Francisco, and San Bruno all have legislated aircraft 'noise elements.' San Bruno even has a specific 'noise insulation' provision. Noise 'footprints' indicate that all these communities adjacent to SFO are impacted (DEIR Vol. II CH. XI Figs. 1-3). Presently, 14,980 people live within the 65 CNEL contour with the total only being reduced to 6,600 by 2006. SFO doesn't dare allow increased noise impact in these communities.

"Who then will be impacted by the expected 300 additional daily flights in 2006, not-with-standing all the nice, neat calculations generated by the models, if assumptions as to quieter aircraft conversion rates are wrong? A look at the Standard Instrument Departure (SID) charts (DEIR Vol. II Ch. XI Tables 8-11) confirms that it will be San Francisco! The location of fixed aircraft noise monitoring sites 23-27 substantiate that the Visitacion Valley, Portola, Excelsior, Bernal Heights, Glen Park, Diamond Heights, Miraloma Park, St. Francis Woods, Forest Hills and, even Pacific Heights and the Marina Districts of San Francisco will all bear the brunt of the additional aircraft noise generated by the proposed SFO expansion. There are no nice, neat contours drawn to clearly illustrate this potential noise impact." (Alyn Lam)

"Within this limited scope, our Committee has reviewed the DEIR and is disappointed at the result. The Committee is concerned with the issue of noise generated by departing and arriving jet aircraft overflying San Francisco as they come and go from SFIA. Unfortunately, the DEIR omits any consideration of this noise problem, or indeed even recognition of the problem, insofar as it impacts San Francisco, a problem that it appears without question will substantially increase as the Master Plan is implemented. The noise problem referred to has had since 1987, at least, substantial environmental impact on San Francisco. This impact will be increased as the Master Plan is implemented. We believe that the DEIR is deficient in law in failing to adequately address the environmental issue of noise in any meaningful way. . .

"Loud single event noise has been identified as a major impact in San Francisco, particularly during the evening and nighttime hours. The DEIR notes that the 300 additional flights per day will contribute to and increase the number of single noise events, although each event may be slightly quieter. (page 6, 164) Although the DEIR provides little information about single event impacts, the data which is disclosed points to significant impacts which are downplayed. For example, the sound exposure level (SEL) analysis shows that some of the aircraft (including Stage III aircraft), will produce noise in excess of 80 decibels SEL in San Francisco. This noise level is described by the Environmental Protection Agency as loud enough to awaken 20% of the population. (EPA Comments on FAA Notice on Airport Noise Compatibility Planning, January 18, 1989) The DEIR does not disclose this impact, the frequency of these overflights, the expected flight paths, or other information which is needed to assess these impacts. Moreover, the DEIR fails to document how much louder these overflights are than ambient noise levels. . ." (Timothy Treacy, Airport Noise Committee)

"Since late 1986 and early 1987 my neighborhood has been subjected to increased aircraft traffic from San Francisco International Airport. The Master Plan acknowledges this impact, stating 'As a result of changing flight patterns, the city experiences overflight noise from aircraft departing runways 1L/1R. Beginning in late 1986 and early 1987, some neighborhoods began complaining of additional flights and increasing noise from aircraft overflying San Francisco.' (Page 3.10)

"In spite of this acknowledgement, the DEIR does not adequately disclose either the existing or expected additional noise impacts in San Francisco. This lack of disclosure precludes the development of any mitigations. . ." (Curt Holzinger)

". . .The noise problem with overflights across San Francisco neighborhoods is created by individual aircraft and not some statistical average, which is what CNEL is. The noise problem

will increase under the Airport plan simply because of the large increase in aircraft operations." (Bruce Krell, Forest Hill Association)

". . .The noise problem with overflights across San Francisco neighborhoods is created by individual aircraft and not some statistical average, which is what CNEL is. The noise problem will increase under the SFIA plan simply because of the large increase in aircraft operations." (Carol Kocivar, West of Twin Peaks Central Council)

"The second paragraph of p. 344 indicates that the noisiest areas without B-747 overflights would likely be 10-15 dBA quieter than B-727 overflights. FAA Advisory Circular 36-3F shows the takeoff noise differential between the B-727 and the Stage 3 MD-80 in various configurations. Only with the loudest 727 and the quietest -80 figures for takeoff power could you get that type of differential. Additionally, takeoff noise and overflight noise are not the same. Sideline noise would provide a more appropriate comparison, and, unfortunately, the differential between the two aircraft is almost insignificant." (Stephen Waldo, Mayor of Brisbane)

"If this plan goes into effect -- and I understand that there are going to be about 3,000 flights -- no, 1,100 flights average per day -- God almighty, as I said before, we are going to have to use earmuffs." (Bruno Bernasconi)

". . .If you overload our skies, which are already overloaded, with more airplanes competing for valuable airspace, we are all going to pay a price. And if that issue can't even be addressed in a Draft EIR, where is it going to be addressed?" (Don Bertone)

"What is happening, if you develop a new city, or like Southampton or Foster City, or if you develop a large project, an office park like Bishop Ranch in the Diablo Valley, and you just totally ignore what happens to the waste products of that, you just figure that you flush the toilet and the effluent goes away, the garbage truck comes along and picks up the solid waste and is disposed of, you never think about it again. What happens here is that the airports of the region will expand and the waste product is a noise that we're going to have overhead. I think we ought to look at it in that context." (Charles Kroupa)

Response

The EIR contains a large amount of information on the environmental effects of increased aircraft traffic. For example, information on noise, air safety, and air quality is contained in the section of the EIR on Environmental Impacts.

As in the group of comments addressing the adequacy of CNEL, above (pp. C&R.228-230), many of the commenters believe that the standard for judging the noise "impacts" of the SFIA Master Plan should be single-event noise and frequency of flights, not CNEL. The comments made in this group, in addition, state that on the basis of a single-event standard, the SFIA Master Plan would "increase the noise problem" and result in significant noise impacts.

As stated in the response to comments regarding the adequacy of CNEL, CNEL has been adopted by the FAA, other federal agencies, and the State of California as the standard for determining the significance of aircraft noise impacts. This cumulative noise standard has been upheld in the courts. There is no standard that is similarly applied to single-event noise. Therefore, the EIR relies on CNEL as the standard for assessing the noise impacts of the SFIA Master Plan.

Notwithstanding the use of CNEL as the standard for assessing noise impacts, the EIR does provide general information on potential single-event noise levels near SFIA. The sound exposure levels shown on Tables C-8 and C-9 (pp. A.56-A.57, Appendix C of the EIR) from single-event noise represent the maximum exposure levels that could occur from the overflight of the representative aircraft. As acknowledged in the EIR, the single-event noise reflected in these tables has an impact on persons outside the CNEL 65 contour (see EIR p. 164). However, as a result of the transition to quieter, Stage 3 aircraft, with or without the project, the level of single-event noise experienced by persons outside the 65 CNEL contour is expected to decrease. The change in the maximum frequency of single-event noise events from 1990 to 1996 and 2006 with the project can be determined by reference to Tables 17, 50, and 51 and the flight tracks shown on pp. 157 through 159.

Two commenters refer to expected SEL values in their communities (San Francisco and Pacifica). In San Francisco, estimated maximum SEL values at the remote monitoring sites (21, 23-27) range from 71 dBA (for the B-737-300) to 97 dBA (for the B-727-200). (According to Table 9 in the description of Noise Effects in Appendix C of the EIR, an

outside noise level of 80 dB is loud enough to awaken 10 percent of the population, contrary to the commenter's statement.) In Pacifica, estimated maximum values at remote monitoring site 19 range from 79 to 98 dBA. In the future, with or without the project, the typical sound exposure levels experienced in these locations would decrease to the lower end of the ranges noted, because of the increased use of Stage 3 aircraft.

Regarding the comments about flight activity over Pacifica, it is true that some aircraft departing SFIA do fly south (or southwest) over Pacifica, but these aircraft take off from Runways 1, not 28 (as the commenter states). These aircraft departures are generally represented by the two "left-turn" tracks from Runway 1L shown in Figure 19 of the EIR (p. 159). the noise produced in Pacifica by these aircraft is reflected in the measured and calculated CNEL and SEL values for remote monitoring station 19 and selected study sites R,S, and T (shown in Tables 53, 54, C-3, C-8, and C-9 in the EIR). With or without implementation of the SFIA Master Plan, the number of flights over Pacifica, by these and other aircraft, would increase, but the noise levels produced by the aircraft would be generally lower (as shown in EIR Tables 53 and 54). (It should also be noted that aircraft flying over Pacifica are typically at altitudes of 2,500 feet and above.

Several comments refer to the difference between ambient and aircraft noise levels. The "ambient" noise levels recorded by the SFIA Remote Monitoring System are "community" noise levels, reflecting what people in the community hear. The data are intended to (but do not necessarily) exclude aircraft noise levels. Annual "community" noise levels in 1990 at most of the remote monitoring stations averaged around 59 dBA, CNEL (levels were substantially higher at two locations). In quiet residential areas, ambient noise levels were probably substantially lower than those recorded, especially at night. As the commenters state, aircraft flying over these quieter areas at night would produce noise levels substantially higher (potentially up to 50 or 60 dBA) than ambient noise levels. The expected phase out of Stage 2 aircraft at SFIA would result in generally lower aircraft noise levels (and less of a difference between aircraft ambient levels) in areas near SFIA.

One commenter challenges the EIR's conclusions regarding the decrease in noise in areas without B-727 overflights. FAA Advisory Circular 36-3F shows the estimated maximum A-weighted sound levels at the takeoff noise measurement position to be about 8 dB greater for the B-727-200 than those estimated for the MD-80. This difference is less than the 10-15 dB typical difference between the A-weighted sound exposure levels for those aircraft used in the Integrated Noise Model (INM), which is the basis for the 10-15 dB

difference stated on p. 344 of the EIR. The Advisory Circular and INM show different noise levels for the two aircraft because the data used for the Circular 36-3F figures were based on different operational flight procedures for the aircraft. The B-727 data used in Circular 36-3F were estimated from certification tests in which the airplane used a significant power cutback near the takeoff measurement point to enable it to comply with Part 36 Stage 2 requirements (this cutback is not used in normal operation conditions.) The MD-80 data used in Circular 36-3F were obtained using full take-off power. In contrast, the data used in the INM are based on normal airline operational procedures (full takeoff power) for both airplanes, resulting in the 10-15 dB typical difference. (The use of full takeoff power as the basis for the noise levels in the INM is similar to the "sideline" noise measurement referred to by the commenter.) Therefore, the 10-15 dB typical difference stated on p. 344 of the EIR is correct.

The EIR impacts analysis states (p. 339) that runway use, the locations of generalized flight tracks, and flight track use are assumed to be the same in 1996 and 2006 as in 1990. Therefore, the increased 300 flights per day in 2006 under the SFIA Master Plan are expected to follow the generalized flight tracks shown in Figure 19 of the EIR. (The majority of the increased flights would not end up over San Francisco, as one commenter asserts.) However, it is incorrect to assume that all aircraft would follow the flight tracks in Figure 19, and that aircraft that did not follow those tracks would not be following established procedures. Figure 19 shows generalized flight tracks developed on the basis of the wide corridors of paths that aircraft actually follow. The flight tracks used by aircraft departing the Airport are within the exclusive control of the FAA. (See also pp. C&R.197-201 regarding flight tracks, pp. C&R.201-203 regarding FAA control over takeoffs, pp. C&R.203-208 for a discussion of runway use, and pp. C&R.299-300 regarding mitigation of single-event noise impacts.)

Health Impacts of Overflights

Comments

"Sleep disturbance is shown in the appendices -- but is given very little discussion in the EIR. This is a very real concern for the residents of Pacifica. Because of the very low background noise levels in Pacifica at night (hourly average noise levels are usually 40 dBA or lower) the overflight of the aircraft (with noise levels of 55 to 80+ dBA) can disturb many

residents. As seen in the EIR Appendix C (Figures 10, and 11) sleep disruption can occur at a frequency of 30 to 40 percent when noise levels reach 55 to 70 dBA. **Clearly, the increase in overflight associated with the project will cause considerable sleep disruption in Pacifica on a regular basis. Why was this impact shown in the Appendix as a matter of general knowledge, but not thoroughly analyzed in the EIR?** Is it not common knowledge that nighttime and early morning noise levels are the most annoying to people?

"The definitions of CNEL and Ldn clearly acknowledge this when they penalize (by adding a 10 dBA penalty) noise levels between the hours of 10 p.m. and 7 a.m." (Fred Howard, Pacifica Noise Abatement Committee)

". . .I agree with the 'Airport Noise Committee's' objections to the Draft: . . .

"3. The impact of single event overflights has to be fully disclosed and evaluated: The health risks of four 70 db overflights in the course of sleeping hours for example; disturbed sleep is stressful as much as interrupted sleep. What does hundreds of overflights do to children's learning concentration and development? . . .

"These flaws must be addressed in any Draft to make it acceptable." (David Deakin)

Response

As explained above, there are considerable differences in how people are affected by single-event noise. Factors such as the type of noise heard, time of day, orientation of the receptor relative to the noise source, reduction provided by the structure if the people are indoors, and individuals' sensitivity (as well as other factors) influence the effects of single-event noise on people.

Appendix C includes an extensive discussion of noise and its effects on people (referenced on p. 153 of the EIR). The information from that discussion, together with the information in the EIR, facilitate an understanding of the types of effects that single-event noise will have on individuals who experience it. For example, Appendix C Figure 10 in the discussion of Noise and its Effect on People shows the probability of a noise-induced sleep change as a function of sound exposure levels. Tables 50 and 51 of the EIR (p. 336-337) show the number of nighttime arrivals and departures of particular aircraft that are expected to occur in 1996 and 2006, and Table C-8 (p. A.56, Appendix C) shows maximum sound exposure levels from these aircraft. By application of these figures, it is possible to

determine the effects that single-event noise occurring in 1996 and 2006 will have on sleep changes.

Impacts of Capacity Constraints

Comment

"Table J-2 in the Appendix shows that more operations will take place during sensitive evening and nighttime hours due to airfield capacity constraints. By 2006, a 31% increase in night flights is expected to occur 25% of the time. This points to impacts which are the result of capacity problems, but which are not further analyzed, and for which no mitigations are proposed. . ." (Timothy Treacy, Airport Noise Committee)

Response

The conclusions of the EIR's analysis of potential capacity constraints (pp. 335 and 338, and Appendix J) were that such constraints could result in increases in evening and nighttime operations, but that most (at least 86 percent) of the time, the resulting increases in cumulative noise levels would not be perceptible. It was also concluded that during the most adverse weather conditions, which occur about 6 percent of the time, the potential increases in evening and nighttime flights could result in an increase in the size of the 1996 and 2006 CNEL contours (EIR p. 338). (This conclusion was based on the assumption that the adverse weather conditions would occur over the entire 24-hour period. Adverse weather conditions at SFIA would more likely occur over shorter periods./15/)

Given the small percentage of the time in which substantial increases in evening and nighttime flights would occur, the CNEL contours developed for the EIR do not reflect increased evening or nighttime operations as a result of capacity constraints.

BACKBLAST NOISE

Adequacy of CNEL as Descriptor of "Noise Problem"

Comments

"We [Peninsula Litigation Coalition] take exception to the fact that in the DEIR they are using the CNEL metric as a measure of the noise that emanates from the airport. The CNEL metric is an insensitive measure of noise impact and noise annoyance. It attempts to deal with separate events by mathematically converting them into an equivalent steady state noise level.

"If the true noise signature of SFIA was steady state, the CNEL would still not adequately reflect the impact on the surrounding population. As established, the CNEL filters out the preponderant low frequencies which characterize the tailpipe noise of departing aircraft. The failure to record these low frequencies promotes the illusion that the major noise problem -- namely, backblast, is no problem." (Duane Spence, Peninsula Litigation Coalition)

". . .CNEL is almost a meaningless criteria for most of Burlingame and Millbrae. It is a single event backblast and take off issue that concerns the local community." (David Few)

"Page 161:
"The major noise impact from SFIA, **backblast**, is artificially diminished by the use of inappropriate metrics in Figure 20. CNEL contours are generated from noise monitor data that use the A-weighted sound spectrum. The monitors are designed to filter out the low frequencies that dominate the backblast spectrum. Furthermore, as is well known, the CNEL metric is extremely insensitive to changes in single event noise and number of flights. It is meaningless to cite the CNEL as the measure of backblast impact. . .

"Page 167, Noise Abatement Program:
"The 27 monitors are positioned and aimed to record overflight noise, not on-airport generated **backblast**. They all use the A-weighted sound spectrum and thereby further ignore backblast events by not recording the low frequencies." (Duane Spence, Airport Mitigation Coalition)

Response

The CNEL contours developed for the EIR were calculated using the the A-weighted sound level metric (A-weighted decibels, or dBA). As noted in Appendix C of the EIR (in the

report "Description of Noise and Its Effects on People"), the A-weighting de-emphasizes low frequency sounds. The A-weighting is described in the California Noise Standards (Section 5001.(m)) as modifying ". . . the frequency response . . . to account approximately for the frequency characteristics of the human ear."/16/

Backblast noise, described on p. 165 of the EIR as ". . . characterized by a lower frequency and an increase in perceived rumble," is known to cause more house vibration and rattle than that associated with overflight noise of the same A-weighted sound level. Houses "respond" to low-frequency backblast noise in a way that enhances the human perception of these sounds.

It is correct that the noise monitors operated by SFIA use the A-weighted sound level as the basis for measurement.. The use of such monitors is in accordance with Section 5080.3 of the State Noise Standards./16/

According to SFIA Administration staff, the question of whether the 'A' weighted noise metric is inappropriate was addressed by the Airport's Consultants, Tracor Applied Sciences, in their 1987 study, *Investigation of Low Frequency Noise From Departures on Runways 01L and 01R at San Francisco International Airport.*/17/ The report concluded that the results of the study did not justify a change from the A-weighted noise metric in aircraft noise monitoring, because, while the A-weighting underestimated loudness (by about 4 dB), it adequately represented perceived noise levels. ("Loudness" refers to the human judgement of intensity of a sound; "perceived noise level" refers to a subject assessment of the perceived "noisiness" of aircraft noise.) A copy of this report is available for public review at the SFIA Noise Abatement Offices.

As discussed on pp. 163 and 165 of the EIR, the topography of the exposed neighborhoods in Millbrae and Burlingame (where backblast noise is principally heard) prevents those neighborhoods from benefitting from the ground attenuation (lessening) of noise that is assumed in the calculation of CNEL. The calculation of CNEL in those neighborhoods was therefore adjusted for the EIR, to more accurately reflect noise levels there (see pp. C&R.258-259 herein for a discussion of this adjustment).

As shown on Figure 21, p. 162 of the EIR, Monitors 8-11 in Burlingame and Millbrae are located behind Runways 1L and 1R, in the general areas where the backblast noise from

departures on Runways 1 is heard. The specific locations of noise monitors must meet the requirements of Section 5072 of the State Noise Standards./16/

A discussion of the CNEL metric with relation to single-event noise is on pp. C&R.228-233 herein.

Historical Shift in Runway Use

Comments

"As to noise, we are very concerned that the trend is toward increased backblast single event noise, particularly for people of Millbrae. . .

"There is on Page 157, Table 18, showing a percentage of departures on Runway 1 increasing from 75 percent to 87 percent. And this increases the backblast noise in Millbrae and surrounding communities. We are very concerned that this noise is not measured and not mitigated and that there is a shift in airport noise because of that, because it is a shift away from the noise that is measured within the 65 CNEL."

"Table 18, page 157, shows the percentages of departures on Runway 1 increasing from 75.3% in 1985 to 87.4% in 1989. Obviously, this increases the backblast noise in Millbrae. Can this trend be explained; and is it necessary that residents be subjected to such a high percentage of departures which generate the single-event backblast noise? This is a shift in airport noise, something opposed by the Airport Round Table." (Janet Fogarty, Mayor of Millbrae)

"FAA Crosswind Criteria for Departures on Runways 1. The text should include a section that explains the FAA's rationale for changing the crosswind component for Runways 1 departures, from 15 knots to 20 knots, and indicate how this change has increased the number of Runways 1 departures and, therefore, has increased the backblast noise problem." (Raymond Miller, C/CAG)

"Table 18, page 157, shows the percentage of departures on Runway 1 increasing from 75.3% in 1985 to 87.4% in 1989. Obviously, this increases the backblast noise in Millbrae. Is it necessary that residents be subjected to such a high percentage of departures which generate the single-event backblast noise? This is a shift in airport noise, contrary to pronouncements by the Airport Round Table." (Robert Treseler, City of Millbrae)

"The backblast noise into the hillside communities of Hillsborough, Millbrae, and Burlingame, although a continuing problem for years, has become the major problem of on-airport generated noise since the operational pattern of SFIA was shifted from 67% runway 1 departures to 95% or more (see enclosures). This has had the effect of shifting overflight (**measured**) noise from the gap cities to (**unmeasured**) **backblast** noise in the hillside communities behind runway 1. [The following is from the summary attached to enclosures showing air carrier departures:]

"Director's Reports for January, February, May and September 1990:

"Documentation to show Runways 1 usage at or above 91%.

"Runway usage summary:

"Shows increase of Runways 1 departures from 1972 through 1977.

"Net results:

"66% (all departures) used Runways 1 in 1972 and over 91% in 1990.

"Not only 91%, but the total number of operations has grown. Thus the number of Runways 1 departures has changed by a factor of 2-3 times more than in 1972.

"Such shifting of noise is in direct violation of the 'Airport Noise Variance Action Plan' 1982, Condition I, B(3)d which states that unless increased use of the Shoreline Departure is made a part of the action plan, the communities behind runways 1 will continue to be severely impacted. The present use of the Shoreline Departure has fallen to a negligible 0.3% of total departures." (Duane Spence, Airport Mitigation Coalition)

"The DEIR states that 75 percent of departures used Runways 1 Left and 1 Right in 1985, and today between 90 and 95 percent use Runways 1, resulting in backblast into the hillside communities. The shift of departure operations on to Runways 1 has effectively shifted measured overflight noise to unmeasured backblast noise. In spite of this noise shift, SFIA is still out of compliance with the state noise standards, and judging by the expansion plans presented, there is no indication that they ever will be in compliance. . . . " (Duane Spence, Peninsula Litigation Coalition)

Response

As cited in the SFIA Joint Land Use Study, Runways 1L and 1R have historically been the preferential runways for departures. "The purpose of the preferential runway use program is to provide for maximum overwater operation in order to minize overflight of the surrounding communities."/18/ The preferential use of Runways 10 for departures during certain nighttime hours was established in the Airport Noise Mitigation Action Plan, which incorporated the results of the Joint Land Use Study./19/

The FAA, by order of Lyn Helms, FAA Administrator (Order No. 8400.9, November 9, 1981) established the nationwide runway crosswind component criteria as 20 knots./20/ According to SFIA staff, the purpose of that order is to set safety and operational criteria which must be followed in the evaluation and/or approval of runway uses.

The increase in Runway 1 departures from 1985 to 1989 is indicated in Table 18, p. 157 of the EIR, but there has been no increase in backblast noise over this same period. State law (California Noise Standards, Title 21) requires SFIA to file quarterly noise reports. The San Francisco International Airport CNEL Quarterly Reports October 1, 1985 through December 31, 1985 and October 1, 1990 through December 31, 1990 measured noise levels at four relevant remote monitoring stations (RMS 8,9,10 and 11). Backblast noise levels decreased by 0.3 to 4.1 dBA. During the same period, these reports indicate that Stage 3 aircraft operations, as a portion of total operations, increased 25 percent.

(See pp. C&R.251-253 herein for a discussion of the extent to which CNEL, and the A-weighted noise level, measure backblast noise.)

The documentation of runway use from 1972 through 1977 provided by the commenter matches information on (1977) runway use in the Joint Land Use Study (it is not known whether the documentation matches actual use in previous years)./18/ The Director's Reports referred to by the commenter are Airport/Community Roundtable reports (prepared by the SFIA Noise Abatement staff) of monthly runway use for November and December 1989 and March and July 1990./21/ The information on runway use from these various sources show a trend toward increased use of Runways 1L and 1R for departure, from about 62 percent in the mid-1970s to over 90 percent in late 1989 and 1990.

This information is consistent with the runway use trends shown in the EIR. The historical runway uses shown in Table 18 on p. 157 of the EIR represent annual use by all air carrier aircraft, over all daytime and nighttime hours. As shown in Table 18, about 87 percent of all departing air carrier aircraft used Runways 1L and 1R in 1989. Page 158 of the EIR discusses the use of Runways 28L and 28R and 10L and 10R for departing aircraft.

It is correct that the number of air carrier (and total) aircraft operations has increased since the 1970s, and that the number of aircraft departures on Runways 1L and 1R has increased. By use of historical aircraft operations and runway use statistics, it is possible to estimate that in 1977, there were about 93,740 air carrier aircraft departures on Runways 1L and 1R./18/ By use of information on pp. 24 and 157 of the EIR, it is estimated that in 1989, there were about 132,200 air carrier aircraft departures on Runways 1L and 1R. The increase in departures on Runways 1L and 1R was about 41 percent, not 2-3 times, as the commenter suggests. (Statistics from 1972 cannot be compared directly to 1989 because the runway use figures are for all aircraft, not just air carrier aircraft. However, the number of air carrier aircraft operations in 1972 was just just 4,000 higher than in 1977./18/)

It is not known what the 1982 "Airport Noise Variance Action Plan" mentioned by the commenter is./21/ As discussed on p. C&R.262 herein, the first Airport Noise Variance was granted in July 1982. The Airport Noise Mitigation Action Plan, published in 1981, does include the increased use of the Visual Shoreline Departure as a mitigation measure./19/ Use of the Shoreline Departure has decreased from 1980 to 1989 (from about 10 percent to about 1 percent of air carrier aircraft departures) because of the greater use of Runways 1L and 1R for departures and the use of the Shoreline Departure when it is "suitable for the intended direction of flight" (which it would not be for B-747 aircraft heading to Asia)./18/

The response to comments regarding SFIA compliance with the State Noise Standards is on pp. C&R.262-265 herein.

Affected Areas

Comments

"I am a resident of the Ray Park area in north Burlingame, and, in the current environment, really feel the effect of two things -- first of all, the backblast from flights taking off over the bay, and especially -- I believe it's Runway 19 takeoffs which occur in times of bad weather. And I think those pilots use El Camino as their guiding path down the Peninsula. It's hard to imagine the noise being much worse than it is right now, quite frankly. It depends, of course, and the weather -- impacts the severity of the problem." (Jack Hickethier)

"The DEIR avoids discussing the major noise problems of SFIA, which are **backblast noise and single event impacts**. The hillside communities which suffer the most impact from exhaust noise of departing aircraft are Hillsborough, Millbrae, and Burlingame.

"The town of Hillsborough should be included when discussing impacted cities, e.g. pages 165 and 166. It is not cited in the DEIR as being impacted, yet, table C-8, page A.56 of the appendix shows single event noise levels of 107 dB at monitor location 13 in Hillsborough. This monitor is located about 4 miles from the airport, and is not subject to overflight noise, just **backblast** . . .)

"Page 161:

". . .In truth, the amphitheater effect of the hills behind runways 1, as well as the fact that low frequencies are not attenuated by the atmosphere, cause significant annoyance 6 to 8 miles from the runway 1L and 1R departure thresholds." (Duane Spence, Airport Mitigation Coalition)

Response

Backblast noise is addressed in the EIR on pp. 163, 165, and 344. On p. 165 of the EIR, it is noted that ". . . backblast is heard principally in the cities of Millbrae and Burlingame, which are located behind Runways 1L and 1R." Information on calculated CNEL values and maximum sound exposure levels at the remote monitoring stations (on pp. 342 and A.56 of the EIR) shows that the station in Hillsborough (No. 13) experiences cumulative and single-event noise levels substantially lower than the levels calculated for the stations in Millbrae and Burlingame (Nos. 8-11). Although the location of Hillsborough relative to

the Airport suggests that it does experience backblast noise, Hillsborough is not mentioned in the list of cities affected because of the lower cumulative noise levels experienced.

The incorporation of terrain into the calculation of CNEL values (to reflect backblast heard/felt near SFIA) is discussed on pp. C&R.258-259 herein.

As shown on p. 157 of the EIR, Runways 19L and 19R were used for 0.3 percent of all aircraft departures in 1989. Because of the configuration of SFIA's runways, Runways 19L and 19R are used only when absolutely necessary (probably during bad weather, as the commenter states). Implementation of the SFIA Master Plan would not result in a change in this use of Runways 19L and 19R for departures.

Adjustment to CNEL Contours

Comment

"Burlingame, along with several other cities, asked that the Draft EIR address the issue of backblast noise. This noise is very low frequency noise. In some cases it cannot be heard but can be felt. Because of its low frequency much of this kind of noise is not reflected in a CNEL measurement. In fact the effects of backblast noise are difficult to identify.

"The Draft EIR document did address backblast. The noise contours for Millbrae and Burlingame were adjusted by .9 dBA CNEL to reflect the impact of this type of noise. The report, however, failed to address any mitigations. The report contained no documentation of how the .9 dBA figure was determined to be the appropriate amount. The method used to arrive at the backblast impact should be documented." (Dennis Argyres, City of Burlingame)

Response

A discussion of the low-frequency characteristics of backblast noise and their relation to the CNEL metric is on pp. C&R.251-253 herein. A discussion of mitigation measures to address backblast noise is on pp. C&R.287-289, 291-293 herein.

Page 163 of the EIR notes the adjustment made to the Integrated Noise Model to improve the representation of the backblast noise from takeoffs on Runways 1L and 1R. The adjustment to the INM was not 0.9 dBA, as the commenter suggests; p. 163 states that the

difference between calculated and measured CNEL values after the adjustment was 0.9 dBA. The adjustment to the model increased CNEL values by about 13 dBA.

To document the basis for making the adjustment to the computer model, the second bulleted item on p. 163 of the EIR is revised as follows (revisions are underlined, deletions are indicated by brackets):

> At stations 8-11, located in Millbrae and Burlingame, the calculated CNEL values are 0.9 dBA higher on average than the measured values. The difference would be greater without a modification to the Integrated Noise Model (INM) to improve its representation of the "back blast" from takeoffs on Runways 1L and 1R [ ]. (Without the modification the calculated CNEL values would be about 13 dB lower than the measured values.) The modification involved removing the excess ground attenuation in the model, which is inappropriate to this terrain, and changes to the INM computer program algorithm representing the noise during takeoff ground roll. These changes were based on data obtained by Tracor (in its investigation of low-freqency noise at SFIA) and on data on noise radiation over water in Boston./7a,7b/

The following end notes are inserted after note /7/ on p. 170 of the EIR:

/7a/ Connor, T. *Investigation of Aircraft Departure Noise in Community Areas Behind Runways 1L and 1R at San Francisco International Airport*, Tracor Doc. T86-01-952IU, October 1986.

/7b/ Kestennor, et al., *Investigation of Low Frequency Noise From Departures on Runways 1L and 1R at San Francisco International Airport*, Tracor Project 076-439 (-01), February 1987.

Impacts

Comments

"Low-Frequency Noise (Backblast) Impacts. The low-frequency noise or backblast problem has been well documented by people in the community and by the frequency-band analyses conducted by CALTRANS and by TRACOR several years ago. While acknowledged in Section III of the DEIR (Environmental Setting), there is only a mention of a possible reduction in impact, as measured in CNEL, in Section IV. We know more than this about low-frequency noise impacts." (Roger Chinn, Airport/Community Roundtable)

Response

As indicated in the EIR, p. 344, the forecast change in backblast noise from 1990 to 1996 and 2006 for Stations 8 and 11 is an average reduction of 3.4 dBA in 1996 and 6.5 dBA in 2006. "This reduction is due to the reduction in the number of takeoffs by Stage 2 aircraft, in particular the Boeing 727 and 737-100 and 200. Their contribution to the total backblast noise at SFIA is greater than that of any other aircraft type."

As discussed on p. C&R.259 herein, the analysis of backblast impacts in the EIR is based on studies of backblast noise at SFIA, including the work by Tracor mentioned by the commenter.

NOISE REGULATIONS

Comments

"San Francisco International Airport Noise Variance. The text should include a section on the Airport's noise variance from the State of California Noise Standards that explains why a variance is required and includes the content of the current variance, which was approved by the State Division of Aeronautics in November of 1986, and is still in effect. This section should also indicate that even with the expected decrease in noise and the shrinking of the 65 dB CNEL contour, the Airport will still need a variance in 2006." (Raymond Miller, C/CAG)

". . .It appears as though the standards set by the current Variance for SFIA will become the operating standard instead of reducing the need for the Variance itself. SFIA would need a Variance in 2006 to operate under the proposed methods of operation contained in the Master Plan." (George Foscardo, City of San Bruno)

"SFIA has a variance granted by the State of California because the airport does not comply with the noise standards established by the state for airports. The Draft EIR did not address the noise variance and how the increase in activity would affect the ability of SFIA to meet these state standards in the future. The document should describe the state standards assuming implementation of the master plan and should include an analysis of whether these standards can/will be met in the future. If a variance is going to continue to be required, will it be the same, greater or less?. . ." (Dennis Argyres, City of Burlingame)

". . .The fact that a Variance will continue to be needed under the proposed Master Plan should also be addressed directly and adds further justification for provision of additional mitigation programs." (Wendy Cosin, City of Pacifica)

"The subject of the Variance under which the Airport is operating is treated very lightly. We feel the DEIR is deficient without discussion of the State Aeronautics Act requirement for zero noise impact by 1986; and Variance requirements which include the airport proprietor taking bona fide measures to achieve the noise standards. It appears that the Variance would be needed at least through 2006, even with quieter aircraft, except perhaps for the no project alternative. We suggest that the inability of the Airport to operate within State law, without a Variance, is a significant impact that merits discussion and mitigation. An appropriate mitigation could be commitment to accelerated noise insulation programs for all impacted dwellings as a bona fide measure." (Janet Fogarty, Mayor, and Robert Treseler, City of Millbrae, letter of 9/6/91, and Janet Fogarty, public hearing of 8/27/91)

"The Draft Environmental Impact Report (DEIR) not only is important to the California Environmental Quality Act (CEQA) process, but the proposed mitigation actions could be made a part of the Airport's current Variance application that is pending before the California Department of Transportation (CALTRANS), Division of Aeronautics (DOA). The matter of the Variance is presently under consideration by the Roundtable." (Roger Chinn, Airport/Community Roundtable)

"In conclusion, the airport is not now in compliance with state noise standards. The airport has consistently stated that its basic goal is compliance with the State Noise Standards with a priority for the reduction of noise impacts by on-airport actions. Judging by the proposed expansion of operations and facilities and the lack of mitigating measures, it is not obvious that they could ever achieve compliance in the future. . .

"Page 168: Stage 2 phaseout:

"The FAA will allow 4 years beyond the 100% compliance date of the year 2000--this should be mentioned. On page 338, the year 2006 is mentioned for 96% compliance. This is inconsistent.

"The maximum sideline noise of 103 dB as of 1993 is actually higher than the SFIA level of 102 dB which was proposed and then withdrawn in 1979. It is of interest to note the following comments regarding maximum noise limits made by Federal authorities:

"Department of Transportation, FAA letter from Clark Onstead, Chief Counsel, dated January 1980 concerning the Joint Land Use Study:

> 'We are also aware of the fact that SFO attempted to establish a maximum noise limit based on AC 36-3 several months ago, but gave up the effort when the airlines objected. I continue to think this decision was premature.'

"Aviation Monitor, June 22, 1979

> 'It may be especially significant to note that both the Bakes CAB letter and the Wesler FAA letter have singled out one example of a noise control use restriction.'
>
> '. . .an airport might decide to limit arrivals between the hours 11:00 p.m. and 7:00 a.m. to aircraft types which create a noise level of no more than 98 EPNdB under Part 36 test procedures at the Part 36 approach reference location. Similarly, departures might be restricted to aircraft type which create a noise level of no more than 89 EPNdB under the departure procedures. . .In this manner the local airport operator can decide which aircraft will be permitted to operate and which will be banned.' " (Duane Spence, Airport Mitigation Coalition)

Response

The EIR does include a discussion of the State Noise Standards and the current SFIA noise variance on p. 166. In order to provide more detail on the current variance, the last three paragraphs on p. 166 of the EIR are replaced with the following:

> The State of California Noise Standards established by the California Department of Transportation specifically prohibit an airport proprietor from operating an airport within California if the noise impact area at the airport exceeds zero, unless the airport proprietor has been granted a variance from the law (California Code of Regulations, Title 21, Division 2.5, Chapter 6). From December 31, 1980 until December 31, 1985, California law established 70 dBA CNEL as the maximum standard for areas impacted by airport noise; as of January 1, 1986 that ceiling was lowered to 65 dBA, CNEL.
>
> SFIA is in compliance with the State Noise Law. However, because SFIA has exceeded the maximum noise ceiling set by these standards since January 1, 1978 in areas near the Airport, it has been required to obtain successive variances from those ceilings to continue operations. The first of these variances was granted on July 8, 1982 and the second was granted on November 25, 1986. The second variance was extended on October 19, 1989 upon the request of SFIA, and further extended on September 19, 1990 at the request of the Airport/Community Roundtable. The Roundtable requested the extension because the SFIA Master Plan and this EIR, when completed, could produce information and mitigation measures that could be incorporated into a new variance.

The 1986 variance contains specific requirements that SFIA make continued progress towards the date when it will be in full compliance with the requirements of the State Noise Standards. Among the conditions of the variance are 1) the use of the goals, objectives and recommendations of the 1980 *Joint Land Use Study* as the framework for mitigation; 2) implementation of the Airport Noise Mitigation Action Plan (described on p. 167); and 3) participation in sound insulation programs and the investigation of certain noise abatement actions./7c/

The following end note is inserted after note /7/ on p. 170 of the EIR:

/7c/ Noise Variance for San Francisco International Airport, granted by California Department of Transportation, November 25, 1986.

According to SFIA Administration staff, compliance with the variance as well as the Airport Noise Regulation are both expected to result in a considerable decrease in the number of impacted (uninsulated) dwelling units within the 65 CNEL contour by the year 2000. These objectives are expected to result with or without the SFIA Master Plan. However, if there continue to be impacted dwelling units within the 65 CNEL contour in 2006, the Airport will continue to require a variance from the State noise standards.

Page 347 of the EIR notes that ". . . SFIA would continue to be required to operate under a variance granted by the Department of Transportation."

Pages 333-351 of the EIR discuss the noise impacts of the proposed SFIA Master Plan; pp. 346-347 summarize the aircraft noise impacts. It is noted that 1) cumulative and single-event noise levels under the project would decrease at almost all locations (and, on p. 343, that any increases in noise levels would not be perceptible to most people); 2) these noise levels would also decrease without the project; and 3) the increase in flights allowed by the project "would have virtually no effect on cumulative noise levels" as measured by CNEL. Although SFIA would still be required to operate under a variance, the continued need for the variance cannot be attributed specifically to the project, as travel using SFIA would increase even with none of the proposed new facilities (see the No-Project Alternative, Variant 1, pp. 440-456 of the EIR). Because people would continue to be affected adversely by operation of the Airport in 1996 and 2006, mitigation measures have been identified on pp. 424 and 425 of the EIR.

The inclusion of these mitigation measures as conditions of the new variance is a decision that is made by the State Division of Aeronautics under the provisions of the State Noise Standards, and as such, is not within the scope of this EIR.

The Airport Noise and Capacity Act of 1990 provides that no person may operate a Stage 2 aircraft after December 31, 1999./10/ Waivers may be granted to permit operation of 15 percent of an air carrier's fleet at Stage 2 levels through the year 2000 if such a waiver is found to be in the public interest.

In addition, the SFIA Noise Abatement Regulation, adopted in February 1988, as amended in June, 1991, requires that beginning Jan. 1, 2000, 100 percent of the operator's operations at SFIA must be performed using Stage 3 aircraft./11,12/

The SFIA regulation requires a transition to Stage 3 aircraft sooner than the federal regulations require. The SFIA regulation was written and promulgated prior to the Airport Noise and Capacity Act of 1990 and is protected under a 'grandfathering' clause.

The CNEL contours for 1996 and 2006 (on pp. 340 and 345 of the EIR) were developed on the basis of assumptions regarding the percentage of Stage 3 aircraft that would be operating at SFIA. At the time the CNEL contours were developed, regulations for the implementation of the Airport Noise and Capacity Act of 1990 had not been promulgated, and SFIA had not amended its Noise Regulation. As noted on p. 339 of the EIR, "If the phaseout of Stage 2 aircraft [by 2000] is implemented. . . there would be no Stage 2 aircraft serving SFIA in 2006. . . [and] the CNEL contours shown in this section would probably be about one dBA smaller than forecast." (An update to the EIR text on pp. 338-339 to reflect the recent federal and SFIA regulatory developments is shown on pp. C&R.210-211 herein.)

The measure of 103 referred to on p. 168 of the EIR refers to EPNL (Effective Perceived Noise Level) dB, not dBA. The EPNL metric contains a pure tone penalty algorithm that is not present in the SEL metric and the EPNL metric weights low frequency noise more heavily than does the A-frequency-weighted SEL. Therefore, the EPNL measure tends to be a more conservative metric which results in a higher number than the SEL measurement.

According to Airport staff, the EPNL metric was used for the maximum sideline noise measurement in order to exclude many more noisy aircraft from the Airport. Use of the more liberal SEL measure would have excluded only the noisiest aircraft, such as the BAC Concorde.

The measure of 102 dB referred to by the commenter should be referred to as 102 dBA.

NOTES - Aircraft Noise Setting and Impacts

/1/ U.S. Department of Transportation, *Air Carrier Traffic Statistics Monthly,* 1991.

/2/ Federal Aviation Administration, *FAA Aviation Forecasts, Fiscal Years 1990-2001,* March 1990.

/3/ Federal Aviation Administration, *Report to Congress, Status of the U.S. Stage 2 Commercial Fleet,* August 1989.

/4/ McClenahan, James, Assistant Air Traffic Manager, San Francisco International Airport, telephone conversation, March 2, 1992.

/5/ Landrum & Brown, *Air Space Element, California Aviation System Plan,* prepared for the California Department of Transportation, Division of Aeronautics, August 31, 1991.

/6/ Federal Aviation Administration, *Airman's Information Manual,* 1990.

/7/ Weinum, Chuck, Assistant Manager of Plans and Programs, Bay TRACON, telephone conversation, March 13, 1992.

/8/ 49 U.S.C.A. Section 1305 (a)(1).

/9/ Dyer, Richard G., Airport Environmental Specialist, California Department of Transportation, Division of Aeronautics, telephone conversation, February 26, 1992.

/10/ 49 U.S.C. App. Section 2125 et seq.

/11/ San Francisco Airports Commission, Resolution No. 88-0016, January 22, 1988; Resolution 91-0099, June 4, 1991.

/12/ San Francisco International Airport *CNEL Quarterly Report,* April 1 1991, to June 30, 1991, "Summary of Statistical Information," Item 7.

/13/ Casey, John, Avmark, Inc., telephone conversation with SFIA staff, February 1992.

/14/ Costas, John, San Francisco International Airport, letter, March 9, 1992.

/15/ Based on ESA review of National Oceanic and Atmospheric Administration monthly summaries for 1990.

/16/ California Administrative Code, Title 21, Section 5000, et seq., as amended.

/17/ Tracor Applied Sciences, *Investigation of Low Frequency Noise From Departures on Runways 01L and 01R at San Francisco International Airport,* Project No. 076-439 (-01), February, 1987.

/18/ Joint Powers Board, *Joint Land Use Study, Final Technical Report,* March 1980.

/19/ San Francisco International Airport, *Airport Noise Mitigation Action Plan (ANMAP),* April 7, 1981.

/20/ Federal Aviation Administration Order No. 8400.9, November 9, 1981.

/21/ Carbone, Dave, City/County Association of Governments of San Mateo County, staff to the Airport/Community Roundtable, telephone conversation, March 11, 1992.

AIRCRAFT NOISE MITIGATION

The Notes for this section begin on p. C&R.312.

SUGGESTED MITIGATION MEASURES

Air Traffic Flow Control

Comment

"Add a separate mitigation measure that indicates the FAA will use air traffic flow control as a noise abatement measure to ensure large numbers of aircraft will not arrive [at] or depart the airport at the same time." (Raymond Miller, C/CAG)

"We agree with the Airport Land Use Commission's (ALUC) comment that the Draft EIR should address air traffic flow control by the FAA as a noise mitigation measure to reduce noise impacts and to analyze the feasibility of a curfew or mandatory preferential runway use during the nighttime hours to reduce noise impacts." (Leslie Carmichael, City of Foster City)

Response

According to SFIA Administration staff, air traffic flow control is a Federal Aviation Administration (FAA) procedure developed and used nationally to reduce the acceptance rate of aircraft landing at airports in instrument flight conditions. All air traffic arriving at or departing SFIA, from or to any destination, is under the direct control of the FAA Oakland Center, which initiates "gateholds" for all airports in Northern California and most of Nevada. The object of the system is to insure proper spacing of aircraft in flight. Extended use of flow control results in air traffic arrival delays for in-bound aircraft, especially when conditions require such techniques late at night.

The use of air traffic flow control would not mitigate noise impacts around SFIA because it would not reduce the number of flights using the Airport, or affect the paths used by arriving and departing aircraft. Thus, it is not appropriate to include air traffic flow control in the EIR as a mitigation measure.

The limits on SFIA's authority to regulate the use of air traffic control procedures are discussed on p. C&R.280 herein.

Curfew / Controls on Nighttime Operations

Comments

". . .Mitigations by the airport to address the impact of single event noise and increases in single event noise should be included through such programs as expanded insulation programs and operational and navigational adjustments such as runway assignments, reciprocal curfews for some destinations or curfews on some operations." (Dennis Argyres, City of Burlingame).

"The text should analyze the feasibility of a nighttime curfew on airport operations and the feasibility of a mandatory preferential runway use program in the nighttime hours, as an alternative to a curfew." (Raymond Miller, C/CAG)

"Appendix J indicates that nighttime flights can be assumed to increase 25% -- from 129 flights per night now to 162 flights per night in the year 2006. Each of the 162 flights would have a statistical probability of disturbing the sleep of each residence they fly over. We would like to see night flyovers of Pacifica eliminated or at least strictly controlled; as to total per night and frequency within any hour.

"Other airports have been forced to limit the hours of their arriving and departing flights in acknowledgment of the problems of aircraft noise at night. . .

"We suggest that the EIR seriously consider an alternative (which must be environmentally superior to the project) that would have hourly flights as shown below (these can be compared to Appendix J-2.)

Hour	Number of Flights
0000	0
0100	0
0200	0
0300	0
0400	0
0500	0
0600	56
0700	90
0800	120
0900	102
1000	95

1100	115
1200	120
1300	110
1400	98
1500	98
1600	104
1700	93
1800	108
1900	120
2000	120
2100	120
2200	0
2300	0
Total	1,669

"At the very least, we believe that limits need to be added on night flights. How many are acceptable during one hour at 10 p.m.?; at 3 a.m.? As we read the EIR now there are no such limits other than the overall limitation on daily CNEL. Such a daily limitation ignores many other measures that can reduce the noise impacts of the SFIA Master Plan." (Fred Howard, Pacifica Noise Abatement Committee)

"**Pages 335 and A.179:** . . . Furthermore, the DEIR states that no increase in traffic during the evening and nighttime hours, (from 7:00 p.m. to 7:00 a.m.) is expected as a result of the expansion plan. If this is to be included as a mitigation measure, then it should be guaranteed that no increases in nighttime operations will occur." (Duane Spence, Airport Mitigation Coalition)

Response

The San Francisco International Airport Noise Abatement Regulation, adopted in January 1988 (San Francisco Airports Commission Resolution No. 88-0016), as amended in June 1991 (San Francisco Airports Commission Resolution No. 91-0099, June 4, 1991) referred to by the EIR, p. 168, provides for a nighttime restriction on Stage 2 operations, defined as 1:00 a.m. to 6:00 a.m. as of January 1, 1989 and extending to 11:00 p.m. to 7:00 a.m. after January 1, 1993. As part of the regulation, all airlines operating at SFIA have agreed in writing to abide by the program to the extent permitted by atmospheric conditions and the FAA. The EIR (pp.167-168) addresses current nighttime restrictions on airport operations, including the Regulation, nighttime preferential runway use, and a prohibition of aircraft engine run-ups from 10:00 p.m. to 7:00 a.m. without special permission.

SFIA's current restrictions still permit Stage 3 aircraft to operate at night. Accordingly, the following mitigation measure is inserted after the fifth bulleted item on p. 425 of the EIR:

> Consider developing and implementing additional restrictions on nighttime operations by Stage 3 aircraft. **Implementing Agencies: SFIA, airlines serving SFIA**

The assumption that there would be no increase in the proportion of total operations occurring during nighttime hours (stated on p. 335 of the EIR) is not a mitigation measure. Responses to comments regarding aircraft operations assumptions are on pp. C&R.206-208 herein.

For responses to comments regarding preferential runway use and expanded sound insulation programs, please see pp. C&R.271, 286-287 herein.

Mandatory Preferential Runway Use

Comments

". . .Mitigations by the airport to address the impact of single event noise and increases in single event noise should be included through such programs as expanded insulation programs and operational and navigational adjustments such as runway assignments, reciprocal curfews for some destinations or curfews on some operations." (Dennis Argyres, City of Burlingame).

"The text should analyze the feasibility of a nighttime curfew on airport operations and the feasibility of a mandatory preferential runway use program in the nighttime hours, as an alternative to a curfew." (Raymond Miller, C/CAG)

"Mitigating Measures We Propose: . . .

"Institute a total departure curfew from 12 midnight to 7:00 a.m. on runways 1L and 1R." (Duane Spence, Airport Mitigation Coalition)

"We understand the assumption that aircraft-generated noise will decrease in the future due to the replacement of noisy aircraft with quieter aircraft. The trend toward increased use of Runway 1, however, subjects Millbrae residents to increased single-event and backblast noise. Mitigation for these impacts should be included; e.g. increased participation in and acceleration of

residential noise insulation by the Airport, and a reduction in the use of Runway 1." (Janet Fogarty, Mayor, City of Millbrae)

Response

The FAA and airlines are responsible for the safety of aircraft operations and have the authority, by law, to decide ultimately which runway to use. The Airport cannot mandate the use of a specific runway, as this is within the control of the FAA and pilot who evaluate atmospheric conditions, which constantly change, to determine operational safety and the appropriate runway to use.

The Airport does, however, have a policy for preferential runway use. A description of this policy can be found in Airports Operation Bulletin (AOB) 88-03. The runway use policy is informal (not officially approved by the FAA), and is implemented through agreement between SFIA and the airlines (as part of the Airport Noise Regulation)./1/ Page 425 of the EIR includes a mitigation measure intended to maximize use of the current preferential runway use procedures. To provide mechanisms to reinforce maximum use of the procedures, the first bulleted item on p. 425 of the EIR is revised as follows (revisions are underlined):

> Continue voluntary maximum use of the existing preferential runway use procedures at SFIA (nighttime use of Runways 10L and 10R for departures). Use the information in the SFIA Director's Reports to track and discuss actual use of the procedures at Airport/Community Roundtable meetings. If the use of the procedures could be increased, consider taking actions to encourage and promote such increased use. **Implementing Agencies: SFIA, FAA, airlines serving SFIA**

(A revision to the same measure to include the use of Runways 19L and 19R for arrivals is shown on pp. C&R.281-282 herein.)

Curfews and expanded sound insulation programs are discussed on pp. C&R.268-270, 282-287 herein.

Navigational Aids

Comments

"Another thing. They could develop a microwave system to successfully implement 92 percent of arrivals landing on Runways 19 Left and 19 Right. It would allow 60 to 80 percent of departures to use quiet shoreline from Runways 28 Left and Right. . ." (Duane Spence, Peninsula Litigation Coalition)

"Add a separate mitigation measure to address installation of navigation equipment to assist in reducing noise impacts over populated areas (e.g., installation of LDA/DME, MLS, improved ILS, etc.)." (Raymond Miller, C/CAG)

"It would also be appropriate to discuss the possible uses of new types of approach and departure guidance equipment (i.e. LDA and Microwave Landing System) that could be used to provide more precise aircraft guidance to minimize the variations in flight paths that currently result in overflights of local communities." (Jack Drago, Mayor, City of South San Francisco)

"There are no mitigations noted for the expected increase in noise exposure, as measured by CNEL, at Foster City. A potential mitigation may include the installation of a Localizer Type Directional Aid (LDA) for approaches to Runway 28R." (Roger Chinn, Airport/Community Roundtable)

"The advantages and disadvantages of using navigational aids such as LDA/DME (Localizer-Type Directional Aid/Distance Measuring Equipment), MLS (Microwave Landing System), or improved ILS (Instrument Landing System) for noise mitigation should be evaluated. If these aids can be used to separate aircraft in bad weather, they should be able to be used to route aircraft farther from shore during good or bad weather in order to reduce noise impacts." (Leslie Carmichael, City of Foster City)

"Mitigation measures involving navigational equipment to assist in reducing noise impacts over populated areas should be added to the DEIR." (George Foscardo, City of San Bruno).

Response

According to SFIA Administration staff, a meeting was held in the Foster City Community Center on January 15, 1992 by the Foster City Noise Committee chaired by Mr. Roger Chinn. Airport and FAA officials were in attendance. The FAA stated that a Localizer Directional Air/Distance Measuring Equipment (LDA/DME) will be installed at SFIA by August 1992. It is proposed that LDA/DME will be used in both bad and good weather potentially to reduce the noise impacts at Foster City.

The Microwave Landing System (MLS) is still in the development stage with limited experimental testing at several airports (Europe, Canada, U.S.A.). Such a system can be operated only when the airborne equipment has been produced and installed on the aircraft. At present, there is no cockpit unit or instrument developed and commercially available for airline usage. The FAA reports that the Request For Proposal (RFP) was issued in February 1992. The FAA does not expect a prototype to be delivered for at least 12-18 months, with unit deliveries expected in 1997-98. SFIA is being evaluated as an early recipient for such an airport-based system. The FAA, MLS Development Team will also be monitoring and evaluating the implementation of the LDA/DME.

The Instrument Landing System (ILS) is a navigational aid used primarily during inclement weather when there is little or no visual contact with the runways. It provides the airline pilot with information on direction and elevation while approaching the runway for landing. The system uses a fixed, at-grade, localizer, and inner and outer markers which send signals to precision instruments in the cockpit for the pilot to interpret. The pilot can then adjust the aircraft's heading and descent rate to land accurately and safely on the runway. By its very nature the ILS is a fixed azimuth and elevation precision aircraft approach system. There is no new technology for ILS Systems (e.g., offset ILS) nor is new technology being pursued. MLS is slated to replace ILS eventually.

The following mitigation measures are inserted after the fifth bulleted item on p. 425 of the EIR:

> Work with the FAA and the Foster City Noise Committee to develop noise abatement approach procedures using the LDA/DME planned for installation at SFIA in 1992. Use of such procedures could result in a reduction in cumulative noise levels in Foster City.

If SFIA is selected for receipt of an MLS, work with the FAA and the Airport/Community Roundtable to review and revise flight procedures, with the goal of using the MLS to reduce single-event and cumulative noise levels.

The following mitigation measures are inserted after the second bulleted item on p. 426 of the EIR:

Implement the planned installation of an LDA/DME at SFIA. Study and, if possible, develop approach procedures using the LDA/DME, with the goal of reducing cumulative noise levels in Foster City. **Implementing Agency: FAA**

Consider SFIA as an early recipient for an MLS. If SFIA is selected, implement the installation of the MLS. Review, and if possible, revise SFIA flight procedures, with the goal of using the MLS to reduce single-event and cumulative noise levels. **Implementing Agency: FAA**

Monitoring of Flight Patterns

Comments

"The mitigation measures should include use of Passive Aircraft Surveillance Radar to provide computer tracking and records of flight patterns in order to monitor and report on whether aircraft are actually staying in assigned areas." (Leslie Carmichael, City of Foster City)

"The use of PADIS to monitor flight tracks is of dubious value. The FAA has not made obviously mitigating track changes over the last 15 years--why would they do so in the next 15 years? This is wishful thinking, not a mitigating measure." (Duane Spence, Airport Mitigation Coalition)

Response

Page 425 of the EIR includes a mitigation measure calling for accelerated installation of a Passive Aircraft Detection Instrument System at SFIA. According to SFIA Administration staff, the PASSUR System was installed at SFIA in December 1991. It is operational and under evaluation. Basically, it is designed for aircraft identification, track, noise, and altitude monitoring. These capabilities are specific to the system in use at SFIA.

Accordingly, the second bulleted item on p. 425 of the EIR is replaced with the following:

> Use the SFIA PASSUR Tracking System to evaluate actual flight patterns at SFIA and determine the value of existing and proposed noise abatement procedures. Develop regular reports from the PASSUR System for inclusion in the Director's Reports presented at Airport/Community Roundtable meetings.

According to SFIA Administration staff, aircraft do not have 'assigned areas'. Rather they have 'flight clearances', which authorize certain departure procedures, enroute airways and assigned altitudes. These clearances are in the exclusive control of the Federal Aviation Administration (FAA).

Radar tracking data (such as the data available through the SFIA PASSUR system) provide information on the actual paths followed by arriving and departing aircraft. Such data are valuable because they allow for evaluation of the effectiveness of established noise abatement flight procedures; they also allow for "testing" of the effectiveness of proposed procedures. The mitigation measure on p. 425 of the EIR (as revised herein) provides for regular presentation and review (at Airport/Community Roundtable meetings) of the data produced by SFIA's PASSUR system. Reviewing the data in a forum such as the Airport/Community Roundtable could lead to proposals for, and development and implementation of, new or revised noise abatement flight procedures.

Distribution of Noise Throughout Region

Comments

". . .We feel the mitigation measures are flawed. . . Some of the things we could suggest as mitigations would be [to], first of all, determine the total noise energy contained in all single event incidents and develop operational patterns that would equitably distribute that noise throughout the entire region." (Duane Spence, Peninsula Litigation Coalition)

"Mitigating Measures We Propose:

> "Develop a regional airport plan to distribute air traffic more equitably among the bay area airports." (Duane Spence, Airport Mitigation Coalition)

"I wish to God they would shift some of these flights down to San Jose. They could use them. They got the space. Our space is so condensed that it's terrible to even consider 1,100 flights per

day in this area. So, without hogging this mike, I wish that this would be forwarded to the commission on the noise pollution." (Bruno Bernasconi)

Response

Page 425 of the EIR includes a mitigation measure calling for a regional study of air traffic control requirements, constraints, and opportunities, with the goal of minimizing noise impacts. Implementation of the commenter's suggestion would have to occur within such a context, because such a "redistribution" of noise would be related to runway use, flight track use, airspace management, and the operation of the Bay Area airports.

Noise Allocation System

Comment

"Mitigating Measures We Propose: . . .

"Adopt a noise banking system in which all airlines have a noise allocation. They would be permitted to use it in a number of ways--spend it, trade it, sell it, bank it. This was originally proposed during the Joint Land Use Study in the late 1970's by Bakes of the CAB. Since the airport's only method to increase flight capacity is to saturate runway 1 where the low frequency noise is not properly taken into account, this would put the airlines in the position of thinking very seriously about their effects on the community. This would be a benefit to all communities." (Duane Spence, Airport Mitigation Coalition)

Response

Generally, the intended effects of a noise allocation system (as described on p. IIIB-15 of the Joint Land Use Study, and as implemented by other U.S. airports) include the increased use of Stage 3 aircraft and the shifting of aircraft operations from nighttime to daytime hours./2/ These purposes are already being achieved by the Airport Noise Regulation, described on p. 168 of the EIR.

A discussion of the preferential use of Runways 1L and 1R is on pp. C&R.270-271 herein.

Construction of New Runways / Runway Extension

Comments

"**Mitigating Measures We Propose:** . . .

"Overflight noise in Foster City due to approaches to runways 28L and 28R could be greatly reduced, if not eliminated, by construction of two additional runways, 26L and 26R. These new runways would allow planes aligned with the runway centerlines to be a half-mile or more off shore as they pass Foster City." (Duane Spence, Airport Mitigation Coalition)

". . .[O]ne of the mitigations that they paid only lip service to is moving the threshold of 1 L and 1 R 3,500 feet down the runway and extending the runway on out in the bay, which was in one of the plans that they paid for. It doesn't look like they're doing any more than just continuing to think about it . . . The point is, moving that threshold down, further away from Highway 101, would be a mitigating effort if they were to go ahead and do that . . . Create more wetland." (David Few)

Response

Runway reconfiguration alternatives that would reduce noise impacts are already being considered as part of the SFIA Runway Reconfiguration Study. This study is described on pp. C&R.48-50. Completion of the study is identified as a mitigation measure on p. 425 of the EIR.

Construction of two additional runways, 26L and 26R, would reduce overflight noise of arriving aircraft over Foster City as well as single-event noise exposure. Depending upon site location, this measure could also either reduce or increase the 65 CNEL noise impact boundary on those communities to the north of the Airport.

The 20 degree westerly shift in aircraft departing 26L or 26R could make it difficult for these aircraft to follow the designated shoreline departure route (an adopted noise mitigation procedure whereby aircraft make a right turn as soon as feasible after takeoff to fly east of San Bruno Mountain adjacent to the shoreline). This could cause aircraft to overfly cities that are currently avoided by aircraft using this procedure, thereby increasing the 65 CNEL impact boundary. However, if the runways were constructed far enough to the south, the mitigating effects of the Shoreline Departure procedure could be enhanced, which would reduce the 65 CNEL impact boundary. In addition, the noise impact

boundary could be reduced further because aircraft departing through the San Bruno gap would be flying at a higher altitude.

Depending on the new runway heading and how far south the runways were sited, construction of these runways could also affect FAA airspace management for Bay Area arriving and departing flights (aircraft arrivals into Oakland and aircraft departures from San Jose). Since this measure proposes additional runways, the separation distance from the existing runway system (28L/28R) would follow existing FAA standard criteria and for ILS operations (4,300') to maintain airfield safety. (This separation would allow simultaneous landings during adverse weather conditions and would reduce aircraft delays during the occurrence of such conditions.) Airport staff estimates this would require constructing runways on approximately 120 acres of Bay fill at a construction cost of approximately $750 million. The amount of Bay fill could affect approximately 400 acres of Bay habitat. On the basis of the probable location of runway 26L and 26R, increased aircraft taxiing distance from the terminals to this runway system would increase the airlines' annual taxi/fuel costs by approximately $40 million.

The fourth bulleted item on p. 425 of the EIR is revised as follows (revisions are underlined and deletion is indicated by brackets):

> Complete study on the feasibility of and benefits from a new runway(s) (to replace the existing runways) or extension(s) to the existing runway(s). New runway(s) with a more westerly orientation could reduce overflights of Foster City and result in increased altitudes for aircraft using the Gap Departure route. Extended or new runways could potentially [ ] handle departures by long-range, heavy aircraft such as the B-747, with flight paths over the Bay instead of the Peninsula. (Currently, these aircraft [ ] primarily use Runway 28R.) New or extended runways might result in an overall reduction in the population within the CNEL 65 contour. If the study results in an SFIA decision to pursue runway reconfigurations, work with FAA and other authorities to obtain necessary approvals to permit such reconfigurations. This work would include environmental review under CEQA and, possibly, NEPA. Potential environmental impacts of new or extended runways include: potential shifts in flight patterns that result in increased cumulative or single-event noise levels in certain locations; potential effects on airspace management in the Bay Area, and on flight procedures for (and noise impacts near) San Jose and Metropolitan Oakland International Airports; an increase in the number of operations that could be accommodated during bad weather conditions, and thus, a reduction in aircraft delays (if new runways are separated by 4,300 feet to allow simultaneous landings during adverse weather conditions); the filling of areas of the Bay, with accompanying temporary water-quality impacts and longer-term biological impacts; and increased energy use and pollutant emissions associated with longer aircraft taxiing distances.
> **Implementing Agencies: FAA, SFIA**

Financial Incentives for Higher Load Factors

Comment

"Mitigating Measures We Propose: . . .

"Provide financial incentives and disincentives for departures that are not full. Empty seats make noise with no off-setting benefits to anyone. Penalties should be levied on those empty seats." (Duane Spence, Airport Mitigation Coalition)

Response

There are clauses in the SFIA Airline Lease and Use Agreements that prevent the Airport from charging additional rates and other charges to the airlines, and from changing the method used to calculate the landing fee (the fee airlines pay to use the Airport)./3,4/ In addition, the economics of airline operation are geared toward high load factors, and the airlines already have strong financial incentives to operate full aircraft.

Return to Pre-1985 Runway Use

Comment

"Mitigating Measures We Propose: . . .

" 'Unshift' the **backblast** noise from runways 1, by returning to pre-1985 levels of departures on runways 1L and 1R." (Duane Spence, Airport Mitigation Coalition)

Response

Shifting runway use back to the pre-1985 distribution would result in a substantial increase in the total population affected by cumulative and single-event noise levels, because departure paths would shift from areas over the Bay to areas over the Peninsula. Thus, it would not be an appropriate mitigation measure to include in the EIR.

Increased Use of Quiet Shoreline Departure

Comment

"**Mitigating Measures We Propose:** . . .
"Increase the departures using the Quiet Shoreline from runways 28 on a regular and mandatory basis." (Duane Spence, Airport Mitigation Coalition)

Response

As noted on p. 167 of the EIR, the use of the visual Shoreline Departure (the procedure to which the commenter is referring) is currently part of SFIA's Airport Noise Abatement Program. Page C&R.293 herein includes a discussion of the limits on the use of the Shoreline Departure.

According to SFIA Administration staff, the authority to regulate flight patterns or routes of aircraft is vested exclusively in the Federal Aviation Administration. Federal law provides that: "No state or political subdivision thereof and no interstate agency or other political agency of two or more states shall enact or enforce any law, rule, regulation, standard, or other provision having the force and effect of law relating to rates, routes, or services of any air carrier having authority under subchapter IV or this chapter to provide air transportation."/5/ (Emphasis added.) The purpose of these federal laws is to provide a uniform and efficient system for the use of the air space. The imposition of local regulations governing aircraft flight patterns would serve to frustrate flight scheduling and navigational patterns nationwide, thus hindering commerce, aviation safety and the general management by the Federal Aviation Administration of the National Air Traffic Network.

Establishment of Nighttime Sideline Noise Limit

Comment

"**Mitigating Measures We Propose:** . . .
"Institute a total sideline noise level of 98 dB with 89 dB for night operations to be sure only the quiet planes operate in and out of SFIA." (Duane Spence, Airport Mitigation Coalition)

Response

As noted on p. 168 of the EIR, SFIA (under the Noise Abatement Regulation) will have a maximum nighttime sideline noise level limit of 103 EPNdB (effective perceived noise level), as of 1993. Page C&R.264 herein includes a discussion of the choice of the effective perceived noise level as the metric for the noise limit. The SFIA Noise Abatement Regulation also includes a phaseout of all Stage 2 aircraft operations by 2000 and an earlier (1993) prohibition on Stage 2 aircraft operations between 11:00 p.m. and 7:00 a.m.

The 98 EPNdB limit on all aircraft operations suggested by the commenter (it is assumed the commenter means EPNdB, not dB) would prohibit operations by almost all Stage 2 aircraft-- a prohibition which would be already be achieved during nighttime hours as of 1993 and during all hours as of 2000. The 98 EPNdB limit would also prohibit operations by the larger Stage 3 aircraft, effectively eliminating international operations. The 89 EPNdB nighttime limit suggested by the commenter would be tantamount to a curfew, because it would prohibit operations by almost all aircraft. Curfews are discussed on pp. C&R.268-270 herein.

Increased Use of Runways 10 and 19

Comment

"**Mitigating Measures We Propose:** . . .
"Initiate the use of runway 19 landings (from up and down the bay, not over the Eastbay) and 10 takeoffs." (Duane Spence, Airport Mitigation Coalition)

Response

The first bulleted item on p. 425 of the EIR is revised as follows (revisions are underlined):

> Continue voluntary maximum use of the existing preferential runway use procedures at SFIA (nighttime use of Runways 10L and 10R for departures). In addition, establish informal (through agreement with the airlines) nighttime preferential use of Runways 19L and 19R for arrivals (to the extent allowed by air traffic and weather conditions). If possible, arrival paths should be designed to minimize the possibility of increased noise levels in East Bay communities. The use of Runways 19L and

19R for arrivals could reduce overflight noise levels in Foster City and communities near the arrival paths for Runways 28L and 28R. Depending on the arrival flight paths used, the use of Runways 19L and 19R for arrivals could result in increased noise levels in East Bay communities. **Implementing Agencies: SFIA, FAA, airlines serving SFIA**

Scheduled Departures to Minimize Use of Vectors

Comment

". . .Scheduling departures to minimize the need for radar vectors should be explored as a mitigation." (Stephen Waldo, Mayor of Brisbane)

Response

As discussed on p. C&R.199 herein, vectoring procedures are used less than five percent of the time at SFIA, and are used only when required for specific air traffic control purposes. In addition, neither the use of radar vectors nor the scheduling of aircraft departures is within the authority or control of the Airport.

Accelerate, Expand Noise Insulation Programs

Comments

". . .Mitigations by the airport to address the impact of single event noise and increases in single event noise should be included through such programs as expanded insulation programs and operational and navigational adjustments such as runway assignments, reciprocal curfews for some destinations or curfews on some operations. . .

". . .What mitigation programs can be implemented to reduce the number of impacted uses? How can they be funded and what levels of funding are necessary? Will all adjacent communities with residential uses located within the 65 dBA CNEL or greater contour be included? Can the retrofit of all these units be accomplished within the SFIA Master Plan planning period?" (Dennis Argyres, City of Burlingame).

". . .Mitigation for this [increased backblast] should include an increased commitment by the airport to residential noise insulation such that there will be no homes within the 65 CNEL by the

year 2006. The master plan proposes 6,000 homes will still be within the 65 CNEL by that date." (Janet Fogarty, Mayor of Millbrae)

"Add a separate mitigation measure that indicates the San Francisco Airports Commission will continue to provide matching funding to local agencies to continue their airport noise insulation projects, and that the Commission will expand its financial commitment, as needed, to accelerate the noise insulation projects, until all noise impacted homes within the 65 dB CNEL noise contour and above have been insulated by the end of 2006. . .

"Local Agency Airport Noise Insulation Projects

"The text should include a section on the ongoing aircraft noise insulation projects in several cities and an unincorporated area of the County near the Airport (Country Club Park). This section should indicate the total number of homes within the 65 dB CNEL and higher noise contours to be insulated and the number of homes insulated as of December 1990. It should also explain the funding structure of these projects, and indicate the overall noise insulation program that could be drastically accelerated if the Airports Commission substantially increases its funding commitment." (Raymond Miller, C/CAG)

". . .I agree with the 'Airport Noise Committee's' objections to the Draft: . . .

"4. Mitigation measures must be acknowledged. The necessity of a sound insulation aspect needs to be part of the report; existing, traditional and proposed flight patterns need to be disclosed as a basis for allocation.

"These flaws must be addressed in any draft to make it acceptable." (David Deakin)

"The noise impacts in the DEIR are not fully examined nor are appropriate mitigations provided . . . An accelerated and stable level of funding for residential acoustical treatment -- regardless of whether or not funds are available from the FAA -- must be considered as a mitigation for both cumulative and single-event noise impacts. The insulation program is not even identified in the Draft EIR as a noise mitigation. . .

"The information in Appendix C and in the text fails to establish that single-event noise levels, even from Stage 3 aircraft, are likely to exceed ambient noise levels in residential neighborhoods by 30-60 dBA. The EIR must provide adequate mitigation measures for single-event noise levels,

such as an expanded acoustical treatment program, with consideration given to the need for insulation outside the 65 CNEL noise contour." (George Foscardo, City of San Bruno)

"Millbrae residents are subject to extreme backblast and single event noise levels. Therefore, we feel strongly about the need for mitigation of aircraft-generated noise and increased noise levels from project-generated surface vehicles.

"The trend toward increased use of Runway 1, however, subjects Millbrae residents to increased single-event and backblast noise. Mitigation for these impacts should be included; e.g. increased participation in and acceleration of residential noise insulation by the Airport, and a reduction in the use of Runway 1." (Robert Treseler, City of Millbrae)

"It is also noted in the EIR that the Noise Impact Area, as defined by the 65 dB CNEL contour, will still contain noise sensitive land uses by the end of the planning period in the year 2006. As the intent of the State Noise Standards and the Noise Variance process is to eliminate this type of exposure, some additional mitigation measures should be added to eliminate this exposure by the end of the planning period. While the Airport has provided continued support to the Noise Insulation Programs in affected communities, it would be appropriate, due to the proposed airport expansion, for the Airport to use all its financial resources to strengthen its financial commitment to the program with the goal of completely eliminating this exposure by the end of the planning period." (Jack Drago, Mayor, City of South San Francisco)

"In recognition of the significance of increased single-event noise levels, the DEIR should propose additional mitigation measures. . .Additional mitigation programs could include provision of an enlarged and accelerated noise insulation program. San Francisco International Airport should guarantee a minimum level of funding for noise insulation programs even if Federal money no longer becomes available. The program should also be expanded without Federal money to provide insulation services to areas affected by single-event noise which are not within the 65 CNEL noise boundary. The importance of SFIA's commitment to the program over and above the basic FAA program cannot be over stressed." (Wendy Cosin, City of Pacifica)

"Add a separate mitigation measure that indicates the San Francisco Airports Commission will expand its financial commitment, as needed, to accelerate local agency noise insulation projects until all noise impacted homes, within the 65 dB CNEL noise contour and above, have been insulated by the end of 2006." (County of San Mateo Board of Supervisors)

"This action is not mentioned as a mitigation. Acoustical treatment programs are underway in several communities, but the increasing impacts that will occur in the future suggest that a substantially larger program will be needed. A larger program should be identified as a key mitigation.

"An expanded land use program might contain the following elements:

" -An expanded area of eligibility to address single-event noise exposure.

" -Commitment to a continuous, long-term program.

" -A minimum funding level available with or without federal funds.

" -Where acceptable, to include land use conversions as well as acoustical treatment." (Roger Chinn, Airport/Community Roundtable)

"I have also inquired about the home insulation program for aircraft noise and how it applies to residents of Burlingame and have gotten pretty unsatisfactory responses to that. And I will continue to try to pursue that, but it seems like Burlingame has been quite passive in that regard, and particularly those of us who live in the north Burlingame area and are most affected by the backblast issue and the flight patterns in severe weather." (Jack Hickethier)

"Millbrae residents are subject to extreme backblast and single event noise levels. Therefore, we feel strongly about the need for mitigation of aircraft-generated noise and increased noise levels from project-generated surface vehicles.

"We understand the assumption that aircraft-generated noise will decrease in the future due to the replacement of noisy aircraft with quieter aircraft. The trend toward increased use of Runway 1, however, subjects Millibrae residents to increased single-event and backblast noise. Mitigation for these impacts should be included; e.g. increased participation in and acceleration of residential noise insulation by the Airport, and a reduction in the use of Runway 1." (Janet Fogarty, Mayor, City of Millbrae)

"An impact is shown in terms of the location of the 65 dBA CNEL contour in Burlingame. Because there is an acknowledged impact, a mitigation program sponsored by the airport or air carriers should be proposed. Some kind of retrofit program designed for this specific kind of noise [backblast noise] could be included for those homeowners and noise sensitive uses outside

the 65 dBA CNEL contour who are particularly vulnerable to this type of noise exposure." (Dennis Argyres, City of Burlingame).

Response

As explained on p. 166 of the EIR, the San Francisco Airport is currently operating under an extension of a variance from the State of California noise standards established by the State Department of Transportation and set forth in Title 21, Division 2.5, Chapter 6 of the California Code of Regulations. This variance, granted in November, 1986 pursuant to Article 5, section 5050 of Chapter 6, was extended on October 19, 1989 and further extended on September 19, 1990. The variance contains specific requirements for reducing the numbers of dwelling units within the 65 CNEL contour. As shown in revised Table 52 on p. C&R.219, the total number of dwelling units within the 65 CNEL contour is expected to be about 2,600 in 2006, not 6,000, as stated by one commenter (there would be an estimated 6,600 people within the CNEL 65 contour in 2006). However, because many, if not all, of those dwelling units will have been insulated by that time, the total number of those units that will be considered "impacted" is expected to be far less than 2,600.

Among other requirements in the variance, the Airport must provide or arrange to provide up to 20 percent of the funding for a noise-insulation/noise-easement program for residences and schools that are located within the 65 dB or greater CNEL contour area. The Airport provides this insulation funding through procedures established by the Aviation Safety and Noise Abatement Act of 1979, 49 U.S.C. 2101 et seq. This Act authorizes airport operators and units of local government to apply for assistance from the FAA for the implementation of noise insulation projects in areas that qualify for such projects under the Act. Under this Act, local governments can receive federal funding for up to 80 percent of the insulation project, providing that the remaining 20 percent is provided by the local community. The Airport currently provides this 20 percent local share for the participating communities in accordance with the requirements of the noise variance.

The Airport provides funding support for these programs in Millbrae, San Bruno, South San Francisco and Daly City. Any increased funding for these programs by the Airport would require the cities to increase their own programs and receive approval for those programs from the FAA. The Airport does not run these programs itself, because it

believes it is appropriate for the cities and individual homeowners to decide what homes will be insulated. As a result, the Airport is somewhat dependent on the local communities to establish insulation programs, receive federal funding and apply to the Airport for the matching amounts.

The following mitigation measure is inserted after the fifth bulleted item on p. 425 of the EIR:

> Consider increased funding for implementation of noise insulation projects in cities near the Airport.

The San Francisco International Airport Noise Abatement Regulation, adopted in January 1988 (San Francisco Airports Commission Resolution No. 88-0016) and amended in June 1991 (San Francisco Airports Commission Resolution 91-0099, June 4, 1991) was also adopted to meet the requirements of the variance. The regulation provides for a continual reduction of cumulative noise resulting from aircraft operations with (1) a 100 percent phase out as of January 1, 2000 and (2) a requirement that the percentage of Stage 3 operations at SFIA performed by a particular airline cannot decrease during a specified quarter, based on the same quarter during the previous year.

SFIA staff expect that these programs will result in a considerable decrease of impacted dwelling units within the 65 CNEL contours by the year 2000. However, if there continue to be impacted dwelling units within the 65 CNEL in 2006, the Airport will continue to require a variance from the State noise standards.

Surface traffic noise is discussed on p. C&R.314 herein.

Research Methods for Measuring and Quantifying Backblast Impacts

Comment

"While South San Francisco is not significantly impacted by backblast noise from departing aircraft, a number of local communities are impacted. While there is no current standardized method for measuring low frequency backblast impacts, the problem is serious enough that the Airport should make a commitment to researching possible methods for measuring and

quantifying backblast impacts. It would then be possible to measure changes in impacts and implement those that prove to be most feasible." (Jack Drago, Mayor, City of South San Francisco)

Response

The following mitigation measure is inserted after the fifth bulleted item on p. 425 of the EIR:

> With the California Department of Transportation and the FAA, conduct a study involving the use of the C-weighting to quantify backblast impacts, and the development of a standard for evaluating backblast impacts.

The following mitigation measure is inserted after the second bulleted item on p. 426 of the EIR:

> Conduct a study involving the use of the C-weighting to quantify backblast impacts and the development of a standard for evaluating backblast impacts. **Implementing Agencies: FAA, Caltrans**

Noise Barriers / Landscaping

Comments

"P. XI-A-174 Table I-1-2 Recommended Action Plan Improve Noise Barrier for RW 1R. It should be added also improve Noise Barrier for RW 1L too." (Jessie Bracker)

"P. XI-A-174 Table I-1, Item 2 reads - "Improve Noise Barrier for RW 1R." - Install Noise Barrier for RW 1L should be added.

"Since Concourse A is going to be extended a long way toward Hwy 101 and many new Departure Gates are to be added there just across the Freeway 101 from Millbrae Homes areas; and with new Taxiways, the highest and best sound reducing Noise Baffle Fence and/or Sound Barrier wall must be constructed from Hilton Hotel going South all the way to past RW 1R along the East side of the Hwy 101 as a Noise Mitigation. Trees and bushes also should be added wherever possible to help clean Pollution from the Air and help alleviate noise." (Jessie Bracker, letter of 8/27/91 and public hearing of 8/27/91)

Response

The improvement of the noise barrier for Runway 1R listed on p. A.174, Appendix C of the EIR was recommended by the FAA Airports Capacity Task Force to increase capacity at SFIA. On p. 10 of the Task Force Study, it is noted that aircraft departing on Runway 1R cannot apply full thrust at the beginning of their takeoff roll because the jet blast would affect freeway traffic on US 101. Improvement of the barrier's containment of jet blast would allow more long-haul aircraft to take off on Runway 1R (instead of Runway 28R)./6/ Although it is not likely that this improvement would reduce noise levels in the communities behind Runways 1L and 1R, it could reduce noise levels under the departure paths for Runway 28R. Consequently, the following mitigation measure is inserted after the fifth bulleted item on p. 425 of the EIR:

> Improve the existing noise barrier for Runway 1R to better contain jet blast. This improvement could result in more aircraft departures on Runway 1R instead of Runways 28L or 28R, and a corresponding reduction in aircraft noise levels under the departure flight paths for Runways 28L and 28R. An increase in departures on Runway 1R could result in an increase in backblast noise in the communities behind the runway.

It is not known whether the installation of additional noise barriers or vegetation behind Runways 1L or 1R would be feasible, or whether barriers would reduce noise impacts. The following mitigation measure is inserted after the fifth bulleted item on p. 425 of the EIR:

> Consider the feasibility and benefits of a noise barrier(s) behind Runways 1L or 1R. If barriers are found to be feasible and to reduce noise levels, install the barriers as appropriate.

A response related to the effects of vegetation on air quality is on p. C&R.332 herein.

Aircraft Takeoff Procedures

Comment

"Please consider the following recommendation:

"Aircraft must attain high altitude upon take off from SFO, because of noise and pollution that affects the San Francisco Bay Area." (Leonard Lundgren, Lakeside Property Owners Association)

Response

A mitigation measure is included on p. 425 of the EIR that identifies a "quiet climb" program to reduce the takeoff noise of Stage 2 aircraft in areas near SFIA.

The attainment of high altitude would require the use of full power during aircraft "climbout" (soon after takeoff). For Stage 3 aircraft with high-bypass engines, the reduction in noise from the increase in altitude outweighs the additional noise produced by the engines operating at full power. For aircraft with low-bypass engines, overall noise may actually increase because the aircraft cannot gain enough altitude to offset the noise produced by the engines operating at full power. This difference between the two categories of aircraft is reflected in the ATA Departure Procedure, which is outlined in FAA Advisory Circular 91-53 (and noted on p. 167 of the EIR). For aircraft with high-bypass engines, the ATA Procedure involves continued climb at full power; for aircraft with low-bypass engines, the procedure involves a cutback in engine thrust.

A draft update to Circular 91-53 contains three alternative takeoff procedures. Under the draft Circular, takeoff procedures at a particular airport could be designated by runway and aircraft type. At SFIA, aircraft with low-bypass engines could continue to climb at full power when departing on Runway 1L or 1R and climbing over the Bay; such a procedure would result in the aircraft flying over East Bay communities at a higher altitude. Accordingly, the fifth bulleted item on p. 425 of the EIR is revised as follows (revisions are underlined and deletion is shown in brackets):

> Work with the FAA and airlines to develop a "quiet climb" program (takeoff procedures) to reduce the single-event takeoff noise of Stage 2 aircraft in areas near SFIA. The program [ ] could involve delaying the application of climb power (after engine cutback soon after takeoff) until reaching a specified altitude (such as 5,000 feet above the ground) or clearing populated areas. When FAA Advisory Circular 91-53 is updated, review the Circular and determine whether runway-specific and other appropriate procedures can be adopted. **Implementing Agencies: FAA, SFIA, airlines serving SFIA**

Participation in the Airport/Community Roundtable

Comments

"Add a separate mitigation measure that indicates the Airports Commission, through the Director of Airports, will continue to support and participate in the Airport/Community Roundtable to continue to provide an ongoing public forum to address community airport noise issues and to monitor airport noise abatement actions implemented by the Director of Airports, the FAA, and the airlines." (Raymond Miller, C/CAG)

"We agree with the ALUC's comment that a separate mitigation measure should be added that indicates the Airports Commission, through the Director of Airports, will continue to support and participate in the Airport/Community Roundtable to continue to provide an ongoing forum to address community airport noise issues and to monitor airport noise abatement actions implemented by the Director of Airports, the FAA, and the Airlines." (Leslie Carmichael, City of Foster City)

Response

The following mitigation measure is inserted after the fifth bulleted item on p. 425 of the EIR:

> Continue to support and participate in the Airport/Community Roundtable to provide an ongoing public forum to address community airport noise issues, and to monitor Airport noise abatement actions.

Increased Use of "Less Noisy Backblast" Aircraft

Comment

". . .They could eliminate the suggestion for long range and faster climb-out aircraft. We need less noisy backblast aircraft. . . " (Duane Spence, Peninsula Litigation Coalition)

Response

The increased use of faster climb-out aircraft is identified as mitigation because it would help to reduce noise levels under the departure paths for Runway 28R. The increased use

of Stage 3 aircraft at the Airport is resulting in less backblast noise (as discussed on pp. C&R.255 herein); the total phaseout of Stage 2 aircraft required by the Airport Noise Regulation would likely result in further reductions in backblast noise.

Adoption of Noise Metric Based on Single Events

Comment

". . .They should abandon the CNEL as a metric and adopt a more realistic measurement based on single events." (Duane Spence, Peninsula Litigation Coalition)

Response

The adoption and use of CNEL as the basis for the evaluation of noise impacts, and the absence of other adopted standards, are discussed on pp. C&R.230-233 herein. The adoption of a metric other than CNEL would be the responsibility of the FAA and/or Caltrans, and would require substantial amendment of the State Noise Standards.

Aircraft Engine Runups

Comment

"P-13- under Additional Measures to address impacts. (to be added) . . .

"All extended-time Aircraft Engine Runups be done as close to East side of Airport as possible (by the Bay)." (Jessie Bracker)

"Although aircraft engine runups between 10:00 p.m. and 7:00 a.m. require special permission, it is never denied. It should be noted here that these engine runups sometimes continue for up to one hour's duration. Even though four engines on one plane may each have engine runup tests, the total is counted as 1 runup." (Duane Spence, Airport Mitigation Coalition)

Response

According to SFIA Administration staff, all Airport engine run-ups are performed in the north and east sides of the Airport adjacent to the bay (19L and 28R run-up area). These areas are the farthest locations from the surrounding communities. This run-up policy is described in Airport Operations Bulletin-85-06. This policy was the subject of an Airport/Community Roundtable workshop and was reviewed and accepted by the Roundtable members.

Shift Southbound Flights Out of San Bruno Gap

Comment

"An additional mitigation measure which should be considered is to shift southbound flights departing from Runway 28 out of the San Bruno Gap. We understand that this has been previously considered, however, a summary of the status of the proposal should be provided as well as consideration of its feasibility." (Wendy Cosin, City of Pacifica)

Response

The EIR preparers are not aware of any proposals to shift southbound departures from Runways 28 out of the San Bruno Gap.

The EIR preparers are also not aware of many southbound flights that depart on Runways 28. As shown from a review of the SIDs in Appendix C of the EIR, most of the SIDs for departures on Runways 28L and 28R require aircraft to proceed for at least six nautical miles (from a navigational aid at the Airport) before turning. The SIDs that allow earlier turns are the Quiet One Departure, used for flights to northern destinations, and the Shoreline Eight Departure, used for flights to northern and eastern destinations. Aircraft flight routes are chosen in large part on the basis of the final flight destinations.

Regarding the shifting of departures out of the Gap: the SFIA preferential runway system has essentially moved as many flights as possible out of the Gap.

Measures Used at Other Airports

Comment

"Moreover, while labelling the transfer of a burden from one community to another a 'mitigation', the DEIR omits seriously to consider any of the existing, effective approaches to mitigating the effects of increased operations that have been adopted at other major airports in the United States and around the world. Creative new approaches to the problems of noise and safety that arise with increased airport operations in limited airspace are entirely absent." (Carol Gamble)

Response

The impacts of the noise mitigation measures in the EIR are discussed on pp. C&R.300-309 herein. The measures in the EIR include the phasing out of Stage 2 aircraft, flight procedures, preferential runway use, the use of radar tracking data, a regional study, a study of the benefits of runway reconfiguration, and a "quiet climb" program for Stage 2 departures. These are the types of measures that are used effectively at other U.S. airports./7/ Other measures used at other airports are suggested and addressed elsewhere in this section.

Additional Noise Monitors

Comment

". . .The need for additional noise monitors has been previously discussed and should also be recognized in the DEIR due to the proposed significant increase in air traffic." (Wendy Cosin, City of Pacifica)

Response

Aircraft noise monitors would not directly mitigate noise, but could potentially serve to provide the Airport with information to help evaluate the effectiveness of existing or develop new noise abatement procedures. Accordingly, the following measure is inserted after the fifth bulleted item on p. 425 of the EIR:

Consider the installation of additional noise monitors to help evaluate the effectiveness of existing, and/or develop new, noise abatement procedures.

Noise Variance Conditions

Comment

"Add a separate mitigation measure that addresses the Airport's noise variance pending before the State Division of Aeronautics." (Raymond Miller, C/CAG)

Response

To the extent that the mitigation measures included in the EIR reduce cumulative noise levels, the measures would reduce SFIA's need for a variance. It would be speculative to conclude that the measures would eliminate the need for a variance, as the effectiveness of some measures depends on the outcomes of studies, and compliance with some measures cannot be mandated by the Airport.

The inclusion of EIR mitigation measures as conditions of the new variance is a decision that is made by the State Division of Aeronautics under the provisions of the State Noise Standards, and as such, is not within the scope of this EIR./8/ The variance is discussed on pp. C&R.262-263 herein.

IMPACTS IDENTIFIED FOR MITIGATION

CNEL

Comment

"May I also indicate that we are quite positive that this airport will do the job to benefit most of the people. We can't do it to all. We are quite positive that the airport will increase in its size. It's only going to have to; otherwise we will have some serious problems . . . in landing and takeoffs. But we feel that we could be a good neighbor, even though we are that far . . . away from the airport, and we can work together.

"I have only been acquainted with the airport for 20 years, since I first moved to Pacifica. And we have been able to mitigate quite a few things. We feel with the noise insulation program that

we applied for the Fairmont area, that that will help mitigate some of the impact of noise. But we hope that we can work with you, alongside of you, to benefit both San Francisco and the area and jobs and everything else, and would also take care of the concerns of cities furthest away from the airport that had no indication -- for 15 years we were not getting any noise in the back of the valley. But because they changed their flight pattern, we have gone from -- we took a monitor out there, and we had a zero ambient noise. But then when the plane flew over at night, it jumped quite high. And we are very quiet back there.

"We are not saying that we don't want you to fly back there, but we are saying: Can we resolve the problem in the ambient noise and also the CNEL?" (Fred Howard)

Response

As stated on pp. 153 and 334 of the EIR, the 65 CNEL contour is established as the threshold of significant adverse impacts by both the FAA and the California State Noise Standards. Under such a standard, there would be a reduction in noise impacts in 1996 and 2006 with or without the project (see pp. 339-344 of the EIR). Estimates of these reductions are shown in Tables 53 and 54, pp. 342-343 of the EIR, and include several Pacifica sites. As noted on p. 347 of the EIR, however, there would still be people exposed to 65 dBA, CNEL and above in those years. To the extent that these persons are "impacted," as described in the State of California Noise Standards, SFIA would continue to be required to operate under a noise variance. The number of overflights from aircraft serving SFIA would increase during the analysis years, as described on p. 344 of the EIR and in EIR Appendix C. However, the shift to Stage 3 aircraft would result in noticeably lower single-event noise levels.

Some of the SFIA noise programs currently in place (and described on pp. 167 and 168 of the EIR) are intended to reduce cumulative noise impacts. Several of the mitigation measures on pp. 424-426 of the EIR -- including commitment to a phasing out of Stage 3 aircraft, increased use of Runways 1L and 1R for departures, revision of the Quiet Bridge Approach, mitigation implemented as the result of regional or runway reconfiguration studies, and a quiet climb program -- could also result in reduced CNEL impacts if they were implemented. Measures addressed in the responses herein that could reduce or minimize CNEL impacts include the installation of navigational aids, the continued nighttime preferential use of Runways 10L and 10R for departures and the use of 19L and 19R for arrivals, and the improvement of the noise barrier behind Runway 1R.

Mitigation for single-event noise impacts is discussed on pp. C&R.299-300 herein.

Backblast Noise

Comments

"Add a separate mitigation measure that addresses the backblast noise problem from aircraft departures on Runways 1, other than studying runway reconfiguration alternatives." (Raymond Miller, C/CAG)

"The low-frequency noise or backblast problem has been well documented by people in the community and by the frequency-band analyses conducted by Caltrans and by Tracor several years ago. While acknowledged in Section III of the Draft EIR in the Environmental Setting, the impact discussion in Section IV only mentions a possible reduction, as measured in CNEL. No specific mitigations are identified for the backblast problem." (George Foscardo, City of San Bruno)

"No specific backblast noise mitigations are identified." (Roger Chinn, Airport/Community Roundtable)

"Millbrae residents are subject to extreme backblast and single event noise levels. Therefore, we feel strongly about the need for mitigation of aircraft-generated noise and increased noise levels from project-generated surface vehicles." (Janet Fogarty, Mayor, and Robert Treseler, City of Millbrae)

Response

As stated on pp. 153 and 334 of the EIR, the 65 CNEL contour is established as the threshold of significant adverse impacts by both the FAA and the California State Noise Standards. (The adequacy of CNEL as a descriptor of backblast noise is discussed on pp. C&R.251-253 herein.) Under such a standard, there would be a reduction in noise impacts in 1996 and 2006 with or without the project. On p. 344 of the EIR, it is noted that backblast noise would decrease from 1990 through 2006.

The phasing out of Stage 2 aircraft by 2000 and the continued preferential use of Runways 10L and 10R for nighttime departures would help to reduce backblast noise. Depending on the outcome of regional and runway reconfiguration studies, the mitigation measures resulting from those studies could help to reduce backblast noise. All of these measures are identified in the EIR (pp. 424-426).

Noise barriers could help to reduce the backblast problem; barriers are discussed on p. C&R.289 herein. Surface traffic noise is discussed on p. C&R.314 herein.

Increase in Nighttime Operations

Comments

"Add a separate mitigation measure that addresses the possible increase in nighttime operations due to air traffic/capacity delays." (Raymond Miller, C/CAG)

"Mitigation measures must be offered to reduce the potentially significant impacts from the possible increase in nighttime operations due to air traffic / capacity delays." (George Foscardo, City of San Bruno)

"There is no mitigation directed at a possible increase in nighttime operations due to air traffic/capacity delays." (Roger Chinn, Airport/Community Roundtable)

Response

The following mitigation measure is inserted after the fifth bulleted item on p. 425 of the EIR:

> Continue to keep track of information on late night air carrier operations by runway and scheduled operations from midnight to 6:00 a.m. as part of the Director's Reports presented at Airport/Community Roundtable meetings. If the percentage of annual total operations performed at night increases such that nighttime cumulative noise levels increase 1.5 dBA, CNEL or more, conduct an investigation to determine the cause of the increase. To the extent allowed by law, implement mitigation measures to offset the increase in nighttime noise levels.

Single Event Noise

Comments

"Substituting large two-engine aircraft with large four-engine aircraft is the only mitigation directed at single-event noise impacts." (Roger Chinn, Airport/Community Roundtable)

". . .[S]ince the DEIR is currently inadequate in its disclosure of noise impacts over San Francisco, no viable mitigations have been proposed. I hope that the responses to these and other comments will suggest further mitigations." (Curt Holzinger)

". . .[T]here are a couple of issues I really would like to express some concern about. No. 1, I feel that the single event [noise impact] in the Environmental Impact Report does not – it speaks of it, but it does not go any further and talk about mitigating that problem." (Fred Howard)

". . .Based on this average day simulation, the DEIR must include mitigation measures to offset the adverse impact of the increased frequency of single-event noise." (Maria Gracia Tan-Banico, City of Daly City)

Response

As stated on pp. 153 and 334 of the EIR, the 65 CNEL contour is established as the threshold of significant adverse impacts by both the FAA and the California State Noise Standards. (The adequacy of CNEL as a descriptor of single-event noise and the adoption of CNEL as the State standard are discussed on pp. C&R.230-233 herein.) Under such a standard, there would be a reduction in noise impacts in 1996 and 2006 with or without the project. On p. 344 of the EIR, it is noted that 1) in areas with overflights by aircraft serving SFIA, the number of times single-event noise occurs would increase, and 2) there would be a decrease in the number of flights by noisier, low-bypass-engine aircraft such as the B-727.

As stated on p. 344 of the EIR, the phasing out of Stage 2 aircraft by 2000 would help to reduce single-event noise. The continued preferential use of Runways 1L and 1R for daytime departures and 10L and 10R for nighttime departures would continue to minimize single-event noise in areas under the departure paths for Runways 28L and 28R. Increased use of large, long-range two-engine aircraft as an alternative to the B-747 would reduce the

single-event noise under flight paths used by the B-747. Revisions of flight procedures and the use of the PADIS to determine the effectiveness of the procedures could further reduce-single event noise. Depending on the outcome of regional and runway reconfiguration studies, the mitigation measures resulting from those studies could help to reduce single-event noise. All of these measures are identified in the EIR (pp. 424-426).

POTENTIAL EFFECTIVENESS AND IMPACTS OF MEASURES IN DEIR

Comments

". . .I agree with the 'Airport Noise Committee's' objection to the Draft: . . .

"2. Noise level reductions based upon new aircraft is an assumption not a mitigation measure. . .

"These flaws must be addressed in any draft to make it acceptable." (David Deakin)

"Page 167, Noise Abatement Program: . . .
"Runways 10L and 10R (for noise abatement between 1:00 and 6:00 a.m.) are used only when airlines voluntarily elect to use them. Although using alternate departure runways is contrary to SFIA's preferential runway use doctrine, no violations are ever issued to the transgressing airlines. . .

"Page 424, Mitigation Measures, Aviation Noise: . . .
"Voluntary use of preferential runways 10, from 1:00 a.m. to 6:00 a.m. will not be effective mitigation until their use is mandatory. Single noise events cause the **backblast** problem and constantly disrupt the sleep of tens of thousands of citizens. San Diego, an International Airport, has a curfew from 11:00 p.m. to 7:00 a.m. The nighttime noise relief at SFIA of changing runways (when conditions permit) still is only voluntary and only for the hours of 1:00 a.m. to 6:00 a.m. This was initially proposed in 1980 as a first step, yet the hours have not been extended to give additional nighttime noise relief (Joint Land Use Plan, adopted 1980). . .

"The Visual Shoreline Departure from runways 28L and 28R accounts for only 0.3% of departures. This certainly cannot be considered a mitigation measure. . .

"The Quiet Bridge Approach is regularly ignored by in-bound flights. Numerous Roundtable meetings have been directed to this mitigation with no results. . .

"Climb power reductions using the 'ATA departure procedure' is of no value whatsoever in mitigating the major noise problem of SFIA, **backblast**. Backblast is generated on-airport. . .

"A 'quiet climb' program does not address the major SFIA noise problem, **backblast**. This program, at best, is minor mitigation compared with the backblast problem. . .

"Until a regional study by FAA, Caltrans, and other agencies is finished and new flight routes are in actual use, the inclusion of this paragraph is not a mitigating measure. It is wishful pie-in-the-sky thinking." (Duane Spence, Airport Mitigation Coalition)

"Another mitigation that is referenced is the runway reconfiguration study, which was a separate study. It really came out of a request on the Peninsula to look at alternative runways, if they can help resolve the noise problem in different areas. This is listed as a mitigation in here, and the study is not done. In fact, the Airport Community Roundtable asked for more information. If you want to call it a possible mitigation, that is fine. But let's not call it a mitigation if the study is not even done." (Curt Holzinger)

"Completion of the Runway Reconfiguration Study should not be identified as a mitigation measure, since that action by itself, will not mitigate single-event and backblast noise impacts." (Roger Chinn, Airport/Community Roundtable)

"The Airport Noise Committee has reviewed the proposed runway reconfigurations, and our analysis revealed several issues which required further study. There is currently no agreement among noise affected parties that any reconfiguration under study will actually mitigate noise, rather than simply shift it elsewhere. In fact, the study concludes that under any configuration where large aircraft are shifted onto Runway #1 for departure; these aircraft cannot reach sufficient altitude to lower noise levels over San Francisco (Runway Reconfiguration Study, Phase 1, pgs. 6-18). Given the lack of consensus and incompleteness of the study, we find no justification for the DEIR calling it a 'mitigation.' " (Timothy Treacy, Airport Noise Committee)

"Runway extensions studies have been done to various extent since 1976. To date, no effective noise solutions have been achieved.

"On the contrary, the studies have shown that extending runways only increases the operational capacities of the airport." (Duane Spence, Airport Mitigation Coalition)

". . .Identifying the consequences of the airport's expansion proposals and analyzing possible mitigation efforts are among the most important aspects of the DEIR to residents of South-Central San Francisco, from Little Hollywood to St. Francis Wood. . .

"It is both interesting and troubling to note that the only proposals labelled 'mitigation' involve the shifting of operations (and the noise and safety concerns inherent in any operation) from one runway to another. In practical terms, the result of this shift of operations is a shift of noise and safety concerns from one community to another. This is an approach that has often been followed by SFIA, with the cooperation of the FAA. Relieving one community at the expense of another is not, however, a 'mitigation'. The label 'mitigation' is cleverly used in the DEIR, but its use is both inaccurate and misleading." (Carol Gamble)

"Another major area of question is with the mitigation section of the Draft EIR. You will recall that last time I mentioned that one of the mitigations proposed in the draft is to put more aircraft onto Runway No. 1. There is no evidence in the Draft EIR which supports that that is, indeed, a mitigation. It references a runway reconfiguration study, which was conducted by the airport, but which was not concluded, and the Airport Community Roundtable requested more information before making a decision as to if, indeed, that was a mitigation or simply a noise shift. It is the position of our committee that to move more aircraft onto Runway No. 1 is simply a noise shift which will put even more aircraft over the City and County of San Francisco." (Curt Holzinger, Airport Noise Committee, public hearing of 10/17/91)

"The DEIR proposes to 'mitigate' noise by placing even more departing aircraft onto Runways IL/IR, and it references the Runway Reconfiguration Study as an additional 'mitigation.' Neither of these proposals has been shown to actually reduce noise, the appearance of a noise reduction is rather, the result of a noise shift. The DEIR should provide supporting evidence that these proposals will mitigate noise, and if mitigation is achieved in one location, it should explicitly disclose where noise levels and frequency of overflight will increase." (Curt Holzinger)

"No mitigations for the single event impacts are proposed. . .The DEIR shows that usage of Runway #1 for departures increased from 75% in 1985 to 87% in 1989 (page 158). This shift has increased backblast noise behind the runway and overflight of the northern peninsula, worsening noise exposure in those areas. In spite of this recent experience, even greater use of Runway #1 is listed as a noise 'mitigation.' The DEIR provides no analysis to support this mitigation, and consequential impacts are ignored. The Committee finds this 'mitigation' to be a noise shift, and absent further data, references to it should be removed. Furthermore, the Airport

and other public agencies have wisely pursued a policy against this type of noise shift." (Timothy Treacy, Airport Noise Committee)

"Increased use of Runway #1 is the principal noise mitigation proposed in the DEIR. Use of Runway #1 has increased from 75% in 1985 to 87% in 1989 according to page 158 of the DEIR. This change has resulted in greatly increased overflight noise in San Francisco. The DEIR provides no analysis to support this alleged mitigation, which is in reality a noise shift from areas in San Mateo County to San Francisco. Consequently, further use of Runway #1 cannot be relied upon as mitigation." (Bruce Krell, Forest Hill Association)

"Increased use of Runway #1 is the principal noise mitigation proposal in the DEIR. Use of Runway #1 has increased from 75% in 1985 to 87% in 1989 according to page 158 of the DEIR. This change has resulted in greatly increased overflight noise in SF. The DEIR provides no analysis to support this alleged mitigation, which is in reality a noise shift from areas in San Mateo County to San Francisco. Consequently, further use of Runway #1 cannot be relied upon as a mitigation." (Carol Kocivar, West of Twin Peaks Central Council)

"Revise Mitigation Measure No. 2 on page 424 in the Draft EIR, by deleting the reference to increase the use of Runways 1 for departures of long-range aircraft." (Raymond Miller, C/CAG)

"By using an increased use of Runways 01 for departures as a mitigation measure, the current high use of that runway and the existing impacts are ignored." (Roger Chinn, Airport/Community Roundtable)

"In the report on Page 424, they refer to a mitigating effort as encouraging the airlines to switch to two-engine aircraft which then they can take off of Runway 1 L and 1 R. That is in violation of the original scheme, which was that that would not alleviate the noise in one area to by moving it to another." (David Few)

"The EIR mentions that, as a mitigation to noise, aircraft will be diverted farther north over the Peninsula, which means practically all of the additional aircraft that will be handled by SFO from this expansion proposal, roughly a 70 percent expansion, if I read that correctly, in aircraft operations. Those aircraft will be -- all that 70 percent additional is going to be going over San Francisco. That is diverting the noise, which is against the tacit agreement which has been in effect for quite some time. That noise will not be diverted to the new communities throughout the bay region." (Charles Kroupa)

"Another area of real concern that is in the existing Draft EIR is with what are called mitigations. Several of the mitigations are a shift of noise. As we understand it, the Airports Commission and the Airport Community Roundtable have a policy against solving one area's problems at the expense of another.

"I will be very brief here. You will hear reference or read reference to: Let's put the aircraft on to Runway No. 1 so they can go up the bay. Those planes go up the bay and then they turn over the northern Peninsula. You have moved noise from the gap up the bay and over the Peninsula. It's a shift. Three of the mitigations which are listed in this document are a shift. I do not think that is an acceptable mitigation. We have got to come up with something better than that.

". . .For example, if the mitigations in the DEIR are followed, large heavy 747 aircraft would depart on Runways IL/IR and might overfly San Francisco. This possible impact needs further explication and assessment." (Curt Holzinger)

"Moreover, the only mitigation proposed to address this problem [noisy Stage III aircraft] is to shift more aircraft onto Runway #1; a plan which merely shifts noise from one place to another." (Timothy Treacy, Airport Noise Committee)

"Page 424, Mitigation Measures, Aviation Noise:
"The realities of long range, two-engine aircraft as an alternative to four-engine aircraft is not a mitigating factor. The continuing and constant use of side-by-side departures on runways 1L and 1R would still have the net effect of four engines at maximum thrust. The use of larger, more fuel laden planes using runways 1 would further exacerbate the major problem, **backblast**, behind those runways. This is no mitigation measure.

"Even if the FAA did study and revise the use of the 'quiet departure' for runways 1 departures, this does not reduce the major noise problem, **backblast**. It encourages more runways 1 departures. This is not a mitigation measure." (Duane Spence, Airport Mitigation Coalition)

Response

It is assumed in the EIR (pp. 338-339) that the proportion of total operations performed by Stage 3 aircraft would increase from 1990 to 2006. The complete phaseout of Stage 2 aircraft is listed as mitigation measures (for SFIA and airline implementation) on pp. 424-425 because the noise impacts analysis in the EIR does not reflect a 100-percent-Stage-3

fleet at SFIA. When the EIR noise analysis was prepared, the Airport Noise Regulation had not been amended to include a January 2000 phaseout date.

SFIA's current preferential runway use program is informal./1/. The use of any noise abatement procedure, whether formal or informal, is limited by the variability of wind and weather conditions, safety factors, and air traffic levels and patterns. (It is stated on p. IVB-28 of the Joint Land Use Study, for example, that wind conditions prohibit nighttime Runways 10 takeoffs about 40 percent of the year./2/) Air traffic controllers and the aircraft pilots (because of their responsibilities for ensuring flight safety) have the option of choosing a procedure other than the noise abatement procedure if they think it necessary for aircraft safety. See pp. C&R.270-271 herein for further discussion of preferential runway use.

Data on nighttime (1:00 a.m. to 6:00 a.m.) runway use in 1989 show that about 70 percent of B-747 aircraft, and about 50 percent of all other aircraft, departed on Runways 10L or 10R. Because Runways 28L and 28R are used as the preferential arrival runways, the resulting "head-to-head" traffic flow may limit the number of aircraft that can depart on Runways 10L or 10R during busy periods. The revision of the preferential runway use procedure described on p. 425 of the EIR to include arrivals on Runways 19L and 19R (see pp. C&R.281-282 herein) could allow for increased use of Runways 10L and 10R for departures.

The Visual Shoreline Departure is already in use at SFIA. (Limits on its use are discussed on p. C&R.293 herein.) The departure is not identified as a mitigation measure in the EIR.

When following the Quiet Bridge Approach to Runway 28R, aircraft proceed to the high stand of the San Mateo Bridge, and then make a visual landing. A similar procedure is followed by aircraft using the Tiptoe Approach to Runway 28L. The path followed to reach the San Mateo Bridge would depend on the air traffic control instructions given to the pilot./1/

The mitigation measure on p. 424 of the EIR regarding the Quiet Bridge Approach is intended to improve the effectiveness of the approach. Other mitigation measures in the EIR (or these responses) that could improve the effectiveness of the Quiet Bridge Approach include use of the PASSUR radar tracking system, and installation of navigational aids.

The inclusion of climb-power reductions as a mitigation measure in the EIR is not intended to reduce backblast impacts.

Because of the possibility that a regional study could lead to the mitigation of noise impacts, completion of the study is identified as a mitigation measure in the EIR. It is not stated in the EIR that the study would mitigate noise impacts. When making its findings on the impacts remaining after mitigation measures are implemented, the Airports Commission could not assume that the study would reduce noise impacts to a level of insignificance.

The reasons for including the Runway Reconfiguration Study as a mitigation measure are discussed on p. C&R.306 herein. As discussed on p. C&R.49 herein, SFIA believes that Phase I of the Reconfiguration Study has (so far) produced four potential runway reconfigurations that would achieve the primary objective of the study (the reduction of cumulative noise impacts). Many secondary objectives (listed on p. C&R.49 herein) were achieved, but not all.

Depending on the results of the Runway Reconfiguration Study (discussed on pp. C&R.49-50 herein), it is possible that aircraft (including B-747s) could be departing on different runways and along different headings (paths) than they do currently, increasing the occurrence of single-event noise in some areas. The main objective of the Runway Reconfiguration Study, however, was to reduce noise impacts as defined by the State Noise Standards (and a secondary objective was to reduce single-event noise impacts). Any runway reconfiguration chosen as a result of the study, then, would by definition result in a reduction of such noise impacts.

Because of the possibility that the Runway Reconfiguration Study could lead to the mitigation of noise impacts, completion of the study is identified as a mitigation measure in the EIR. It is not stated in the EIR that the Study would mitigate noise impacts. When making its findings on the impacts remaining after mitigation measures are implemented, the Airports Commission could not assume that the Study would reduce noise impacts to a level of insignificance.

The extension of a runway as a mitigation measure would be implemented only if the Runway Reconfiguration Study found it to be effective in reducing noise impacts. The FAA Airports Capacity Task Force Study did show that extending Runways 19L, 19R,

28L, or 28R would result in reduced aircraft delays (as shown in Table I-1, p. A.174, Appendix I of the EIR).

Several commenters refer to a policy or policies against shifting noise from one community to another. It is the position of members of the Airport/Community Roundtable that any shift in noise from one community to another should be prohibited. "Noise" as defined in this position is any kind of noise, including single-event noise (levels and frequency) and backblast noise./1/

Condition III.F. of the SFIA Noise Variance states, "[The] Airport shall not knowingly permit or authorize and shall oppose any activity which results in a shifting of aircraft generated noise from one community to another within the airport environs." Although "noise" is not specifically defined in this Condition, in the State Noise Standards (in accordance with which the variance was granted) "noise impact" is defined in terms of CNEL./8/

Pages 424-425 of the EIR identify nine noise mitigation measures for SFIA to implement. Additional mitigation measures are identified on pp. C&R.267-295 herein. Of those measures, the only measure explicitly involving a potential shift of operations "from one runway to another" is the use of large long-range, two-engine aircraft as an alternative to the B-747.

As stated on p. 344 of the EIR, ". . . the noisiest aircraft overflights to / from SFIA would likely be by B-747 aircraft. . . " All B-747 aircraft on long-range flights and about one-half of all other B-747 aircraft departed on Runway 28R in 1989 (and would, it is assumed, depart on Runway 28R in 1996 and 2006). Almost all of these departing aircraft follow the Gap Departure route, which takes them over Peninsula communities at relatively low altitudes.

If a B-747 aircraft departing on Runway 28R were replaced by a long-range two-engine aircraft (such as a B-767) departing on either Runway 28R or Runways 1L or 1R, a relatively noisy Stage 3 aircraft that climbs relatively slowly would be replaced by a quieter Stage 3 aircraft that climbs faster. If the two-engine aircraft were to depart on Runway 28R, communities under the Gap or Shoreline Departure routes would still experience noise, but the level would be lower. If the aircraft were to depart on Runways

1L or 1R, communities under the Runway 28R flight paths would not hear the noise from the aircraft.

Part of the noise would be shifted to communities under the flight paths for Runway 1L or 1R, including the upper and middle Peninsula, San Francisco, and Pacifica for flights headed to destinations west, southwest or south of SFIA. However, the aircraft would be at higher altitudes when flying over those communities, and the noise produced (even at the same altitude) would be lower than that from the B-747. Therefore, there would be an overall reduction in (cumulative and the level of single-event) noise.

The result would be an overall reduction in noise, and not just a shift (as claimed by the commenters), because high noise levels would be taken from the most highly affected areas and replaced with lower noise levels elsewhere. This strategy is consistent with SFIA's noise reduction efforts, which consider as a priority relief for people within the CNEL 65 contour. Although others may be affected by the results of such efforts, the impacts to those people would not be as great as the benefits to those now experiencing high cumulative noise levels.

This reduction can be demonstrated by using the information in Table C-8 on p. A.56, Appendix C of the EIR. The table shows the maximum sound exposure levels at the remote monitoring stations for four representative aircraft using SFIA (including the B-747-200 and B-767). Monitor No. 4 in South San Francisco is directly under the Gap Departure route; when a B-747-200 departs on Runway 28R, the sound exposure level at Monitor No. 4 could be as high as 103 dBA. Replacing the B-747 with the B-767 on Runway 28R could reduce the noise at Monitor No. 4 to 89 dBA. Monitor No. 24 in San Francisco is near the departure flight paths for Runway 1L. If the B-767 departure were shifted to Runway 1L, there would be no noise produced by it at Monitor No. 4, but the sound exposure level at Monitor No. 24 could be as high as 81 dBA. The reduction achieved by switching to the B-767 and shifting runways could be 21 dBA or more./9/

It is correct that replacing B-747 with B-767 aircraft (as identified in the EIR) could lead to an increase in the use of Runways 1L and 1R, and result in 1) an increase in the occurrence of single-event noise in communities under the departure paths for Runways 1L and 1R (those along the northern Peninsula, and San Francisco) and 2) an increase in the occurrence of backblast noise in the communities behind Runways 1L and 1R. Accordingly, the following is added to the second bulleted item on p. 424 of the EIR:

> An increased number of departures on Runways 1L and 1R would result in an increase in the occurrence of single-event noise in communities under the departure flight paths for those runways, including San Francisco and communities on the Peninsula and in the East Bay. An increased number of departures on Runways 1L and 1R would also result in an increase in the occurrence of backblast noise in communities behind those runways, including Burlingame and Millbrae.

The increased use of long-range aircraft is not the only mitigation measure identified to address noisy Stage 3 aircraft; please see pp. C&R.269, 271, 273-274, 280-282, 286-287, 289-290 herein.

Possible revision of the flight routing for aircraft departing on Runways 1L and 1R is identified as a mitigation measure on p. 424 of the EIR. The measure is intended to reduce cumulative and single-event noise levels in communities on the Peninsula; it is not intended to reduce backblast noise.

The measure is described and assessed incorrectly in the EIR. Accordingly, the fourth bulleted item on p. 424 and the ninth bulleted item on p. 425 of the EIR are revised as follows (revisions are underlined and deletions shown by brackets):

> Encourage the FAA to study and, if possible, [ ] institute the use of [ ] a "quiet departure" []flight routing[] for aircraft departing on Runways 1L and 1R. Currently, aircraft departing on Runways 1L and 1R [ ] make a left turn over the Peninsula. Requiring the aircraft to travel further north over the Bay before turning could reduce single-event noise over Peninsula communities, but could result in increased overflights and single-event noise in communities further north. In addition, a revised flight routing could conflict with departures from Metropolitan Oakland International Airport.
>
> Study and, if possible, [ ] institute the use of [ ] a "quiet departure" for aircraft departing on Runways 1L and 1R. **Implementing Agency: FAA**

Mitigation measures for single-event impacts are discussed on pp. C&R.299-300 herein. Responses to comments regarding increases in backblast noise are on pp. C&R.251-260 herein.

GENERAL

Comments

". . .What mitigation programs can be implemented to reduce the number of impacted uses? How can they be funded and what levels of funding are necessary?. . ." (Dennis Argyres, City of Burlingame).

". . .There is just a woeful lack of detail and analysis as to how mitigation measures would work. For example, one of the suggestions to mitigate the noise is to, 'encourage the airlines to use different types of aircraft that have the ability to take off at a very sharp angle and thus not have to spend much time over residential areas.' The question is, how do we encourage the airlines to do that? Are there specific suggestions, incentives, penalties that could be imposed? And how successful would those incentives or penalties be, based upon, perhaps, examples from other jurisdictions?" (Commissioner Morales)

"Potential Noise - The noise problems will be mitigated through the improvement and expansion of the Airport's already successful noise program." (Stan Moy, Finger & Moy Architects)

"The third mitigation measure on page 424 should include an estimated date for completion of review and revision of the Quiet Bridge Approach." (Leslie Carmichael, City of Foster City)

"Pages 425 and 426 list measures to mitigate noise impacts; included are measures to work with several agencies and groups to 'conduct a regional study of air traffic control requirements, constraints, and opportunities, with the goal of minimizing noise impacts.' This mitigation should be undertaken before proceeding with any other aspect of the project, since 'the study would involve identifying the flight patterns and routes regionwide that are most environmentally desirable, determining how to establish and coordinate use of the routes while maintaining aircraft safety.' The SFIA must take into account future expansions at other airports in the region, including the possibility of airport development in areas of rapid growth not presently served by a regional airport facility. . ." (Onnolee Trapp, Leagues of Women Voters of San Mateo County)

"Pages 425 and [4]26 list measures to mitigate noise impacts. Included are measures to work with several agencies and groups to 'conduct a regional study of air traffic control requirements, constraints and opportunities, with the goal of minimizing noise impacts.' This mitigation should

be undertaken before proceeding with any other aspect of the project, since, 'the study would involve identifying the flight patterns and routes region-wide that are most environmentally desirable, determining how to establish and coordinate use of the routes while maintaining aircraft safety.' The airport must take into account future expansions of other airports in the region, including the possibility of airport development in areas of rapid growth not presently serviced by regional airport facility. Considering the multiple impacts detailed in the EIR for the airport alone, it's imperative that regional coordination must be involved.

"Well, we call on you for cooperating with the other jurisdictions in the area to work these things out and reconsider this plan and perhaps even alter your expansion plans." (Onnolee Trapp, San Mateo County Leagues of Women Voters, public hearing of 8/27/91)

"Pages 335 and A.179:
"There are very serious problems in the DEIR with suggested noise mitigation measures, one of which is the fact that most measures are only voluntary. No mitigation measures are proposed in the DEIR that are mandatory or binding. Therefore, they are not under the control of the Airports Commission to effect noise mitigation. For instance, any use of runways 10 for late night departures between 1:00 a.m. and 6:00 a.m. is optional. . .

"Page 424, Mitigation Measures, Aviation Noise: . . .
"In general, the SFIA mitigation paragraphs are actually requests to other entities and agencies to accomplish some actions. Nothing is mandatory, therefore nothing can be concluded as to whether the actions will be done, or what their results would be. For the purpose of the DEIR, they are not mitigating measures." (Duane Spence, Airport Mitigation Coalition)

Response

Section 15050(e) of the CEQA *Guidelines* states that "The exercise of discretionary powers for environmental protection shall be consistent with express or implied limitations provided by other laws." SFIA cannot implement mitigation measures which it has no authority (under the powers granted to it by law) to implement. As stated in the responses to various suggested noise mitigation measures (pp. C&R.267-295 herein), and implied in the discussion of airport proprietors' rights and obligations in Appendix A herein, there are limits to SFIA's ability to directly implement certain noise mitigation measures. Those limits are reflected in the categorization of the noise mitigation measures by implementation responsibility (see pp. 424-425 of the EIR).

For example, as implied in C&R Appendix A and described on p. C&R.279 herein, there are limits on SFIA's ability to require or influence the use of long-range, two-engine aircraft at the Airport (through regulation or financial incentives). Because of those limits, increased use of such aircraft would be implemented by the airlines, not SFIA. SFIA could "encourage" the airlines' use of such aircraft at SFIA , through rulemaking, airline agreements, and/or financial incentives.

Under CEQA (*Guidelines*, Section 15091), mitigation measures may be adopted or rejected by the Airports Commission as part of the written findings for each significant effect. Mitigation measures adopted become conditions of project approval, and are binding. The noise mitigation measures not directly under the control of SFIA (such as FAA revision of flight procedures) cannot be adopted by the Airports Commission in its findings.

Given that some of the noise mitigation measures identified in the EIR are not within SFIA's control, the commenter is correct in asserting that conclusions cannot be made as to the likely implementation or effectiveness of those measures. This absence of knowledge regarding the effectiveness of the noise mitigation measures must be taken into consideration by the Airports Commission in its findings.

CEQA does not require that an EIR include information on the costs and potential financing of mitigation measures. Please see p. C&R.386 herein for further discussion of this issue.

The review and revision of the Quiet Bridge Approach and the completion of a regional air traffic study are not within the authority of SFIA. Therefore, implementation of these measures cannot be mandated by the Airports Commission as a condition of project approval.

NOTES - Aircraft Noise Mitigation

/1/ Carbone, David, staff to the Airport/Community Roundtable, telephone conversation, March 11, 1992.

/2/ Williams, Platzek & Mocine et al., *Joint Land Use Study, San Francisco International Airport / San Mateo County Environs Area*, prepared for the Joint Powers Board, March 1980.

/3/ U.S. Department of Transportation, Secretary's Task Force on Competition in the U.S. Domestic Airline Industry, *Airports, Air Traffic Control, and Related Concerns (Impact on Entry)*, February, 1990.

/4/ Airline Lease and Use Agreements, San Francisco International Airport.

/5/ 49 U.S.C. App. Section 1305 (a) (1).

/6/ U.S. Department of Transportation, Federal Aviation Administration, *San Francisco Bay Area Airports Task Force Capacity Study of SFO, SJC, and OAK International Airports* (prepared jointly by FAA, Bay Area international airports staffs, Air Transport Association, and the airlines serving the San Francisco Bay Area), 1987.

/7/ Federal Aviation Administration, Office of Environment and Energy, *Airport Noise Control Strategies*, Report No. FAA-EE-86-02, May 1986.

/8/ California Administrative Code, Title 21, Section 5000, et seq., as amended.

/9/ The B-767 is not a direct replacement for the B-747, because the B-767 is a smaller aircraft. If an aircraft of similar size (such as the planned B-777) were used, the noise levels produced would probably be about 4 dBA higher than those produced by the B-767.

OTHER NOISE

SURFACE TRAFFIC NOISE

Comment

"...Whether or not aircraft noise reduction is achieved, the report states (p. 6) that 'surface traffic due to the project would increase noise levels on local roads by a maximum of one decibel over baseline conditions' for both 1996 and 2006. NO MITIGATION is proposed for this environmental impact." (Onnolee Trapp, Leagues of Women Voters of San Mateo County)

Response

Humans can hear noise level changes of only about three dBA or more. A noise level increase of one dBA would not be audible to the human ear and, so, there would be no noticeable effects on ambient noise levels. Therefore, no mitigation measures would be needed for the change in ambient noise levels due to increased surface traffic along local roads.

CONSTRUCTION NOISE

Impacts

Comments

"IV-331 Environmental Impacts Re: Construction Noise - Clearly impacts of construction on Millbrae were completely overlooked and left out of Document. I can't help wondering why? A lot of Millbrae homes are much closer to Construction Sites planned for, than those homes in Lomita Park, San Bruno which have been included in text." (Jessie Bracker, letter of 8/27/91 and public hearing of 8/27/91)

"On page -- Chapter IV-331 - Environmental Impacts - 'Construction' and Noise - Noise sensitive areas - are named in 1st par. of page 6 and 1st par. (middle of), also found on page 333. Sites named are incomplete. Airport Park, Marina Vista, and North Millbrae Subdivisions of homes were not named and must be because they are closer to much of the Development areas than Lomita Park is

so noise levels there from Construction would have to be higher than from Lomita Park where text says it would be unacceptable (clearly). Millbrae nursery school also should be included." (Jessie Bracker)

Response

The list of sensitive receptors on p. A.58 of the EIR (Appendix C) in Table C-10, is revised (the revised table is shown on p. C&R.220 herein) to include Millbrae Nursery School (and other uses found in responding to other comments about sensitive uses). This list contains only schools, hospitals and other public facilities in the vicinity of the Airport. The commenter is correct in stating that residential land uses in Airport Park, Marina Vista and North Millbrae subdivisions, closer to the Airport than Lomita Park, would be exposed to high noise levels from construction activities. Table 48 on p. 332 of the EIR shows the approximate distances at which construction noise would be reduced to certain levels. Generally, external noise levels over 65 dBA, L_{eq}, are not considered compatible with residential land uses. Pages 332 and 333 of the EIR state that noise levels at Lomita Park Elementary School and in the Lomita Park residential area would be above recommended standards. Residential land uses in Airport Park, Marina Vista and North Millbrae subdivisions, closer to the Airport than the Lomita Park sensitive receptors, would be exposed to noise levels above recommended standards during excavation, pile driving, and finishing operations. Because construction activities are temporary, noise generated by construction activities would not have a long-term effect on ambient noise levels in the region.

The second sentence of the first paragraph on p. 6 of the EIR is replaced with the following:

> Nearby noise sensitive areas include residential land uses, schools and hospitals.

The following sentence is added to the end of the paragraph on pp. 332-333 of the EIR.

> Residential land uses closer to the Airport than the Lomita Park residential area, such as Airport Park, Marina Vista and North Millbrae, would be exposed to higher noise levels during pile driving, which would be considered "clearly unacceptable."

Mitigation

Comments

". . .Millbrae's general plan reads: City should make sure that noise from construction is reduced to the lowest possible level. All mitigation measures possible must be used." (Jessie Bracker, letter of 8/27/91 and public hearing of 8/27/91)

"P. 14 and 15 - Mitigate Construction Noise Impacts - All measures possible must be included." (Jessie Bracker)

Response

Noise control policies and ordinances, such as the Airport Land Use Plan (San Mateo County Airport Land Use Commission, 1981) and the San Francisco Noise Ordinance, which prohibits construction work at night, have limited authority over actual Airport operations. Page 426 of the EIR lists feasible mitigation measures that could be implemented as a condition of project approval. Construction noise levels could be substantially attenuated by these mitigation measures.

AIR QUALITY

SETTING

The Notes for this section begin on p. C&R.337.

Existing Air Quality at SFIA

Comments

"P. 174 - Pollution readings are taken in San Francisco! - Surely for this document actual readings must be taken by Terminals, Aprons, and Taxiways and ends of Runways 1. . .

"With reference to all pages in the text regarding Pollution and to Summary - Pollution Readings for this Document should be taken at Airport; not in San Francisco. Summary reads 'The increase in traffic will increase Pollutant Emissions!' " (Jessie Bracker)

"The evaluation of air quality is based on data from air monitoring station equipment which is not located at SFIA. Air quality should be measured and continuously monitored by equipment located at SFIA. This is a more realistic approach to determining impacts and offering proper mitigations." (George Foscardo, City of San Bruno)

Response

The Bay Area Air Quality Management District (BAAQMD) air quality monitoring station closest to SFIA is located in San Francisco. Although atmospheric conditions, such as wind direction, wind speed and temperature, influence the dispersal of air pollutants generated by SFIA, ambient concentrations at the nearest monitoring station provide an indication of existing air quality in the area. The air pollutant data presented in Table D-1 on page A.137 (Appendix D) of the EIR are, therefore, shown to provide the reader with a general idea of ambient air pollutant concentrations in the area. As pointed out in the EIR (p. 174), air quality in San Francisco and San Mateo Counties is generally better than that in, for example, the East Bay and the South Bay.

The data in Table D-1 were not used to estimate the emissions generated by the project. Although future air quality monitoring at the Airport would give accurate air pollutant concentrations after project buildout, future project emissions cannot be estimated using

present air quality monitoring data. Project emissions are generally calculated using established emission factors. Future emission factors developed by the Environmental Protection Agency (EPA), California Air Resources Board (ARB) and BAAQMD were used to estimate total emissions from various Airport operations. Roadside CO concentrations (existing and future) were modeled using the CALINE4 approved and recommended air quality modeling program, developed by Caltrans. Background concentrations were obtained from BAAQMD contour maps. Air quality impacts of the project were determined by comparing these estimated emissions and concentrations to the significance thresholds established by BAAQMD. Thus, the project impacts were evaluated and mitigation measures identified, on the basis of established procedures and practices. The proximity of air pollutant data monitoring stations does not affect the estimated project impacts on air quality.

Sensitive Receptors

Comment

"P. XI-A-138 - Table D-2 - Air Quality Sensitive Receptors Within 1/4 m. of Airport Property line. - 2 Convalescent Hospitals, 1 Millbrae Nursery School, should be added." (Jessie Bracker)

Response

Table D-2, p. A.138 (Appendix D) of the EIR is revised (revisions are shown in bold text) to include the two convalescent hospitals and Millbrae Nursery School.

TABLE D-2: AIR QUALITY SENSITIVE RECEPTORS

Within 1/4 mile of Airport Property Line

Sheltering Pines Convalescent Hospital
Millbrae Serra Convalescent Hospital
Millbrae Nursery School
Residential areas (West of US 101)
Belle Air School (San Bruno)
Lomita Park School (Millbrae)

Within 1/2 mile of Airport Property Line

Residential areas (West of US 101)
Churches
Capuchino High School (San Bruno)
Happy Hall School (Childcare Center - San Bruno)
Saint Dunstan School (Millbrae)

Within 1 mile of Airport Property Line

Churches
Decima M. Allen School (San Bruno)
Edgemont School (San Bruno)
El Crystal School (San Bruno)
City Park (San Bruno)
Glen Oaks School (Millbrae)
Green Hills Country Club
Green Hills School (Millbrae)
Highlands School (Millbrae)
Taylor Jr. High School (Millbrae)
Former Chadbourne School (now vacant, will become senior citizens center/home) (Millbrae)
Mills High School (Millbrae)
Spring Valley School (Millbrae)
Peninsula Hospital
Lincoln School (Burlingame)
Parkside Jr. High School (San Bruno)
City of San Bruno Public Library
Ray Park (Burlingame)
Residential Areas (W. of El Camino Real)

SOURCE: Environmental Science Associates, Inc.

Plans and Regulations

Comment

"Now lets take a hard look at air quality. In the early 1970's, SFO declared that 'Airport management along with neighboring communities will together have to devise and implement strategies to improve air quality to within acceptable limits' (FEIS Vol. III Part 2-Comments II-2-17 and III-1-20). These strategies were to be 'evaluated as part of a future control plan' in order to minimize air pollution (FEIS Vol. III Part 1-Comments II-9-3). Where is that plan? Where are those controls? Where is the air quality data that would have facilitated intelligent planning?" (Alyn Lam)

Response

The strategies and plans identified by the commenter are the State of California's "Transportation Control Strategies" and "Air Quality Implementation Plans" for critical regions, which called for the minimization of total vehicle miles traveled to improve regional air quality./1/ An analysis of total vehicle miles traveled was required to demonstrate compliance with these strategies and plans; any increase in VMT was not consistent with them.

Plans, policies and programs are updated, revised or modified as more information becomes available. The current Plan (*The Bay Area '91 Clean Air Plan*), by aiming to reduce air pollutant emissions through a combination of permits and indirect source controls, seeks to reduce VMT and thereby improve local and regional air quality./2/ Pages 172 -173 of the EIR discuss current air quality regulations, plans and policies. To reflect the new information, the third sentence of the fourth paragraph on p. 172 of the EIR is revised as follows (revisions are underlined and deletions shown in brackets):

> An Air Quality Plan for the Basin was prepared in [] 1991 and [] is being incorporated into the current California SIP./3/

The first sentence of the fifth paragraph on p. 172 is revised as follows:

> The [] *Bay Area '91 Clean Air Plan* describes the air pollution control strategies necessary to bring the Bay Area into attainment for all of the NAAQS [].

The first full paragraph on p. 173 of the EIR is deleted. The last two sentences of the second full paragraph on p. 173 of the EIR are replaced with the following:

> The *Bay Area '91 Clean Air Plan* (CAP) describes the Bay Area's current plans for meeting State clean air laws/3/ The goal of the CAP is to improve air quality through the 1990's through tighter industry controls, cleaner cars and trucks, cleaner fuels, and increased commute alternatives. The CAP encourages cities and counties to adopt measures in support of this goal. Identified measures include: developing rules to reduce vehicle trips to major residential developments, shopping centers, and other indirect sources; encouraging cities and counties to plan for high-density development; and clustering development with mixed uses in the vicinity of mass transit stations. These measures would serve to reduce total vehicle miles travelled, thereby improving regional air quality.

The third full paragraph on p. 173 of the EIR is replaced with the following:

> Provisions in the CAP will likely affect the Airport in two ways. First, the BAAQMD is considering an indirect source control program, to be adopted in 1994, that would require facilities to implement an indirect source emissions reduction program. Such a program would include measures to reduce the total vehicle miles traveled. Second, the BAAQMD is developing an employee-based trip reduction rule, scheduled for adoption by mid-1992, that would mandate large employers to achieve a specified average vehicle ridership for their employees. Both of these measures would likely be phased in for new and existing developments. SFIA will be required to work with BAAQMD in implementing future rules and regulations governing total vehicle miles travelled, including the indirect source control program and the employee-based trip reduction rule. As discussed on pp. 130-137, SFIA currently seeks to reduce total vehicle trips by offering shuttle services, public transit facilities, and transit subsidies and incentives to employees.

The following note replaces note /3/ on p. 177 of the EIR:

/3/ Bay Area Air Quality Management District, Association of Bay Area Governments, and Metropolitan Transportation Commission, *Bay Area '91 Clean Air Plan*, 1991.

While the 'plan' referred to by the commentor dealt with State-wide transportation/air-quality issues, the EIR authors judge that the intent of the comment was to evaluate strategies to be implemented by the Airport. Some of the mitigation measures identified in the EIR to reduce transportation impacts could also reduce air quality impacts. For a discussion of transportation/air-quality strategies to be implemented by the Airport, please refer to responses regarding transportation mitigation measures on pp. C&R.152 et seq. herein.

BAAQMD formulates air quality plans on the basis of conclusions drawn from a wide body of data. BAAQMD has compiled emissions inventories for various air pollutants over the years. Some sources of air pollution are measured directly, but most are estimated based on source characteristics, throughput rates, partial sampling, and scientific or engineering calculations. These emissions inventories, combined with future projections of growth and emissions reductions attainable through control systems, provide the basis for future planning efforts./2/

IMPACTS

Impacts of Increased Flights

Comment

". . .If you overload our skies, which are already overloaded, with more airplanes competing for valuable airspace, we are all going to pay a price. And if that issue can't even be addressed in a Draft EIR, where is it going to be addressed." (Don Bertone)

Response

The EIR addresses project impacts in detail. Emissions from aircraft operations are estimated on p. 361 of the EIR, emissions from vehicular traffic on p. 357 of the EIR, ground support vehicle emissions on p. 358 of the EIR, and building emissions on p. 363 of the EIR. On p. 436 of the EIR, it is concluded that the project would have an unmitigable significant adverse impact on air quality.

It is not known if the commenter is referring specifically to impacts of increased flights on air quality. The commenter may also be referring to impacts on aircraft noise levels and aviation safety; accordingly, this comment is duplicated on p. C&R.245 herein (aircraft noise) and p. C&R.375 herein (air traffic safety), and responded to in those contexts.

Impacts of Vehicle Emissions

Comment

"33,400 employees now commute daily to SFO with an additional 8,900 expected by 2006 (DEIR Vol. I Ch. I). Two-thirds of them will drive alone (DEIR Vol. I Ch. III §B). Highways

380 and 101 carry the bulk of the vehicular traffic into the terminal area (DEIR Vol. 1 Ch. IV Figs. 29-30) with on-airport intersections numbers 4, 5, 6, 7, 8, 9, 24, and 25, hindering peak hour traffic flow (DEIR Vol. I Ch. IV §B). None of these intersections, with the exception of that into the remote parking lot, show any deterioration of traffic flow between now and 2006. Isn't it strange then that CO, NO_X, SO_X, PM_{10} levels from vehicle emissions all will deteriorate significantly during the same period? (DEIR Vol. I Ch. IV §D Tables 56-57). Perhaps vehicle emission standards are to be revised downward in the interim. The need for valid continuous air quality monitoring is obvious." (Alyn Lam)

Response

Table 39 on p. 308 of the EIR shows the traffic flow conditions (LOS and V/C ratios) at the intersections noted in the comment. The commenter is, in effect saying that project-generated traffic alone would not result in a degradation of the LOS at intersections nos. 4-9 and 24 in the table. The V/C ratios would increase at these intersections, however, reflecting the increase in SFIA-generated and cumulative total traffic. The fact that LOS would not degrade also reflects the road-widening improvements proposed by SFIA, shown on pp. 276-277 of the EIR. With the addition of two lanes on Road R-3, North Access Road and Road R-2, these roads could accommodate more traffic. However, the projected increase in traffic is large enough that the volume of traffic relative to the increased roadway capacity would increase, but the LOS (categories) would not degrade. Similarly, the air pollutant emissions could increase, even though the LOS does not.

The estimated emissions in Tables 56 and 57 in the EIR (pp. 357-358) were calculated on the basis of the emission factors current when the DEIR was prepared, and the traffic volumes used to evaluate traffic flow conditions. Footnote /a/ in Table 56 on p. 357 of the EIR shows the basis of the calculation of emissions from project-generated traffic. Footnotes /a/ and /b/ in Table 57 on p. 358 of the EIR show the basis of the calculation of emissions from ground-support vehicles. Procedures and methodologies established by EPA were followed to calculate project-generated emissions.

The value of air quality monitoring is discussed above, on pp. C&R.317-318 herein.

Carbon Monoxide Impacts

Comments

"Page 436 reads: 'Project generated emissions would be over the BAAQMD threshold for carbon monoxide.'" (Jessie Bracker, public hearing of 8/27/91 and letter of 8/27/91)

"Landside emissions. Vehicular traffic in regard to tables. [Table 55] Results indicate that existing carbon monoxide levels already exceed the state eight-hour CO standards, and the state eight-hour CO concentration standard would be violated under almost all scenarios for the intersections examined. The table also shows a state violation for one-hour periods at El Camino and Millbrae Avenue. Carbon monoxide is a slow, silent killer, and exceedances or any happening must not be taken lightly nor added to for safety of people. . . The increase in traffic will increase pollutant emissions, according to the summary. . ." (Jessie Bracker)

"The Bay Area Air Quality Management District has recently revised its recommendations for estimating future CO ambient background levels. These revisions will significantly affect the CO concentration analysis in Table 55 and the conclusions reached in that table." (Chris Brittle, Metropolitan Transportation Commission)

Response

Page 175 of the EIR includes a brief description of the health effects of CO. Table D-1 on p. A.137 (Appendix D) of the EIR shows eight-hour CO standard violations for 1987 and 1988. To clarify the discussion of existing CO emissions, the sixth sentence in the first paragraph on p. 175 of the EIR is revised as follows (revisions are underlined and deletions indicated by brackets):

> The eight-hour CO standard was violated in 1987 and 1988 (see Table D-1, Appendix D, p. A.137). Although no violations of the State one-hour or eight-hour CO standards [] were recorded in 1989 at the San Francisco monitoring station [], relatively high levels would be expected along heavily traveled roads and near busy intersections.

CO non-attainment regions are classified into 'severe,' 'serious,' and 'moderate,' depending on the projected date of attainment. The San Francisco Bay Area Air Basin is non-attainment for CO. Monitoring stations in San Francisco County and San Mateo County did not record CO standard violations in the past two years, but stations in San Jose and

Vallejo recorded eight-hour standard violations. The Air Basin is categorized as 'serious,' because it is projected that the Air District would be in attainment for CO by 1997. /2/ The BAAQMD does not expect any CO standard violations after 1997. In the future, CO emissions from motor vehicles are expected to decrease substantially, due to improved engine efficiencies and cleaner-burning fuels.

All of the estimates in Table 55 on p. 355 of the EIR are revised to incorporate the most recent information regarding emission factors, background concentrations and roll-back factors provided by the BAAQMD.

The revised table (Table 55) shows a decrease (from the original DEIR table) in existing and future one-hour and eight-hour CO concentrations at all of the intersections. On the basis of the revised table, the first paragraph on page 356 of the EIR is replaced with the following:

> The results indicate that existing CO levels already violate State eight-hour CO standards for the intersections analyzed, but that by 2006, the CO standard would be violated at only one intersection. The eight-hour standard would be violated at three intersections under 1996 traffic conditions. At El Camino Real & Millbrae Avenue, 1996 baseline (without the project) traffic conditions would violate the ambient eight-hour CO standard, and the project would contribute to an increase in the frequency of standard violations. At the other two intersections, El Camino Real & San Bruno Avenue and Rollins Road & Millbrae Avenue, the project on its own would not cause the violation of the standards in 1996, but the project together with projected growth would result in the violation of the eight-hour standard. Cumulative traffic conditions in 2006, including traffic from the project, would cause a violation of the eight-hour standard at El Camino Real & Millbrae Avenue. No other analyzed intersection would exceed ambient standards under cumulative traffic conditions. CO emissions are projected to decrease in the future because of improved engine efficiencies and cleaner burning fuels. The decline in CO concentrations over time apparent at some of the intersections is a result of the expected decline of future emission rates as cleaner new vehicles enter the vehicle mix, and is not an indication that the number of vehicles through the intersection is dropping.

Health Effects

Comment

"Please consider the effects of the health of human beings. We're jeopardized already." (TREE)

TABLE 55: ESTIMATED WORST-CASE EXISTING AND FUTURE CO CONCENTRATIONS IN THE PROJECT VICINITY

	Concentration by Year (ppm)/a,b/						
Location	1990 Existing	1996 Forecast Growth	1996 + Project/c/	1996 +List-added Growth/d/	2006 Forecast Growth	2006 + Project/c/	2006 +List-added Growth/d/
Intersections							
El Camino Real & Millbrae							
1-hour	20.7/e/	16.8	16.8	17.6	13.5	13.5	15.9
8-hour	13.4	10.8	10.8	11.3	8.7	8.7	9.7
El Camino Real & San Bruno							
1-hour	15.2	12.4	12.6	15.7	10.6	10.7	13.0
8-hour	9.5	7.7	7.8	10.0	6.7	6.7	8.3
South Airport & Utah							
1-hour	14.8	11.7	11.7	12.8	9.3	9.4	10.3
8-hour	9.2	7.2	7.2	8.0	5.8	5.8	6.5
Rollins & Millbrae							
1-hour	14.7	12.4	12.6	15.4	10.7	12.3	12.9
8-hour	9.2	7.7	7.8	9.8	6.7	7.9	8.3
Segment							
Bayshore Freeway/f/							
1-hour	10.6	8.7	8.8	9.2	7.5	7.5	7.9
8-hour	6.3	5.1	5.2	5.5	4.5	4.5	4.8

/a/ Estimates were calculated using CALINE4, a computer-based air pollution dispersion model developed by the California Department of Transportation. The eight-hour CO concentrations were assumed to be about 70 percent of the modeled one-hour values. One-hour background CO concentrations used were 5.6 ppm for 1990, 4.7 ppm for 1996, and 3.8 ppm for 2006. Eight-hour background CO concentrations used were 2.8 ppm for 1990, 2.3 ppm for 1996, and 1.9 ppm for 2006. Intersection concentrations correspond to a location approximately 15 feet from the corner of the intersection. Bayshore Freeway concentrations correspond to a point about 250 feet from the center of the northbound lanes.

/b/ ppm = parts per million

/c/ Includes forecast growth.

/d/ Includes forecast growth plus project growth.

/e/ Underlined values are in violation of the applicable standard.

/f/ In the p.m. peak hour, northbound Bayshore Freeway between San Bruno Avenue and I-380 volumes were assumed to be 45% of southbound volumes.

NOTE: The State 1-hour CO standard is 20 ppm and the State 8-hour standard is 9 ppm.

SOURCE: Environmental Science Associates, Inc.

Response

From an air quality standpoint, the health effects on the public would be evaluated on the basis of the violation of ambient standards for criteria air pollutants, and the types and amounts of air toxics emitted by the project. Ambient air quality standards were established to set conservative concentration levels above which the public would be exposed to unhealthy levels of air pollutants. Pages 174-176 of the EIR briefly discuss the adverse health effects of criteria air pollutants. The EIR includes evaluations of the project's contribution to ambient air quality standard violations and to total area-wide emissions, and thus considers the health effects of the project. Dispersion modeling for CO concentrations also indicates ambient standard violations at some intersections, as shown in the revised Table 55 on p. C&R.326 herein. Table 61 on p. 364 of the EIR shows that the proposed project would generate a net increase in criteria air pollutant emissions above one percent of County-wide emission totals -- a criterion used by BAAQMD to determine if a proposed project would have a significant air quality effect on the environment./3/

Health effects from air toxics are classified as either carcinogenic or non-carcinogenic, depending on the overall estimate of cancer risk. Please refer to p. C&R.328 herein for a discussion of air toxic emissions at SFIA.

Impacts of Proposed Parking

Comment

"What is going to happen if they are going to add 7,000 more parking spaces? For God sakes, it's not only our resources being chewed up because we haven't any -- and I am talking about gasoline -- all this air traffic coming in is going to cause nothing but smog. And that in itself is very bad -- well, it's a bad environment as far as people's health is concerned." (Bruno Bernasconi)

Response

The proposed number of parking spaces was estimated on the basis of a parking demand analysis that used demand ratios from past years to project future parking demand. It is likely that insufficient parking spaces would result in increased traffic circulation throughout the Airport area, including local roadways and neighborhoods. Providing

adequate parking spaces to meet the demand would reduce local vehicular air pollutant emissions, by reducing overall circulation.

For a discussion of the proposed parking spaces, transportation impacts, and mitigation measures to reduce vehicular traffic to SFIA, please refer to pp. C&R.181-183 herein .

For a discussion of airside emissions from increased flight operations, please refer to pp. 356-365 of the EIR.

Health Risk Assessment

Comment

"P. XI-A-157 See Air Toxics Hot Spots - Health Risk Assessments must be done." (Jessie Bracker, letters of 8/18/91 and 8/27/91)

". . .There is another place that says air toxic hot spots health risk assessments must be done. They weren't done by the airport. . ." (Jessie Bracker)

Response

The Air Toxics Section on pp. 224-225 of the EIR includes a brief discussion of health-risk assessments, to provide some background information on air toxics regulations, policies and procedures. On p. 225 of the EIR, it is stated that SFIA submitted its Emissions Inventory Report to the BAAQMD in June 1990. The Airport was categorized as low priority, indicating that it is a low-risk facility and, it is stated, no future action has been required of SFIA. Contrary to the commenter's statement, the EIR does not say that SFIA should do a health-risk assessment; the BAAQMD has confirmed that SFIA itself is not required to conduct a health-risk assessment./4/ A health-risk assessment was conducted by United Airlines, because of potential air toxic emissions from its service facilities that include fuel tanks and repair shops with painting and plating operations. The results of the study, completed in January 1991, are available at the BAAQMD's offices.

Emissions of criteria ("non-hazardous") pollutants are discussed on pp. C&R.322-325 herein, and illustrated in Table 59, on p. 361 of the EIR.

Significant Impacts

Comments

"The DEIR recognizes on Page 436 that the project would have significant air quality effects. In fact, the estimates in Table 72, Page 453, show that aircraft emissions alone by 2006 would generate more than twice the carbon dioxide, 1.4 times the nitrous oxide, and 2.1 times the hydrocarbons than if there were no expansion project. When aircraft emissions, building energy emissions, ground support vehicle emissions, and other vehicular traffic emissions are added, we concur with your conclusion that it must be that the project will have significant environmental effects that cannot be avoided if the proposed project is implemented." (Onnolee Trapp, San Mateo County Leagues of Women Voters, public hearing of 8/27/91)

"The Draft EIR estimates that the air quality will deteriorate because of the increased ground and air traffic. Bay Area air pollution levels are already unacceptable, and SFIA should not be allowed to increase air pollution levels. Adequate mitigation measures must be implemented to decrease SFIA air pollution below present levels." (Jim Wheeler, Sierra Club, Loma Prieta Chapter)

"The DEIR recognizes (p. 436) that 'the project would have significant air quality effects. . .' and that 'project-related surface traffic. . .would probably lead to an increase in the frequency of standards violations in the project area over future CO levels without the project. Project-generated emissions would be over the BAAQMD threshold of 150 lb/day for HC, NO_X, SO_X, and PM_{10}. In addition, . . . project-generated emissions would be over the BAAQMD threshold for CO.'

"In fact, the estimates in Table 72, p. 453, show that aircraft emissions alone by 2006 would generate more than twice the CO, 1.4 times the NO_X, and 2.1 times the HC than if there were no expansion project. When aircraft emissions, building energy emissions, ground support vehicle emissions, and other vehicular emissions are added, we concur that the conclusion must be that the project will have 'significant environmental effects that cannot be avoided if the proposed project is implemented.' " (Onnolee Trapp, Leagues of Women Voters of San Mateo County)

Response

On page 436 of the EIR, it is concluded that the project would have significant unavoidable air quality effects. The comments, then, are consistent with the information in the EIR. Please refer to pp. C&R.332-337 herein for responses relating to air quality mitigation.

ODOR

Comments

"We did not notice any discussion of objectionable odor from fuel exhausts. On those occasions when the wind is toward Millbrae from the Airport, the odor is very noticeable. As this would be expected to increase, some mitigation should be described." (Janet Fogarty, Mayor, and Robert Treseler, City of Millbrae)

"Page 171, D. Air Quality:
"The analysis of existing air quality problems does not discuss the odor of kerosene that prevails over the entire surrounding communities during warm, relatively calm days. . ." (Duane Spence, Airport Mitigation Coalition)

"The San Francisco airport already 'stinks' - If these expansion projects go ahead, I expect the air will be unbearable." (TREE)

Response

The perception of, and sensitivity to, odor differs from person to person, depending on the type and intensity of the odor. Some people find certain types and intensities of odors more objectionable than others. Odor impacts are mainly annoyance, irritation and discomfort. The health effects of odors are too speculative at this point to be included in the EIR.

Aviation fuel is odorous and presents the potential for a nuisance, depending on the quantity emitted and on weather conditions. According to the BAAQMD, however, there is no history of any odor complaints from SFIA or its operations./5/ The Air District does not use any specific thresholds for evaluating odor, and inspects sites on the basis of complaints received. As no complaints have been received by the Air District, odor issues were not discussed in the EIR.

Prevailing winds at the Airport are from the west-northwest (about 26 percent of the time), with wind speeds of about 14 miles per hour. Winds from the west (about 18 percent of the time), have speeds of about 14 miles per hour. Winds from the northwest (about 10 percent of the time) have speeds of about 13 mph, while winds from the west-southwest (about five percent of the time) have speeds of about 10 mph. Southwesterly winds occur about 4 percent of the time, with an average speeds of about 9 mph./6/ These winds would likely disperse any odorous emissions in the project area towards the Bay and away from residential areas. Because of the prevailing winds, sensitive receptors, such as nearby residential land uses, would not likely be exposed to odor impacts for extended periods of time over much of the year.

VISIBILITY

Comment

". . .[V]isibility is restricted by the jet engine emissions which can be seen by the naked eye as brown-colored exhaust streaming from each engine. Besides the effect of these particles on lungs, outdoors, and other surfaces upon which they precipitate, the fact remains that the visibility of the entire region is adversely affected at the present level of operations. Increased pollution from airport expansion and the accompanying surface vehicles will become a crucial problem." (Duane Spence, Airport Mitigation Coalition)

Response

Visibility can be affected by air pollutants such as nitrogen dioxide and suspended particulates. Nitrogen oxides, emitted by aviation fuel combustion processes, as well as by automobiles and building heating systems, are oxidized and become nitrogen dioxide (NO_2) in the atmosphere. NO_2 has a whiskey-brown color. Haze, normally consisting of NO_2, fine dust and smog, has the potential to reduce and limit visibility. The particulates associated with jet engine exhaust generally are of the larger type, which settle down quickly and contribute more to local soiling problems than to area-wide visibility reduction./7/

Wind conditions determine, to a large extent, the effect of air pollutants on local visibility. Protected inland valleys would have more of a visibility problem from air pollutant emissions than locations where there is a strong regular air movement. Under calm, stable

conditions, the pollutants would not be dispersed quickly and visibility-reducing particles would remain in the atmosphere. At SFIA, however, calm and stable wind conditions occur mostly at night, and most of the Airport operations occur during the day. Prevailing daytime winds at the Airport are from the west-northwest (about 26 percent of the time). Other winds are from the west (about 18 percent of the time), the northwest (about 10 percent of the time), the west-southwest (about five percent of the time), and the southwest (about 4 percent of the time). These winds would likely disperse the visibility-reducing particles and nitrogen dioxide gases from the vicinity of SFIA over much of the year. Haze has been identified as a regional problem in some parts of the Bay Area; the project could incrementally contribute to area-wide reductions in visibility due to smog-induced haze.

MITIGATION

Tree Planting

Comment

"Mitigations must be offered to help reduce the adverse air quality impacts on the region. A mitigation must be considered for SFIA to contribute funds to affected cities such as San Bruno for street tree planting programs to help upgrade the air quality adjacent to the airport, as well as planting of trees along and within the I-380 right-of-way to upgrade the air quality and create a scenic corridor as identified in the San Bruno General Plan." (George Foscardo, City of San Bruno)

Response

Although the planting of trees along I-380 could make a contribution to the visual quality of this corridor, it would not likely improve regional air quality conditions appreciably. Trees would absorb CO_2 and release oxygen as part of the photosynthetic process, but they would not be expected to make a substantial difference to local CO levels, given the air pollutant contribution from motor vehicle exhausts. Air-quality impacts can be mitigated and conditions improved by reducing motor vehicle emissions, as motor vehicle emissions generate the most air pollutants, especially CO.

Transportation Mitigation for Air Quality Impacts

Comments

"In view of the fact that San Mateo County already has levels of emissions that must be lowered in order to achieve the air quality requirements of the BAAQMD, and that a significant part of that reduction must be achieved by reduction in vehicular emissions, and that the recently adopted Congestion Management Plan (CMP) specifies Level of Service (LOS) standards for highways and arterials as well as for transit services, and that these levels of service can be achieved only through a reduction in the number and percentage of vehicular trips for all types of travel, therefore, the proposed expansion of SFIA should be reexamined, and realistic mitigations must be devised to alleviate effects that will cause adverse environmental impacts, primarily in the vicinity of the airport, but also extending to other parts of the Bay Area. However, the DEIR states (p. 5) that 'the proposed project would cause further deterioration of levels of service on the surrounding freeway network, and decreases in levels of service on the arterial street network in surrounding communities.' " (Onnolee Trapp, Leagues of Women Voters of San Mateo County, letter of 8/27/91 and public hearing of 8/27/91)

"We are concerned about air quality effects both from ground transportation and from the aircraft themselves. And we feel that there may be better efforts to reduce the air quality impacts on the local areas, especially through the use of encouragement of public transportation, which has been raised before you already.

"We also think that the airport should be encouraging new affordable housing near the airport as a mitigation measure to improve air quality by reducing automobile trips. The Master Plan shows that by 2006 there will be a need for 6,850 new housing units generated by airport expansion. This is identified as an environmental impact, but there is no discussion of mitigation measures." (Janet Fogarty, Mayor of Millbrae)

"Significant air quality effects from project-related surface traffic are classified as unavoidable. To an extent this may be true but greater attention should be given to formulating mitigation for both aircraft and surface-related air quality impacts.

"Suggested mitigation measures:

"1. Significant diversion of automobile traffic to public transit could be a mitigation measure to improve air quality.

"2. Encouragement of new affordable housing near the Airport could be a mitigation measure to improve air quality by reducing automobile trips. However, we are not suggesting building under existing flight paths which we believe to be unsafe." (Janet Fogarty, Mayor of Millbrae)

"Pages 4-6 - Differences in amount of vehicle trips and amounts of Pollution that would be added because of BART being put West of 101 by R.R. Tracks - or because of BART being an Internal Airport Terminal Station - should have been studied. It's very important and should be documented. I'm sure the Internal BART Station would be cause of lots less vehicle trips and therefore lots less Pollution and should be seen as a mitigation to Pollution Problems, versus the External BART Station West of Freeway which would be cause of a great many vehicle trips and lots more added Pollution!, - (Especially Carbon Monoxide) (which is CO, a "slow silent death" killer and exceedances that are already happening must not be taken lightly nor added to. That also puts added Pollution, into Safety Category!" (Jessie Bracker)

"The Regional Groups such as MTC and BAAQMD, which are under a court order to reduce air pollution, should make strong recommendations to the operators of attendant-operated parking facilities to provide bicycle parking. This would bring air quality benefits with little additional cost.

"Among the prime new candidates to use bicycle parking are those persons who have short commutes along routes with few hills." (Charles Smith)

"The EIR would benefit from a discussion of the regional (ozone) and local (carbon monoxide) reductions that would be achieved by increased use of transit and ridesharing modes by air passengers and airport employees. Also, the Airport should be aware of transportation control measures (TCMs) adopted by MTC in February 1990 as Contingency Measures for the 1982 Bay Area Air Quality Plan and proposed TCMs in the BAAQMD's 1991 Clean Air Plan to meet state air quality standards which may affect the transportation impacts discussed in the DEIR." (Chris Brittle, Metropolitan Transportation Commission)

Response

Please refer to pp. C&R.152 et seq. herein for responses to comments on traffic mitigation measures, including comments on the San Mateo County Congestion Management Plan, Transportation System Management (TSM), and bicycle measures.

Section V.C., pp. 426-427 of the EIR, lists mitigation measures to reduce the severity of the air quality impacts of the project. As noted on p. 427 of the EIR, measures identified to mitigate traffic impacts would also mitigate air quality impacts.

Transportation mitigation measures, by seeking to reduce congestion and enhance the free flow of traffic along access routes, would also serve to mitigate air quality impacts, by reducing auto emissions from excessive idling and delays at crowded intersections and roadways. Motor vehicles are the primary source of air pollutants in the Bay Area. Any reduction in vehicle-miles traveled would reduce vehicle emissions, thereby reducing the quantity of air pollutants emitted. An effective way to achieve trip reductions is through the increased use of public- and mass-transit options. The public, cumulatively, would make a substantial difference to air quality if it chose alternate modes of transport instead of driving alone. Some of the Transportation Control Measures (TCMs) which would help to reduce the number of people driving alone are: improving area-wide transit service, improving access to transit services, constructing carpool and express buslanes along freeways, requiring employer-based trip reductions, improving bicycle access and facilities, providing incentives for alternate modes of transport, and implementing market-based strategies. The EIR, on p. 427, identifies trip reduction measures that would improve air quality.

As indicated in the responses to comments regarding transportation mitigation, SFIA has an Airport-wide transportation coordinator, who is currently preparing a trip reduction ordinance, which would require each large Airport employer to appoint a transportation coordinator and establish policies that would increase transit use. SFIA seeks to reduce total vehicle trips by using TSM elements which include: telecommuting, compressed work weeks, ridesharing, increasing transit attractiveness, priority for high-occupancy vehicles (HOV), incorporating TSM features into physical design (e.g., lockers for bicycles, shower and changing facilities, bicycle paths, pedestrian paths, and HOV lanes) and incorporating TSM features into SFIA employers' policies (e.g., parking rates and spaces favorable to vanpools and carpools, subsidies to employees for transit fares, and transportation coordination contact with employees). These elements would be consistent with the San Mateo Congestion Management Plan, and with TCMs proposed by MTC.

The commenter's suggested mitigation measure to divert automobile traffic to public transit is consistent with the mitigation measures identified in the EIR.

Residential development close to an Airport is constrained by noise from Airport operations and, so, encouraging affordable (or any price range) housing near the Airport may not be a feasible measure to mitigate air quality impacts on the environment. If new affordable housing near the Airport were to be occupied by Airport employees, there would be a net reduction in vehicle miles traveled by them. On the other hand, if the employees chose not to live close to the Airport, then this measure would not necessarily reduce their vehicular emissions. If the occupants of the new affordable houses do not work at SFIA, and have to drive longer commute distances, then it would increase their vehicular emissions. This would have a detrimental effect on local air quality. A regional policy of encouraging residential construction close to transit corridors would reduce vehicular emissions, even if employees living in such residences were some distance from their places of employment. Issues of affordable housing that relate to this project are discussed on pp. C&R.362-363 herein.

The traffic impacts from alternative BART station locations are addressed on pp. C&R.139-145 herein. On p. 306 of the EIR, it is stated that if BART were extended to SFIA in 2006 (with a station west of US 101), vehicle trips to and from the Airport would be reduced, but none of the study area intersections would experience a change in LOS. It is also stated that locating the station closer to the Airport would result in a higher BART patronage than assumed in the EIR. Higher BART patronage would likely result in lower project-generated emissions. Locating the BART station within SFIA would affect the location of a CalTrain/BART connection, however, and possibly result in decreases in CalTrain patronage.

The 1991 Clean Air Plan prepared by the BAAQMD estimates the percent reduction of CO, and ozone precursors HC and NO_X, from various TCMs on an Air Basin-wide basis./8/ Employer-based trip reductions are estimated to generate about a 3.7 percent reduction each in HC and NO_X, while improving transit services would reduce HC and NO_X emissions by about 1.3 percent each. Carpool incentives would generate a saving of about 0.3 percent each of HC and NO_X, and market-based measures, such as smog fees and gas taxes, would provide a reduction of about 15 percent of NO_X and about 23 percent of HC.

These reductions are on an areawide basis; the specific reductions that could be achieved at the Airport would depend on the effectiveness of the TCMs/TSMs actually implemented.

For a discussion of airside emission impacts of increased flight operations, please refer to pp. 356-365 of the EIR, and Table 59 on p. 361 therein. See also p. C&R.322 herein.

Impacts of Mitigation Measures

Comment

". . In my opinion, many of the suggested mitigation measures listed would not be mitigation measures, but, instead, would be additions to the pollution problem and should be listed as such. The BART station should not be placed in or near the vacant airport lands west of 101 highway because of added traffic vehicle pollutants, new roads that would have to be built, and parking lots that would have to be built -- all generating more pollutants, which would make a farce of the purported reason for getting BART in the first place -- which was to have cleaner air. BART is the only one that would benefit." (Jessie Bracker)

Response

The potential effectiveness of transportation mitigation measures, and thus, their relation to air quality, is discussed on pp. C&R.191-193 herein.

NOTES - Air Quality

/1/ Landrum & Brown, *San Francisco International Airport, Environmental Impact Assessment Report, Airport Improvement Program,* 1975.

/2/ Bay Area Air Quality Management District, Association of Bay Area Governments, and Metropolitan Transportation Commission, *Bay Area '91 Clean Air Plan,* 1991.

/3/ Bay Area Air Quality Management District, *Guidelines for Assessing Impacts of Projects and Plans,* 1985.

/4/ Steve Hill, Bay Area Air Quality Management District, telephone conversation, February 13, 1992.

/5/ Rochelle Walker, Bay Area Air Quality Management District, telephone conversation, February 13, 1992.

/6/ California Air Resources Board, *California Surface Wind Climatology,* 1984.

/7/ Association of Bay Area Governments, *Aviation Effect on Air Quality,* 1971.

/8/ Bay Area Air Quality Management District, Association of Bay Area Governments, and Metropolitan Transportation Commission, *Addendum to the Bay Area '91 Clean Air Plan,* 1991.

CULTURAL RESOURCES

MITIGATION

Comment

"The concern of the Native American Heritage Commission is in those places where the prehistoric sites underlie areas which have been previously developed and thought to be free of cultural resources. When an older structure is replaced with a modern building, or an old underground water or sewer line is upgraded to meet present needs is when the problem of impacting such a location takes place. When a foundation is dug to comply with the building codes and requirements of today, or utility lines are buried to meet health and safety standards, previously undisturbed soil becomes impacted.

"The Native American Heritage Commission recommends that the mitigation measures covering cultural resources use the language found in the California Environmental Quality Act, Appendix K. CEQA, Appendix K gives directions to follow in the event any previously undetected archaeological sites that are inadvertently discovered during any phase of construction. Use of the language in Appendix K, or reference to the standardized procedures therein, helps to eliminate costly delays and assures more adequate protection of such cultural resources. I would also recommend that you contact and work closely with the appropriate Native American groups in the area during the initial planning stages. They may be able to offer input regarding sites in the area.

"The Native American Heritage Commission has prepared a pamphlet for use by lead agencies, planners, developers, and property owners. It provides an easy-to-read breakdown of the California Codes pertaining to Native American human remains and their disposition. I have included a copy of this brochure for your information." (Debbie Pilas-Treadway, Native American Heritage Commission)

Response

In response to the concerns expressed by the Native American Heritage Commission regarding the mitigation measure on p. 428 of the EIR, the following sentence is inserted after the last sentence in the first paragraph:

> An archaeologist should instruct excavation crews of the potential for discovery of cultural and historic artifacts on the site, and of the procedures to be followed if such artifacts are uncovered.

The first sentence of the second paragraph on p. 428 is revised as follows (revisions are underlined):

> Should evidence of cultural or historic artifacts or features of potential significance, as determined by the project archaeologist, be found during project excavation, the Environmental Review Office (ERO) and the President of the Landmarks Preservation Advisory Board (LPAB) would be notified immediately, and any excavation which could damage such artifacts or features would be halted.

State law requires that the Native American Heritage Commission be notified if burial remains or related artifacts are found. The following, added on to the mitigation measure in the EIR, would exceed present legal requirements but would help protect all Native American artifacts that might be found. The following is added to p. 428 of the EIR before the last sentence in the second paragraph:

> Should evidence of prehistoric or historic Native American artifacts be found during excavation, the Native American Heritage Commission would be notified immediately, an action required by state law when Native American remains are found. Also, an appropriate representative of the local Native American group would be retained as needed if burial remains were found.

In response to the commenter's request that the mitigation measures use the language found in Appendix K of the CEQA *Guidelines*, it should be noted that the appendices to the *Guidelines*, including Appendix K, are advisory rather than mandatory. The retention of an archaeologist and the participation of the ERO, LPAB, and Native American Heritage Commission (as appropriate) would help to assure adequate protection for cultural resources on the project site.

HAZARDOUS MATERIALS AND WASTES

The Notes for this section begin on p. C&R.350.

RADIOACTIVE MATERIALS

Comment

"One last illustration on the DEIR's thoroughness should suffice. There is copious documentation on hazardous wastes and toxic materials. There are even maps showing spills. I found, however, absolutely no mention of the transport and storage of radioactive materials. Like illicit drugs, there must be 'tons' of these materials transported through SFO each day. Is this a deliberate omission?" (Alyn Lam)

Response

Radioactive materials are not actually used to an appreciable extent at Airport facilities, but many common carriers do transport radioactive materials through the Airport by ground and air. No statistics are available to indicate quantitatively the extent of radioactive material shipments. A large portion of the radioactive materials passing through SFIA are for medical uses such as radiopharmaceuticals. According to SFIA administration staff, transportation of radioactive materials is considered a high priority by the Airport, and almost none of these materials are stored at the Airport.

Radioactive material is a specific type of hazardous material and, as such, was not deliberately omitted from the EIR. Radioactive elements such as tritium (^{3}H) or carbon-14 (^{14}C) emit a type of high-energy radiation, called ionizing radiation. Although there are inherent hazards associated with exposure to ionizing radiation such as cancers and genetic damage, simple and effective protective measures may be taken to prevent exposure. Regulations that apply to most hazardous materials were described in the EIR under Hazardous Materials Regulatory Framework (pp. 202-205, A.147-A.157). Radioactive materials are regulated through the Nuclear Regulatory Commission and, in California, the Radiologic Health Branch of the Department of Health Services.

There are two sets of regulations applicable to radioactive materials shipped by air: the 1) U.S. Department of Transportation (DOT) Regulations, and 2) International Air Transport

Association Dangerous Goods Regulations. In 49 CFR, DOT specifies how radioactive materials are to be transported according to the type and quantity of radioactivity. These regulations are in addition to those contained in 10 CFR and 39 CFR, promulgated by the Nuclear Regulatory Commission and the U.S. Postal Service, respectively. The Dangerous Goods Regulations forbid the air transport of specific radioactive cargo such as explosives and pyrophoric (spontaneously ignitable in air) radioactive materials.

DOT sets minimum standards for package design and labeling, specifies thermal and radiation level limitations, requires provisions for contamination control, and provides temporary storage procedures. The radiation level may exceed 200 millirem per hour (mrem/hr) on the external surface of a package only under very specific circumstances. (The estimated total radiation exposure per capita is about 160 mrem/yr or 0.02 mrem/hr from all sources. Of this total, 49 percent is from naturally occurring background radiation and 46 percent is from medical and dental uses./1/) During temporary storage, individual packages must be placed in small groups of limited radioactivity separated by a specific distance. Radioactive materials are not permitted aboard passenger-carrying aircraft unless they are intended for research, medical diagnosis, or treatment, in which case restrictive quantity limits and packaging requirements apply.

Specific regulatory requirements on packaging depend on the radioisotope shipped and its concentration. Most shipments of radioactivity (96.5 percent) are classified as type A, which require type A packaging. These containers are usually made of fiberboard, wood, or steel, and are designed to withstand moderately rough handling conditions.

Type B shipments account for 90 percent of the radioactivity shipped, but less than 3.5 percent of the radioactivity shipments. Type B shipments require Type B packaging, which is considerably stronger than Type A packaging. Type B packages must be capable of withstanding a 9-meter fall onto a hard surface, a 1-meter drop onto the upraised end of a 15-centimeter steel bar, a 30-minute exposure to 1,475°F (for fissionable materials), and submersion under one meter of water for eight hours./1/

No significant impacts are expected as a result of possible increases in radioactive shipments through the Airport.

WASTES PRODUCED BY SFIA TENANTS

Comment

"On page 214 the Draft EIR states 'Hazardous wastes produced by tenants are not closely monitored by the Airport. The tenant is responsible for the proper removal and disposal of manifested wastes.' The 1991 San Mateo County Hazardous Waste Management Plan identifies three of San Mateo County's fifteen largest hazardous waste generators as SFIA tenants, with United Airlines Maintenance Operations alone generating over 4,000 tons of hazardous waste per year. Admittedly, San Mateo County has little control over import, storage or disposal of hazardous materials and wastes at SFIA.

"The DEIR does not quantify nor address the current level or kinds of wastes produced by SFIA airline and business tenants, nor does it identify expected increases for each tenant due to the projected Airport expansion. Hazardous materials and waste siting should be generally located, the transportation of hazardous materials and wastes should be planned, and the EIR should identify impacts and offer appropriate mitigations for increased generation and handling of hazardous materials and hazardous waste." (George Foscardo, City of San Bruno)

Response

The EIR does not attempt to quantify hazardous materials use or hazardous waste generation at all SFIA-related facilities under current operating conditions or as a result of the project. The commenter has correctly pointed out discrepancies between the EIR and the *1991 San Mateo County Hazardous Waste Management Plan* (which was published after preparation of the DEIR). According to the *1992 San Mateo County Hazardous Waste Management Plan*, the United Airlines Maintenance Center generated the second greatest quantity of hazardous waste in San Mateo County in 1986. The *Plan* states that United Airlines Maintenance Operations created 4,144.91 tons of waste in that year (4,027 tons the following year). The *Plan* also indicates that the County's twelfth largest hazardous waste generator in 1986 was the TWA Maintenance Center, which generated 302.91 tons of waste. The PSA Maintenance Center was among the top twenty generators, producing at least 75 tons./2/

San Mateo County obtained the 1986 data from the California Department of Toxic Substance Control's Manifest Unit, which compiles the data directly from state copies of

hazardous waste manifests into the Hazardous Waste Information System (Tanner Lists). Twelve of SFIA's tenants appear on the 1990 Lists, along with SFIA Administration. EIR Table 19A, added here, summarizes the most current data available from these Lists and is inserted following p. 215 of the EIR.

In light of this data, which is the most accurate information available at this time, several text changes are incorporated into the EIR. First, following the first paragraph under "Hazardous Waste Generation" on p. 214 of the EIR, of the EIR, the following paragraph is inserted:

> Copies of Hazardous Waste Manifests are collected by the California Department of Toxic Substance Control's Manifest Unit, which compiles annual waste volumes by waste category into what are known as the Tanner Lists. Table 19A, "1990 Hazardous Waste Generation By SFIA and Tenants," summarizes these data for SFIA facilities. The volume of waste generated at the Airport in 1990 may be indicative of a typical year, but individual wastestreams could vary widely from year to year. Asbestos-containing waste and contaminated soil from site clean-ups are especially unpredictable. Generally, when asbestos is removed from a source, it is unnecessary to remove it from the same location again. Some generators, such as Budget Rent-a-Car and Hilton Hotels, may not create waste on an ongoing basis, because they have received "one-time-only" EPA generator numbers. One-time-only wastestreams are identified in the footnotes of Table 19A.

The first two sentences in the paragraph under "Airport Facilities" on p. 214 are replaced with the following text:

> Nearly all (97 percent) of the hazardous waste generated by SFIA in 1990 contained asbestos, presumably from asbestos removal projects. The rest of SFIA's hazardous waste was produced by the Airport maintenance shops and the water quality lab. Every year, approximately 3.5 tons of hazardous waste are shipped, consisting mainly of waste solvents and a small amount of waste from the water quality lab.

The fourth sentence in the second paragraph on p. 215 of the EIR is replaced by the following sentence:

> As shown in Table 19A, United Airlines generated approximately 3,600 tons of hazardous waste in 1990. The bulk of the waste from Trans World Airlines, American Airlines, and Delta Airlines is related to oil, but otherwise their wastes are similar to those of United Airlines line maintenance operations.

TABLE 19A: 1990 HAZARDOUS WASTE GENERATION BY SFIA AND TENANTS

Generator /a/	Waste Category /b/	Volume (tons)	Total Volume (tons)
United Airlines	Alkaline solution (pH>=12.5) with heavy metals	16.12	3608.45
	Aqueous solution with <10% organic residues	1516.44	
	Asbestos-containing waste /c/	256.96	
	Other inorganic solid waste	116.03	
	Halogenated solvents	406.96	
	Oxygenated solvents	207.21	
	Hydrocarbon solvents	70.65	
	Unspecified solvent mixture	284.97	
	Waste oil and mixed oil	216.06	
	Off-specification, aged, or surplus organics	5.45	
	Organic solids with halogens	109.36	
	Other organic solids	17.71	
	Unspecified sludge waste	3.47	
	Contaminated soil from site clean-ups /c/	8.20	
	Liquids with halogenated organic compounds >=1000 mg/l	15.98	
	Solids or sludges with halogenated organic compounds >=1000 mg/l	35.88	
	Not reported	321.00	
Trans World Airlines	Halogenated solvents	0.20	316.62
	Oxygenated solvents	0.39	
	Hydrocarbon solvents	0.20	
	Waste oil and mixed oil	5.80	
	Oil/water separation sludge	1.66	
	Unspecified oil-containing waste	212.97	
	Organic liquids (nonsolvents) with halogens	0.41	
	Unspecified organic liquid mixture	0.77	
	Other organic solids	1.20	
	Contaminated soil from site clean-ups /c/	93.02	

(Continued)

TABLE 19.A: 1990 HAZARDOUS WASTE GENERATION BY SFIA AND TENANTS
(Continued)

Generator /a/	Waste Category /b/	Volume (tons)	Total Volume (tons)
American Airlines	Alkaline solution (pH>=12.5) without heavy metals	0.20	149.70
	Unspecified alkaline solution	0.29	
	Asbestos-containing waste /c/	0.84	
	Unspecified solvent mixture	8.00	
	Waste oil and mixed oil	81.70	
	Organic monomer waste	1.34	
	Other organic solids	1.35	
	Other empty containers >=30 gal.	0.50	
	Contaminated soil from site clean-ups /c/	1.20	
	(Acidic) Liquids with pH <=2	0.20	
	Not reported	54.08	
SFIA	Asbestos-containing waste /c/	123.02	126.60
	Halogenated solvents	0.20	
	Hydrocarbon solvents	1.85	
	Unspecified solvent mixture	0.20	
	Waste oil and mixed oil	0.83	
	Other empty containers >=30 gal.	0.50	
Chevron USA	Unspecified oil-containing waste	3.32	24.20
	Other empty containers >=30 gal.	2.00	
	Contaminated soil from site clean-ups /c/	18.53	
	Liquids with polychlorinated biphenyls (PCBs) >=50 mg/l /d/	0.35	
Shell Oil	Other inorganic solid waste	15.92	21.93
	Tank bottom waste	0.50	
	Unspecified organic liquid mixture	1.37	
	Other organic solids	0.02	
	Unspecified sludge waste	3.90	
	Detergent and soap	0.22	

(Continued)

TABLE 19A: 1990 HAZARDOUS WASTE GENERATION BY SFIA AND TENANTS
(Continued)

Generator /a/	Waste Category /b/	Volume (tons)	Total Volume (tons)
Hertz Rent-A-Car	Waste oil and mixed oil	0.18	11.43
	Tank bottom waste	11.25	
Delta Airlines	Oxygenated solvents	0.22	10.80
	Unspecified solvent mixture	0.68	
	Waste oil and mixed oil	9.90	
Budget Rent-A-Car	Tank bottom waste /d/	5.42	6.26
	Gas scrubber waste /d/	0.84	
U.S. Coast Guard Air Station	Oxygenated solvents	0.18	0.88
	Hydrocarbon solvents	0.18	
	Off-specification, aged, or surplus organics	0.02	
	Organic liquids with metals	0.16	
	Not reported	0.34	
Hilton Hotels	Hydrocarbon solvents /d/	0.22	0.22
U.S. Postal Service Airport Mail Facility	Unspecified solvent mixture	0.22	0.22
Aircraft Service International	Oxygenated solvents	0.12	0.12

NOTES:

/a/ Some users generate hazardous wastes at two or more Airport locations separated by public roadways; therefore, they are required to have more than one EPA generator number. Their wastes are separated by EPA generator number on the Tanner Lists, but they have been combined in this table.
/b/ Waste categories are defined by the State of California (CCR, Title 22).
/c/ Some waste streams, such as asbestos and contaminated soils, are usually generated as part of a specific project, and annual volumes of these wastes may be inconsistent from year to year.
/d/ This material was disposed of under a one-time-only EPA generator number.

SOURCE: California Department of Toxic Substance Control, Manifest Unit, Hazardous Waste Information System, 1990.

The last sentence of the second paragraph on p. 215 that begins "The car rental agencies produce. . ." begins a new third paragraph. After this sentence the following text is inserted:

> Fuel suppliers generate volumes of waste similar to the car rental agencies. Hazardous waste generated by the U.S. Coast Guard Air Station, the U.S. Postal Service, and Aircraft Service International are minor (less than 0.03 percent of the total waste generated).

Two text changes have been incorporated in an effort to clarify statements in the EIR regarding hazardous materials use. The last sentence in the first paragraph on page 390 under "Tenant Facilities" is amended as follows (revisions are underlined):

> Since the SFIA Master Plan does not include expansion of the United Airlines Maintenance Center, operations there are not expected to increase <u>proportionally</u> with Airport expansion, and <u>hazardous material use would probably not increase as a direct result of the project</u>.

The second complete sentence on p. 391 beginning "The amount of hazardous materials. . ." is re-worded as indicated (revisions are underlined and deletions shown in brackets):

> The amount of hazardous materials [ ] stored and used at these facilities [ ] <u>would</u> be small compared to [ ] <u>the amount</u> used at the United Airlines Maintenance Center [ ].

No significant impact is expected as a result of the incremental increases in hazardous waste generation that may accompany the expansion of the Airport, because federal, state, and local laws and regulations would mitigate the impacts of increased hazardous waste generation. Hazardous Waste Minimization Plans required by Senate Bill 14 and additional on-site recycling as mentioned in the EIR (p. 392) would also tend to offset increases in hazardous waste generation.

ASBESTOS

<u>Comment</u>

"Then there is the little matter of asbestos. There are at least 32 demolition projects in the proposed expansion totaling roughly 16% of SFO's existing building area. At least 10 of these projects are necessary in order to permit the construction of the new terminals (DEIR Vol. I CH.

XI Table B.1/DEIR Vol. I CH. II Fig. 5). Both the EPA and BAAQMD are responsible for asbestos removal in the Bay Area. The Asbestos Emergency Response Act (AHERA) gives the EPA authority to regulate (DEIR Vol. II CH. XI A-157). Furthermore, under Subpart M §§61.145 and 61.146 of the Clean Air Act, the EPA must be notified in writing of intentions to demolish any facility." (Alyn Lam)

Response

According to SFIA administration staff, the Airport's policy is to remove any asbestos found when demolishing buildings in accordance with state and federal laws, including complying with notification and reporting requirements of responsible agencies (*San Francisco International Airport Tenant Improvement Guide* and *Airport Rules and Regulations*). As stated on pp. 223-224 of the EIR, the Airport plans to conduct additional surveys of asbestos at its facilities in the near future and is in the process of implementing an asbestos policy and abatement program.

In order to clarify information provided in the EIR, the following paragraph is added between the first and second full paragraphs on p. A.157 of Volume II: Appendices:

> Because the EPA has delegated the enforcement responsibility of all National Environmental Standard Hazardous Air Pollutants (NESHAP) requirements, including asbestos, to the BAAQMD, the BAAQMD is responsible for regulating the removal of friable asbestos of one percent or more. Although it was necessary at one time to notify the EPA of any intentions to demolish buildings, this is no longer required. Instead, BAAQMD must be notified ten days prior to a demolition, regardless of whether or not the buildings are known to contain asbestos. This requirement also applies to the removal of asbestos from areas of at least 100 square or linear feet./1/

The following sentences are added in place of the first sentence of the second full paragraph on p. A.157 of Volume II: Appendices:

> The Asbestos Hazards Emergency Response Act (AHERA) has also given EPA the authority to regulate abatement methods and establish standards for exposure levels during and following abatement activities, but AHERA only applies to public and non-profit private schools (K-12). AHERA spells out accreditation standards for the training of personnel involved in asbestos abatement at these schools, and in November 1992, the EPA is expected to implement regulations recently mandated by Congress that extend the training provisions of AHERA to those working on other public and commercial projects./2/

A new paragraph is begun at "Some state regulations on asbestos are. . ." in the second full paragraph on page A.157 of Volume II: Appendices.

The following is inserted at the end of p. A.157 of Volume II: Appendices:

NOTES - Hazardous Materials Regulatory Setting

/1/ Bernardo, Naomi, Air Quality Technician, Bay Area Air Quality Management District, telephone conversation, February 10, 1992.

/2/ Lanier, Don, Compliance Monitor, Environmental Protection Agency, telephone conversation, February 10, 1992.

The above comment was written in the context of a discussion of the jurisdiction of NEPA over the implementation of the project. The EPA has ministerial authority over asbestos removal. It does not have any discretionary authority; therefore, the involvement of the EPA in asbestos removal does not contribute to a need for an EIS. Federal jurisdiction is discussed further under EIR Process, pp. C&R.410-413 herein.

NOTES - Hazardous Materials and Wastes

/1/ Eisenbud, Merril, *Environmental Radioactivity*, 3rd ed., Orlando: Academic Press, Inc., 1987.

/2/ *1992 San Mateo County Hazardous Waste Management Plan*, January 1992.

EMPLOYMENT AND HOUSING

SFIA EMPLOYMENT

The notes for this section begin on p. C&R.368.

United Airlines

Comment

". . .As a point of information, the MOC [Maintenance Operations Center] employs 12,000, not the 6,000 as referenced in the DEIR." (Thomas Brown, United Airlines)

Response

Comment noted. The number presented in the EIR represents maintenance and mechanic workers only. (The correct employment figure was used for the EIR analyses.) Accordingly, the fourth sentence of the first paragraph on page 228 should read as follows (revisions are underlined):

> United Air Lines' maintenance base at SFIA is the largest in the United States and employs over 6,000 maintenance and mechanic workers at SFIA. Total full-time equivalent employment at the maintenance base is approximately 11,500.

Provision of Jobs for Area Residents

Comments

"From a business point of view, improved facilities and service levels will generate additional jobs for community residents and increased revenues for local businesses and governmental bodies. . ." (Jerome Copelan, San Francisco Association of International Airlines)

"Finally, on the subject of jobs, your commission allows only enough new office space to be built each year to house about 2000 new jobs. In a city that graduates more than 12,000 high school and college students annually, do you realize that your policies force 80 percent of your city's most ambitious and talented young people to not dare think about starting their careers here and contribute to our city. I know of no other planners in the world who force their next

generation out. Do you believe that, too, is good planning for the benefit of your constituents? . . . a policy you now wish to extend to the airport?" (Stanford Horn)

Response

The first comment is consistent with information presented on pp. 394-399 of the EIR. Table 67 on p. 398 of the EIR shows that implementation of the proposed SFIA Master Plan improvements would result in an additional 8,970 SFIA jobs by 2006. It is estimated in Table 67 that the new jobs would be filled by residents of all nine Bay Area counties. Estimates for induced employment (which is related to the revenues mentioned by the commenter) are discussed on p. C&R.358 herein.

The Office Growth Limitation Ordinance (Ordinance No. 414-85) was approved by the San Francisco Board of Supervisors on September 10, 1985. Proposition M, the Accountable Planning Initiative, was approved by San Francisco voters on November 14, 1986. Ordinance No. 414-85 limited the growth of office developments larger than 50,000 square feet in San Francisco to a total of 2.85 million square feet over a period of three years. Proposition M, which amended Section 320(g)(1) of the City Planning Code, lowers the threshold for office projects subject to the annual limit from 50,000 square feet to 25,000 square feet of additional office space. Proposition M also added Section 321.1 to the City Planning Code which changed the total growth limitation amount from 2.85 million square feet of office space over three years to 950,000 square feet in one year.

It is true that the San Francisco Planning Commission, in accordance with the Office Growth Limitation Ordinance and Proposition M, limits office space development, and potentially, the number of jobs that can be created. However, those measures were not established by the City Planning Commission as stated by the commenter.

Regarding the SFIA Master Plan, the Planning Commission is responsible only for certifying the EIR; the Airports Commission has the authority to approve the project. The project approval process is discussed on pp. C&R.38-45 herein.

EMPLOYMENT AND HOUSING DEMAND

Direct Employment and Housing Demand

Comments

". . . Even excluding the visitor induced jobs the addition of demand for 10,226 or 6,850 units should be treated as a significant adverse impact as well. The reason for treating this as adverse is that the Bay Area is already in an annual housing deficit, building fewer housing units than it needs to meet current demand. There is ample data available to the EIR drafters on this issue and that data needs to be viewed in the context of the impact of the airport expansion. According to the EIR, thirty-seven percent (37.1%) of the current SFIA work force resides in San Mateo County. Direct and Indirect housing demand in the County is 3,675 new units; the direct, indirect and visitor induced units (arbitrarily using the same 37%) equals 14,210 new dwelling units needed in the County over the next fifteen years.

"The DEIR, at Vol. 1, page 397, states that the new housing demand of 2,450 units is less than nine percent (9%) of ABAG's estimate of San Mateo County's potential for new housing units between 1990 and 2005. The DEIR does not discuss whether that potential will be met, what constraints will interfere with meeting that potential, whatever other projects are already relying on that housing potential, and what SFIA can do to assure that at least the nine percent needed for its future direct employees will be constructed.

"San Mateo County has a housing supply deficit, particularly for low and moderate income persons. The project would create a need for an estimated 2,450 -- which is 35 percent of the projected 6,850 total units. They need that many -- 2,450 additional dwelling units in San Mateo County, mostly for flight crews and passenger service personnel. Employment is expected to increase by 8,900, from 33,400 to 42,300, or 27 percent, leaving 2,050 persons unaccounted for in terms of housing." (Onnolee Trapp, San Mateo County Leagues of Women Voters, public hearing of 8/27/91)

"San Mateo County has a housing supply deficit, particularly for low and moderate income persons. The project would create a need for an estimated 2450 (35% of 6850 total units) additional dwelling units in San Mateo County, mostly for flight crews and passenger-service personnel. Employment is expected to increase by 8,900, from 33,400 to 42,300, or 27%,

leaving 2050 persons unaccounted for in terms of housing. . . " (Onnolee Trapp, Leagues of Women Voters of San Mateo County)

Response

This response addresses a variety of issues involving the housing impacts that would occur in San Mateo County as a result of the direct employment created by the proposed project. (Indirect demands are addressed in the next response.) First, information from the EIR about projected direct employment and housing needs through 1996 and 2006 is summarized. This responds specifically to the commenter's concerns regarding additional dwelling units that would be needed in San Mateo County as a result of SFIA Master Plan implementation. Second, as requested by one commenter, criteria for determining the significance of the identified housing impacts are discussed. Third, as one commenter also requested, the need for the EIR to analyze development constraints relative to project-generated housing demand is addressed.

Direct Employment and Housing Demand Projections

The EIR (Tables 65 and 67, pp. 396, 398) states that 4,610 direct jobs would be created by 1996, and 8,970 by 2006, as a result of the proposed SFIA Master Plan project. The additional employment created at SFIA would, in turn, result in an increased demand for housing in the area. On the basis of existing ratios of employed residents to households, and residence patterns for current SFIA employees, it is expected that a total of 3,460 housing units would be required through 1996, and 6,850 by 2006, to house the new, direct SFIA employees. It is projected that San Mateo County's share of this demand would be 1,220 units by 1996, and, as stated by a commenter, 2,450 by 2006.

Housing Impacts and Significance Criteria

The following text is added after Table 67 on p. 398 of the EIR:

Housing Demand Impacts

The significance of the potential impacts on housing resulting from a project-generated increase in employment can be analyzed by comparing the project's share of the local labor force to the proportion of total local housing units used by the project's employees. If proportionally, the proposed project's use of local housing

units would be substantially greater than its share of the local labor force, the impact could be considered significant.

In order to evaluate the potential impacts that would occur from implementation of the proposed SFIA Master Plan, the percentage of all San Mateo County jobs located at SFIA was compared to the percentage of San Mateo housing units used by SFIA employees (see Table 67A). As shown in Table 67A, in 1990, 11.0 percent of all San Mateo County jobs were located at SFIA, and SFIA employees used about 5.2 percent of all the housing stock in the area. Based on SFIA employment (under the project) and San Mateo total number of jobs, 11.7 percent of all San Mateo jobs would be located at SFIA in 1996. However, SFIA employees would use about 5.5 percent of the San Mateo housing stock. In 2006, about 12.1 percent of all San Mateo County jobs would be located at the airport, and SFIA employees would use about 5.7 percent of San Mateo County's housing stock.

These figures show that in 1990, and in the future with the project, the percentage of San Mateo County housing units used by SFIA employees would be approximately half of the percentage of San Mateo County jobs located at SFIA, and the proposed project would not affect this ratio substantially. Given these results, it can be concluded that no significant impacts on housing would occur as a result of the project.

Identification of Development Constraints

CEQA (*Guidelines*, Section 15131) does not require that market feasibility factors, such as the identification of constraints that may prevent a community from realizing its full development potential, be analyzed in an EIR. Although San Mateo County may need to identify these constraints, such identification would be best accomplished through a market feasibility study. The analysis in the EIR regarding future housing demands in San Mateo County provides local decision-makers with information that may used in the preparation of a housing market feasibility study, if such a study were to be done.

Indirect Employment and Housing Demand

Comments

"The DEIR fails to take into account the impact of the indirect and visitor induced employment created by the airport expansion envisioned in the Master Plan on the surrounding communities

TABLE 67A: EMPLOYMENT AND POPULATION PROJECTIONS FOR SFIA AND SAN MATEO COUNTY/a,b/

	1990	Projected 1996	Projected 2006	Absolute Difference 1990 - 1996	Absolute Difference 1990 - 2006
Total SFIA Jobs	33,400	38,000	42,400	4,600	9,000
Total San Mateo County Jobs /c/	303,600	326,300	349,900	22,700	46,300
Total SFIA Employees Living in San Mateo County	12,600	14,300	15,700	1,700	3,200
Total Number of Housing Units in San Mateo County /d/	241,900	256,500	274,000	18,200	32,100
Percent of SFIA Employees Living in San Mateo County	37.6%	37.1%	37.1%	-0.50%	-0.50%
Percent of All San Mateo County Jobs Located at SFIA	**11.0%**	**11.7%**	**12.1%**	**0.64%**	**1.12%**
Percent of San Mateo Housing Units Used by SFIA Employees	**5.2%**	**5.5%**	**5.7%**	**0.33%**	**0.52%**
Percent of New San Mateo County Jobs Located at SFIA	**N/A**	**20.3%**	**19.4%**	**N/A**	**N/A**
Percent of New San Mateo Housing Units Used by New SFIA Employees	**N/A**	**9.3%**	**10.0%**	**N/A**	**N/A**

NOTES:

/a/ Methodology for deriving figures in this table is described in a background paper available for review in Department of City Planning files, 450 McAllister Street.
/b/ Totals may not add due to rounding.
/c/ From data provided by the San Mateo County Planning Department.
/d/ Based on results of housing inventory contained in Consolidated Comprehensive Housing Affordability Strategy, Department of Environmental Management, San Mateo County. November 19, 1991.

SOURCE: Environmental Science Associates, Inc.

and the region. It also fails to make conclusions as to the significance of its direct impacts on housing. The DEIR's logic seems to be as follows:

"A. the existing employees at SFIA are distributed throughout the nine Bay Area counties;

"B. the future housing needs of new employees will be a tiny fraction of the housing needs of the San Mateo County and Bay Area (8,970 new employees; 6,850 new housing units);

"THEREFORE, the SFIA expansion will not have a significant impact on the environment.

"This silent logic is bolstered by limiting the DEIR's review of impacts to direct employees expected to be generated by the expansion. But the DEIR (at Vol. 1, page 229) raises two additional factors that make the actual impact on housing (as well as on traffic, transportation and air pollution) far greater. The DEIR states that:

"a. one half of an indirect employee should be assumed for every direct job created, and

"b. an additional 4.3 direct and induced jobs will be created for every new direct job at SFIA due to expenditures by additional visitors facilitated by the expansion.

"The DEIR Environmental Impact chapter does not consider either of these two impacts identified in the Environmental Setting portion.

"If .5 indirect job is generated by each new expansion job, the total new employee impact must be increased by 4,485 for a total of 13,455 new workers. Using the DEIR's ratio .76 housing units per employee the true new housing demand generated by the expansion of SFIA is 10,226 housing units.

"If 4.8 additional jobs are generated by the expansion (.5 + 4.3) the total new employee impact must be increased by 43,056 for a total of 52,026 new workers. Using the DEIR's ratio .76 housing units per employee the true new housing demand generated by the expansion of SFIA is 39,540 housing units.

"The addition of demand for 39,540 new housing units in the next 15 years is clearly a significant environmental impact. . .

"The nine percent estimate [of San Mateo County's potential for new housing units] jumps to 14 to 15 percent when direct and indirect employment impacts are considered and up to 50 percent when visitor induced employment is allocated to San Mateo County." (Harvey Levine for Sierra Point Associates)

"Secondary impacts of housing demand for new employees should be addressed." (Ed Everett, City Manager, City of Belmont)

"The report also states that for every direct San Francisco Airport job, there is five-tenths of induced job and, ultimately, due to passenger spending, 4.3 direct and induced jobs for every direct airport job. These employment projections will most heavily impact housing and traffic in

San Mateo County." (Onnolee Trapp, San Mateo County Leagues of Women Voters, letter of 8/27/91 and public hearing of 8/27/91)

Response

This response addresses a variety of issues regarding projected indirect and induced employment and impacts on housing that would occur as a result of the SFIA Master Plan improvements. First, projections of indirect and induced employment resulting from the SFIA Master Plan are discussed. Second, factors affecting the potential supply and demand of housing are explained. Third, the approach used to analyze housing impacts is explained and related to other policy issues.

Several of the comments include estimates of indirect and induced employment resulting from implementation of the SFIA Master Plan. The EIR states (on p. 229) that the operation of the Airport creates indirect and induced employment. The commenters correctly note that Section IV.I of the EIR, Employment and Housing, does not include estimates of the indirect and induced employment created as a result of the SFIA Master Plan. Although the basic calculations could be derived from information in the Draft EIR, the following text is inserted after Table 67 on p. 398 of the EIR (and following the text inserted regarding housing demand impacts, shown on pp. C&R.354-355):

SECONDARY EMPLOYMENT AND HOUSING DEMAND

New Indirect and Induced Employment

On the basis of the new SFIA employees generated by the project, and the job creation factors noted on p. 229 (0.5 indirect and 3.8 induced jobs per direct SFIA job), it is projected that the project would result in the creation of about 2,310 new induced jobs by 1996, and about 4,490 by 2006. Additionally, the project would likely result in the creation of about 17,520 indirect jobs by 1996, and about 34,100 by 2006, due to additional expenditures by visitors to the Bay Area. The total number of indirect and induced jobs created as a result of the project would be about 19,820 by 1996, and 38,570 by 2006. The total number of all jobs created by the project would be about 24,440 by 1996 and 47,540 by 2006.

It is assumed that the indirect and induced jobs created as a result of implementation of the SFIA Master Plan would be located throughout the Bay Area and also outside the region. The specific locations of these jobs within the Bay Area cannot be determined because projections of the number of jobs are based on regional multipliers.

Housing Demand Created by Indirect and Induced Employment

Employees holding the indirect and induced jobs resulting from the project would create additional demands on the Bay Area housing stock. On the basis of the employed residents-to-households ratio shown in Tables 65 and 67 (for the Bay Area) and the number of indirect and induced jobs that would be created as a result of the project, there would be a demand for an additional 14,880 housing units through 1996, and an additional 29,460 units through 2006. (The total housing demand generated by the project would be 19,490 units through 1996, and 38,430 units through 2006.)

Although, as shown above, it is possible to estimate the number of housing units required to house individuals holding the induced and indirect jobs resulting from the project, it is not possible to accurately determine their residence patterns. As stated above, the indirect and induced jobs could be located anywhere in the Bay Area or even in locations adjacent to the Bay Area. This is because some direct, new SFIA employees would live in Concord for example, and would create demand for goods and services in and around the Concord area, as well as other parts of the region, resulting in creation of jobs indirectly related to the new SFIA jobs. This scenario would be repeated all over the Bay Area and beyond. Since the locations of these indirect and induced jobs are unknown, it is not possible to determine the residence patterns of the individuals holding the jobs. As such, it is not possible to determine the extent of impacts on housing that would be experienced by any one local jurisdiction, including San Mateo County.

Indirect and Induced Housing Demand Impacts

The significance of the potential impacts on housing resulting from a project-generated increase in indirect and induced employment can be analyzed by comparing the proportion of Bay Area housing units used by the individuals holding the indirect and induced jobs to the employees' share of the Bay Area labor force. If proportionally, the proposed project's use of the regional housing stock is substantially greater than its share of the regional labor force, the impact could be considered significant.

Based on a comparison of the projections of induced and indirect employment and related housing demand mentioned above with ABAG projections of total Bay Area employment and number of households, the housing impacts resulting from project-generated indirect and induced employment would be insignificant. In 1990, induced and indirect jobs created by the operation of SFIA accounted for approximately 4.5 percent of the Bay Area total number of jobs; these employees used approximately 4.7 percent of total Bay Area housing stock. In 1996, induced and indirect jobs created as a result of the project would account for approximately 0.6 percent of the Bay Area labor force; the employees would use approximately 0.8 percent of the total Bay Area projected housing stock. In 2006, approximately 1.0 percent of all the jobs in the Bay Area would be induced by, or indirectly related to, the proposed project. Employees holding these jobs would use approximately 1.3 percent of the Bay Area housing stock.

Although the shares of the Bay Area labor force and housing stock represented by SFIA-created induced and indirect employment would increase under the project, the relationship between the employment and housing shares would not change substantially, and the project would not result in proportionally greater demands on housing (relative to employment).

Thus, impacts on housing created by indirect and induced employment would not be significant.

Jobs / Housing Balance

Comments

"When we have looked at other large projects, Mission Bay, there was an awful lot of discussion about the jobs, housing balance. When you look at a project this size, to what extent should that be an issue that we should be looking at it?" (Commissioner Sewell)

"The EIR suggests the expansion project will contribute to a jobs/housing imbalance in San Mateo County. The Airport should indicate how it will mitigate this impact." (Jack Drago, Mayor, City of South San Francisco)

"The impacts of massive job creation in an area that already has a huge jobs/housing imbalance cannot be overlooked. As a possible mitigation, the Airport should consider building housing on SFIA property. We are not suggesting building under flight paths which we believe to be unsafe, but rather in locations away from both danger and noise. While it is unheard of for civilian airports, virtually all military airbases have housing situated and constructed to be safe, comfortable and conveniently located on site." (Stephen Waldo, Mayor of Brisbane)

Response

By creating more jobs in San Mateo County, implementation of the proposed SFIA Master Plan would likely create a more balanced situation between jobs and housing in the County. In evaluating the jobs/housing balance of a community, the number of employees and housing units in the community, as well as the number of employees per housing unit, must be known. A balanced situation occurs when a community has the same number of jobs as housing opportunities.

Given the existing number of jobs and housing units, and number of employees per housing unit, San Mateo County currently has a jobs/housing imbalance. There is a shortage of jobs (based on the number of existing housing opportunities) needed to achieve a jobs/housing balance (see Table C&R.3). On the basis of ABAG projections of jobs and housing units in the County in the years 1996 and 2006, it is expected that San Mateo County's jobs/housing imbalance will continue. Because implementation of the SFIA Master Plan would increase the number of jobs in the County, it would potentially create a more balanced situation between jobs and housing. It is likely that some current San Mateo county residents would switch from commuting out of the County for work to working at SFIA as a result of the additional jobs available at SFIA in the future.

Because by creating more jobs, the project would help to correct the jobs-housing imbalance that currently exists in San Mateo County. No mitigation is required.

TABLE C&R.3 REQUIRED AND PROJECTED NUMBER OF JOBS TO ACHIEVE HOUSING BALANCE IN SAN MATEO COUNTY

Year	Number of Housing Units/a/	Required Number of Jobs /b/	Projected Number of Jobs/c/
1990	241,910	322,320	303,600
1996	256,880	342,260	324,200
2006	274,020	365,100	358,530

NOTES:

/a/ Based on results of housing inventory contained in Consolidated Comprehensive Housing Affordability Strategy, Department of Environmental Management, San Mateo County, November 19, 1991.

/b/ Number of jobs needed to house individuals living in the housing units available in San Mateo County. Based on an employee-household ratio of 1.33 from ABAG's Projections 90.

/c/ From ABAG's Projections 90.

SOURCE: Environmental Science Associates, Inc., Association of Bay Area Governments.

Housing Affordability

Comments

". . .[T]here is an analysis on Page 397 of housing demand created by the airline workers. But that demand is not broken down in any way according to the salaries of those airline workers and then the housing which they would be able to afford. I think there should be that level of detail so that we know truly what the impact is of these additional workers on the housing market, both in and around the airport and in San Francisco. I note that there is a sizable number of those workers who live in San Francisco." (Commissioner Morales)

"The DEIR states implementation of the SFIA Master Plan would add about 4,600 new jobs by 1996 or about 8,900 new jobs by 2006 (pg. 10). This would create a demand for 3,460 dwelling units by 1996 or 6,850 units by 2006. The DEIR projects 2,450 of these units would be in San Mateo County, 1,940 in San Francisco and 810 in Alameda County. Decision makers need to know the projected income of these employees and how housing that is affordable to them will be provided. Most airport employees cannot afford to live in San Mateo County." (Gary Binger, Association of Bay Area Governments)

"The Airport should develop an employee assistance program to enable Airport employees to find more affordable housing near their jobs." (Robert Treseler, City of Millbrae)

"By 2006 there would be 9,000 new jobs and the need for 6,850 new housing units generated by Airport expansion. This is identified as an environmental impact; however there are no mitigations discussed or proposed.

"Suggested mitigation measures:

"1. Encouragement of new affordable housing near the Airport, in areas which would not jeopardize Airport operations.

"2. The Airport should commit to developing an employee assistance program to enable Airport employees to find more affordable housing near their jobs." (Janet Fogarty, Mayor, City of Millbrae)

Response

Housing Affordability

Individuals holding jobs created as a result of the SFIA Master Plan project would create additional demand for housing in the Bay Area. This increased housing demand would be within the projected additional housing supply in the Bay Area, as shown in Table 67A. As such, construction of SFIA-employee-related housing would not result in additional physical impacts to the environment, as it is expected that this housing would be constructed with or without the demand created directly by project employees.

The additional demand for housing resulting from the project could potentially have negative socio-economic impacts directly related to housing affordability. Under guidelines established by the U. S. Housing and Urban Development Department, housing is affordable when families use 30 percent or less of their income on housing-related expenses. New SFIA employees would create additional demands on housing supply, possibly resulting in an increase in the area's housing prices. However, as shown by historical evidence, increases in household incomes would lag behind increases in housing prices. /1/ If historical trends in the relationship between housing prices and household incomes in the Bay Area hold true in the future, a large number of Bay Area residents, including an undetermined number of SFIA employees, would incur housing expenses that, under the housing affordability standards mentioned above, would not be "affordable."

Under CEQA (Guidelines, Section 15131), social and economic impacts may be addressed in an EIR, but are relevant only to the extent that they are related to the physical impacts of a project. As a result, no affordability analysis has been prepared as part of this response and no mitigation measures for housing affordability would be required. Depending on the extent of housing affordability problems that may be experienced in the future by SFIA employees, these individuals may choose to live in outlying parts of the region or communities outside of the Bay Area. If this were to occur, the extended commuting distance traveled by these individuals would result in additional physical impacts. Without further analysis of future wage and housing price levels in the region as a whole, it would be difficult to determine the number of individuals that would choose to live in the outskirts of the Bay area and to quantify the extent of these potential physical impacts.

MITIGATION

Demand for Housing and Support Services

Comments

"The Draft EIR briefly addresses employment and residence patterns in the Environmental Setting Chapter, and employment and housing in the Environmental Impacts Chapter. The text indicates employment is expected to increase by about 4,600 jobs between 1990 and 1996. This would represent about 11% of the 341,690 employees in San Mateo County. An 11% increase is also expected between 1996 and 2006. The Draft EIR also indicates the largest number of new employees are expected to reside in San Mateo County (37.1%) and those employees will create a demand for 2,450 new housing units in San Mateo County.

"The Draft EIR does not propose any mitigation measures to address the employment and housing demands in San Mateo County or any other county. The demand for housing is already high in San Mateo County and the housing costs are very high. In addition, there is an extremely small amount of available land in the County on which to build new housing. These issues should be fully addressed in the Draft EIR and feasible, implementable mitigation measures should be identified to address the anticipated impacts." (Raymond Miller, C/CAG)

"The Board's [County of San Mateo Board of Supervisors] major concern is the projected increases in employment and housing in San Mateo County, as a result of the implementation of the proposed Master Plan. The Draft EIR indicates there will be 3,320 new employees in San Mateo County and a demand for 2,450 new housing units in the County by 2006, as a result of the implementation of the Master Plan. The demand for housing is already high in San Mateo County and the housing costs are very high. In addition, there is an extremely small amount of available land in the County on which to build new housing.

"The Draft EIR does not propose any mitigation measures to address the anticipated employment and housing impacts in San Mateo County. The Board of Supervisors requests the projected employment and housing demands in San Mateo County, as a result of the implementation of the proposed Master Plan, be thoroughly analyzed in the Draft EIR and feasible mitigation measures, implemented by the City and County of San Francisco, be identified to address the anticipated impacts." (Paul Koenig, County of San Mateo, and County Board of Supervisors)

"We did not notice discussion of the indirect effects of the project. We understand that direct employment resulting from the project would have a multiplier effect. We would appreciate discussion of that effect and mitigation, if required for indirect employment effects." (Janet Fogarty, Mayor, City of Millbrae)

"Instead of mitigating this significant impact, SFIA is currently opposing new housing on the Peninsula. In 1986 SFIA challenged an EIR for a housing project in South San Francisco, effectively killing that project. On August 6, 1991, the Airport Commission approved an SFIA sponsored agreement to prohibit housing east of Interstate 101.

"The Airports Commission attempted to justify this action on the basis of protecting a necessary departure route. However, the SFIA's own noise studies show that a portion of the area covered by the agreement (Sierra Point) is not noise impacted, nor is it underneath a departure route. (See V.1, pp. 161, 340 and 345) Sierra Point is one of the last large parcels available for housing that is both near the airport and outside the area of noise impact.

"Given the serious shortage of housing resulting from the Master Planned expansion, it is incumbent on SFIA, as a mitigation measure for its impacts on San Mateo County in the area of housing, to modify its stance against housing on the east side of Highway 101 and its agreement with South San Francisco.

"If SFIA believes it must protect its approach and departure routes, it can continue to monitor housing proposals in the environs of the airport for noise insulation and impact. Developers are more than willing to work with the SFIA to provide a portion of the housing that will be generated by growth at the airport. SFIA, as a mitigation for its housing impact, should meet them half way." (Harvey Levine for Sierra Point Associates).

"An appropriate mitigation must be provided to address the increased demand for housing as a result of the proposed expansion of SFIA and the new employees associated with the growth. With San Bruno abutting SFIA, it can be reasonably and logically assumed that a large demand for the additional housing will impact San Bruno, not San Francisco. The airport should contribute to a San Bruno housing reserve fund which would help provide a variety of housing services and opportunities to San Bruno residents." (George Foscardo, City of San Bruno)

"The Draft EIR documents that there will be an increase in employment at the airport as a result of the growth in passenger and freight activities. Many of these people will seek housing and

support services such as child care within the adjacent communities. Meeting these needs will affect these neighboring communities in a variety of ways. In addition to local roadway access to SFIA, these impacts include demand for lesser cost housing, provision of child care and health care services and demand for other personal and commercial services. The Draft EIR does not address how the airport proposes to mitigate the impacts created by these effects. How will SFIA assist local communities to provide these services and make them available and viable? Can some or all of these support services for employees be included on airport lands?" (Dennis Argyres, City of Burlingame)

Response

As shown in Tables 65 and 67 in the DEIR, the San Mateo County housing demand from new SFIA employees would be less than one percent of total 1990 County housing stock, not a significant impact. Also, as shown by Table 67A, it is estimated that new SFIA employees would use approximately 9.3 percent of San Mateo County's housing stock that would be created between 1990 and 1996. By 2006, it is projected that SFIA employees would use approximately 10 percent of the housing stock that would be created between 1990 and 2006. The potential direct, indirect and induced employment opportunities and the associated housing demand that would result from implementation of the SFIA Master Plan are further described on pp. C&R.355-360 herein. As discussed on those pages, the implementation of the SFIA Master Plan would not result in a significant impact on housing relative to the direct and indirect employment created. Therefore, no mitigation measures for the project 's impacts on housing are required. Child care and health care services are social and economic impacts and thus are not covered in EIRs. which analyze physical environmental effects. The Airport could, of course, volunteer to support housing or child care, but these would not be considered mitigation of significant effects as defined by CEQA.

The comment regarding the Sierra Point Property has been submitted by counsel to Sierra Point Associates, a property owner interested in the development potential of property on Sierra Point, located in the Cities of South San Francisco and Brisbane, north of the Airport.

The commenter is incorrect in stating that the Airport is opposed to the construction of new housing on the Peninsula. According to SFIA Administration staff, it is the policy of the Airport to further the goals set forth in the state law relating to land uses in the

vicinity of the Airport. in Cal. Pub. Util. Code § 21670. These goals include (1) the promotion of orderly development of areas surrounding airports to prevent the creation of new noise and safety problems and (2) the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses. (Cal. Pub. Util. Code § 21670 (a) (1) and (2)).

In furtherance of these goals, the Airport has worked closely with the Airport Land Use Commission to create an Airport Land Use Plan that reduces the possibility of incompatible development in areas near the Airport (EIR, page 168, 169). In addition, the Airport has worked with communities near the Airport to provide funding for local noise insulation programs. For example, the City of South San Francisco has been operating an Aircraft Noise Insulation Project pursuant to The Aviation Safety and Noise Abatement Act of 1979, 49 U.S.C. 2101 et seq. This Act authorizes airport operators and units of local government to apply for assistance from the Federal Aviation Administration (FAA) for the implementation of noise insulation projects in areas that qualify for such projects under the Act. Under this Act, local governments can receive funding for up to 80 percent of the insulation project, providing that the remaining 20 percent is paid by the local community. The Airport has been providing this 20 percent share to local communities as part of the requirements of its variance from the California state noise standards.

The commenter incorrectly characterizes the agreement between the Airport and South San Francisco. The City and County of San Francisco, operating through the San Francisco Airports Commission, entered into this agreement in August, 1991. The purpose of the agreement was to further the longstanding policies of state law and the Airport to discourage the construction of incompatible uses on land that may be affected by airport noise.

Under this agreement, the Airport has agreed to (1) set aside a total of $10,000,000 to be used by South San Francisco over a ten year period in connection with the City's existing Noise Insulation Project and (2) provide other assistance to South San Francisco in connection with its noise insulation project. The agreement does not prohibit housing east of US 101. Rather, as a condition to the Airport's obligations under the Agreement, the City of South San Francisco will have to exercise its discretion in taking the necessary land use actions to prevent the construction of noise-sensitive land uses,

including housing, on property in South San Francisco located east of US 101. If the City chooses to take these actions and the agreement takes effect, the Airport has the opportunity to review and comment on the proposed project. If the City chooses to allow the use, the Airport is no longer obligated to provide funding provided in the agreement. /2/

The reference to the 1986 challenge to an EIR for a housing project in South San Francisco appears to refer to the mixed use project called Shearwater proposed for Sierra Point in 1986. The Airport Land Use Commission opposed the project because it would result in the construction of housing that would be impacted by aircraft overflights. The Airport also challenged in court the environmental impact report prepared for the project. The project eventually did not proceed.

The commenter notes that a portion of the area covered by the Agreement is not noise impacted or under a departure route. The comment is noted in that a portion of the area is not within the 65 CNEL contour.

The commenter is incorrect in stating that the SFIA Master Plan is expected to result in a serious shortage of housing. As explained in the EIR, implementation of the SFIA Master Plan is not expected to result in a significant housing impact (EIR, pp. 394-399 and pp. C&R.354-360). Even if the SFIA Master Plan were expected to result in a serious housing shortage, the mitigation measure proposed in the comment would not necessarily result in the increased availability of housing near the Airport to serve new Airport employees. The decision on whether housing will be located east of US 101 is up to the cities with jurisdiction over those properties, not the Airport. Therefore, this mitigation measure will not be added to the EIR.

NOTES - Employment and Housing

/1/ State of California, Senate Office of Research, Grasping at the Dream, California Housing: Who Can Afford the Price? June 1990.

/2/ Agreement for Aircraft Noise Mitigation, Between City and County of San Francisco Acting By and Through the Airport Commission and City and of South San Francisco. August 29, 1991.

PUBLIC UTILITIES

The Notes for this section begin on p. C&R.373.

WATER USE

Comments

"Under utilities and water regarding housing, the report documents approximately 3,460 more dwellings will be needed in surrounding cities where water usage is already rationed and the people already living there can't use as much water as they need. The water problem should be solved before any more added growth occurs anywhere in the area." (Jessie Bracker, public hearing of 8/27/91 and letter of 8/27/91)

"I do think that we've got to focus on the issue of water -- water, water, water. We want more housing, we want the airport to get bigger. We want more of everything. Yet we have no water to give to anyone. We are penalized if we do not use enough water, and we are penalized if we use too much water. So, I think the water is our No. 1 issue. People don't seem to address it. I think it's really No. 1." (Rose Urbach)

"P. 10 - Utilities and Water - Report documents approximately 3,460 more dwellings needed in surrounding cities where Water Use is rationed. Report Documents on p. 10, Housing/Water, 3,460 more dwellings will be needed if Plan is carried out. How is it such growth can be projected to be needed everywhere when the people already living here can't have enough water for their usage needs? There should be a Moratorium on all growth in area until that problem is resolved! Too much growth is at the root of most of the areas existing problems in the already built up areas of Cities named on p. 12, that will be most affected because of their proximity to the Airport and listed as needing to provide housing for Project Employees! The Water problem should be solved before growth is added." (Jessie Bracker)

"The master plan would generate need for an additional 0.42 million gallons per day of water, in the near term, and 0.69 million gallons per day in the long term. The document does not state whether this includes the additional water needed by the new residents of the 6,800 housing units added to Millbrae, San Bruno and South San Francisco.

"If anyone wishes to look realistically at the situation, this is the place to do it. Water is rationed. It will continue to be rationed for the foreseeable future. Who of us is going to give up his ration of water so that the airport can be expanded?" (Patricia Clark)

Response

Given the existing mandatory and voluntary water rationing programs throughout the Bay Area, the comments express concern regarding the ability of local municipalities to supply water for the additional housing units projected to be needed in the Bay Area as a whole as a result of the SFIA Master Plan (3,460 near-term, 6,850 long-term, as shown on pp. 396 and 398 of the EIR).

In general, long-term water supply planning is not based on current drought conditions. For the various watersheds that supply water to the San Francisco Bay Area, long-term supply planning is based on an average water yield that would result from the occurrence of drought, non-drought, and abnormally high rainfall years over time.

Water supply planning to address existing and projected water shortages within the state is being conducted by regulatory agencies and water suppliers. Specifically, water allocation, distribution, and/or conservation programs are currently being discussed by the San Francisco Water Department (which supplies water to SFIA and San Mateo County), the California Department of Water Resources, and the Federal government (through the Central Valley Project)./1/ Changes in the distribution and allocation of water and the implementation of conservation programs may or may not alleviate urban water shortages within the planning horizon of the SFIA Master Plan.

The estimates in the EIR for additional near- and long-term water demand that would be generated by the project (pp. 400-401) include only the direct water demand generated by SFIA facilities, and do not include the additional demand from the forecast housing units needed for new SFIA employees. The San Francisco Water Department would supply most of the additional water demand generated by SFIA facilities and the additional housing units in San Francisco and San Mateo County. The total capacity of water currently available to the San Francisco Water Department is approximately 341 million gallons per day (mgd), of which SFIA uses 1.7 mgd.

In addition to supplying water to the City of San Francisco, the San Francisco Water Department supplies water to approximately 30 other cities and communities, including cities in San Mateo, Santa Clara, and Alameda Counties./2/ These cities and communities, termed herein "suburban water users," together receive up to a maximum of 184 mgd of water based on an existing agreement with the San Francisco Water Department./2,3/ Water rationing programs imposed in the City of San Francisco are extended in-kind to the suburban water users./4/

Implementation of the SFIA Master Plan would increase water consumption at SFIA to approximately 2.4 mgd (using the demand estimate on p. 401 of the EIR). The estimated demand for additional water supplies by the 4,390 housing units that would be needed long-term in San Mateo County and San Francisco is between 0.4 and 0.8 mgd./4/

SFIA current and long-term projected levels of water demand represent 4/10 of one percent and approximately 7/10 of one percent, respectively, of current water supply. The EIR (pp. 400-401) indicates that the San Francisco Water Department has included SFIA in its projections, and has assumed that SFIA would implement water conservation measures to reduce water usage. The demand for additional water supplies to accommodate 4,390 housing units long-term in San Mateo and San Francisco Counties represents 3/10 of one percent of the daily San Francisco Water Department supply during a non-drought year.

Long-term water supply planning to accommodate projected growth in population and residences (as envisioned in the general plans of Bay Area cities and counties) is controlled by the various public works departments, city planning agencies, the California Department of Water Resources, and other regional and local growth/infrastructure planning agencies. The potential growth in water demand by residential water users resulting from the hiring of additional employees under the SFIA Master Plan would be encompassed by the long-term water supply planning (and subject to the growth controls) of the city and county planning/permitting agencies in which such growth may occur.

In general, water supply planning to accommodate residential growth that may result from the implementation of the SFIA Master Plan has not been considered explicitly by cities within the SFIA environs./2/ The factors that determine whether sufficient water supply exists to accommodate potential residential growth associated with the SFIA Master Plan vary among the suburban water-user cities./2/ Discussions with suburban water users'

representatives indicate that water supply does not appear to be the factor limiting new residential growth in the SFIA environs./2/ For example, the availability of developable land was cited by representatives of the Cities of Burlingame, Millbrae, and San Bruno as a primary constraint to new residential growth. If water supply becomes a constraint to the approval of residential construction, new residential construction may be restricted by local planning controls such as the issuance of building permits.

The ability of local municipalities in California to meet growth in water demand beyond existing water supplies (assuming drought conditions do not persist) appears to rely on a combination of the following water supply strategies: more efficient collection and distribution of existing surface water supplies, including the possibility of some redistribution of agricultural supplies, installation of water-conservation devices, use of groundwater sources, conservation oriented water consumption habits (including retention of existing habits), and water reclamation./2,5/ For example, thirty percent of the pre-drought water demand for cities in San Mateo County served by the California Water Service Company has been saved through the existing conservation measures. Some of these conservation measures will result in long-term reductions in water demand./6/

Additional water supplies would be needed for the residences constructed as a result of growth induced by the SFIA Master Plan. The locations of such residences would be diffuse and are unknown at this time.

POWER SUPPLY

Comment

"P. 7 - Electricity and Gas - have already been greatly increased within last two years at P.G. and E. Millbrae Substation and in Airport West of Bayshore lands north of Madrone Street. Was that taken into account in this text?" (Jessie Bracker, letters of 8/18/91 and 8/27/91)

Response

The 15 Mega Watt (MW) and additional 10 MW power capacities referred to on p. 7 of the EIR are SFIA-requested increases in the amount of electrical power supplied from PG&E. As discussed on p. 180 of the EIR, the PG&E transformer serving SFIA has a maximum capacity of 46.3 MW. The forecast total maximum electrical load from all proposed

facilities is 52.6 MW (EIR p. 368). Therefore, an additional transformer bank would be needed to accommodate the additional demand. (As stated on p. 369 of the EIR, PG&E has indicated that substation expansion would be needed.) It is not known exactly what modifications the comment refers to. However, both the Millbrae substation and a substation known as the airport substation (owned by PG&E on SFIA property) were modified recently to increase electrical transmission capacity. Although the work performed was intended to increase the amount of power the transmission lines could carry, the work was not in response to the potential future expansion of the Airport./7/ As shown by the improvements discussed on pp. 368-369 of the EIR, modifications to electrical systems are an ongoing part of SFIA operations.

NOTES - Public Utilities

/1/ The California Department of Water Resources is currently considering changes to the Delta water quality goals and other water distribution and allocation programs statewide. The Central Valley Project, which supplies approximately 20 percent of water in California, is being considered for re-authorization by the U.S. Congress, and is also under consideration for transfer to the State of California./8/ During the Central Valley Project re-authorization process, the existing water allocation, pricing, distribution programs and guidelines may or may not be changed. The San Francisco Water Department is considering a review of its watershed management and water reclamation practices./9/ These potential changes in the underlying watershed management practices in California could affect the amount of water available during drought conditions or to serve future growth in the Bay Area.

/2/ Melissa Adams, City of Millbrae Water Conservation and Resources Manager, telephone conversation, April 27, 1992; Robert Bradford, San Francisco Water Department, telephone conversation, April 15, 1992; Ralph Kirkup, City of Burlingame Public Works Director, telephone converstation, April 27, 1992; Lee Ritzman, City of San Bruno Director of Public Works, telephone conversation, April 21, 1992; Sheri Saisi, City of Burlingame Planning Department, telephone conversation, April 27, 1992; Barney Tume, California Water Service Company, telephone conversation, April 27, 1992.

/3/ *San Mateo County General Plan,* 1986, Section 10, Water Supply.

/4/ *San Mateo County General Plan,* 1986, Section 10, Water Supply, Table 10.11, Projected Domestic Water Demand. Estimate indicated is based on a water consumption rate of 100-190 gallons per day per housing unit, multiplied by 6,850 housing units.

/5/ Ralph Kirkup, City of Burlingame Public Works Director, telephone conversation, April 27, 1992.

/6/ Barney Tume, California Water Service Company, telephone conversation, April 27, 1992.

/7/ John Holt, Pacific Gas and Electric Supervising Transmission Engineer, telephone conversation, April 20, 1992.

/8/ California Water Education Foundation, *California Water Map*, 1987.

/9/ Robert Bradford, San Francisco Water Department, telephone conversation, April 15, 1992.

AIR TRAFFIC SAFETY

The Notes for this section begin on p. C&R.377.

Comments

". . .[N]eighborhood safety issues are suggested by the potential large increase in overflights, incoming and outgoing, over our San Francisco neighborhoods. . .

"In addition to the foregoing, the DEIR makes no mention of how an increase of up to 40% in air traffic from SFIA will be managed in the skies around the Bay Area. As does the Master Plan, the DEIR simply dismisses this matter as within the purview of the FAA. Irrespective of the FAA's jurisdiction, or responsibilities, the increased air traffic still creates environmental concerns." (Timothy Treacy, Airport Noise Committee)

"Furthermore, due to the existing and expected increased traffic in the skies over our neighborhood, we are concerned about the safety of our skies, a consideration not addressed at all in the Master Plan or DEIR." (Bruce Krell, Forest Hill Association)

"We are additionally concerned about aircraft and neighborhood safety issues." (Carol Kocivar, West of Twin Peaks Central Council)

". . .If you overload our skies, which are already overloaded, with more airplanes competing for valuable airspace, we are all going to pay a price. And if that issue can't even be addressed in a Draft EIR, where is it going to be addressed?" (Don Bertone)

Response

Pages 242-244 and 407-408 of the EIR include a discussion of aviation safety at SFIA, including the role of the FAA in the management of the airspace, FAA design criteria and standards, the air traffic control system, and aircraft accidents. It is noted on p. 408 that implementation of the SFIA Master Plan could lead to an increase in the accident rate, but that the number of future accidents could be less than estimated (based on the national average accident rate) because of SFIA's historical safety record.

As noted on pp. C&R.198-201 herein, SFIA is within the service area of the Bay Terminal Radar Approach Control (TRACON) facility. The Bay TRACON provides air traffic services to, and thus is responsible for the safe management of the airspace within, the entire Bay region. According to the Airspace Element of the California Aviation System Plan, the Bay TRACON would have adequate capacity to support the annual and typical-hour SFIA and regional operations forecast for 2005. The CASP concluded, however, that the Bay TRACON would be capacity-constrained during peak hour conditions. (As shown on p. 64 of the EIR, the CASP forecasts of operations are substantially higher than the FAA or SFIA Master Plan forecasts.) /1/

The safe operation of the airspace immediately surrounding SFIA is the responsibility of the Airport Traffic Control Tower. The estimates of airfield capacity at SFIA (discussed in the EIR and on pp. C&R.46-55 herein) incorporate air traffic safety requirements and procedures that would be used by the SFIA ATCT. The potential capacity shortfall at SFIA during adverse weather conditions reflects the fact that air traffic control rules limit the number of aircraft that can land and take off at SFIA./2/

The FAA Aviation System Capacity Plan ". . .is intended as a comprehensive 'ground-up' view of aviation system requirements and development."/3/ As well as identifying recommended capacity improvements at individual airports, the Plan identifies new terminal airspace procedures that will increase capacity at some airports in the system; outlines programs to provide new technology to increase airspace capacity and improve airspace efficiency; and outlines programs designed to increase en route airspace capacity. The aviation system capacity requirements identified in the Plan incorporate FAA standards for air traffic safety. Implementation of the capacity improvements in the Plan could result in benefits to aircraft operations at SFIA and in Bay Area airspace./3/

Given the role of the FAA in the safe operation of the airspace, the capacity of the Bay TRACON to handle increases in regional aircraft operations, the application of safety-based rules to the operation of the SFIA airfield, and FAA plans to improve aviation system capacity, the implementation of the SFIA Master Plan would not result in reduced safety in neighborhoods subjected to SFIA overflights.

NOTES - Air Traffic Safety

/1/ Landrum & Brown, *Air Space Element, California Aviation System Plan,* prepared for the California Department of Transportation, Division of Aeronautics, August 31, 1991.

/2/ U.S. Department of Transportation, Federal Aviation Administration, *San Francisco Bay Area Airports Task Force Capacity Study of SFO, SJC, and OAK International Airports* (prepared jointly by the FAA, Bay Area international airports staffs, Air Transport Association, and the airlines serving the San Francisco Bay Area), 1987.

/3/ U.S. Department of Transportation, Federal Aviation Administration, *1990-91 Aviation System Capacity Plan,* September 1990.

GROWTH-INDUCING IMPACTS

Comment

"The DEIR fails to address the increased demand for child care activities as a growth inducing impact. This issue must be addressed and adequate mitigation measures offered." (George Foscardo, City of San Bruno)

Response

The demand for child care in San Francisco has emerged within the last few years as a planning issue. Further research and analysis will be required in order to identify new approaches for producing affordable programs to meet the growing demand for child care services. Because provision of child care services involves consideration of a broad scope of variables (e.g., social, economic and cultural aspects within a community) it is regarded as a planning issue, not an environmental impact issue subject to the provisions of the California Environmental Quality Act (CEQA). This interpretation was upheld in a recent State Court of Appeal decision, *San Franciscans for Reasonable Growth et al. v. City and County of San Francisco* [209 Cal. App. 1502, 1516 (1989)].

The importance of this issue has been recognized, however. As part of adoption of the Downtown Plan in 1985, the City Planning Code was amended to incorporate Section 314, "Child Care Requirements for Office and Hotel Development Projects." Section 314 requires developers and employers to provide space for child care facilities in development of new office and hotel projects containing 50,000 square feet or more, or pay an in-lieu fee to the City's Affordable Child Care Fund.

While Section 314 itself is an innovative program for responding to child care needs, other planning efforts are under way. The Mayor's Office, in conjunction with the Department of City Planning, the Child Care Law Center (a non-profit organization) and a multitude of City and community groups, have joined forces with the objective of developing a comprehensive plan containing a full program of implementing strategies to increase child care services in the City. It is anticipated, ultimately, that goals and policies with respect to childcare would be incorporated into the City's Master Plan.

WATER QUALITY

AIRCRAFT FUEL DUMPING

Comment

"Flights into San Francisco airport run the risk of having to dump fuel in our ecologically fragile Bay due to technical problems. And airplanes of the future using this airport would be larger and hold more fuel than present planes. Flights into San Jose would seldom find the Bay the only option when fuel dumping was necessary." (Patricia Clark)

Response

According to SFIA Administration staff, the dumping of aircraft fuel might occur as a result of an aircraft engine or mechanical failure (e.g., faulty landing gear) that occurs on take-off, during flight, or approach to an airport. In order for the aircraft to land safely, fuel must be jettisoned to reduce the aircraft's weight below the maximum permitted landing weight (e.g., in the case of an engine failure) or to further reduce the risk of fire (e.g., in the case of a wheels-up landing).

The Federal Aviation Administration's (FAA's) procedure for fuel dumping is covered in the FAA *Air Traffic Control Handbook* (Document No. 7110.65F), Section 6, which provides guidelines for aircraft routing, altitude assignment, separation criteria and information dissemination. The FAA Airport Traffic Control Tower at SFIA and the Bay Terminal Radar Approach Control Center (TRACON) direct aircraft, unless impractical for safety reasons, to fly out over the Pacific Ocean in order to jettison fuel. The other large civil and military airfields within the Bay Area environs (San Jose International Airport, Metropolitan Oakland International Airport, Moffett Naval Air Station, and Alameda Naval Air Station) that have aircraft arrivals and/or departures over the Bay likely follow similar procedures.

CONSTRUCTION IMPACTS

CUMULATIVE CONSTRUCTION ACTIVITIES

Comment

"When we also look at several of the projects that are on our own drawing board or that could be on our drawing board, to what extent does this project analysis impact that? For example, when we look at Mission Bay over that 15-year period of time, when we look at this airport expansion, when we look at the possibility of a south Bayshore plan and other things, to what extent are -- whether it be quality of life, whether they be goods and services, whether they be the employment pool, whether they be housing, et cetera, et cetera, et cetera, -- to what extent can San Francisco cope with projects that are as enormous as those kinds of projects over a similar time frame?

"I began to wonder just how big a nightmare could this project be. Again, if you look at them in isolation, you can begin to say: Gee, we can deal with that. But I wonder to what extent they become a bit differently evaluated in the context of these other big projects.

". . .Phoenix has gone through just a fantastic experiment with their own airport. When I look at some of the ideas in here, the idea for the rental car garage, that is right out of what Phoenix did, several other things are right out of Phoenix. I know that was one of those round-the-clock projects that was reasonably well managed and was done in just a very, very short period of time. Again, I don't necessarily think that the question of time maybe is an issue in this impact.

"I guess my question is, to what extent do we have any connection or any input to the body that would decide things like time frame? I think we have all been looking at . . .the airport as one of those never-ending sagas, and perhaps hoped that construction would be over. When you look at this 11-year thing, it really begins to boggle the mind. I guess the question is, what is the proper forum to deal with the question of time frame for a project like this?

"Maybe relating to the early comment, as we look at Baghdad by the Bay, to what extent does a major project like this over 11 years become another one of those straws to break the camel's back? To what extent does a project over an 11-year period as massive as this going to have an impact on flight of people from San Francisco? To what extent does this really become the thing where people say, 'I am not going to' -- and people of reasonably important means relative to the

tax base -- to what extent does this become the thing that really gets people to look at living in other places." (Commissioner Sewell)

Response

This EIR analyzes not only the impacts of this project on the environment, but also the impacts of the project in conjunction with other cumulative development. Most development impacts of the SFIA Master Plan would be located within San Mateo County and its cities. For example, construction noise would have local impacts within the City of Millbrae, only. The transportation effects from development in San Francisco are reflected in the traffic level of service analysis of freeway segments in the years 1996 and 2006, and are considered as part of the future base growth. Future base growth considers future development from San Francisco and other cities and counties.

Quality-of-life issues are fairly subjective. Decision makers may consider quality-of-life issues in their consideration of whether to approve this project or one of the alternatives (including either of the No-Project Alternatives). As other projects come forward for approval, quality-of-life issues and other concerns may be weighed in the decision-making process for each project. Quality-of-life issues are not related specifically to the California Environmental Quality Act (CEQA) but are one of the criteria that may be used by decision makers during a project's approval process. (Quality-of-life issues are discussed in the response on pp. C&R.383-384 herein.)

It is not possible to estimate whether incremental impacts of this or any other project, or whether the combination of effects from all projects, may change the quality of life such that some people may desire to reside in or work in San Francisco no longer. Numerous other factors determine whether people are satisfied with their place of residence or employment, including crime, the number and location of homeless people, perceived quality of amenities (including parks, schools, roads) and infrastructure (including transit systems and streets), availability of desired services, proximity to employment and housing, and other similar concerns. Even if some people may decide to reside or work in San Francsico no longer due to development and its resulting impacts, others may choose to live or work in San Francisco due to individual preferences for perceived amenities.

The City and County of San Francisco is the lead agency. For this project, the decision-making body that determines the adequacy of the EIR is the City Planning Commission;

the decision-making body that acts on whether to approve the project or one of its alternatives (including either of the No-Project Alternatives) is the Airports Commission. Thus the City Planning Commission has no decision-making role over the time frame for project implementation. However, the City Planning Commission may forward to the Airports Commission any concerns that it may have over construction duration or other project impacts.

QUALITY OF LIFE

Comment

"And to show you a little bit more, one out of every eight people in the United States lives in California. And San Mateo County has the highest density population following Alameda, San Francisco, and Los Angeles. I am just trying to show what the density picture is in San Mateo County. And when you talk about the United States as a whole, you can see, again, we are overdeveloped with homes and also with our airport. We must level off if we want to consider any kind of quality of life." (Rose Urbach)

"I appreciate the balancing act the planning commission must perform. However, existing overflight conditions in southern and western neighborhoods are currently mocking the City Planning Code's stated intent of preserving the character and quality of San Francisco's neighborhoods. Further, all of the Planning Commission's efforts to develop architectural controls maintaining scale and open space are folly if aircraft overflights make those homes and spaces intolerable." (David Deakin)

". . .[O]ur skies are saturated as it is. Our skies are no longer friendly. Our bay is being chewed up by not only greedy realtors but also the airport. Little by little, if this keeps up, we will not have a bay, we will be across, joining Oakland. Hopefully, this won't happen." (Bruno Bernasconi)

Response

Quality-of-life issues are fairly subjective. The Airports Commission may consider quality-of-life issues in its consideration of whether to approve the project or one of the alternatives (including either of the No-Project Alternatives).

It is not possible to estimate whether population density or aircraft overflight impacts of this project may change the quality of life such that some people may find it intolerable to continue residing in or working in the urban areas of San Mateo and San Francisco Counties. Numerous other factors besides overflight noise and population density determine whether people are satisfied with their place of residence or employment. Such factors include crime, the number and location of homeless people, perceived quality of amenities (including parks, schools, roads) and infrastructure (including transit systems

and streets), availability of desired services, proximity to employment and housing, and other similar concerns. Even if some people may decide to reside or work in San Francsico no longer due to its density or due to aircraft overflights, others may choose to live or work in San Francisco due to individual preferences for perceived amenities.

This project would not include any development within San Francisco Bay and thus would not contribute to the filling of the Bay so as to connect San Mateo County with Oakland.

MITIGATION, GENERAL

SCOPE

Comments

". . .[A]s Commissioner Sewell alluded to, the airport and the large companies that use the airport are, in a sense, like our downtown developers. And with our downtown developers who are building large projects with lots of workers, the city imposes a number of mitigation measures, whether that be in housing or transportation. I think there needs to be an analysis of what type of mitigation measures should be imposed, either directly on the airport or on the employers who would use airport space. I would like to see some analysis of perhaps even using some of the assumptions behind the downtown commercial office space projects and the mitigation measures that are imposed, just transfer some of those over to the airport and see what the cost would be to the airport or to the airline companies that use the airport." (Commissioner Morales)

". . . [W]e applaud the full disclosure that is in the EIR. There are a lot of problems that the EIR discloses. We are very concerned, though, that, as comprehensive as it is, it is not comprehensive in mitigation measures proposed to meet those very substantial significant effects.

"The airport must, as a proprietor, accept the willingness and show the intention to mitigate those significant impacts if they plan to continue their future expansion. This is probably the largest project San Mateo County will see in the near future, and it will have substantial impact on the ability of the region to accommodate any other growth." (Janet Fogarty, Mayor of Millbrae)

Response

Mitigation measures identified in an EIR must relate to potential environmental impacts that would result from implementation of the project. Mitigation measures for the downtown area of San Francisco, some of which have since been codified (or written into law), are based on the potential effects of development downtown. For example, the five-dollar-per-square-foot Transit Impact Development Fee (TIDF) (Ordinance 224-81) was implemented due to transit impacts caused by cumulative office development within greater downtown San Francisco. These impacts were disclosed in EIRs for office development downtown and the TIDF mitigation was tied directly to the lessening of such impacts. Thus such a measure cannot simply be transferred to the Airport without first

showing within the SFIA Master Plan EIR or some other study that similar effects on MUNI would occur at SFIA as a result of the SFIA Master Plan. Mitigation measures in the SFIA Master Plan EIR must be based on the potentially significant effects of this project. Such mitigation measures are included on pp. 411-434 of the EIR. Additional measures are included in responses to comments on specific topics above.

As stated above, this EIR discloses a number of potentially significant effects and measures to mitigate them. Given the general nature of the comment that is concerned about the EIR not being comprehensive in mitigation measures, it is not possible to respond in a specific manner about additional measures without knowing more specifically what the concerns may be. Comments on specific EIR topics are covered under specific topics, above.

An EIR must not only disclose significant effects, it must include feasible mitigation measures to lessen the impacts of any significant effects. However, there is no requirement under the California Environmental Quality Act (CEQA) that a lead agency implement mitigation measures if they are not feasible (CEQA *Guidelines* Section 15091). The lead agency may approve a project without mitigating all significant impacts if the agency determines that "the benefits of a proposed project outweigh the unavoidable adverse environmental effects" (CEQA *Guidelines* Section 15093). In other words, the lead agency may find that implementation of the project is more important due to its social or economic considerations than any environmental degradation that may result from its implementation.

FEASIBILITY AND COSTS

Comment

". . .[S]ome of the mitigation measures just talk about increasing Caltrain service, SamTrans, and I guess basically increasing the activities and services of other public entities. But there is no price tag associated with what it would cost to, in fact, increase those other public services. I think we need to have an assessment of those public costs to see if they are, in fact, feasible mitigation measures." (Commissioner Morales)

Response

The costs of mitigation measures may be included as necessary in the Findings on the EIR. To increase public services such as CalTrain and SamTrans, there would be a fiscal cost to implementing agencies. The City and County of San Francisco does not have authority to implement mitigation measures under the jurisdiction of other agencies. These other agencies would have to consider whether they would implement the identified measures based on their own budgets and other potential constraints. (See following response.)

IMPLEMENTATION AND ACCOUNTABILITY

Comments

"Many of the mitigations listed in the draft EIR, particularly the traffic mitigations, are ascribed to others as implementing agencies without indication of concurrence by those agencies. Mitigation measures identified in the DEIR which do not have written concurrence by the implementing agencies (other than SFIA), in effect, do not adequately mitigate impacts.

"Mitigations which require amendments to existing agreements or contracts with SFIA, which require amendments to the Charter for San Francisco, which require voter approval to be implemented, or which require other similar actions must be clearly identified in the EIR. The likelihood of such changes must be noted or, in effect, any such mitigations do not adequately mitigate substantially adverse impacts. . .

"The EIR must identify these potentially significant impacts and offer adequate mitigations, including identifying funds for mitigations, responsible agencies for mitigations, written agreements for mitigations, and any agreements or amendments to charter arrangements needed to provide adequate mitigation measures." (George Foscardo, City of San Bruno).

"Mitigating Measures: This is the first of the two most important aspects of an EIR, yet of the nine categories of mitigating measures, ranging from transportation to public services, SFO has not made any real commitments for which it can be held accountable (DEIR Vol I CH. V). The only so-called mitigating measures under the direct control of SFO that involve actual construction are the parking additions, access road widenings, marking of high-occupancy vehicle lanes, channelizing traffic lanes, and the marking of bicycle lanes all of which would

have been done under the expansion anyway. I must admit though, the thought of an additional 20 million passengers complete with luggage strapped to their backs pedaling furiously along Highway 101 in order to catch a flight does provide a certain humorous counterpoint to this rather serious business.

"Beyond the above, SFO offers only passive half-measures such as encouraging disincentives, collecting and disseminating information, and possibly cost-sharing with other agencies. It would appear that SFO and, of course, the public is at the mercy of the plans and budgets of BART, SAMTRANS, CALTRANS, FAA and the adjacent communities to provide the intersection modifications, highway access ramp monitoring, highway widenings, bus/train transit link development, air quality monitoring, and aircraft noise abatement procedures. I simply must ask why most of these proposed mitigation measures are not already in place and functioning. It really is a shame that so little thinking and imagination has been used. All real commitment seems absent." (Alyn Lam)

"The EIR does not stipulate who will be responsible for implementing the list of traffic mitigations. A mitigation monitoring program indicating the actions to be taken and the responsible parties should be included." (Ed Everett, City Manager, City of Belmont)

"The DEIR proposes various mitigation measures to minimize adverse impacts of the project. Many of the proposed mitigations would alleviate only situations that are internal to the airport. Some of these, in fact, would negate other efforts, and would promote, not reduce, increases in vehicular traffic. Some proposed mitigations depend entirely on other agencies for both capital and operating expenses, but there is no documentation of agreements having been made with said agencies in order to vallidate the proposed mitigations. . .

"We call on the SFIA to cooperate with governmental agencies in the neighboring jurisdictions to develop meaningful mitigations to alleviate the detrimental environmental impacts of the proposed project, to delay development of the project until adequate mitigations can be assured, and, as a last resort, to reduce the scope of the project to reduce the adverse impacts. The description (Chapter VI, pages 435-436) of significant environmental effects that cannot be avoided if the proposed project is implemented convincingly documents reasons that SFIA must reconsider and alter the expansion plans set forth in this proposed Master Plan." (Onnolee Trapp, Leagues of Women Voters of San Mateo County)

Response

If the project were to be approved, and if measures identified in the EIR to mitigate potentially significant effects were not implemented, the project would result in a significant effect on the environment due to any such unmitigated impacts. Thus the project could not be approved without findings of overriding consideration for the potentially significant effects that would not be mitigated. When the lead agency for project approval is different from the decision-making body for implementation of a mitigation measure, the lead agency would have no authority over implementation of such a mitigation measure. The forum for determining whether the SFIA Master Plan or any other development project should pay a specific fee amount to an agency as an appropriate means of mitigating operating deficits for other agencies rests with the other agencies. In the absence of a fee requirement or other mitigation measures under the jurisdiction of other agencies, the EIR identifies on p. 435 that, for those potentially significant impacts that could not be mitigated to a less-than-significant level by measures included as part of the project, the SFIA Master Plan would have a significant effect on the environment.

CEQA does not require that detail regarding disclosure of all actions or voter approval required to implement a measure be included in an EIR. Nor does CEQA require that the likelihood of such actions be included, because such an assessment would be speculative in nature. CEQA does not require that identification of funds available for mitigation measures be included in an EIR. (See CEQA *Guidelines* Sections 15126(c), 15096(g).)

After each mitigation measure this EIR notes which agencies would be responsible for implementing it. Mitigation measures identified in the EIR are identified by the EIR authors and not by SFIA. During the comment period on the Draft EIR, the public had the opportunity to suggest adding mitigation measures to the EIR that had not been previously identified by EIR authors. See specific comments and responses on mitigation measures, above, for measures added to the EIR as a result of public input. Any mitigation measure that would be the responsibility of SFIA to implement could be required as a condition of project approval. All feasible mitigation measures under SFIA jurisdiction would have to be implemented. (See CEQA *Gui delines* Section 15091.)

If the project were to be approved, SFIA would consider impacts of any mitigation measure before considering their adoption.

The function of an EIR is to disclose potentially significant effects of development and to identify measures to mitigate those effects. Proposed mitigation measures have not yet been implemented because this EIR is the forum for identifying significant effects and measures to lessen those effects. This is the first time that some effects have been objectively analyzed and disclosed. Once a measure is required by law to be implemented it would no longer be considered a mitigation measure. For example, the Transit Impact Development Fee (TIDF) for downtown San Francisco is no longer considered to be a mitigation measure for downtown office development because it is required to be implemented for certain projects.

A mitigation monitoring program must be adopted at the time of project approval (as required by AB3180). It is not necessary to include details of this program in the EIR. If the project is approved, then a monitoring program will be required for those mitigation measures that are to be implemented. Because the Airports Commission has not yet deliberated on project approval, or decided which measures to include (if the project or one of the alternatives were to be approved), it is premature to include a monitoring program at this time.

SIGNIFICANT EFFECTS

Comments

"There is a famous old remark - 'We're damned if we do and damned if we don't' - which I think fits this situation exactly in relation to my opinions. The Document covers a vast amount of information. And yes it is a fantastic Airport but - The Noise and Pollution problem is seemingly devastating to many unless these problems can be much more efficiently mitigated than is suggested within these documents." (Jessie Bracker, letter of 8/27/91 and public hearing of 8/27/91)

"The Leagues of Women Voters are concerned about the environmental impacts of the proposed extension of the airport and particularly concerned about the projected 71 percent increase in annual passengers by 2006 with the resulting increases in vehicular traffic on Highway 101 and ramps and arterials, feeders, and intersections in adjacent cities, with concommitant increases in noise and air pollutants, both during construction and on a cumulative basis." (Onnolee Trapp, San Mateo County Leagues of Women Voters, public hearing of 8/27/91)

"On Page 438, I found that to be the most enlightening statement in the whole document to me. I would like to read it so everyone knows that it is in there if they didn't get to read it. It says: 'Significant irreversible environmental changes which would be involved in the proposed action, should it be implemented -- additional vehicle trips, plus construction activities from new development, would contribute to future cumulative air quality impacts and particulate matter, carbon monoxide, and precursor emissions to ozone.' I thought you did very well on that paragraph. I want to compliment you for digging that out." (Jessie Bracker, letter of 8/27/91 and public hearing of 8/27/91)

"SFIA contributes significantly to the adverse air quality of the region. With the proposed expansion and associated increases in traffic, approval of local developments could be negatively impacted due to cumulative air quality impacts created by SFIA." (George Foscardo, City of San Bruno)

"Significant air quality effects from project-related surface traffic are classified as unavoidable. This issue should be revisited." (Robert Treseler, City of Millbrae)

Response

The comments are consistent with the information presented in the EIR. Implementation of the SFIA Master Plan would have significant effects on the environment. This project could thus not be approved unless the San Francisco Airports Commission were able to make findings of overriding consideration in the project-approval process.

EIR PROCESS

PUBLIC PARTICIPATION

EIR Availability and Readability

Comments

"I know that many public officials have also conscientiously studied the SFIA DEIR, which is a lengthy challenge to read and carefully analyze in the context of all the variables addressed. It was also somewhat of a challenge for me, as a member of the public not on the distribution list, to obtain a copy to read. When I telephoned the Airport Commission office, I was informed that it was only available in the Commission office, and not in public libraries; in fact, it is in public libraries in seven cities. This kind of disincentive to public participation in the EIR process is undesirable." (Onnolee Trapp, Leagues of Women Voters of San Mateo County)

"I live in San Bruno and am directly impacted by the noise in San Bruno. And I have a couple of concerns not directly related to the Environmental Impact Report, but more related to the availability of the Environmental Impact Report. I did a little checking around to try to find out who had Environmental Impact Reports. Now, out of the cities of San Bruno, South San Francisco, and Millbrae, which is approximately 100,000 people, there were four copies of the Environmental Impact Report that were generally available to the public. Out of that, one copy is a circulating copy, meaning you can check it out. I was not able to check out a copy that I could take home and look at. I think that's something that needs to be addressed. We need more copies available at our local libraries and more circulating copies that people can take home and look at. I went to Operation Landside at the airport. They do not have any -- didn't know anything about it. I finally ended up at the airport engineering office, and they told me that I had to go to the library. The report is very long and does need to be taken home, where somebody can sit down and digest it for a while.

"I found some parts of the report, that, when I finally did find one that I could look at, were unreadable. Volume II specifically Report 64-91, Figures 1 through 3, were almost unreadable as to the decibel levels.

". . . I think people at the airport are directly impacted, because I work at the airport. I'd like to see Environmental Impact Reports and construction reports available to people at the airport at some centralized location -- and people know that they're there." (Edwin Works)

Response

The public was notified of the publication and availability of the SFIA DEIR by notices published on July 11, 1991 in both the *San Mateo Times* and *San Francisco Independent.* In addition, signs were posted regarding DEIR availability in public areas of the Airport. In accordance with the California Environmental Quality Act (CEQA), *Guidelines* Section 15087, the published public notice and posted signs also provided information regarding the location where copies of the DEIR were available for public review, the time period that public comments would be accepted, and where and when the two public hearings would be held.

As to the first comment, we apologize for any misinformation given by the Airports Commission office that indicated that no copies of the DEIR were located at local public libraries and that copies of the DEIR were located only at the Commission office. As correctly noted by the commenter, copies of the DEIR were located at local libraries; however, 14 libraries had copies of the DEIR for public review and not 7, as the commenter indicated. In addition, copies of the DEIR were available without charge for distribution to the public at the San Francisco Department of City Planning.

A list of the locations where copies of the DEIR was deposited for public review is included in the back of the DEIR under the heading of "X. DEIR Distribution List." The 14 libraries to which a copy of the DEIR was distributed included:

1) San Francisco Main Library - Civic Center, San Francisco (2 copies);

2) Environmental Protection Agency (EPA) Library, 215 Fremont Street, San Francisco;

3) Stanford University Library, Stanford;

4) Government Publications Dept., San Francisco State University, 1630 Holloway Ave., San Francisco;

5) Hastings College of the Law - Library, 200 McAllister Street, San Francisco;

6) Institute of Government Studies, University of California, 109 Moses Hall, Berkeley;

7) San Mateo County Library, 25 Tower Road, San Mateo;

8) City of Brisbane Library, 250 Visitacion Avenue, Brisbane;

9) City of Burlingame Library, 480 Primrose Road, Burlingame;

10) Foster City Library, 600 Foster City Boulevard, Foster City;

11) City of Millbrae Library, 1 Library Avenue, Millbrae;

12) City of Pacifica Library, 104 Hilton Way, Pacifica;

13) City of San Bruno Library, 701 Angus Avenue West, San Bruno; and

14) City of South San Francisco Library, West Orange Library, 840 West Orange Avenue, South San Francisco.

In total, there were 14 or more copies distributed for public review at the 14 different library locations. There were initially about 250 individual copies of the DEIR sent without charge to known interested parties, agencies, local governments, elected officials, companies, and the media. In addition, about another 145 individuals, agencies and companies received a Notice of Availability of the DEIR and could request a copy if interested. After the initial distribution, another 85 copies of the DEIR were requested and distributed without charge, including copies of the DEIR which were picked up by people at the Department of City Planning. In total, approximately 340 copies of the DEIR were distributed for public review. The initial distribution list is included in the last pages of the DEIR under "X. DEIR Distribution List."

CEQA requirements regarding public review of a draft EIR are discussed in *Guidelines* Section 15087. Section 15087 provides in pertinent part the following:

Section 15087. Public Review of Draft EIR

"(a) The lead agency shall provide public notice of the availability of a draft EIR. . . Notice shall be given to all organizations and individuals who have previously requested such notice and shall also be given by at least one of the following procedures:

"(1) Publication at least one time by the public agency in a newspaper of general circulation in the area affected by the proposed project.

"(2) Posting of notice by the public agency on and off the site in the area where the project is to be located.

"(3) Direct mailing to owners of property contiguous to the parcel or parcels on which the project is located as those owners are shown on the latest equalized assessment roll....

"(d) Public agencies shall use the State Clearinghouse to distribute draft EIRs to state agencies for review and should use areawide clearinghouses to distribute the documents to regional and local agencies.

"(e) To make copies of EIRs to the public, lead agencies should furnish copies of the draft EIRs to public library systems serving the area involved. Copies should also be available in the offices of the lead agency."

As the lead agency complied with the above CEQA requirements regarding adequate notice, requesting public comments, noting the location where the document could be reviewed, distributing numerous copies of the document for public review, and indicating where and when scheduled public hearings would be held, the DEIR was adequately available for public review.

As to the readability or legibility of the DEIR document, to the best knowledge of the distributing agency, copies of the DEIR were legible when distributed to the local libraries for public review. If a page within a copy of the DEIR was inadvertently blurred when photocopied, as indicated by one commenter, we apologize; however, there were other copies of the DEIR available for review. In addition, the last pages of the DEIR indicated where other copies of the DEIR were available for review and in the alternative, the reader could have called or written the lead agency and requested a copy of the DEIR be sent to him or her.

Opportunities for Public Comment

Comments

"Notice: Although a 45-60 day review period may seem adequate. (DEIR Vol. I Ch.II §E) it is not considering the delay in the distribution of the DEIR to the public and the questionable public notice. It is my understanding that the only notice published was in the San Mateo Times. It was only by word-of-mouth that I became aware that a DEIR has been issued. Considering the scope and the $1.7 billion "price tag" on the proposed expansion, the two public meetings that were scheduled to be held on the evening of August 27th in Burlingame and the afternoon of August 29th in San Francisco seemed woefully inadequate. Afternoon meetings, particularly, are difficult for most people to attend. I get the distinct feeling that public input is being deliberately discouraged." (Alyn Lam)

"First, I want to thank you and to ask you, Ms. Sahm, to take our thanks to the Planning Commission for showing concern and having a meeting on the Peninsula. When I met with Mayor Agnos a few weeks ago, he said that the City of San Francisco wanted to be neighborly to its Peninsula neighbors. And we are encouraged. This shows that intent to be neighborly." (Janet Fogarty, Mayor of Millbrae)

". . . I am very concerned with . . . staff's suggestion, that the response period be closed now, that additional information, which you have requested about the mitigations and alternatives, which arguably, . . . are probably the most important aspects of a Draft EIR, that that be put off until later. My understanding is, if that is put off to later, the public may not comment on those. The public hearing is closed. I do not think that is fair to the public, to our committee, and to the community at large, or to the decision-makers." (Curt Holzinger, Airport Noise Committee)

". . .I don't find that any neighborhoods have been properly notified. This is probably because this plan doesn't place an airport in any of the San Francisco neighborhoods. But, nonetheless, one of the worst impacts that this airport expansion will do will bring all of the noise and pollution into the neighborhoods.

"Nobody has come forth. There have been no mobs coming down, as there was on the Hazardous Waste Plan. Nobody seems to know what is going on, yet public comment period is about to be closed. This is a much more serious problem. This isn't a building going up on the corner of such and such. This is the Airport Master Plan to go into the next century. And to simply close public comment, based on the fact that all the facts are supposedly in would really be appalling. And I don't think it should fly at all today." (Don Bertone)

". . .It's amazing to me, after the publicity that we had on the last hearing, the lack of interest, aside from city officials, that the department and I personally have received on the project, despite a newspaper editorial and a story that was somewhat controversial. . .This may be evidence of two things. Either the public doesn't care or the public doesn't know enough about it to really care, and that presents an interesting challenge to the Airports Commission in terms of dealing with this particular project -- and that is, it will be controversial." (Commissioner Engmann)

". . .The two most important parts of the plan, as they affect the citizens of San Francisco, the effects of the plan expansion, and the proposed mitigation, have been put off for further action by

the staff, and public comment will be foreclosed. These two aspects of the Draft EIR are of most significant import to those of us who live and work in the city." (Carol Danville, Glen Park Association)

Response

A total of 102 days were provided for public review of, and comment on the SFIA DEIR. CEQA generally requires a public review period of between 30 and 90 days, except in unusual circumstances (*Guidelines,* Section 15087(c)). Public notice of the publication and availability of the SFIA DEIR was published in the *San Francisco Independent* and the *San Mateo Times* on July 11, 1991, and posted in public areas of the Airport. Although there were originally two scheduled public hearing dates, ultimately three public hearings were held. For the convenience of Peninsula residents, the first public hearing was held the evening of August 27, 1991 at the Clarion Hotel in Millbrae. The second scheduled public hearing was held in San Francisco on August 29, 1991. This public hearing was extended to the evening of October 17, 1991 by the City Planning Commission. The public comment period was also extended from September 10, 1991 to October 21, 1991, or four days after the last public hearing date. Thus, the DEIR comment period was 102 days, July 11, 1991 to October 21, 1991, --during which written comments were accepted. It should be noted that CEQA does not require public hearings as part of the environmental review process, although the use of public hearings is encouraged (*Guidelines,* Section 15087(g)). (See also the response to the previous comment on the EIR availability and readability.)

Participation of Oakland and San Jose Airports

Comment

". . .It's very difficult for me to try and evaluate the quality of the data or the correctness of the data. There are times, as we do with other EIR's, we ask competitors about the EIR and the information, and not necessarily evaluating San Francisco Airport's business plan, but more so about the data. I don't know if we -- it doesn't appear that we have a great deal of comments from Oakland or San Jose Airports, but maybe we should, as a regional analysis, ask for their input and comments." (Commissioner Hu)

Response

Airports in the region had the opportunity to provide comments on the DEIR, as did the public in general. During the approximately three and one-half month public comment period, no comments were received from any of the other Bay Area airports. Caltrans Division of Aeronautics submitted comments regarding the DEIR. However, these comments were specific to SFIA and did not mention the Bay Area's other regional airports. The Metropolitan Transportation Commision (MTC) provided indirect comments regarding the interests of the other Bay Area airports. It should also be noted that MTC is currently updating the Regional Airport System Plan, in which all of the airports within the region are addressed. In fact, substantial preliminary data and analysis from MTC on the Regional Plan are included within this document under Project Description, Regional Planning and Coordination and Alternatives, pp. C&R.8-45, 56-100 herein, because the material became available after preparation of the DEIR.

PLANNING COMMISSION CONTINUATION OF COMMENT PERIOD

Requests for Additional Data and Discussion

Comment

"I would like to suggest that we continue the hearing until we are able to, first, get the comments from the other regional agencies.

"Second, that we have some of the regional data that we talked about. I personally think that is very important in terms of where people are coming from and the potential environmental impacts of the regional transportation systems.

"Thirdly, until you feel comfortable or perhaps members of the public or the commission itself can come up with some more meaningful potential mitigation measures that might be discussed, as I think all the commissioners have suggested, and maybe the Airports Commission would like to have a joint hearing with us if we want to get into the substance of it, or at least perhaps more than just one person from the Airports Commission staff might want to come so we can discuss this a little more in depth. I don't know whether that is September or October, when we can get a package like that together for us to discuss." (Commissioner Engmann)

"At the last hearing [August 29, 1991], I think commissioners made a myriad of requests from the staff for additional information to include in the EIR. As I understand it, there are approximately five reports that have been provided . . . particularly relating to regional traffic information of airport origin that I had felt strongly about should have been included, and which, I understand, will be included in the Draft EIR.

"I further understand that much of the material, or at least some of the material that we requested relating to alternatives, additional mitigations, and other general comments, such as response to the ballpark down in that area, are more appropriately included in the Responses and Comments, and won't be included in the EIR, but included in the Responses and Comments, which does get incorporated into the Final EIR. . ." (Commissioner Engmann)

Response

Barbara Sahm, the Environmental Review Officer, stated at the August 29 public hearing: "Commissioners, if you are talking about providing some of the additional information, it would be appropriate, and I think important, to make this information available to the public before the Commission holds the hearing and give the public at least a couple of weeks to digest the information.

"I would like to suggest if we can continue this to the 17th, that I endeavor to get the additional information that the Commission is interested in having available by October 1 so that the public has two and a half, nearly three weeks to review the material. Some of it is indeed in the file, but I'm sure not all of it is."

At the August 29, 1991 City Planning Commission public hearing, the Commissioners decided to continue the SFIA DEIR public hearing to October 17, 1991 and extend the written comment period from September 10, 1991 to October 21, 1991, to permit time for review and comment on the additional materials requested by the Planning Commission. On October 4, 1991 Barbara Sahm transmitted the promised package of additional materials to the Planning Commissioners, to public libraries that had copies of the Draft EIR, and all persons who had commented on the DEIR prior to October 4, 1991. The information responded to the various requests made by the Commissioners during the August 29, 1991 public hearing. The October 17, 1991 public hearing was held 13 days after the additional information was distributed The public written comment period closed on October 21, 1991, 17 days after the information was distributed. The information

transmitted to the Planning Commissioners and others on October 4, 1991 is included in this document as C&R Appendix A. It should be noted that the provision of the additional information and additional time to review this information is not required by CEQA, but was provided as a courtesy to the Planning Commission and the interested public.

The following is a brief description of the additional information provided in the October 4, 1991 transmittal package.

The material referred to as "Attachment A" in the October 4, 1991 informational package references the 1990 Air Passenger Survey prepared by MTC, released for public use in August 1991. Although not reproduced here, the survey is on file with the Department of City Planning and available for public review there or at MTC offices. The Air Passenger Survey covers passengers arriving at the three major Bay Area airports. As was noted in the discussion, it was not used in the DEIR because it was not available until after the draft was published. The DEIR, however, does explain the surveys used, as well as assumptions and methodology used that formed the project passenger and employee trip distribution noted on pp. 287-292. The report also summarizes the Airport's information on the proportion of flights heading generally for international, domestic and Southern California destinations. The MTC survey also provides some limited information on links between the passenger survey information (where people are coming from to get to the Airport) with the flight destination information (where people who use the Airport are going).

"Attachment B" noted in the transmitted materials includes portions of work in progress on the Regional Airport System Plan. It is being prepared under contract by TRA Airport Consulting for MTC. The Plan Update, originally expected for release in 1991, is now expected to be completed sometime in late 1992. So far, information available to the public includes information on preliminary forecasts of growth at the various regional airports, an inventory of present facilities and their capacities, and a draft discussion of alternative regional planning scenarios. The preliminary aviation demand forecasts were not used in the SFIA DEIR because they were not finalized at the time the DEIR was published.

"Attachment C" referenced in the transmitted materials contains additional information on the status of San Jose International Airport expansion plans.

"Attachment D" of the package is a brief explanation of airport operations and the regulatory framework for airport operations. While this information was not specifically requested by the Planning Commissioners, it is useful in the context of the SFIA Master Plan EIR. The provided information is commonly known to those who run airports, but for those who simply use airports, it presents a useful summary of airport information. It includes information on the extent to which the local operator can control airport activities, a brief discussion of airport economics, and a summary of Federal regulatory history.

"Attachment E" provided in the package includes copies of comment letters received by the lead agency from regional agencies such as MTC, ABAG and Caltrans Division of Aeronautics as of October 4, 1991 regarding the DEIR up to the time of transmittal.

EIR ADEQUACY

Scope of Information Included

Comments

"But my biggest concern is making sure that all of the information that is reasonably available on the project that relates to its environmental impact be included in the document somewhere. I am not so much concerned as to whether it's in the body of the EIR or whether it's in the Responses and Comments, but that it be included so that future decision-makers can make an appropriate decision with all of the information that is in there. . .

". . .The EIR process is a process of trying to provide as much information to decision-makers that are going to make the final decisions on this project, which won't be the Planning Commission. It will be the Mayor, the Airports Commission, and the Board of Supervisors and any other regional agencies that might have impact or have a decision in this process. And that's what I had meant to say. . . " (Commissioner Engmann)

"Please include and address the comments in this letter as well as the issues, facts and the alternative land use and transportation proposal raised in the document referenced herein in both the 'Comments and Responses' section of the Draft EIR and the Final EIR. Furthermore, I ask that you reproduce this letter and the enclosed 'alternative' in their entirety (no summaries) in the Draft EIR and the Final EIR. Substantiation is provided by the documents listed in the attached 'Major Substantiating Documents and Report.'

"It is my position that local and regional agencies have failed to address the issues, fatal flaws and alternative proposals contained in the attached list of reports [on the following page] and that they must be addressed in this EIR. . .

"It is my position that under CEQA Guidelines cited below, the Transit Link System proposal must be formally studied as part of the SFO Master Plan DEIR or through a Supplemental DEIR. . . [Mr. Queen cites CEQA Guidelines §15088, 'Evaluation of and Response to Comments', and emphasizes the requirement that the Lead Agency make a good-faith effort to respond to all comments using a reasoned approach.]

"During the course of the past two years I have submitted detailed 'Public Comments' to the Lead Agency charged with preparing the respective EIRs detailed in the attached reports listing. In every case the Lead Agency has chosen to not address the issues, alternatives and detailed comments presented, and thus, I have wasted a great deal of time, and in many cases hundreds of hours, preparing these comments to no avail.

"For this reason I am not submitting detailed comments regarding the SFO Master Plan DEIR. I would, however, repeat my public testimony given at the August 29, 1991 Public Hearing: The SFO Master Plan DEIR does not contain any data pertaining to costs or an analysis of socioeconomic impacts associated with the project per the requirements cited below:

"Under Section 15131 of the CEQA Guidelines, et al (quote):

> "Financial Analysis - Socio-Economic Impact
>
> "Governmental bodies have established the interpretation of state and federal EIR and EIS statutes and guidelines where socio-economic and financial impacts are not addressed as legitimate project issues.
>
> "However, CEQA provides that socio-economic considerations shall be included in an EIR if a 'chain and effect to actual physical changes can be demonstrated' (Section 15131).
>
> "It is my position that socio-economic impacts must be considered because the proposed project elements created this 'chain and effect to actual physical changes' in that implementation of any alternative in the EIR will result in the 'timing and type of redevelopment' in terms of:

Major Substantiating Documents and Reports

REF:	TYPE:	ADDRESSEE	TITLE / SUBJECT / DESCRIPTION	DATE	PAGES
# 1	Study:	Mayor Agnos, Supervisors, Registrar of Voters, District Attorney	*"Analysis, Waterfront Transportation Projects (Prop B-Sales Tax Increase), Fraudulent Misrepresentation of Fact."*	October 16, 1989,	4 pages.
# 2	Study:	Mayor Agnos, Supervisors, et al	*"A Unifying Theory of Political Corruption/Constitutional Means for Politically Eliminating It."*	February 1990,	28 pages.
# 3	Study:	Mayor Agnos, Supervisors, Planning Commission,	*"Fiscal, Financial & Social Evaluation of the Mission Bay and Related (Publicly-Funded) Infrastructure Projects, Misrepresentation of Fact, 34 Fatal Flaws."*	June 1990,	54 pages.
# 4	Letter:	Mayor Agnos, Supervisors, Planning Commission, et al	*"Mission Bay Ballot Issue, Fraudulent Misrepresentation of Fact, 34 Fatal Flaws."*	August 14, 1990,	3 pages.
# 5	Proposal:	Mayor Agnos, Supervisors, Planning Commission	*"San Francisco Public Hearing Policy."*	August, 1990,	1 page.
# 6	Letter:	Mayor Agnos, Supervisors, Planning Commission	*"Planning Department's & Planning Commission's Flawed EIR Process."*	October 29, 1990,	12 pages.
# 7	Proposal:	Mayor Agnos, Supervisors, MTC, et al	*"Privately Funded Rail Small Business, Sports, Convention, Housing Transit Center / Integrated (Regional) Transit System, (Update BJT."*	Nov. 1, 1990,	36 pages.
# 8	Letter,	Mayor Agnos, Supervisors, Planning Commission	*"Fatal Flaws, Compliance Gov. Code 65009, Mission Bay Dev. Agreement, w/Substantiating Documents."*	Nov 15, 1990,	500+ pages.
# 9	Letter,	Mayor Agnos, Supervisors,	*"Improper Taking, Eminent Domain, Misuse of Fed Funds."*	December 10, 1990,	5 pages.
#10	Letter:	Mr. Joe Cheung, Dept of Public Works,	*"Fatal Flaws, Waterfront Transportation Project EIS, 34 Fatal Flaws."*	December 23, 1990,	10 pages.
#11	Letter:	Mayor Agnos, Supervisors, Planning Commission	*"Unresolved Fatal Errors, Mission Bay EIR Certification, 34 Fatal Flaws,et al."*	January 7, 1991,	6 pages.
#12	Letter:	Mr. Hank Dittmar, MTC,	*"New Rail Starts Program (Resolution 1876 Update)."*	January 14, 1991	
#13	Presentation,	Dept. City Planning	*"SBDC's Land Use & Transportation Proposals:* "Dept. City Planning/Embarcadero Citizen Advisory Committee, Save Taxpayers $2.7 billion"	March 26, 1991,	20 pages.
#14	Brochure:	Mayor Agnos, Supervisors, et al	*"Declaration For Restoring Economic and Social Freedom,"*, (Synopsis)	May 28, 1991,	2 pages.
#15	Report:	MTC	*"Public Comment, MTC's Regional Transportation Plan (RTP) Draft EIR, w/Alternative Proposals"*	June 14, 1991,	14 pages.
#16	Letter:	Mayor Agnos, Supervisors, MTC	*"Non-Profit Housing Project, Abandon Public Easement, Rail Commerce ROW, 2nd & King Streets"*	June 24, 1991,	7 pages.
#17	Report:	MTC, BAAQMD	*"Summary/Analysis of MTC's Bay Area Travel Forecasts (Models), Facts Suppressed in EIRs, Hearings, Media."*	July 14, 1991,	14 pages.
#18	Report:	BDCD, MTC	*"Public Comment on the BCDC's Bay Plan Amendment: No. 3-91, re Stopping Dredging, Kill Ocean Commerce."*	July 18, 1991,	11 pages.
#19	Letter:	Assemblyman Byron Sher,	*"AB 1309, BCDC's Bay Plan, Stopping Dredging, Kill Ocean Commerce."*	July 22, 1991,	2 pages.
#20	Brochure:	General Public	*"Brief Position Paper."* Dahnert C. Queen, Candidate for Mayor,	July 29, 1991,	1 page (plus Substantiating Excerpts).
#21	Report:	MTC, BAAQMD,	*"Public Comment, BAAQMD's Clean Air Plan (CAP) Draft EIR."*	August 19, 1991,	5 pages.
#22	Letter:	Fed. Judge T.E. Henderson,	*"Ruling: Bay Area Transportation/Environmental Plans Inadequate; Request TRO."*	Aug. 23, 1991,	5 pages.
#23	Report:	BART, MTC	*"Public Comment, BART's Proposal to Warm Springs Extension Draft EIR, w/Alternative Proposal."*	August 26, 1991,	11 pages.
#24	Pro Per Suit:	Superior Court,	*"Dahnert C. Queen v Democratic Central Committee, CA Constitution Art 11, Sec 6(b), (Stop Endorsements)."*	August 28, 1991,	3 pages.
#25	Letter:	League of Women Voters, et al,	*"Brief Biography / Major Issues."*	September 6, 1991,	2 pages.
#26	Letter:	The Honorable John Seymer	*"Facts, Considerations, Alternatives Regarding Bay Dredging and Disposal."*	September 11, 1991,	3 pages.
#27	Letter:	Mssr. Weir, Schroder, MTC	*"TIP, RTP/EIR, Notice, Failure to Comply with Federal/State Statutes."*	September 11, 1991,	3 pages.

"• . . .private and/or public development plans to include high-rise offices, retail, multi-family residential and medical facilities.

"• . . .specific area plans being redesignated from (low density) industrial parcels to (high density) residential and/or commercial (office space) use in areas compatible with the elements of the project.

"• . . .general area plans being redesignated from (low density) industrial parcels to (high density) residential and/or commercial (office space) use in areas compatible with the elements of the project.

"• . . .substantial increase (70 percent) in air passengers.

"• . . .substantial increase (?) in transportation and other infrastructure facilities.

"Authority cited: 'Socioeconomic Report for the Bay Area 1991 Clean Air Plan EIR, p.1, footnote #1.

"Discussion: Implementation of the project would result in increased population density, increased vehicular traffic, air and water (environmental) impacts, and increased demands for additional infrastructure (water, sewer, power, etc.) and thus, the cost of the total project, definition of its elements, funding sources, construction considerations, the socio-economic impacts relative to redefined land use, the displacement of residents and companies, the displacement/replacement of job categories/skill levels/wages, increased density, and transportation elements including ALL transportation alternatives and many other factors are presented in a very cursory and generally unclear manner or not addressed at all." (Dehnert Queen, Small Business Development Corporation)

"Full Disclosure: The second of the two most important aspects of an EIR is full disclosure. Public input from an uninformed public is meaningless! There are 'hints' throughout this entire DEIR that it is not complete. For example, under Alternative B: Onsite (DEIR Vol. I CH. I Pg. 16) the report states that 'A second Onsite Alternative incorporating proposed SFIA runway expansions is not included in this EIR. A preliminary feasibility study for the expansion of SFIA runways completed in June, 1990, includes proposed new runway locations that could conflict with existing uses and proposed Master Plan projects in the East Field Area.' If this refers to the report developed by Greiner Engineering of Tampa, FL. (DEIR Vol I CH. IV §B) it certainly will! It is rumored that not only are new runways proposed for construction in San Francisco Bay but the existing runways will also be lengthened and extended into the Bay." (Alyn Lam)

"The fact of the matter is, all of us, various representatives from different parts of the city, put in a lot of time for free on the Airport Noise Committee. We search the facts. We spend a lot of time. We come up with comments. We mail them into the EIR, whoever is supposed to be dealing with it. Yet, none of them are addressed or even acknowledged. What's the point of having an advisory committee to do the work for the City and County if the very people who are supposed to be dealing with this, that are supposed to be the experts, don't even get their comments acknowledged in an EIR? This needs to be addressed over again." (Don Bertone)

Response

A wide array of information is included in the EIR. Detailed information provided includes project description; airfield capacity and delay information; discussion of regional planning and coordination; land use and plans; transportation setting, impacts and mitigation; aircraft noise setting, impacts and mitigation; air quality; cultural resources; discussions on hazardous material and waste; employment and housing; public utilities; air traffic safety; geology and seismicity; energy issues; public services; water quality; growth-inducing impacts; construction impacts; general mitigation; significant effects; and the quality of life. Feasible alternatives were also reviewed and evaluated.

A commenter noted that documents identified on a list he submitted should have been evaluated in the EIR. However, most of the documents referred to are not relevant to the SFIA EIR. Typical documents listed include "Fiscal, Financial & Social Evolution of the Mission Bay," " A Unifying Theory of Political Corruption," and "San Francisco Public Housing Policy." Notwithstanding, a few of the documents indicated may have been indirectly incorporated into the EIR via final versions of reports referenced in the list. In addition, relevant documents referenced in the commenter's list are likely to have been considered in the EIR, via review and comments provided by appropriate agencies in their review of the DEIR.

As the commenter rightly noted, the lead agency must evaluate and respond to comments received during the comment period regarding the DEIR and that response should be made in good faith using a reasoned approach. The commenter, however, stated this in conjunction with a statement indicating that the "Transit Link System proposal must be formally studied as part of the SFO Master Plan DEIR or through a supplemental DEIR." It should also be noted that CEQA requires that only feasible alternatives need be addressed in the EIR document. Thus, the SFIA EIR is not required to evaluate all

conceivable peninsula transit systems. It need only consider systems which are "reasonably foreseeable." Examples of such "reasonably foreseeable" systems include the BART extension to SFIA, and improvements in CalTrain and various bus transit systems, which were considered. As the "Transit Link System" is not a "reasonably foreseeable" project pursuant to CEQA regulations, this proposal need not be examined in the SFIA EIR, because the analysis would be speculative and premature.

Contrary to a commenter's indication, the quote provided by the commenter is not a recitation of CEQA *Guidelines* Section 15131, but may be his summary of same. For the record, CEQA *Guidelines* Section 15131 is titled "Economic and Social Effects" and states the following in pertinent part:

Section 15131. Economic and Social Effects

"Economic and social information may be included in an EIR or may be presented in whatever form the agency desires."

"(a) Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a project through anticipated economic or social changes resulting from the project to physical change caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be physical change.

"(b) Economic or social effects of a project may be used to determine the significance of physical changes caused by the project....

"(c) Economic, social and particularly housing factors shall be considered by public agencies together with technological and environmental factors in deciding whether changes in a project are feasible to reduce or avoid the significant effects on the environment identified in the EIR. If information on these factors is not contained in the EIR, the information must be added to the record in some other manner to allow the agency to consider the factors in reaching a decision on the project."

Nonetheless, and contrary to one commenter's indication, some socio-economic impacts are addressed in the SFIA EIR in the chapters entitled "Employment and Residence Patterns," "Employment and Housing," and "Growth Inducing Effects" in accordance with CEQA requirements (CEQA *Guidelines* Section 15131). Again, as to alternatives considered, only feasible alternatives need to be addressed in the EIR per CEQA requirements.

The additional package of informational material transmitted on October 4, 1991 to the City Planning Commissioners and other persons who had commented on the DEIR as of October 4, 1991 was intended to contain only information requested by Commissioners at the August 29, 1991 public hearing. This information was not provided to respond to all public comments received as of that date. This "Comments and Responses" document is the appropriate vehicle for responses to all the comments received during the full comment period, both written and oral. Comments made by the Airport Noise Committee are responded to in this document within sections dealing specifically with airport noise (please refer to pp. C&R.194-313 herein.)

EIR Is Inadequate

Comments

"The Master Plan, I regret, is a shame and the DEIR, as presented, is a sham. The DEIR fails both as a full disclosure document and as a plan for mitigating adverse environmental impacts. The fault can't be assessed against local planning ministries alone. They are a product of local political policies promulgating confusion, circumvention, and cover-up. Those of us in business have been extremely short-sighted when it comes to the future of long-established Bay Area institutions. Bay Area environmental advocates are equally to blame. They have been off fighting for whales, porpoises, spotted owls, redwoods etc. and not covering their collective backside." (Alyn Lam)

"I will be brief and to the point. At the last meeting [the August 29 public hearing on the DEIR], there was a general sense, from both the commissioners and the public, that the Draft EIR was not adequate. It is still not adequate. I have reviewed the additional information which was provided for public review, and it did not address the questions that were raised by this committee, by our committee. It did not address the questions that were raised over two years ago when the notice of preparation was sent out." (Curt Holzinger, Airport Noise Committee)

Response

The San Francisco City Planning Commission is responsible for certifying the SFIA EIR. As such, the Planning Commission has the responsibility of determining the adequacy, objectivity, and completeness of the EIR prior to its certification.

The additional package of informational material transmitted on October 4, 1991 to the City Planning Commissioners and other persons who had commented on the DEIR as of October 4, 1991 was intended to contain only information requested by the Commisioners at the August 29, 1991 public hearing. This information was not provided to respond to all public comments received as of that date. This "Comments and Responses" document is the appropriate vehicle for responses to all the comments received during the full comment period, both written and oral. Comments made by the Airport Noise Committee are responded to in this document within sections dealing specifically with airport noise (please refer to pp. C&R.194-313 herein.)

EIR Is Adequate

Comments

"I urge you to recommend approval of the 'Draft of the Environmental Impact Report (EIR) for the San Francisco International Airport Master Plan'. Rutherford & Chekene supports this Environmental Impact Report as being comprehensive, objective and even-handed.

"Since 1970, Rutherford & Chekene has furnished structural, civil, and geotechnical engineering services for many expansion and addition projects for San Francisco International Airport, and for many of the Tenant airlines. These included the South Terminal Modernization & Expansion that was completed in 1987. Based on our knowledge of SFO, we believe this Draft EIR for the San Francisco International Airport Master Plan deserves the unanimous approval by the City of San Francisco." (Peter E. Bank, Rutherford and Chekene, C.E.)

"After a preliminary review of the draft EIR for the SFIA Master Plan, we have found the results to be consistent with our analysis of specific conditions at the site. The current and projected figures relating to employment levels, transportation, parking, hazardous materials, and housing reflect similar views to ours. In analyzing the impacts of the SFIA Master Plan as portrayed in the EIR, we would like to state that we are in agreement with the findings." (Shelley Kessler, Coordinator, Airport Labor Coalition)

"On behalf of the National Organization of Minority Architects, we are informing you that we support the EIR and that we concur with the mitigating solutions suggested by the consultants. Any additional points that we have are minor and would require, in our opinion, no additional study.

"We recommend that the Department of City Planning accept and approve the draft EIR and issue a final report expeditiously." (National Organization of Minority Architects)

Response

These comments are noted.

FEDERAL JURISDICTION

Comment

"The discussion on noise mitigation (DEIR Vol. I CH. V Pg. 425) also mentions a runway study which 'If the study results in SFIA decision to pursue runway reconfigurations, work with FAA and other authorities to obtain necessary approvals to permit such reconfigurations. This work would include environmental review under CEQA and, possibly, NEPA.' This last declaration is the key to this entire sham!

"Terminals cannot function without runways and vice versa. There seems to be an attempt here to 'split' the proposed SFO expansion into two separate series of projects and to avoid federal Environmental Protection Agency (EPA) involvement and the development of an Environmental Impact Statement (EIS) as required by the National Environmental [Policy] Act (NEPA). Observe that within this DEIR there is absolutely no mention of supporting runway, taxiway, or apron development and no federal FAA funding ties.

"The EPA, however, must necessarily be involved! Daily aircraft operations are expected to increase by 298 or 36% between now and 2006 (DEIR Vol. I CH. III Table 17 / Vol. I CH. IV Table 51). Likewise, vehicle traffic to SFO is expected to increase by 69,067 trips per day or about 62% by 2006 (DEIR Vol I CH. IV §B Tables 27-29). The EPA shares responsibility with the Bay Area Air Quality Management District (BAAQMD) for increases in vehicle and aircraft emissions.

"Then there is the little matter of asbestos. There are at least 32 demolition projects in the proposed expansion totaling roughly 16% of SFO's existing building area. At least 10 of these projects are necessary in order to permit the construction of the new terminals (DEIR Vol I CH. XI Table B.1/DEIR Vol. I CH. II Fig. 5). Both the EPA and BAAQMD are responsible for asbestos removal in the Bay Area. The Asbestos Emergency Response Act (AHERA) gives the

EPA authority to regulate (DEIR Vol. II Ch. XI A-157). Furthermore, under Subpart M §§61.145 and 61.146 of the Clean Air Act, the EPA must be notified in writing of intentions to demolish any facility.

"The FAA and EPA are not the only other federal agencies involved in the proposed expansion. The Corps of Engineers also has a say in the expansion of the existing sewage treatment plant that will be necessary to support the new terminal buildings and which passes treated sewage into Bay waters.

"Add to the above the fact that SFO has already violated the Bay Area Regional Plan, a very strong argument can be made that there is not only a significant federal interaction at SFO and but that there is also a need for federal intervention to preserve regional environmental planning and that this necessitates a separate EIS as required by NEPA. If I were a bond underwriter, I certainly would take an interest in the completeness of the environmental approval process for this expansion!

"Now why would SFO and the FAA work so hard to avoid compliance with NEPA? Suppose the hypersonic ramjet technology which was tested so effectively in the new Aurora spy plane during the Gulf War was now ready for incorporation into an advanced SST design. Wouldn't it be nice to have a safe, centrally located, all-weather airport from which to initiate Pacific Rim service in, say, five or ten years? If I were a Washington based politico with a strong Bay Area constituency composed of environmental advocates, I certainly would like to find out what is going on!" (Alyn Lam)

Response

The project does not fall within the jurisdiction of the National Environmental Policy Act (NEPA). There is no direct involvement of any Federal agencies such as the Federal Aviation Administration (FAA), Environmental Protection Agency (EPA) or Army Corps of Engineers.

The SFIA Master Plan does not include plans for any new runways or runway expansion and implementation of the Plan will not use any federal funding. See pp. 61-72 of the EIR and pp. C&R.50-53 herein ("Airfield Capacity, Aircraft Delay, and Environmental Effects") for a full discussion of the capacity of existing runways and the indication that new or expanded runways would not be needed to accommodate anticipated future growth.

Contrary to the commenter's statement, the Bay Area Air Quality Management District (BAAQMD) is responsible for regulating and reviewing any increases in vehicle and aircraft emissions at SFIA. In California, the EPA has delegated its enforcement responsibility to the California State Air Resources Board, which in turn has delegated enforcement responsibility in the Bay Area to BAAQMD. EPA's role remains setting national air quality standards. Thus, the EPA is not responsible for regulating any increases in vehicle and aircraft emissions associated with the airport expansion plans.

Also contrary to the commenter's statement, BAAQMD is the responsible agency regulating the removal of asbestos at SFIA because the U.S. EPA has delegated its enforcement responsibility for all National Environmental Standard Hazardous Air Pollutants (NESHAP) requirements to BAAQMD, as a result of revisions to NESHAP: Asbestos made on November 20, 1990, noted in a letter from the U. S. EPA - Region IX to all contractors dated March 18, 1991. As a result of this delegation of authority to BAAQMD, although it was previously necessary to notify the EPA of any intentions to demolish buildings, this requirement is no longer in effect. Instead, BAAQMD must be notified ten days prior to a demolition, regardless of whether or not the buildings are known to contain asbestos. This requirement also applies to the removal of asbestos from areas of at least 100 square or linear feet. Asbestos issues, including non-applicability of the Asbestos Hazard Emergency Response Act (AHERA) to the proposed project, are discussed in greater detail on p. C&R.349 herein.

The Regional Water Quality Control Board (RWQCB) is the appropriate agency to review any expansion of any existing sewage treatment plant needed to support airport expansion plans. The Army Corps of Engineers would become involved in the airport expansion only if any sewage treatment plant expansion plans included plans to physically intrude the plant building into wetland areas or increase discharges into the wetlands creating an increase in sediment. Put simply, the Corps of Engineers becomes involved when wetlands are subject to fill and dredge operations.

Also contrary to the commenter's statement, SFIA has not "violated" any bay area regional plans. The commenter's use of the word "violation" implies that a legal statute or regulation has not been adhered to. Regional plans are policy documents designed to guide local government and cannot be legally enforced. Therefore, by definition, a regional plan cannot be "violated." It is assumed that the "Bay Area Regional Plan" the commenter is referring to is MTC's Regional Airport Plan. The SFIA Master Plan may appear

inconsistent with some parts of MTC's Regional Airport Plan. One area is the projected future airport market share. Under the SFIA Master Plan, the Airport would retain close to its current airport market share; MTC forecasts that SFIA's market share will steadily decline. However, as the MTC's projections are policy recommendations and cannot be imposed on any of the region's airports, inconsistencies between the SFIA Master Plan and MTC's Regional Airport Plan would not affect the validity of SFIA Master Plan or the adequacy of the SFIA Master Plan EIR.

The SFIA Master Plan project has been promulgated by the Airport to accommodate future growth that would occur with or without runway expansion. If runway expansion were proposed, additional environmental review would be required. (Please also see responses to comments on airfield capacity and delay, pp. C&R.46-55 herein.)

EIR COSTS AND TIME

Comment

"Time: This process has already taken a year and a half to study. Meanwhile other airports are attracting SFO business away from San Francisco. Any further delay will only cause more economic damage, which we can ill afford.

"Cost: Money spent on the EIR process does not contribute to permanent improvements to the City or to revenue to help run programs, or to pay for City services. Enough money has been spent on process. We should now put our plans into action, not more debate and rhetoric." (Stan Moy, Finger & Moy Architects)

Response

The EIR process is required by law and includes an important forum for public input into the evaluation of the environmental effects of a project's implementation. To put the costs of the EIR process in perspective, recent estimates indicate that the San Francisco International Airport Master Plan EIR process will cost approximately 0.06 percent, or much less than one tenth of one percent, of the estimated cost to implement the SFIA Master Plan recommendations. (This estimate does not include the public costs of the EIR process; if the public costs were included, the total cost would still be a negligible fraction of the cost of implementing the SFIA Master Plan.)

SUPPORT FOR SFIA MASTER PLAN

Comments

"Alaska Airlines supports development of the New International Terminal at San Francisco. The completion of this project will provide facilities essential to meet the increasing international and domestic traffic demand in the Bay Area.

"The terminal expansion will assure that the Airport continues to act as an important contributor to the local economy by providing additional direct employment and indirect revenue. We also view the Airport and City's commitment to this project as a validation of our efforts to develop a low noise, fuel efficient fleet to serve your community." (Korbey Hunt, Alaska Airlines)

"On behalf of the San Francisco Foreign Flag Carriers (SFFFC), representing 15 major international airlines serving San Francisco, we support wholeheartedly the Airport's plan for improving facilities for the travelling public.

"The airlines will play a vital role in bringing to fruition these improvements. Our carriers have played a leading role - and will continue to do so - in providing aircraft that are quieter, more efficient and more compatible with the environment. We will continue to employ the highest technology available and utilize whatever procedures necessary to achieve optimum effectiveness in reducing noise and air pollution in the years to come.

"For the best service to the flying public, maximum safety and the most acceptable environmental solution, SFFFC urges the timely implementation of the SFIA Master Plan." (Barbara Giel, San Francisco Foreign Flag Carriers)

"On behalf of SAIA, I wish to express our support for the Airport's Master Plan and urge certification of the Environmental Impact Report at the earliest possible time. We encourage the development of improved facilities and look forward to the increased level of service we will be able to offer our cargo and passenger customers." (Jerome Copelan, San Francisco Association of International Airlines)

". . .United strongly supports the need for additional development at SFIA, especially with respect to international arrival and departure facilities, and we believe that the conceptual plan

outlined in the SFIA Master Plan for such development serves as an appropriate basis for detailed planning of these needed improvements. . .

"Finally, United believes that the development proposed in the SFIA Master Plan is necessary to sustain the economic vitality of air transportation in the Bay Area, and to preserve SFIA's role as the primary U.S. gateway to the Pacific Rim." (Thomas Brown, United Airlines)

"Accordingly, if you desire to keep San Francisco Airport the number one (1) airport in the San Francisco Bay Area (it was disclosed today that the best place to visit in the world is San Francisco) the plan for the approval of the expansion should be given expeditiously. There is a distribution of wealth when people come to visit your city." (James Palma)

". . .During the past 10 years of our company history, we have witnessed a severe decline of business and economic opportunity here in the City. The survival of SFO and its ability to compete, is vital to the economic well being of the entire region." (Stan Moy, Finger & Moy Architects)

Response

These comments are related to the project approval process. The EIR is an informational document and is a tool for the Airports Commission to use when deliberating on project approval. For the SFIA Master Plan, the EIR must be certified by the San Francisco City Planning Commission, a different decision-making body from that for the project approval process. The Airports Commission, in its deliberations, may approve the project or one of the alternatives, including the No-Project Alternative. Any support for the project or one of the alternatives should be expressed to the Airports Commission.

ERRATA

Comment

"...On Page 110, there is a discussion about MTC's analysis that doesn't have a page number. I couldn't find it later." (Commissioner Engmann)

Response

In the response to comments under Regional Planning and Coordination, Regional Forecasts and Capacities (p. C&R.67 herein), a revision is made to the first paragraph following Table 14 on p. 110 of the EIR. The revision includes the page number requested by the commenter.

D. STAFF-INITIATED CHANGES

EIR COVER

The August 27, 1991 public hearing location noted on the cover and title page of the Draft EIR is revised to read as follows (revision is underlined):

> Draft EIR Public Hearing Dates:
> August 27, 1991, 7:30 p.m., Clarion Hotel, Millbrae . . .

I. SUMMARY

The second sentence, p. 4, is revised to read as follows (new text is underlined):

> Both projects require San Francisco Bay Conservation and Development Commission (BCDC) approval.

On p. 4, the sentence preceding the heading "TRANSPORTATION" is moved into the first full paragraph on the page, following the second sentence. The revised paragraph reads as follows (inserted text is underlined and deleted text is shown by brackets):

> There are a number of plans by various local, regional, and state agencies that address the provision of facilities to accommodate regional air transportation demand. Most of those plans were developed on the basis of forecasts of regional transportation demand, assessments of the capabilities of facilities in the Bay Area (airports and the facilities for other modes of transportation) to accommodate the forecast demand, and various recommended means of meeting demand (such as facility expansion). Those plans do not include the same recommended means for meeting forecast demand. The California Aviation System Plan (CASP), forecasts expansion at SFIA to about 52,770,000 passengers in 2006 (three percent over the SFIA Master Plan). The Federal Aviation Administration (FAA) forecasts indicate that SFIA expansion would be less than predicted in the SFIA Master Plan.
>
> [ ]

On p. 15, the phrase "(includes three variants)" at the end of the paragraph just after the heading "D. ALTERNATIVES" is deleted.

II. PROJECT DESCRIPTION

General clarification: Existing facilities at SFIA that were previously occupied by Pan Am, which is no longer in business, are being used by United Airlines. No projects have been removed from the SFIA Master Plan as a result of Pan Am's departure from the industry. According to Airports Commission staff, the reconfigured and expanded facilities originally designated for Pan Am under the SFIA Master Plan would be used by other airlines.

The last sentence on p. 20 of the EIR is revised to read as follows (new text is underlined and deleted text is shown by brackets):

> Within the nine-county San Francisco Bay region are four air carrier or commercial service airports (SFIA, Metropolitan Oakland International, [ ] San Jose International and Sonoma County Airport), four U.S. military airfields (one of which is closed), [ ] 21 public use General Aviation airfields, 20 private use General Aviation airfields and numerous heliports, most of them for medical or military use[ ]./7/

On p. 41, the heading "Proposed Facility Projects in Buildings" and the subheading "1.0 Terminal Facilities: SFIA Master Plan Projects" are moved to the top of p. 50. The text preceding and following the headings is combined into one paragraph, as follows:

> Near-term and long-term SFIA Master Plan projects would together result in demolition of about 1.4 million square feet of existing building area and construction of about 4.2 million square feet of new building area, for a net increase of about 2.9 million square feet of building area. This total net change for combined SFIA Master Plan near-term and long-term projects represent a 35 percent increase from the existing 1989 SFIA building area total of about 8.2 million square feet. About 0.8 million square feet of existing building area would be remodeled and about 7,340 net new parking stalls would be added under combined near-term and long-term SFIA Master Plan projects.

On p. 72, in the second paragraph under the heading "Assumptions for Evaluation of Environmental Effects," the last three sentences are moved to follow the first sentence, and the third and fourth sentences are revised and made a separate paragraph. The revised text reads as follows (new text is underlined and deleted text is shown by brackets):

> As discussed in Section II.C. Project Characteristics, p. 22, the landside improvements proposed under the project are designed to accommodate the forecasts of activity developed in the SFIA Master Plan. If future activity occurs as forecast in the SFIA Master Plan, airport landside facilities with the project would not constrain the activity such that the constraints cause additional environmental effects. If future activity occurs

as forecast under the CASP, however, SFIA landside facilities with the project may constrain the activity such that the constraints cause additional environmental effects. Those effects cannot be estimated specifically.

According to SFIA, the existing airfield could accommodate SFIA Master Plan-related growth. This EIR evaluates whether the existing airfield [ ] could accommodate the forecast growth, [ ] and whether there could be airfield constraints that could cause additional environmental effects. [ ]

Note /7/ on p. 76 of the EIR is revised to read as follows:

/7/ Metropolitan Transportation Commission, Draft Regional Airport System Plan Update Inventory, May 22, 1991. Military airfields include: Hamilton Air Force Base/Army Airfield (surplus); Travis Air Force Base; Alameda Naval Air Station; and Moffett Field Naval Air Station (potential surplus). Public use General Aviation airfields include: Hayward Air Terminal, Livermore Municipal Airport and Oakland North Airfield in Alameda County; Buchanan Field and Byron Airport in Contra Costa County; Gnoss Field in Marin County; Napa County [ ] Airport and Parrett Field in Napa County; Half Moon Bay and San Carlos Airports in San Mateo County; Palo Alto, Reid-Hillview and South County Airports in Santa Clara County; Nut Tree and Rio Vista Airports in Solano County; and Cloverdale, Healdsburg, Petaluma, Santa Rosa Air Center, Sonoma Sky Park and Sonoma Valley Airport [ ] in Sonoma County. Private use General Aviation airfields include: Fremont (closed), Meadow Lark and Sky Soaring Airports in Alameda County; Antioch and Delta Airports in Contra Costa County; Marin [ ] Airport and Commodore Seaplane Base in Marin County; Calistoga (closed), Inglenook Ranch, Moskowite, Mysterious Valley [ ] and Pope Valley Airports in Napa County; [ ] Blake, Garabaldi, Maine Prairie, Travis Air Force Base Aero Club, Vaca-Dixon (closed), and Vacaville Airports in Solano County; and Graywood and [ ] Sea Ranch [ ] Airports in Sonoma County.

III. ENVIRONMENTAL SETTING

A. Land Use and Plans

Figure 11, p. 83, is revised to include "United States Geological Survey;" after "SOURCE:".

Figure 12, p. 106, is revised to include "San Mateo County Airport Land Use Commission;" after "SOURCE:".

On p. 111, the last sentence in the section pertaining to the Metropolitan Oakland International Airport Master Plan update, just before the heading, "San Jose International Airport (San Jose Airport)," is deleted. The following paragraph is added:

> Fluctuations in the aviation industry, as well as potential environmental controversy and other institutional changes, caused the Port of Oakland to re-scope the Master Plan update program and scale back the plan time frame, a process which has culminated in the development of the 10-year 2002 Airport Development Program. Among the projects under consideration in the 2002 Airport Development Plan are the modification of existing terminal facilities, widening of existing airport access roads and construction of new airport access roads, construction of a ground transportation center/parking structure and remote parking lots, enhancements and additions to existing airline support and air cargo facilities, improvements to taxiway and runway facilities, and restoration of wetlands as mitigation for a previous 33-acre fill on Oakland Airport lands. The improvements to the airfield facilities are intended to enhance the current level of safe and efficient operations of aircraft and would not expand the overall capacity of the Oakland Airport airfield.

The last paragraph on p. 111 and the first full paragraph on p. 112 (both pertaining to the San Jose International Airport Master Plan update) are replaced by the following text:

> San Jose International Airport, owned and operated by the City of San Jose, is also updating its Master Plan, a process that began in 1988 and will likely continue for another two years (through 1994). According to demand forecasts, total annual aircraft operations at San Jose Airport are expected to increase by 90 percent between 1988 and 2010./58/ Land availability is considered a more important constraint at San Jose Airport than airspace capacity./59/
>
> San Jose Airport staff and consultants are currently in the process of defining and scoping four Master Plan alternatives that have been identified for consideration by the San Jose City Council. An EIR will be prepared on the four alternatives, and selection of a preferred alternative will occur after completion of the EIR (expected in mid-1993). The first of the four alternatives would accommodate all of the air carrier demand projected for San Jose Airport in the Master Plan technical analysis. The second alternative, prepared by Citizens Against Airport Pollution, is an environmental-performance-based alternative that would, at most, allow limited expansion at San Jose Airport. The third, or moderate growth alternative, would fall between the first and second alternatives in terms of the amount of expansion it would allow at San Jose Airport. The fourth alternative is the No-Project alternative, defined as continuation of the existing (1980) Master Plan. Any of the four alternatives may ultimately be selected as the preferred alternative for San Jose Airport./59a/

The first paragraph, p. 113, is revised as follows (new text is underlined and deleted text is shown by brackets):

Phase II of the *CASP* [ ] comprised in-depth studies of issues related to air cargo, airport ground access and airspace utilization. These three Phase II [ ] *CASP* [ ] studies, and an Executive Summary, were published in August, 1991./61, 61a, b, c, d/

The second sentence in the second paragraph, p. 114, is revised, and a new sentence is added, as follows (new text is underlined and deleted text is shown by brackets):

Two Northern California facilities (Mather Air Force Base and Hamilton Air Force Base) and two Southern California facilities (Norton Air Force Base and George Air Force Base) [ ] were included in the [ ] first phase of this review./60/ A report on possible conversion of these four bases to civilian aviation was published by Hodges & Shutt, a consultant to the Caltrans Division of Aeronautics, in May 1991./60a/

In the first sentence of the last paragraph on p. 114, the phrase, "to be completed in 1991," is deleted.

The following notes are added on p. 123:

/59a/ Greene, Cary, Airport Planner, San Jose International Airport, telephone conversation, May 6, 1992.

/60a/ Hodges & Shutt, *Executive Summary: Study for Possible Conversion of Military Airbases to Civilian Aviation,* California Department of Transportation, May 14, 1991.

/61a/ Wilbur Smith Associates, Inc., in association with Landrum & Brown, Manalytics, and Communiquest, Inc, *Executive Summary: California Aviation System Plan Airspace Element, Air Cargo Study, Ground Access Study,* prepared for the California Department of Transportation, Division of Aeronautics, August 31, 1991.

/61b/ Landrum & Brown, in association with Communiquest, Inc, *Final Report: California Aviation System Plan Airspace Element,* prepared for the California Department of Transportation, Division of Aeronautics, August 31, 1991.

/61c/ Manalytics, in association with Communiquest, Inc, *Final Report: California Aviation System Plan Air Cargo Study,* prepared for the California Department of Transportation, Division of Aeronautics, August 31, 1991.

/61d/ Wilbur Smith Associates, Inc., *Final Report: California Aviation System Plan Ground Access Study,* prepared for the California Department of Transportation, Division of Aeronautics, August 31, 1991.

B. Transportation

On Figure 13, p. 128, the identifier for R1-N is revised to point to the inside roadway (the westbound portion of the terminal access loop road) rather than to R-18.

On Figure 16, p. 141, the reference on the bottom right corner of the map is revised to read:

The existing and future number of parking spaces are shown in tables 16, 46 and 47.

C. Noise

In the last sentence on p. 155, "Table 18" is changed to "Table 17."

In the first sentence on p. 157, the phrase "about 140" is revised to read "143" and the phrase "about 118" is revised to read "118."

On p. 158, the last sentence of the second paragraph is revised as follows (new text is underlined):

See Appendix C, Table C-2, p. A-46 for estimates of actual nighttime runway use.

On p. 160, second-to-last paragraph, the figure "12,670 people" is changed to "12,660 people."

On Figure 20, p. 161, the numeral "75" in the lower right is revised to lie on the innermost contour line.

On p. 163, the second bulleted item is revised as follows (new text is underlined and deletions are shown by brackets):

- At stations 8-11, located in Millbrae and Burlingame, the calculated CNEL values are 0.9 dBA higher on average than the measured values. The calculated values would be substantially lower than the measured values [ ] without a modification to the Integrated Noise Model to improve its representation of the "back blast" from takeoffs on Runways 1L and 1R by removing the excess ground attenuation in the model, which is inappropriate to this terrain. (Without the modification the calculated CNEL values would be 10-15 dB lower than the measured values.)

On p. 164, the third paragraph is revised as follows (new text is underlined and deletions are shown by brackets):

> Most of the calculated CNEL values for East Bay locations (except Site P in Moraga) are below 50 dBA (Table 54, [ ] which lists the values, is [ ] on p. 343). These locations are relatively far from SFIA (15-20 miles).

In the second-to-last sentence on p. 164, "84 dBA" is changed to "87 dBA."

In the first sentence on p. 165, the phrase "(sites H, I, K, and L)" is changed to "(sites F, H, I, K, and L)."

In the first full sentence on p. 168, "February 1988" is changed to "January 1988." In the second bulleted item following that sentence, "Stage 3" is changed to "Stage 2." The first bulleted item following that sentence is revised as follows (new text is underlined and deletions are shown by brackets):

- A gradual scheduled phaseout of Stage 2 aircraft, including requirements [ ] that at least 25 percent (of each operator's aircraft operations) after January 1, 1989 must be performed using Stage 3 aircraft; at least 50 percent after January 1, 1994; at least 75 percent after January 1, 1999, and 100 percent as of January 1, 2000.

H. Hazardous Materials

On p. 210, in the third-to-last sentence of the second paragraph, the reference to "Appendix X" is changed to "Appendix F."

On p. 211 at the end of the first paragraph (continued from p. 210), "Section III.E. Energy, p.---" is changed to "Section III.E. Energy, pp. 178-79."

On p. 217 at the end of the second paragraph, "Section III.J. Utilities, p.---" is changed to "Section III.J. Utilities, pp. 233-35."

IV. ENVIRONMENTAL IMPACTS

Introduction

The beginning of the third full sentence on p. 246 is revised to read, "For Millbrae, with one relatively small known development project. . ."

On Table 22, p. 248, a double asterisk (**) is added immediately after the title "CUMULATIVE DEVELOPMENT" in reference to the existing note identified by a double asterisk. Under note /l/ on p. 249, in the last sentence, the word "growths" is changed to "growth factors."

A. Land Use and Plans

On p. 250, the last two sentences of the first paragraph are revised to read as follows (new text is underlined and deletions are shown by brackets):

> [ ] No projects or land use changes are proposed by the SFIA Master Plan on sites within Airport environs cities. Airport-related highway and transit projects under Caltrans and BART jurisdiction could occur within Airport environs cities, however.

Figure 10, p. 251, is renamed "Figure 25A." The references in the Table of Contents and on p. 250, second sentence, are also changed to "Figure 25A."

On p. 258, in the first sentence of the last paragraph, "1991" is changed to "1992."

B. Transportation

On p. 287, the following sentences are added following the last sentence of the second paragraph (pertaining to SFIA Master Plan trip generation):

> (Note: in Figure 29, trip percentages for I-280 North, I-280 South and San Bruno Avenue do not total the percentage for I-380 due to rounding. In Figure 30, 6.5 percent of trips are shown for I-380 west of I-280, although I-380 does not extend west of 280. These trips are assumed to dissipate on the western portions of Sneath Lane and San Bruno Avenue.)

The last sentence, p. 292, is revised to read as follows:

The results of the existing traffic analysis, which are described in the setting section, have been summarized in Table 34 for intersections shown on Figure 31, p. 294.

D. Air Quality

On Table 55, p. 355, note /c/ is revised as follows (new text is underlined):

/c/ Includes forecast growth, as shown in Table 22, p. 248 and explained on p. 246.

On Table 56, p. 357, a note indicator "/b/" is added after the headings of the second and fourth columns ("1996 Forecast Growth"and "2006 Forecast Growth"). A note is added to the end of the table as follows:

/b/ Forecast growth is shown in Table 22, p. 248 and explained on p. 246.

I. Employment and Residence Patterns

In the second sentence of the second paragraph, p. 394, "11%" is changed to "11.6 percent" and "341,690 employees" is changed to "326,300 employees."

The total in Table 64 on p. 395 is changed to 38,000.

Table 65 on p. 396 is revised to include an additional note and to read as follows:

TABLE 65: NEW SFIA EMPLOYEES, PLACE OF RESIDENCE, 1990-1996

County	Number of New Employees	Percent /a/	Demand for New Housing Units/b/	Percent of County's 1990 Housing Stock
San Mateo	1,710	37.1%	1,220	0.48%
San Francisco	1,170	25.4%	960	0.29%
Alameda	550	11.9%	420	0.08%
Santa Clara	420	9.1%	280	0.05%
Contra Costa	170	3.7%	130	0.04%
Marin	160	3.5%	120	0.12%
Solano	110	2.4%	80	0.07%
Sonoma	100	2.2%	80	0.05%
Napa	10	0.2%	10	0.02%
Other	210	4.6%	160	N/A
TOTAL	4,610	100.0%	3,460	N/A

NOTE: Percent total does not add due to rounding.

/a/ Percentages are based on 1987 Martin Associates Survey of SFIA employees and projected growth rates for each of the employment sectors found at SFIA.

/b/ Based on the ratio of employed residents to households from ABAG's *Projections '90*, and a four-percent vacancy rate.

SOURCE: Environmental Science Associates, Inc.

In the first sentence under "2006" on p. 396, "42,300" is changed to "42,400," "11.1 percent" is changed to "12.1 percent" and "382,380" is changed to 349,900."

The total in Table 66, p. 397, is changed to 42,400. A note /a/ is added after the total and at the bottom of the table, as follows:

/a/ Employment sector subtotals do not add due to rounding.

Table 67 on p. 398 is revised to include an additional note and to read as follows:

TABLE 67: NEW SFIA EMPLOYEES PLACE OF RESIDENCE, 1990-2006

County	Number of New Employees	Percent /a/	Demand for New Housing Units/b/	Percent of County's 1990 Housing Stock
San Mateo	3,320	37.1%	2,450	0.96%
San Francisco	2,330	25.9%	1,940	0.59%
Alameda	1,060	11.8%	810	0.16%
Santa Clara	780	8.7%	530	0.10%
Contra Costa	330	3.7%	250	0.08%
Marin	300	3.3%	230	0.22%
Solano	210	2.3%	150	0.13%
Sonoma	200	2.2%	160	0.10%
Napa	30	0.1%	20	0.05%
Other	410	4.6%	310	N/A
TOTAL	8,970	100.0%	6,850	N/A

NOTE: Percent total does not add due to rounding.

/a/ Percentages are based on 1987 Martin Associates Survey of SFIA employees and projected growth rates for each of the employment sectors found at SFIA.

/b/ Based on the ratio of employed residents to households from ABAG's *Projections '90*, and a four-percent vacancy rate.

SOURCE: Environmental Science Associates, Inc.

M. Growth Inducement

In the second sentence of the second paragraph, p. 409, "11 percent" is changed to "11.6 percent" and "341,690 employees" is changed to "326,300 employees." In the following sentence, "11.1 percent" is changed to "12.1 percent" and "382,380 jobs" is changed to "349,900 jobs."

IX. ALTERNATIVES TO THE PROPOSED PROJECT

On Table 68, pp. 441-43, the word "Total"is replaced by "Near Term" in the rightmost column heading, so that the heading reads "Comparison of No-Project Alternative (Variant 1) With Near Term Master Plan."

On p. 447, the second paragraph is moved to follow the first sentence in the last paragraph on p. 440 and is revised (new text is underlined and deletions are shown by brackets). The last paragraph on p. 440, including the inserted, revised sentence, reads as follows:

> Growth in aviation activity (passenger counts, cargo tonnage and aircraft operations) would occur under the No-Project Alternative, Variant 1, but to a lesser extent than under the SFIA Master Plan "unconstrained" development scenario. [ ] The No-Project Alternative, Variant 1 would [ ] result in an increase in annual passengers of about 26 percent during the near-term compared to an increase of about 41 percent with the project, and would [ ] result in about a 33 percent increase in annual passengers during the long-term compared to about a 71 percent increase in annual passengers with the project. SFIA Master Plan "constrained" forecasts assume that some growth in annual passenger counts would be accommodated by industry-driven increases in the proportion of large aircraft in SFIA's aircraft fleet mix, and by more efficient utilization of aircraft seating (higher "load factors").

On Table 73, pp. 458-460, in the second and third column headings, "Variant 1" is changed to "Variant 2." The word "Total" is replaced by "Near Term" in the rightmost column heading, and "Variant 1" is changed to "Variant 2," so that the heading reads, "Comparison of No-Project Alternative (Variant 2) With Near Term Master Plan."

On p. 463, the sentence under the heading "Reasons for Rejection" is revised as follows (new text is underlined and deletions are shown by brackets):

> The sponsor has chosen the SFIA Master Plan for analysis as the preferred project instead of this alternative because [ ] the alternative would not accommodate the demand from forecast growth.

On p. 470, the column spacing is adjusted to match the appropriate headings.

On p. 475, the sentence under the heading "Reasons for Rejection" is revised as follows (new text is underlined and deletions are shown by brackets):

> The sponsor has rejected this alternative because it would not meet the sponsor's objective to accommodate at SFIA the demand from forecast growth [ ].

XI. APPENDICES

In Appendix C, Noise, "Description of Noise and its Effects on People," by Kenneth McK. Eldred, a portion of the Draft EIRs were distributed with a duplicate page headed "3. INTERFERENCE WITH HUMAN ACTIVITIES AND ANNOYANCE" and a duplicate Figure 7, and were missing Table 5 and Figure 8. The duplicate pages are deleted. Table 5, two paragraphs of text, and Figure 8, as included herein, are inserted following Figure 7.

In the list of tables under "APPENDIX G: TRANSPORTATION," p. A.161, Table G-4 is corrected to read "Cumulative Trip Generation."

On Tables G-5 and G-6, pp. A.166-67, the "A.M. Peak Hour" and "P.M. Peak Hour" headings are adjusted to indicate the correct columns, as shown on previous Table G-4, p. A.165 (each peak hour heading covers five columns: "Rate In," "Rate Out," "Trips In," "Trips Out" and "Total Trips").

TABLE 5

Steady A-weighted Sound Levels that Allow Communication with 95 Percent Sentence Intelligibility Over Various Distances Outdoors for Different Voice Levels

VOICE LEVEL	COMMUNICATION DISTANCE (Meters)					
	0.5	1	2	3	4	5
Normal Voice	72	66	60	56	54	52
Raised Voice	78	72	66	62	60	58

For indoors, the effects of masking normally-voiced speech are summarized in Figure 8, which assumes the existence of a reverberant field in the room. This reverberant field is the result of reflections from the walls and other boundaries of the room. These reflections enhance speech sounds so that the decrease of speech level with distance found outdoors occurs only for spaces close to the talker indoors. For typical living rooms, the level of the speech is more or less constant throughout the room at distances greater than 1.1 meters from the talker. The distance from the talker at which the level of speech decreases to a constant level in the reverberant part of the room is a function of the acoustic absorption in the room. The greater the absorption, the greater the distance over which the speech will decrease and the lower the level in the reverberant field for a given vocal effort. The absorption in a home will vary with the type and amount of furnishings, carpets, drapes and other absorbent materials, being generally least in bathrooms and kitchens and greatest in living rooms and bedrooms.

As shown in Figure 8, the maximum sound level that will permit relaxed conversation with 100 percent sentence intelligibility throughout the room is 45 dB. People have a considerable capability to vary their voice levels to overcome noise and achieve desired communication. This ability works well over a range of levels of steady noises, but is less useful if the interfering noises are intermittent. Figure 9 shows necessary voice levels limited by noise conditions. The communication distance is given on the ordinate, the sound level and the parameters are voice level. At levels above 50 dB, people raise their voice level as shown by the "expected" line if communications are not vital or by the "communicating" line if communications are vital. Below and to the left of the "normal voice line, communications are at an Articulation Index of 0.5, 98 percent sentence intelligibility. At a shout, communications are possible except above and to the right of the "impossible" area line.

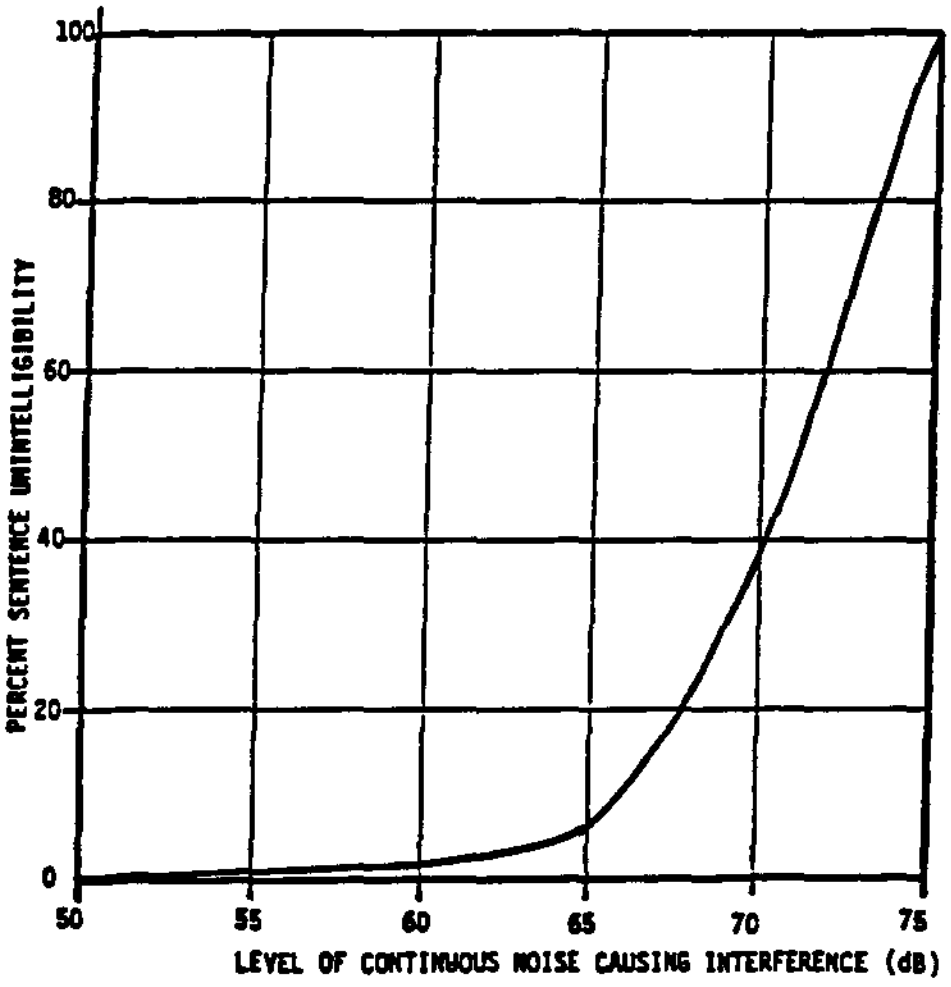


Figure 8: **Criteria for Indoor Speech Interference for Relaxed Conversation Distance in a Typical Living Room.**

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C&R APPENDIX A: BACKGROUND INFORMATION ON THE SAN FRANCISCO INTERNATIONAL AIRPORT MASTER PLAN DRAFT EIR

This Appendix contains the following documents:

- Memorandum from Barbara Sahm, Environmental Review Officer for the San Francisco Department of City Planning, to the San Francisco City Planning Commissioners, October 4, 1991
- Discussion of Metropolitan Transportation Commission (MTC) *1990 Air Passenger Survey* (Attachment A, MTC *1990 Air Passenger Survey* is available for review in San Francisco Department of City Planning files)
- Attachment B, MTC Regional Airport System Plan, Selected Regional Forecasts (May 1991), and Draft Inventory and Alternatives Definition (Draft Report - May 1991)
- Attachment C, Work Program for the Airport Master Plan and Noise Program, San Jose International Airport (Memorandum from the Director of Aviation to the Mayor and City Council, City of San Jose, June 6, 1991)
- Attachment D, Background to Airport Operations
- Attachment E, Letters from Regional Agencies Commenting on the Draft EIR

City and County of San Francisco
Department of City Planning

450 McAllister Street
San Francisco, CA 94102

ADMINISTRATION
(415) 558-6414
CITY PLANNING COMMISSION
(415) 558-6414
PLANS AND PROGRAMS
(415) 558-6264
IMPLEMENTATION / ZONING
(415) 558-6377

MEMORANDUM

October 4, 1991

To: City Planning Commissioners

From: Barbara W. Sahm, Environmental Review Officer

Re: Background Information on the San Francisco International Airport Master Plan Draft EIR

Attached is a package of materials in response to requests made by Commissioners at the August 29 public hearing on the SFIA Master Plan DEIR. The package includes a brief discussion and explanation of some of the information in the attached documents, with the documents identified as "Attachment X".

Attachment A is the 1990 Air Passenger Survey prepared by MTC, released for public use in August 1991. It covers passengers arriving at the three major Bay Area airports. As noted in the discussion, it was not used in the Draft EIR because it was not available until after the Draft was published. The Draft EIR explains the surveys used, as well as the assumptions and methodology that formed the project passenger and employee trip distribution on pages 287 - 292.

The discussion that precedes the attachments also summarizes the Airport's information on proportion of flights heading generally for international, domestic and Southern California destinations. The MTC 1990 Passenger Survey also provides some limited information on links between the passenger survey information (where people are coming from to get to the airport) with the flight destination information (where people who use the airport are going).

Attachment B includes portions of the work, now in progress, on the Regional Airport System Plan. It is being prepared under contract by TRA Airport Consulting for MTC. The Plan Update, originally expected in 1991, is now expected to be complete sometime in late 1992. So far, the material that is available to the public includes information on preliminary forecasts of growth at the various regional airports, an inventory of present facilities and their

capacities, and a draft discussion of alternative regional planning scenarios. The preliminary aviation demand forecasts were not used in the Draft EIR on the SFIA Master Plan because they were not finalized at the time the Draft EIR was published, and are not yet finalized for use. The Draft EIR does include summaries of activity levels for the San Francisco Airport as forecast by the Caltrans Division of Aeronautics (CASP) and the Federal Aviation Administration (FAA), in addition to growth estimated by SFIA consultants preparing the draft Master Plan, on pages 61 - 72. Attachment B includes the draft forecasts of growth at Oakland and San Jose Airports.

Attachment C is additional information on the status of San Jose Airport expansion plans.

Attachment D is a brief explanation of airport operations and the regulatory framework for airport operations, prepared at my request by ESA. While this information was not specifically requested, it seemed useful in the context of the SFIA Master Plan EIR. It is information generally known and obvious to those who run airports, but is a useful summary for those of us who simply use airports. It includes information on the extent that the local operator can control airport activities and a brief discussion of airport economics. An appendix summarizing Federal regulatory history is also provided.

Attachment E includes copies of letters of comment on the Draft EIR by regional agencies--MTC, ABAG and Caltrans Division of Aeronautics. These agencies, and many nearby cities and counties have been very cooperative in submitting their letters of comment as close to the original end of comment period of September 10.

I hope this information will be useful to the Commission in completing its comments on the Draft EIR on the SFIA Master Plan. The EIR files include other documents, such as relevant portions of General Plans from cities surrounding the Airport, that can be made available to the Commission upon request. If you have any questions about the attached materials in the package or about material referenced in the DEIR, please call me. My number is 558-6378.

INTRODUCTION

The *SFIA Master Plan Draft EIR* traffic analysis made use of several surveys that have been conducted in the past decade. The Metropolitan Transportation Commission (MTC) conducts a comprehensive survey of air passengers at the three Bay Area airports every five years./1/ The City and County of San Francisco Airports Commission conducts an annual survey at SFIA each May. The most recent survey of San Francisco International Airport (SFIA or SFO) employees is the San Mateo County Transit (SamTrans) *SFO Airport Employee/Employer Survey, September 1983*.

MTC's *1990 Air Passenger Survey* results were released in August 1991, and were not available for use in the *SFIA Master Plan Draft EIR*.

In the *SFIA Master Plan Draft EIR*, the trip distribution analysis for project-related traffic was based on survey data. Project trip distribution assumptions, methodology, and estimates are outlined on pages 287-292 of the Draft EIR. The 1983 SamTrans survey was used for the distribution of SFIA employees. The 1989 San Francisco Airports Commission survey was used for the air passenger distribution. (This methodology implies that the distribution of passenger origins will not change significantly in the future.) Use of these surveys provided the most conservative estimate of project-generated traffic, as the surveys showed the highest percentage of automobile use. The analysis for the Draft EIR included a comparison of both of the surveys to other MTC and San Francisco Airports Commission surveys, in addition to the MTC 700-zone Bay Area multi-purpose trip model. The trip distribution data that were used were found to be consistent with the MTC model.

Further survey data were collected by DKS Associates in the summer of 1990, to obtain vehicle classification information. The survey covered automobiles (single-occupant and carpools), shuttles, buses, taxis and limousines. The vehicle occupancy data were used to convert air passenger trips to vehicle trips; traffic analysis is based typically on vehicle trips.

The entire MTC *1990 Air Passenger Survey* is presented in Attachment A. A summary of the survey results is presented on pages 17 through 22 of the survey.

COMPARISON OF MTC 1990 AIR PASSENGER SURVEY WITH SFIA MASTER PLAN DRAFT EIR

Comparisons of the recently released MTC *1990 Air Passenger Survey* (August 1991) with the surveys used in the *SFIA Master Plan Draft EIR* traffic analysis and DKS estimates of resulting person trips are shown in Tables 1, 2 and 3 on the following three pages. The MTC 1985 and 1990 surveys are internally similar with respect to the origins of air passengers in the Bay Area. The 1989 San Francisco Airports Commission survey, however, shows more people arriving from Alameda, Contra Costa, Marin, Napa, San Francisco and Sonoma counties, and fewer people arriving from San Mateo, Santa Clara and Solano Counties, than the MTC survey does. The largest differentials (MTC results first, Airports Commission second) are for air passengers coming from Santa Clara (21 percent versus 8 percent) and Marin (4 percent versus 13 percent).

The MTC surveys are also internally similar with respect to mode choices, with a decrease in taxi use and an increase in airport shuttle use between 1985 and 1990. The 1989 San Francisco Airports Commission survey, however, shows a higher percentage in the use of both private automobiles and public transit, and a lower percentage in the use of rental cars and airport shuttles, than the MTC surveys.

If the trip distribution patterns for the proposed SFIA Master Plan were recalculated using the MTC *1990 Air Passenger Survey*, which shows a relatively higher percentage of trips coming from San Mateo and Santa Clara Counties, increased impacts could be experienced on U.S. Highway 101 and U.S. Interstate 280 (I-280), particularly south of SFIA. The number of trips affected are shown in Tables 1 and 2, for the a.m. and p.m. peak hours, respectively.

The number of project-generated trips to and from Santa Clara County would be 21.5 percent of the total project-generated trips if the MTC *1990 Air Passenger Survey* data were used, as compared to the 8 percent figure used in the *SFIA Master Plan Draft EIR* (San Mateo County trips would be 14.5 percent of the total, as compared to the Draft EIR's 12.0 percent). The difference of 400 or 500 vehicles during each peak

TABLE 1: ORIGINS OF AIR PASSENGERS - AM PEAK HOUR

County	1985 MTC Survey			1990 MTC Survey			1989 SFIA Survey		
	Percent Passengers	1996 Person Trips/a/	2006 Person Trips/a/	Percent Passengers	1996 Person Trips/a/	2006 Person Trips/a/	Percent Passengers	1996 Person Trips/a/	2006 Person Trips/a/
Alameda	13.6%	222	384	15.4%	251	435	19.0%	310	537
Contra Costa	6.7%	109	189	7.2%	118	204	11.0%	180	311
Marin	5.2%	85	147	4.6%	75	130	13.0%	212	368
Napa	0.7%	11	20	1.4%	23	40	2.0%	33	57
San Francisco	30.4%	496	859	28.0%	457	792	31.0%	506	876
San Mateo	14.0%	228	396	14.5%	237	410	12.0%	196	339
Santa Clara	18.0%	294	509	21.5%	351	608	8.0%	131	226
Solano	1.3%	21	37	2.1%	34	59	0.5%	8	14
Sonoma	2.5%	41	71	2.7%	44	76	4.0%	65	113
Out of Region	7.6%	124	215	2.4%	39	68	n/a	0	0

NOTES:

Airport employees were not surveyed by either MTC or SFIA.
Totals may not add to 100% due to rounding.

/a/ DKS calculation of distribution of SFIA Master Plan-generated trips, based on air passenger survey figures.

SOURCE: DKS Associates, 1991

TABLE 2: ORIGINS OF AIR PASSENGERS - PM PEAK HOUR

County	1985 MTC Survey			1990 MTC Survey			1989 SFIA Survey		
	Percent Passengers	1996 Person Trips/a/	2006 Person Trips/a/	Percent Passengers	1996 Person Trips/a/	2006 Person Trips/a/	Percent Passengers	1996 Person Trips/a/	2006 Person Trips/a/
Alameda	13.6%	241	418	15.4%	273	473	19.0%	337	584
Contra Costa	6.7%	119	206	7.2%	128	221	11.0%	195	338
Marin	5.2%	92	160	4.6%	82	141	13.0%	230	399
Napa	0.7%	12	22	1.4%	25	43	2.0%	35	61
San Francisco	30.4%	539	934	28.0%	496	860	31.0%	549	953
San Mateo	14.0%	248	430	14.5%	257	446	12.0%	213	369
Santa Clara	18.0%	319	553	21.5%	381	661	8.0%	142	246
Solano	1.3%	23	40	2.1%	37	65	0.5%	9	15
Sonoma	2.5%	44	77	2.7%	48	83	4.0%	71	123
Out of Region	7.6%	135	234	2.4%	43	74	n/a	0	0

NOTES:

Airport employees were not surveyed by either MTC or SFIA.
Totals may not add to 100% due to rounding.

/a/ DKS calculation of disribution of SFIA Master Plan-related trips, based on air passenger survey figures.

SOURCE: DKS Associates, 1991

TABLE 3: COMPARISON OF AIR PASSENGER SURVEYS: GROUND TRANSPORTATION MODES

	1985 MTC Survey	1990 MTC Survey	1989 SFIA Survey
Private Car	47.1%	46.0%	49.4%
Rental Car	19.5%	19.6%	13.6%
Hotel Shuttle	5.8%	4.0%	9.9%
Public Transit	0.9%	1.2%	6.2%
Taxi	10.8%	6.1%	8.6%
Luxury Limo	2.3%	2.6%	2.5%
Airporter/Other	13.6%	20.5%	9.9%
TOTAL	100.0%	100.0%	100.0%

NOTE: Airport employees were not surveyed by either MTC or SFIA. Totals may not add to 100 percent because of rounding.

SOURCE: DKS Associates, 1991

hour, if spread evenly over the 16 total lanes of U.S. 101 and I-280 between Santa Clara County and the Airport, would add about 1 car to each lane every 2.0 to 2.5 minutes, a statistically insignificant addition. These trips had been assigned to other parts of the Bay Area for the *SFIA Master Plan Draft EIR* traffic analysis; recalculation of the trip distribution using the MTC *1990 Air Passenger Survey* data would therefore result in a correspondingly slight reduction in impacts to those other areas.

Overall, the calculated intersection levels of service would not be expected to differ, and the freeway segments and ramps north of SFIA would probably not experience better levels of service as a result of the use of MTC *1990 Air Passenger Survey* data. As noted above, the freeway mainline segments on U.S. 101 and I-280 south of SFIA would have slightly more traffic, and as a result, the volume-to-capacity ratios would most likely increase, but not in a statistically significant way, relative to estimates in the *SFIA Master Plan Draft EIR* traffic analysis. This would not change the overall conclusions of the latter study; therefore, the mitigation measures identified would still be applicable and no new mitigation measures would be necessary.

PASSENGER DESTINATIONS

According to SFIA staff, 86.7 percent of total passengers using SFIA in 1990 had domestic destinations, and 13.3 percent had international destinations. Of the total passengers, 21.3 percent had Southern California destinations (Los Angeles, San Diego, Santa Barbara, and Palm Springs)./2/

The MTC *1990 Passenger Survey* provides limited information on the link between passenger origins and destinations. Table 2.10 on page 34 of the survey shows that about 70 percent of SFIA passengers had "domestic and international" destinations, and about 30 percent had California destinations. Of the SFIA passengers with domestic and international destinations, about 34 percent were from San Francisco, 19 percent from San Mateo County, 13 percent from Santa Clara County, and 12 percent from Alameda County (the remaining 22 percent were from other Bay Area counties and outside the region). Of the SFIA passengers with California destinations, about 47 percent were from San Francisco, 20 percent from San Mateo County, 9 percent from Santa Clara County, and 7 percent from Alameda County./1/

About 56 percent of Metropolitan Oakland International Airport passengers had California destinations, and about 44 percent had domestic and international destinations. Of the passengers with California destinations, about 42 percent were from Alameda County. Of the passengers with domestic and international destinations, about 53 percent were from Alameda County./1/

About 54 percent of San Jose International Airport passengers had domestic and international destinations, and about 46 percent had California destinations. About 82 to 83 percent of passengers (regardless of destination) were from Santa Clara County./1/

Table 9.1 on page 85 of the survey shows that about 36 percent of total Bay Area passengers had California destinations; about 59 percent had domestic destinations; and about 5 percent had international destinations. The percentages were roughly the same for each Bay Area county./1/

NOTES - MTC 1990 Survey

/1/ Metropolitan Transportation Commission, *1990 Air Passenger Survey*, August 1991.

/2/ John Costas, Assistant Administrator, San Francisco International Airport, telephone conversation, October 2, 1991.

COMPONENTS AND STATUS OF THE RASP

The Regional Airport Planning Committee (RAPC) advises the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) on aviation matters and is preparing the *MTC Regional Airport System Plan* (RASP) Update with MTC staff and Seattle-based TRA Airport Consulting. (The recently published *1990 Air Passenger Survey*, summarized above, was also prepared under RAPC auspices.)/1/ The updated RASP is expected to be completed in 1992./2,3/ The RASP and 1980 *Regional Airport Plan* are discussed on pages 108 through 110 of the Draft EIR.

The RAPC has 13 members representing ABAG, the Bay Area Council, the Bay Conservation and Development Commission (BCDC), Buchanan Field (Concord), Caltrans Division of Aeronautics, the Federal Aviation Administration (FAA), MTC, the Port of Oakland (Metropolitan Oakland International Airport), San Francisco International Airport, San Jose International Airport, and selected Bay Area cities and counties./1/ The RAPC has been meeting quarterly during the RASP Update preparation process; the most recent meeting was September 6, 1991.

The previous Metropolitan Transportation Commission *Regional Airport Plan* was completed in 1980. The update currently in progress is intended to include an inventory, forecasts of aviation demand, a definition of alternatives, an evaluation of alternatives, an EIR, and revisions to the system plan./4/

Elements of the RASP that have been completed to date include drafts of Chapter IV, "Inventory and Capability Assessment," and Chapter VII, "Airport System Alternatives Definition." The Aviation Demand Forecasts element has not been completed because the forecasts are being refined; air carrier and general aviation forecasts are expected to be completed in December 1991. (Selected preliminary forecasts are illustrated in Attachment B, along with the inventory and alternatives draft chapters of the RASP Update.) As of September 1991, the Evaluation of Alternatives element was in progress.

SUMMARY OF RASP INVENTORY AND CAPABILITY ASSESSMENT

The RASP Draft Inventory and Capability Assessment documents the existing physical, operational, environmental, and policy conditions for each airport in the system, and for the system as a whole. In addition, the chapter presents information on the constraints and capabilities of the airports and the airport system. These constraints and capabilities directly affect the system's ability to meet current and future aviation demand in the region./4/

Inventory

The inventory includes all public use and military airports in the region (see MTC Exhibit 4.1 on page 4, Chapter IV in Attachment B). Private airfields are included in less detail because less information is available about private-use facilities. The inventory also contains information about public-use airports that have been closed completely, and military airfields that are inactive (closed to military operations but still able to be used), such as Hamilton Field. Although currently closed, these facilities are important aviation resources that should be considered in planning for the regional aviation system./4/

The regional airport system includes some 25 public-use civil airports, four military airports, and 20 private-use facilities (three of which are closed). The commercial service airports in the region include San Francisco International, Metropolitan Oakland International, San Jose International, Buchanan Field (Concord), and Sonoma County Airport./4/

Many changes have occurred since the last MTC Regional Airport Plan revision in 1980. The number of facilities has increased. Some have shifted in type of ownership and category of use. Since 1980, two additional commercial service airports have commenced scheduled passenger service: Sonoma County and Buchanan Field./4/

MTC Exhibit 4.23 (pages 51 through 54, Chapter IV in Attachment B) summarizes the inventory of Bay Area public-use airports.

Capability Assessment

The RASP capability assessment includes a comparison of airports' existing capacity with their existing levels of demand, and an analysis of potential constraints on future activity at each airport.

Capacity and Demand

The comparison of runway capacity with demand found that "The commercial service airports are constrained considerably in the peak hour. Demand for runway access exceeds capacity in IFR [poor weather] conditions."/4/ (MTC Exhibit 4.23 in Attachment B shows the percentage of annual runway capacity currently used at each airport.) The comparison of "landside" (including passenger terminal) capacity with demand found that:

- San Jose International Airport "...has a terminal capacity shortfall";
- SFIA "...has insufficient domestic and international terminal capacity"; and
- Oakland International Airport "...has an adequate terminal capacity availability."/4/

Constraints

The analysis of constraints notes that "There are additional factors beyond the airports' physical capacity...which place limitations on how much activity can and will take place at each airport." The constraints are categorized as airspace-, environmental-, physical-, and policy-related./4/

Airspace constraints "...relate to regional airspace issues." The airspace used by the Bay Area airports overlaps, and procedures are in place where flights from one airport "interact" with (operate in the same airspace as) flights from another airport. Because SFIA has the largest share of the region's air traffic, SFIA has been established at the top of the "user's hierarchy." This designation means that the operations of other airports in the region (in the airspace) must conform with the operations at SFIA./4/

Environmental constraints are those related to the natural environment, such as wildlife, wetlands, and San Francisco Bay.

> "Two of the major commercial airports, Oakland and San Francisco, are situated on the Bay, and host a variety of wildlife. Development at Oakland is also affected by the presence of non-Bay wetland areas. Wetlands exist to a lesser degree at other airports as well. Construction of new runways which affect wetlands or require Bay fill will not meet with general favor. Public opposition to capacity increasing measures may be strong and well organized."/4/

Physical constraints include such things as "limited airport size or the presence of physical barriers to growth." The constraints analysis notes that SFIA "is constrained by the absence of sufficient land area for a new runway and passenger terminal development," but has undeveloped parcels that could accommodate support facilities. Metropolitan Oakland International Airport "has considerable land area" for development, but also has "significant areas of environmentally sensitive property." Future development at San Jose International Airport is "highly constrained," given the airport's location and small site./4/

Policy constraints "...include noise, safety, and other community compatibility issues." The constraints analysis notes that noise regulations are in place at SFIA, Metropolitan Oakland International Airport, and San Jose International Airport. San Jose International Airport has a curfew on all operations from 11:30 p.m. to 6:30 a.m.:

> "This limits the total daily activity which can occur at the airport, and also creates some congestion during the morning hours. If continued into the future, the curfew will constrain activity at the airport and cause increased congestion within the available operating time envelope."/4/

The RASP Inventory and Capability Assessment includes further discussion of the constraints on future development at the airports in the region (see pages 37 through 44, Chapter IV in Attachment B).

DEFINITION OF AIRPORT SYSTEM ALTERNATIVES

As noted above, one of the elements of the RASP that has been completed is the Airport System Alternatives Definition, included in Attachment B to this packet.

The RASP Air Carrier System Alternatives include:

- No New Action
- Airport System Management (ASM)
- Airport Master Plans
- Airport System Optimization
- New Technology/4/

Implications of each of the System Alternatives are also identified in the RASP Airport System Alternatives Definition. "Implications" are defined as areas that could be affected by the implementation of an alternative. The following implications will be addressed in the RASP evaluation of alternatives:

- Runway/airspace congestion and delay
- Airport ground access constraints
- Environmental impacts
- Air Fares (supply vs demand) / Airline Competition
- Safety
- Timing of improvements and other actions
- Airport / airline cooperation
- Joint use agreements with the military
- Public transportation improvements to airports
- Funding
- Impacts on general aviation
- Operating agencies
- Potential markets / practical application
- Noise / land use compatibility / encroachment protection
- Passenger convenience/4/

The evaluation of the Regional Airport System Alternatives, and selection of a preferred plan, will take into consideration such factors as the relationship between capacities, demand forecasts, and efficiency (delays); the distribution of demand and supply; environmental effects (bay or wetland fill, noise, air quality); economic benefits; construction costs; ground access and public transportation; safety and emergency response; and the ability of MTC to implement./4/ As noted above, criteria for evaluating the System Alternatives are still being refined./2,3/

RASP LIMITATIONS

When complete, the *MTC Regional Airport System Plan* (RASP) Update will provide a body of information on the existing regional system and its operations, expected future requirements, and recommendations for accommodating those future requirements. This information can be used by decisionmakers within the region, including the airports themselves, in guiding capital improvement programs and related policy decisions./3/

No regional authority currently exists to enforce the RASP. MTC's authority to implement elements of the RASP is generally indirect, in that MTC has responsibility for environmental review and funding approval on regional ground transportation projects. MTC can thus potentially influence airport planning through its role in major ground transportation projects affecting specific airports. MTC and the RASP can also potentially influence other agencies that affect regional airport systems (e.g., FAA, airlines, airports, U.S. military). Implementation of a majority of RASP elements, however, depends on voluntary actions by the airports and airlines.

Other large metropolitan regions, such as Los Angeles and New York, conduct planning for multiple airport development within the auspices of a municipal or regional agency or authority which has decision-making power over several airports within the region. Attachment D of this packet contains a discussion of the ability of airport operators to influence airline service and air travel demand.

The level of detail in the final RASP, moreover, will likely be at a programmatic level, rather than a project-specific level. Cooperation by the airports with the RASP would therefore not eliminate the need for development of individual airport Master Plans.

NOTES - MTC Regional Airport System Plan Update

/1/ Metropolitan Transportation Commission, *1990 Air Passenger Survey*, August 1991.

/2/ Marc Roddin, Metropolitan Transportation Commission Staff Liaison, telephone conversation, September 16, 1991.

/3/ Steve Kiehl, TRA Airport Consulting, telephone conversation, September 16, 1991.

/4/ TRA Airport Consulting, *MTC Regional Airport System Plan, Draft Inventory and Alternatives Definition*, May 1991.

SUMMARY AND STATUS OF METROPOLITAN OAKLAND INTERNATIONAL AIRPORT (MOIA) MASTER PLAN

The Port of Oakland is proceeding with plans to match existing landside capacity with existing airside capacity as part of its Terminal Expansion Program. Minor airside improvements, such as a taxiway bypass, are also being explored as part of that plan. The MOIA Master Plan is currently being re-evaluated by the Port of Oakland. While the MOIA Master Plan calls for expansion of airside capacity, some of the components of the Plan may be delayed until more studies on the Airport's capacity are completed. Constraints facing the Port are discussed briefly above, in the summary of the Inventory and Capabilities section of the *Draft MTC Regional Airport Plan Inventory and Definition of Alternatives* (TRA Airport Consulting, May 1991). According to that document:

> "Oakland's plans involve meeting growth in air carrier operations by improving airside capacity and acting on many landside improvements. The air cargo market is important to them as is the general aviation market. Plans include:
>
> - Construct new air carrier runway with parallel taxiway
> - Expand terminal to 42 gates
> - Construct parking garage
> - Terminal roadway improvements
> - Develop additional 100 acres for air cargo
> - Develop expanded GA apron and tie-downs
> - Construct new ARFF facility
> - Construct new international arrivals facility
> - Construct BART connection."/1/

SUMMARY AND STATUS OF SAN JOSE INTERNATIONAL AIRPORT MASTER PLAN

Constraints on expansion of San Jose International Airport are discussed briefly above, in the summary of the Inventory and Capabilities section of the *Draft MTC Regional Airport Plan Inventory and Definition of Alternatives* (TRA Airport Consulting, May 1991). According to that document:

> "Future plans at San Jose International include work on both the air side and land side of the airport. Their master plan should be completed by mid-1991.

Airfield

- Extend runway 12L-30R to 8,900 feet (included in previously adopted master plan)
- Reworking of the taxiways
- Pavement management rehabilitation work on the airfield.

Terminal

- Reconstruction of passenger terminal C and construction of new passenger terminal B
- Construction of a new air traffic control tower.

Parking

- Construct new parking garages.

General Aviation

- Relocation of all GA to west side of airport
- Reduce total number of GA based aircraft.

Air Freight

- New air cargo facilities.

Other

- Installation of a fuel farm.

Roadway

- Terminal area roadway improvements."/1/

The master plan process for San Jose International Airport has been extended by at least two years, in order to respond to the direction of the San Jose City Council. (The process would now be complete or nearly complete under the original schedule.)/2/

Through the master plan process, begun in 1988, San Jose International Airport and its consultants developed a range of development alternatives and selected a preferred plan. In January 1991, the Airport took the plan to the San Jose City Council. After a series of contentious public meetings, the City Council (in May 1991) decided not to endorse any of the master plan alternatives. The Council directed the Airport to address a specific list of additional issues and develop three or four master plan alternatives incorporating those issues./2/

The San Jose City Council has directed the Airport to begin work on the master plan EIR, which is to address all of the master plan alternatives in equal detail. A preferred plan will then be selected, incorporating the results of the environmental review. It is expected that this process will take about two years to complete./2/

A memorandum from the San Jose Director of Aviation to the City Council outlining the current master plan work program is included in Attachment C.

DEVELOPMENT PLANS FOR HAMILTON AIR FORCE BASE

The *Draft MTC Regional Airport Plan Inventory and Definition of Alternatives* contains the following background information on Hamilton Air Force Base:

> "Hamilton Field, formerly Hamilton Air Force Base, is owned and operated by the United States Army, but currently accommodates some activity by the U.S. Coast Guard Strike Team. This unit is on call for emergencies and uses the airfield as required. They do not base any aircraft here. The U.S. military currently uses housing at the field for personnel from all branches and from the U.S. Coast Guard. A single, 8,000 foot runway is located on the site, with no air traffic control tower. Roadway access to the base is facilitated by nearby State [sic] Highway 101 and local bus service to the main gate by the Golden Gate Transit Company.
>
> "Many groups have interest in the future of Hamilton Field as it is also in a well developed area of the region, located in Marin County. Hamilton Field has property which includes many wetland areas, and as redevelopment of the land is considered, their preservation may be a prominent concern. The land is valuable and there is possible pressure to sell the land for other development. If there is a rise in the number of flights, there is a potential for neighborhood objection to noise levels."/1/

According to Mr. Charles Gallagher, head of the Hamilton Re-Use Committee, Hamilton Field could function as a regional airport for the North Bay without becoming an air carrier airport. The Hamilton Re-Use Committee will present a plan based on this concept to the public in the Fall of 1991./3/ Certification by the FAA of Hamilton Field as a Part 139 airport would allow only smaller commuter aircraft (up to 30 seats) to operate out of Hamilton. These commuter craft could potentially serve as feeders for the American Airlines hub at San Jose International Airport. Other potential reliever airports include Travis Air Force Base in Napa County (joint military-civilian use is proposed) and Moffett Field in Santa Clara County./3/

On September 12, a development team submitted plans to the City of Novato to build 1,400 homes and as much as 1.2 million square feet of commercial space at Hamilton Field. The project would be developed on about 350 acres at the base./4/

NOTES - Development Plans of Selected Bay Area Airports

/1/ TRA Airport Consulting, *MTC Regional Airport System Plan, Draft Inventory and Alternatives Definition*, May 1991.

/2/ Cary Greene, Airport Planner, San Jose International Airport, telephone conversation, September 25, 1991.

/3/ Charles Gallagher, Hamilton Re-Use Committee, telephone conversation, September 19, 1991.

/4/ "Developer's Big Plans For Novato," article in *San Francisco Chronicle*, September 11, 1991.

ATTACHMENT B

MTC REGIONAL AIRPORT SYSTEM PLAN

SELECTED REGIONAL FORECASTS

TRA Airport Consulting

May 1991

DRAFT INVENTORY AND ALTERNATIVES DEFINITION

(Includes: Chapter IV, "Inventory and Capability Assessment"

Chapter VII, "Airport System Alternatives Definition")

TRA Airport Consulting

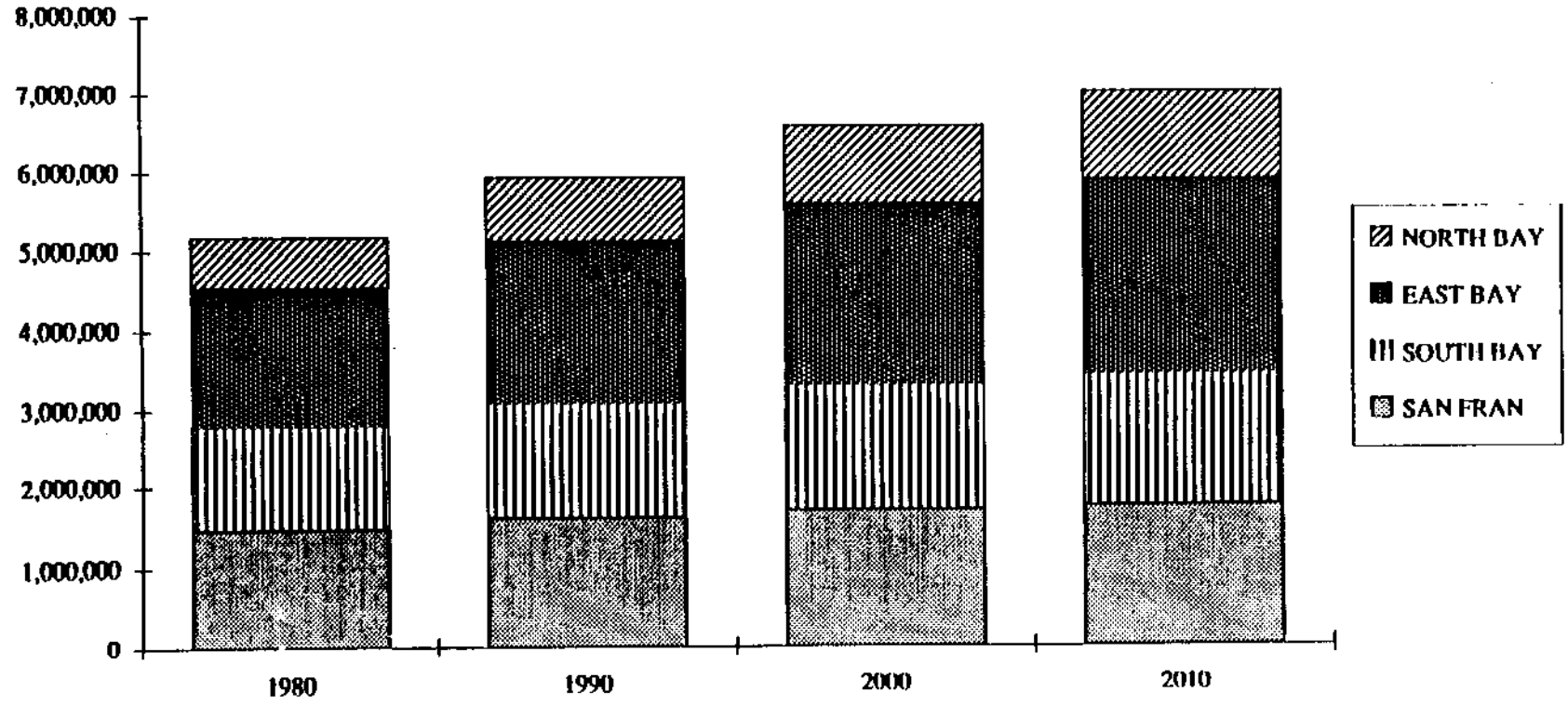
Draft Report - May 1991

MTC

Regional Airport System Plan Update

C&R.A.27

REGIONAL POPULATION FORECASTS



NOTES: Forecasts are from Association of Bay Area Governments, Projections 1990.

SOURCE: TRA Airport Consulting, Draft MTC Regional Airport System Plan, May 1991.

NORTH BAY — Napa, Solano and Sonoma Counties

EAST BAY — Alameda and Contra Costa Counties

SOUTH BAY — Santa Clara County

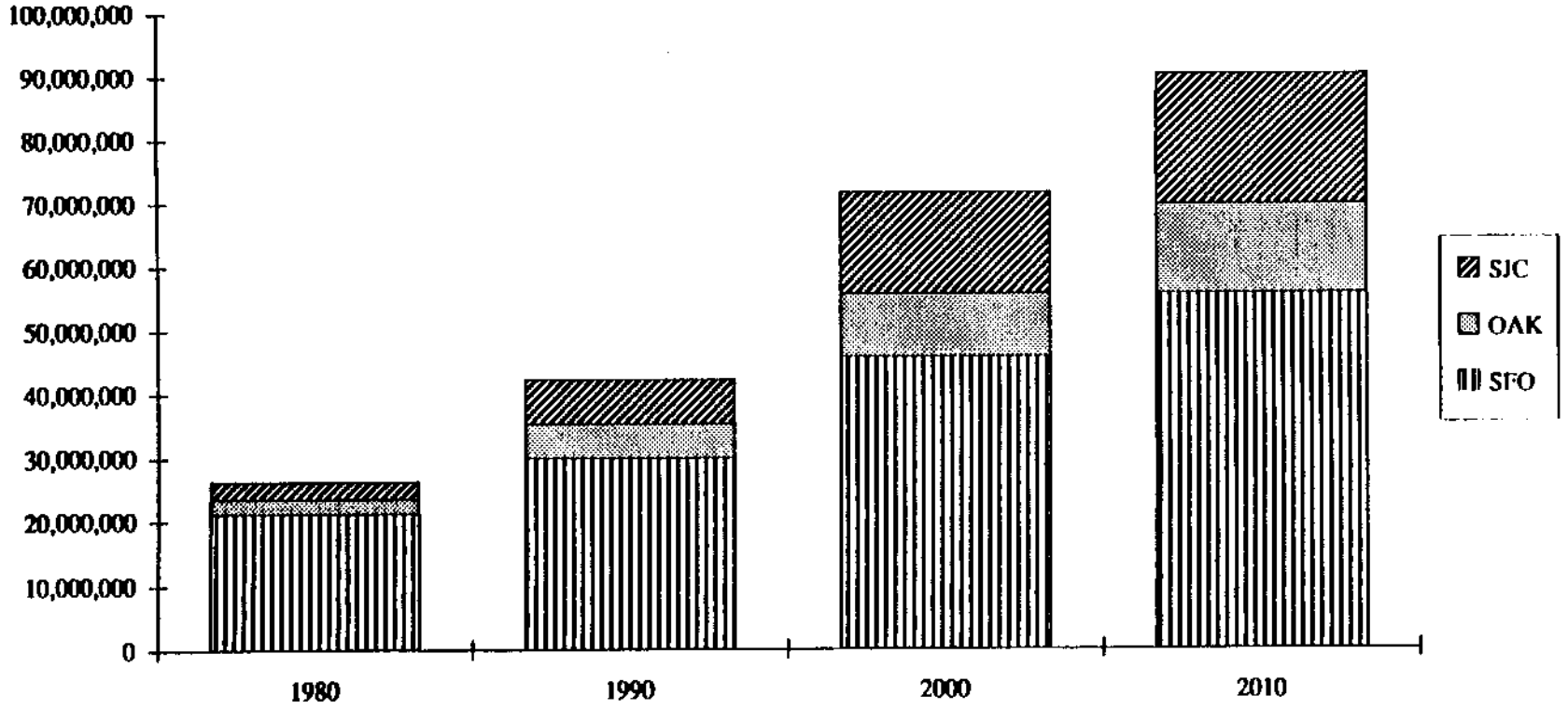
SAN FRANCISCO — Includes Marin County

MTC

Regional Airport System Plan Update

C&R.A.28

REGIONAL PASSENGER FORECASTS

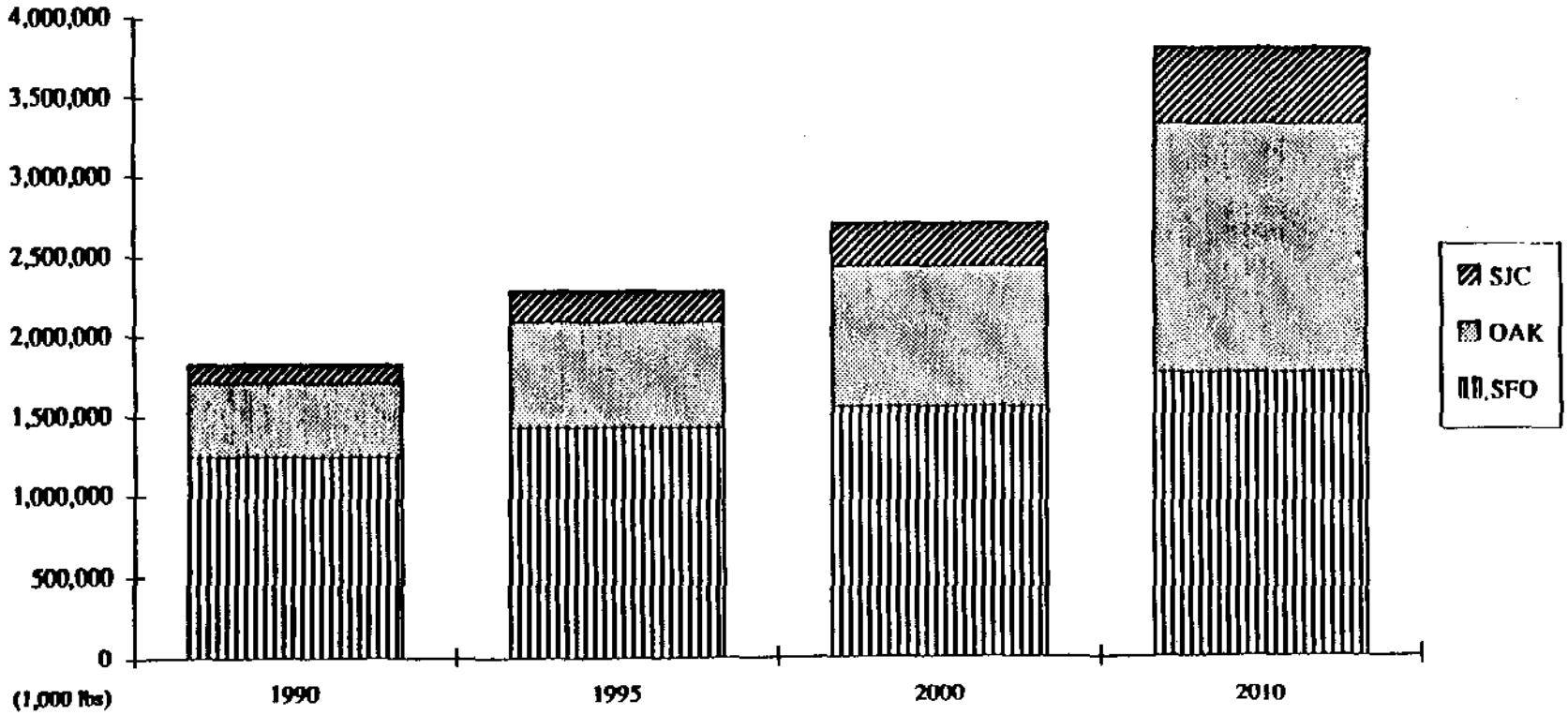


SOURCE: TRA Airport Consulting, Draft MTC Regional Airport System Plan, May 1991.

MTC

Regional Airport System Plan Update

REGIONAL AIR CARGO FORECASTS



SOURCE: TRA Airport Consulting, Draft MTC Regional Airport System Plan, May 1991.

C&R.A.29

AGENDA ITEM #3a

MTC

Regional Airport System Plan

DRAFT

Inventory and Alternatives Definition

Prepared by
TRA Airport Consulting

May 1991

C&R.A.31

CHAPTER IV

INVENTORY and CAPABILITY ASSESSMENT

INTRODUCTION

This chapter documents the existing physical, operational, environmental, and policy conditions for each airport in the system, and for the system as a whole. In addition, the chapter presents information on the constraints and capabilities of the airports, and the airport system. These constraints and capabilities directly affect the system's ability to meet current and future aviation demand in the region.

Physical conditions data includes such items as airport ownership, location, and size; number and length of runways; airport classification; number and type of based aircraft; amount of passenger terminal facilities; and presence of an air traffic control tower. Operational conditions data includes items such as total annual and peak hour operations; air carrier, commuter, and general aviation operations; annual passenger enplanements; and annual air cargo volume. Environmental conditions include information about the natural and human environment near each airport, noise sensitive land uses, wildlife habitat, and wetlands. Policy conditions information includes current airport master plan, capital improvement program, and other policy opportunities and constraints which affect the development and operation of individual airports and the airport system as a whole.

Finally, the chapter presents information about the technical constraints and capabilities which affect the airport system. These include landside (vehicle access and parking, terminal, and related facilities) and airside (aircraft parking, taxiways, and runways) capacity and regional airspace.

The inventory includes all public use and military airports in the region. Private airfields are included in less detail because less information is available about private use facilities. This inventory also contains information about public use airports which have been closed completely and military airfields which are inactive (closed to military operations but still able to be used), such as Hamilton Field. Although currently closed, these facilities are important aviation resources which should be considered in planning for the regional aviation system.

This chapter catalogues current data (in most cases 1990) on the physical facilities and operations at the airports under consideration. Historic data on operations, passengers, air cargo, and based aircraft for the period 1980 through 1990 is included in Chapter V (Historical Airport Data). This data will be drawn upon for trend documentation and in preparation of the aviation system forecasts (see Chapter VI).

The system will first be characterized, with reference made to the 1980 MTC System Plan to identify major changes in the past decade. A look at the facilities and operations for the year 1990, including a capacity analysis, is then presented to be the basis for alternatives development and analysis.

Much of the information used in this inventory was derived from The California Aviation System Plan (Element 1: Inventory published August 1990), by the California Department of Transportation Division of Aeronautics. Other data sources included the most recent individual airport master plans and capital improvement programs, current and historic FAA Airport Master Records (FAA 5010 forms), FAA activity statistics, and the individual airports. The most current information available has been used. In most cases this represents conditions in the year 1990.

A survey of the airport operators provided planning documents as well as information about site specific conditions which could impact future capacity. A follow up survey gave the airports an opportunity to be involved in the MTC planning process.

THE REGIONAL AIRPORT SYSTEM

The regional airport system includes some 25 public use civil airports, 4 military airports, and 17 private use facilities. All of the airports in the system are listed below.

Of the 25 public use airports there are 5 with commercial airline service while the other 20 are general aviation airports. These are mapped in Exhibit 4.1. "Commercial service" airports are defined by the National Plan of Integrated Airport Systems (NPIAS) as those which have scheduled airline service and enplane more than 2,500 passengers annually. General Aviation airports by definition do not have scheduled service, and only serve general aviation aircraft.

The commercial service airports in the region process not only people but also air cargo. The largest three are the only ones to have an appreciable number of all cargo operations. These airports are noted in Exhibit 4.4. The 16 private use, private ownership general aviation airports are displayed in Exhibit 4.6.

There are 12 public use airports which currently have helicopter activities and/or services, shown in Exhibit 4.3 along with the region's heliports which are listed below. These include all 5 of the commercial service airports and 7 general aviation airports denoted below by an "H". Facilities serving primarily as gliderports are designated with a "G" and are illustrated in Exhibit 4.5. FAA Air Traffic Control towered airports are indicated by a star and are mapped in Exhibit 4.2. Please see also Exhibit 4.23 for the complete airport system data inventory.

❑ Commercial Service Airports:

San Francisco International ☆ H
Metropolitan Oakland International ☆ H
San Jose International ☆ H
Buchanan Field (Concord) ☆ H
Sonoma County ☆ H

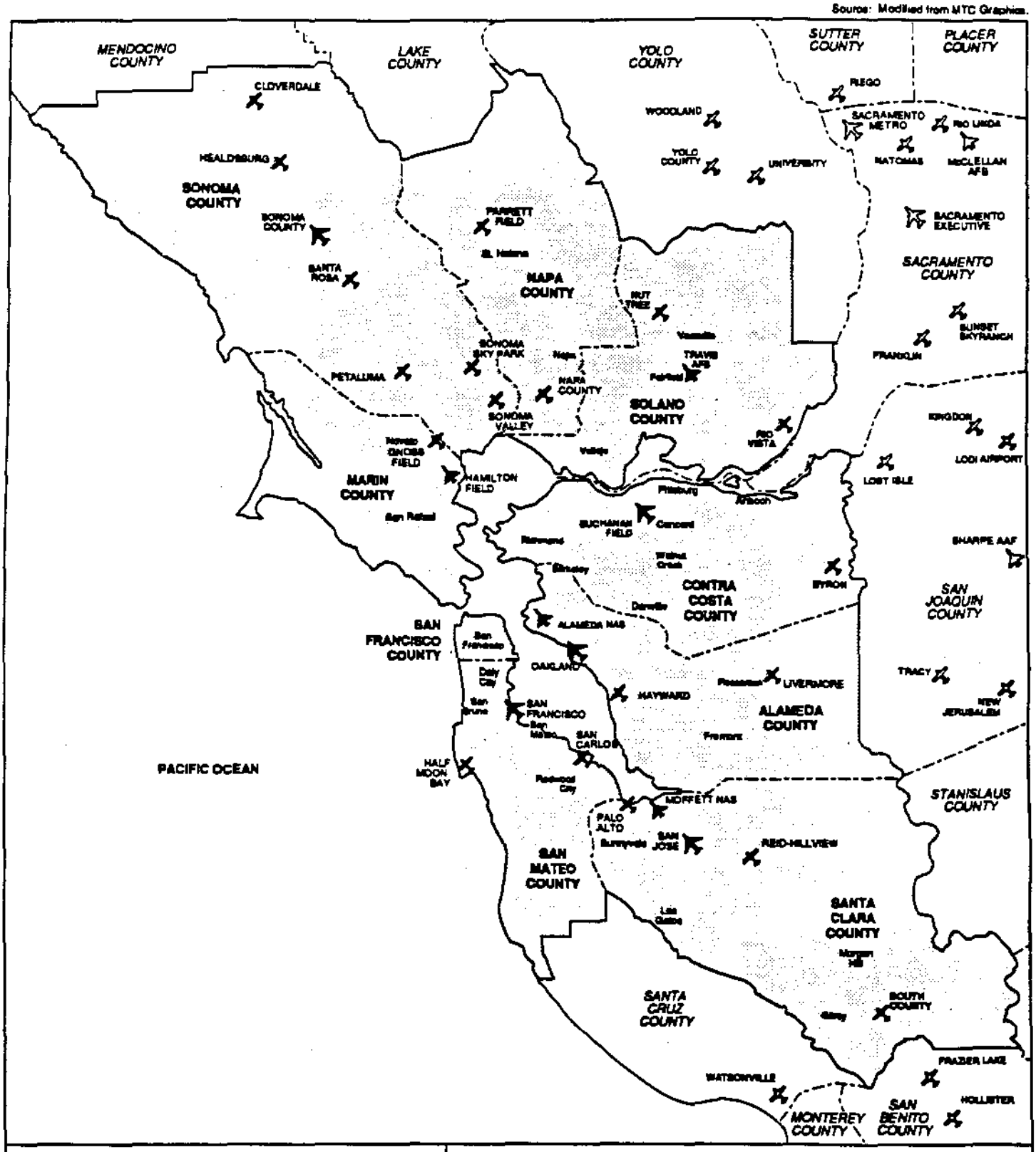
❑ General Aviation Airports (public use):

Byron
Cloverdale Municipal
Gnoss Field H
Half Moon Bay H
Hayward Air Terminal ☆ H
Healdsburg Municipal
Livermore Municipal ☆ H
Napa County ☆ H
Nut Tree
Oakland (North Field) ☆
Palo Alto ☆
Parrett Field
Petaluma Municipal
Reid-Hillview ☆ H
Rio Vista
San Carlos ☆
Santa Rosa Air Center
Sonoma Sky Park
Sonoma Valley
South County

❑ Military Airports:

Alameda NAS ☆ H
Hamilton Field
Moffett Field (NAS) ☆ H
Travis AFB ☆

Source: Modified from MTC Graphics.



LEGEND

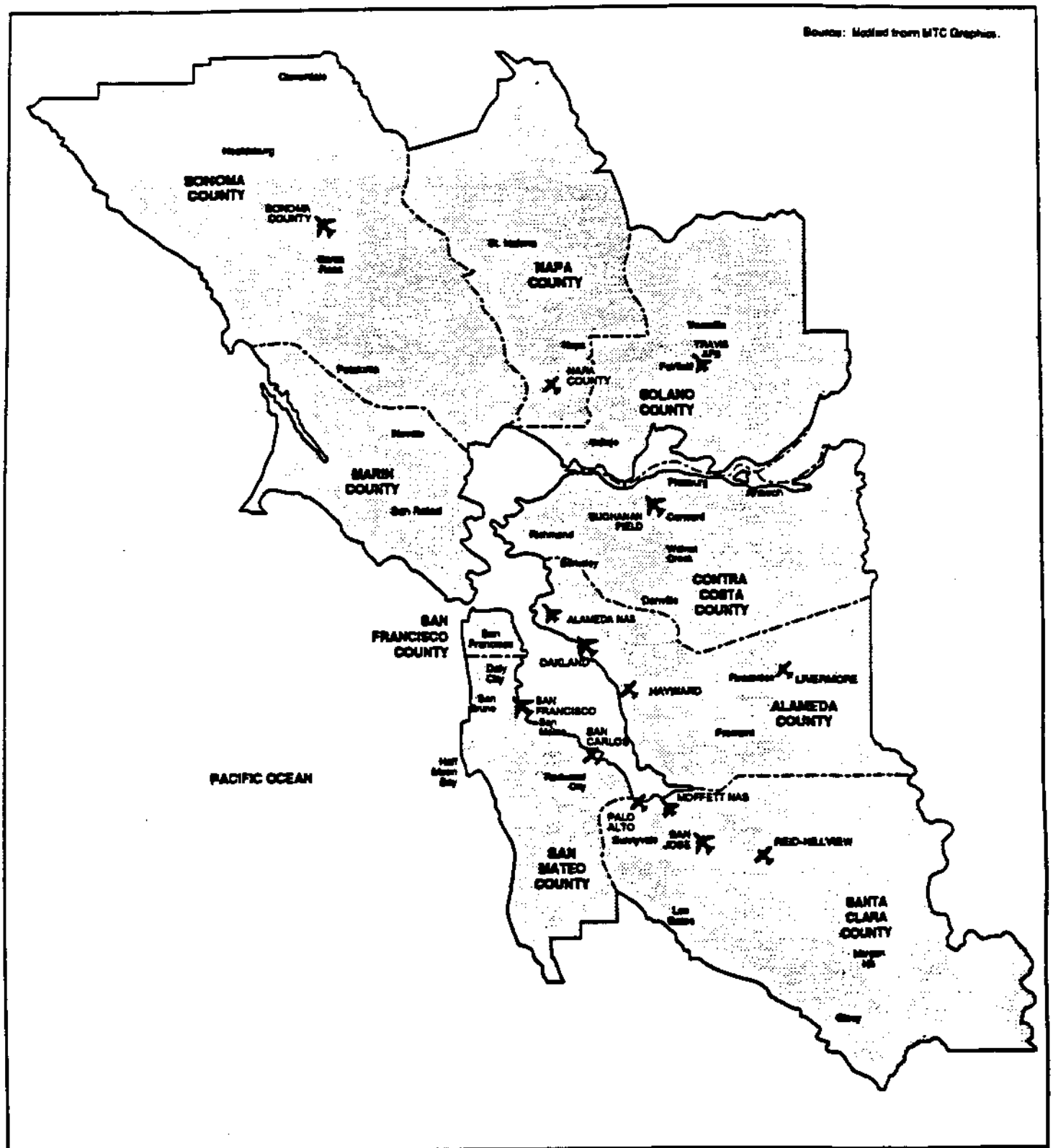
Airports Inside Study Region	Airports Outside Study Region
Air Carrier	Air Carrier
General Aviation	General Aviation
Military	Military

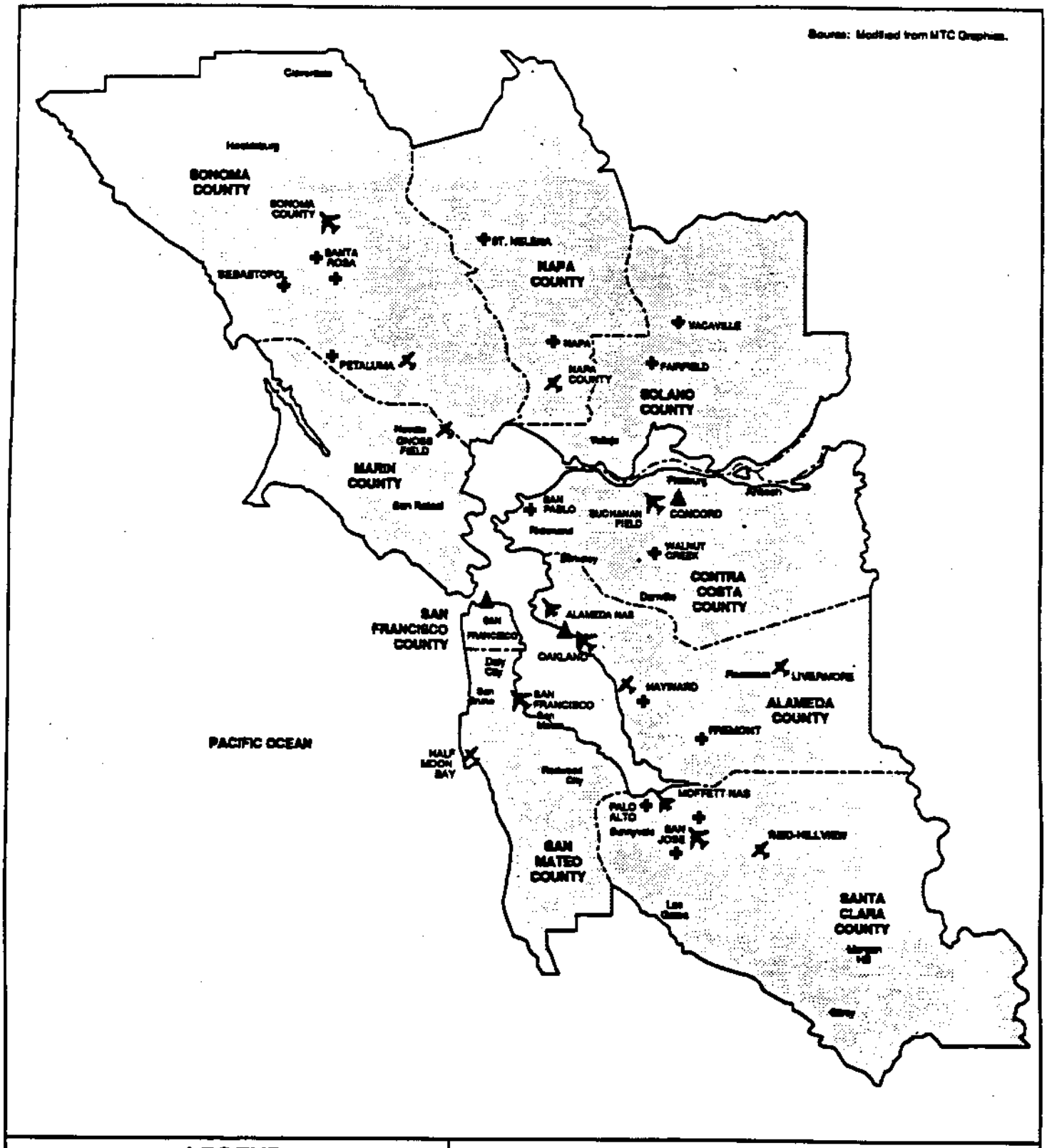
MTC

Regional Airport System Plan

Exhibit 4.1

THE AIRPORT SYSTEM
PUBLIC USE FACILITIES


Source: Modified from MTC Graphics.
SONOMA COUNTY
SONOMA COUNTY
NAPA COUNTY
NAPA COUNTY
SOLANO COUNTY
TRAVIS AFB
MARIN COUNTY
BUCHANAN FIELD
CONTRA COSTA COUNTY
ALAMEDA NAS
SAN FRANCISCO COUNTY
OAKLAND
HAYWARD
LIVERMORE
ALAMEDA COUNTY
SAN FRANCISCO
SAN CARLOS
PACIFIC OCEAN
MOFFETT NAS
PALO ALTO
SAN JOSE
RED HILL/VIEW
SAN MATEO COUNTY
SANTA CLARA COUNTY
LEGEND
Air Carrier
General Aviation
Military
MTC
Regional Airport System Plan
Exhibit 4.2
TOWERED AIRPORTS



LEGEND

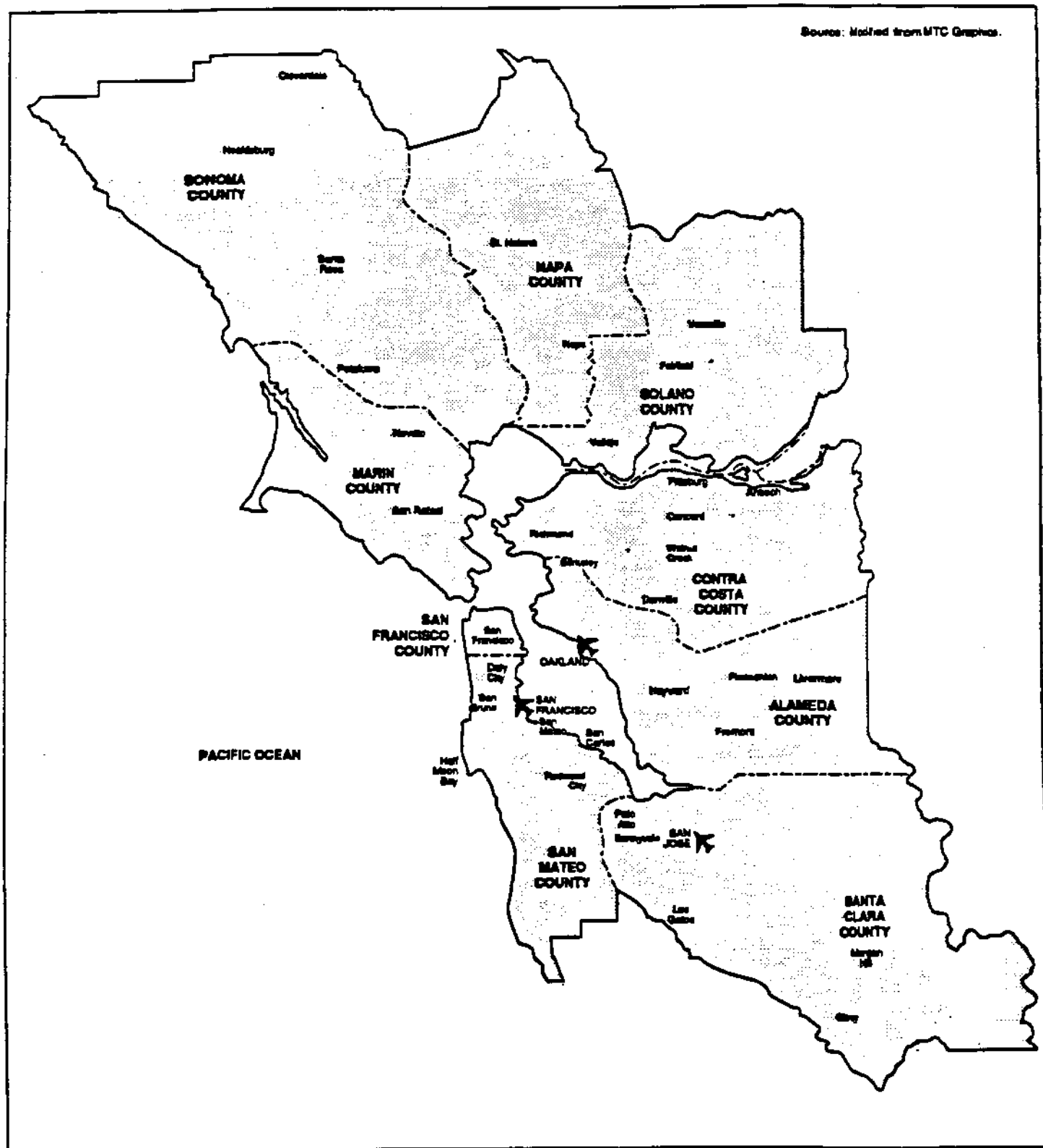
Airports with Helipads	Facilities with Helipads
Air Carrier	Hospitals
General Aviation	Military Centers
Military	Other

MTC

Regional Airport System Plan

Exhibit 4.3

HELICOPTER FACILITIES


Source: Modified from MTC Graphics.
SONOMA COUNTY
NAPA COUNTY
SOLANO COUNTY
MARIN COUNTY
CONTRA COSTA COUNTY
SAN FRANCISCO COUNTY
OAKLAND
SAN FRANCISCO
ALAMEDA COUNTY
SAN MATEO COUNTY
SAN JOSE
SANTA CLARA COUNTY
PACIFIC OCEAN
LEGEND
Air Carrier
MTC
Regional Airport System Plan
Exhibit 4.4
AIR CARGO AIRPORTS

❑ Private Use Airports

Antioch
Blake
Calistoga Airpark (Closed) G
Commodore Center Seaplane Base
Delta
Fremont (Closed)
Garibaldi
Graywood
Inglenook Ranch
Maine Prairie
Marin
Meadowlark
Moskowite
Mysterious Valley
Pope Valley
Sea Ranch
Sky Soaring G
Travis AFB Aero Club
Vaca-Dixon (Closed)
Vacaville Gliderport G

❑ Public Use Heliports

Port of San Francisco Heliport (Closed)

❑ Military Heliports

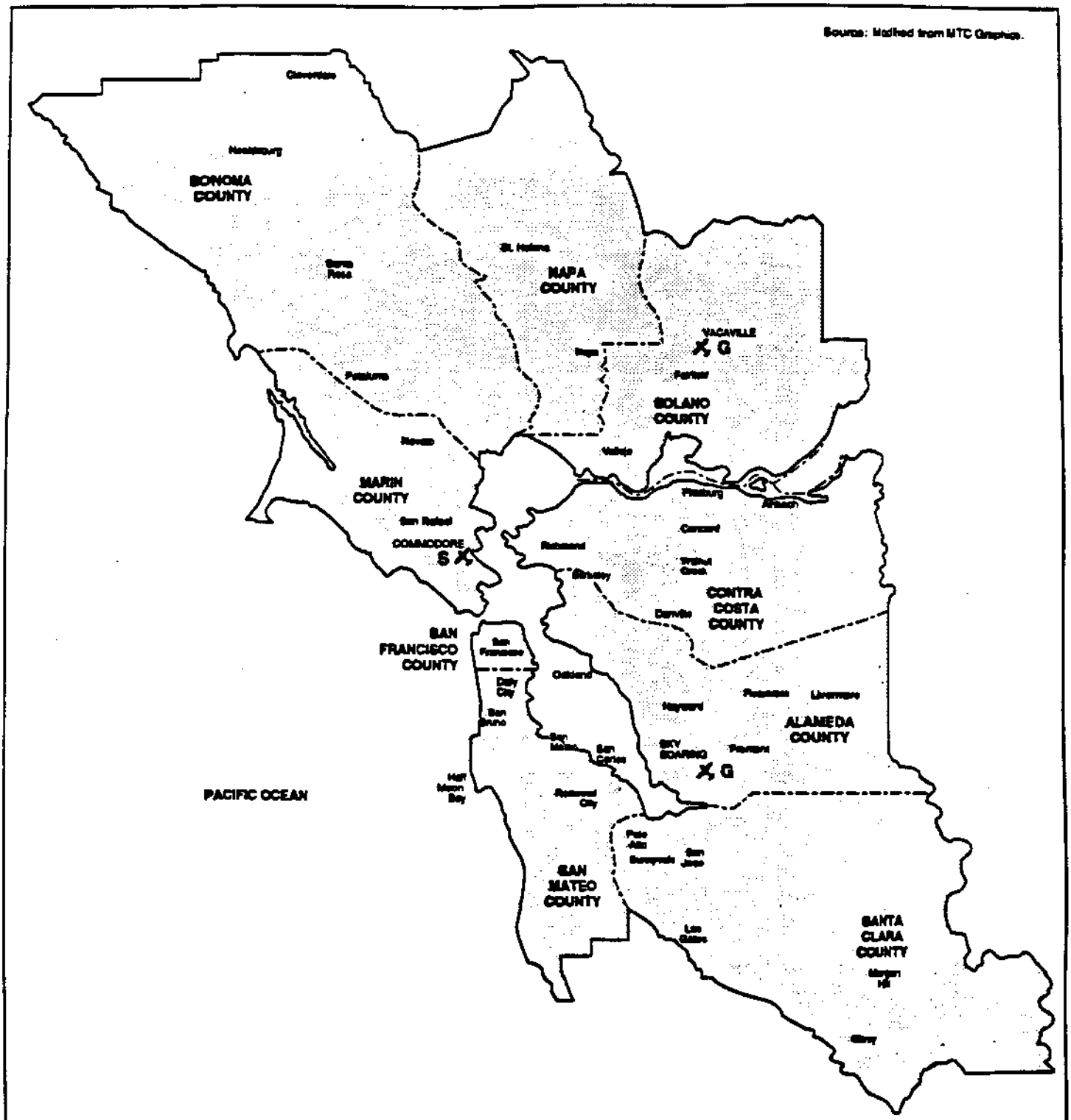
Crissy Army Airfield
Naval Hospital Oakland
Naval Weapons Station Concord

❑ Medical Heliports

Brookside Hospital
Community Hospital
John Muir Memorial Hospital
North Bay Medical Center
Palm Drive Hospital
Petaluma Valley Hospital
Queen of the Valley Hospital
Saint Helena Hospital Site II
Saint Rose Hospital
San Jose Medical Center
Santa Rosa Memorial Hospital
Stanford University Hospital
Vaca Valley Hospital
Valley Medical Center
Washington Hospital

❑ Other Heliports

These airports are part of a complex regional transportation network. The regional highway system and the public transportation system are each mapped to show their relation to the air transportation system. Exhibit 4.7 shows the regional highways, and Exhibit 4.8 shows regional rail transportation.



LEGEND

Private Use Facilities

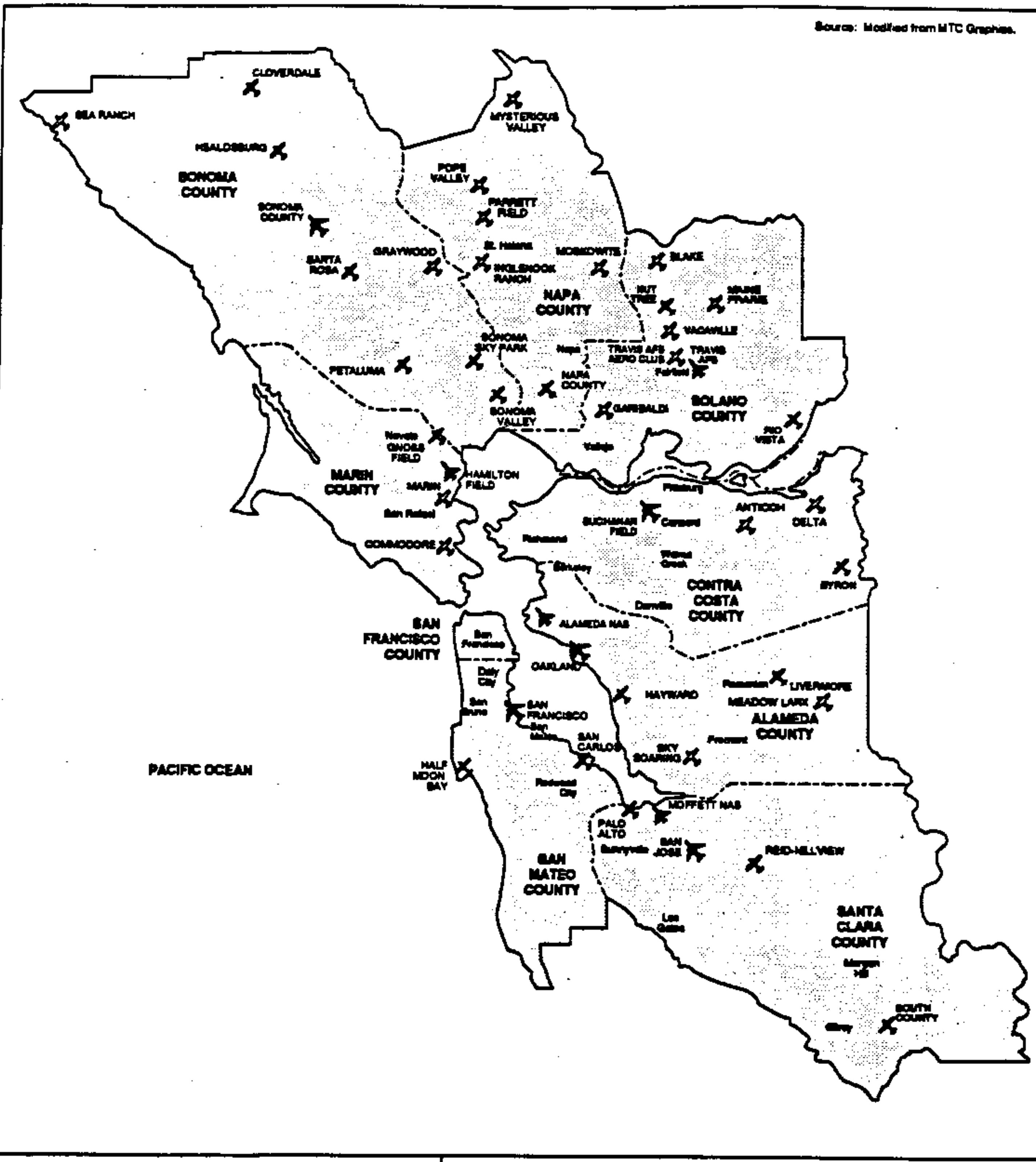
✈	General Aviation
G	Gliderports
S	Seaplane Bases

MTC

Regional Airport System Plan

Exhibit 4.5

SPECIAL USE AIRPORTS



LEGEND

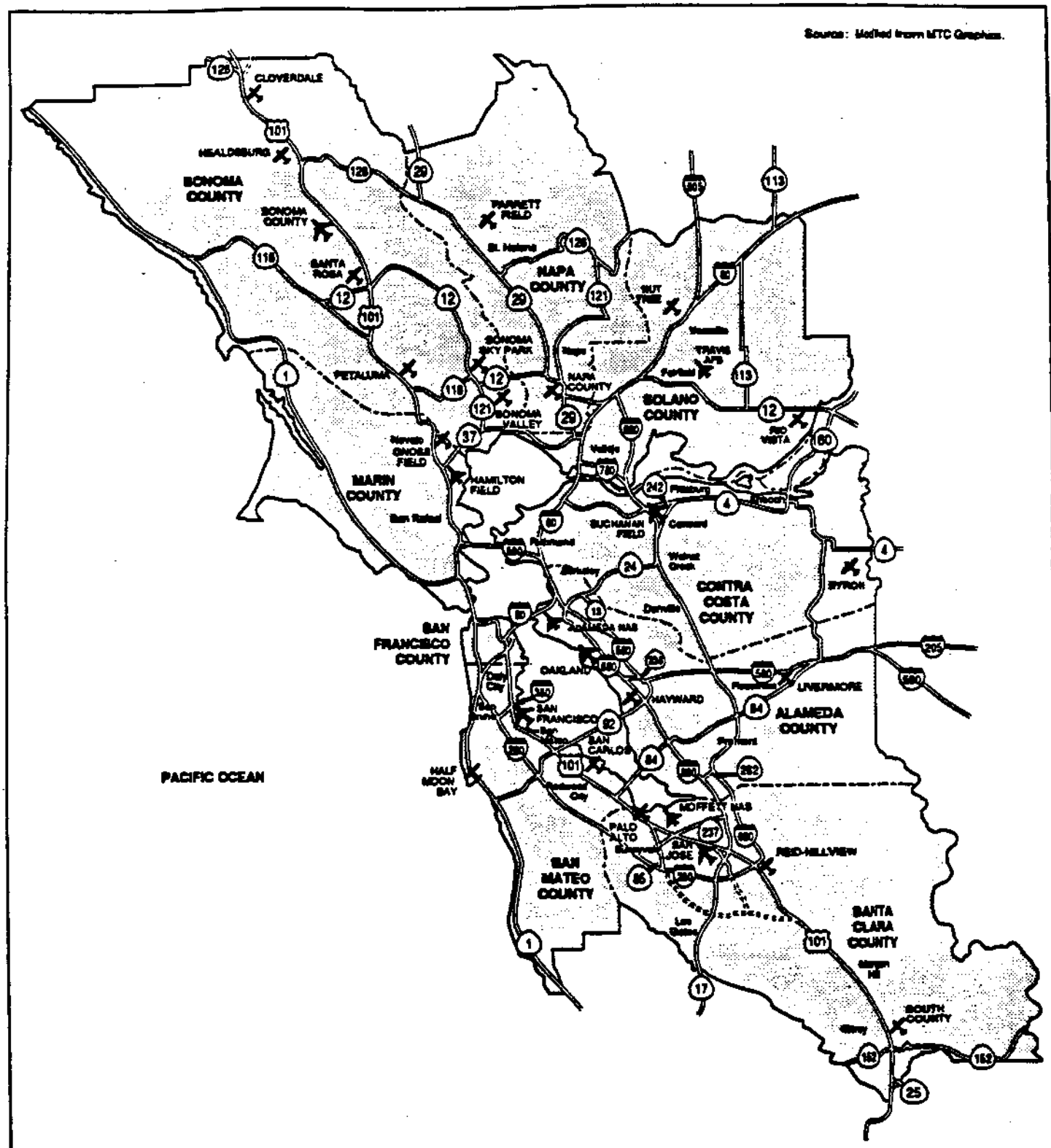
- Air Carrier
- General Aviation
- Military
- GA Private Use

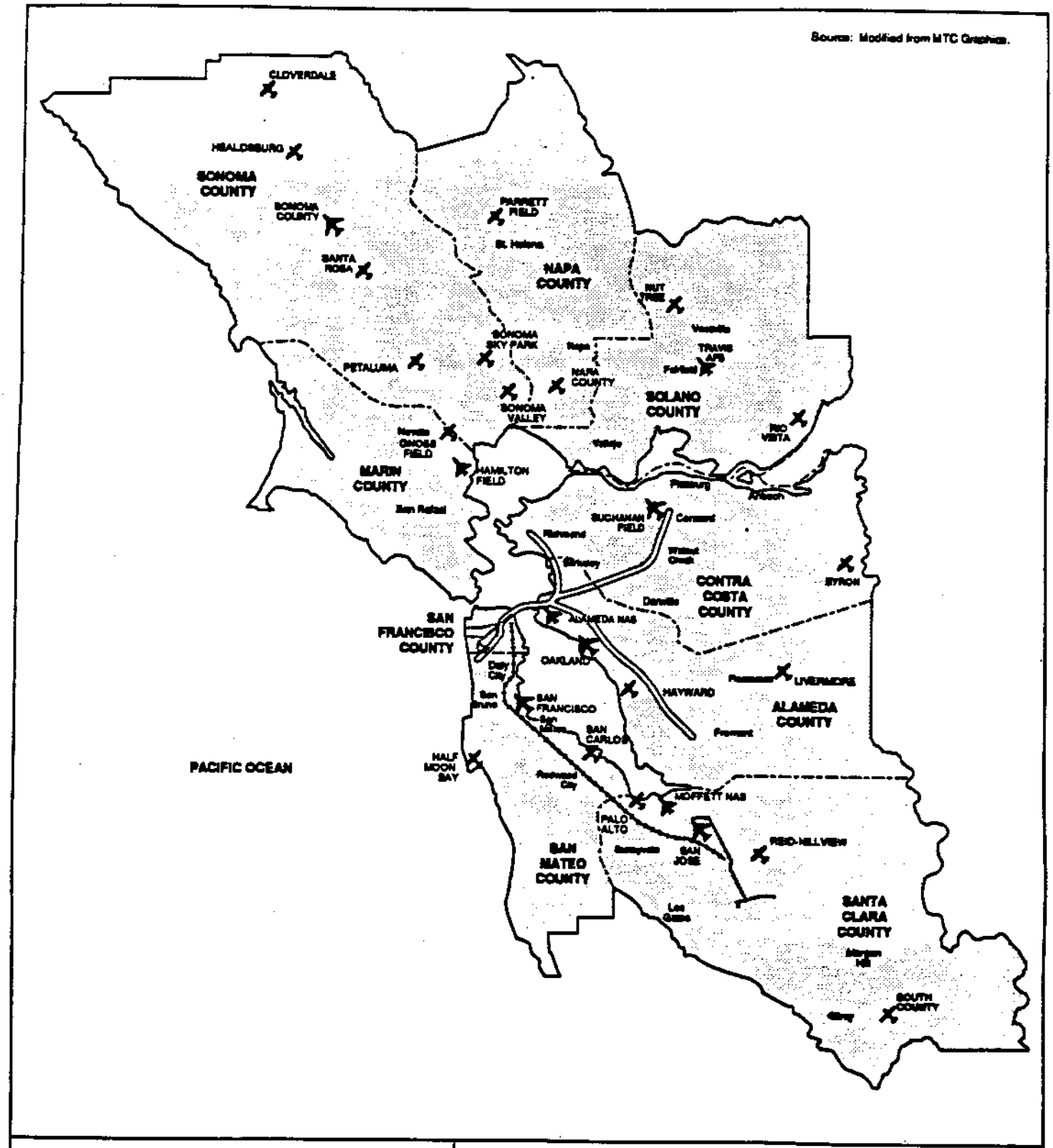
MTC

Regional Airport System Plan

Exhibit 4.6

THE AIRPORT SYSTEM PUBLIC AND PRIVATE USE FACILITIES


Source: Modified from MTC Graphics.
CLOVERDALE
HEALDSBURG
SONOMA COUNTY
SONOMA COUNTY
SANTA ROSA
PETALUMA
SONOMA VALLEY
SONOMA SKY PARK
PARRETT FIELD
NAPA COUNTY
NAPA COUNTY
SUT TRES
TRAVIS AFB
SOLANO COUNTY
RIO VISTA
MARIN COUNTY
GNOSS FIELD
HAMILTON FIELD
SAN RAFAEL
BUCHANAN FIELD
CONCORD
WALNUT CREEK
BYRON
CONTRA COSTA COUNTY
DANVILLE
SAN FRANCISCO COUNTY
ALAMEDA NAS
OAKLAND
HAYWARD
LIVERMORE
ALAMEDA COUNTY
SAN FRANCISCO
SAN CARLOS
PACIFIC OCEAN
HALF MOON BAY
MOFFETT NAS
PALO ALTO
SAN JOSE
REID-HILLVIEW
SAN MATEO COUNTY
SANTA CLARA COUNTY
SOUTH COUNTY
LEGEND
Highway - Existing
Highway - Planned/Under construction
Air Carrier
General Aviation
Military
MTC
Regional Airport System Plan
Exhibit 4.7
REGIONAL HIGHWAYS


Source: Modified from MTC Graphics.
CLOVERDALE
HEALDSBURG
SONOMA COUNTY
SONOMA COUNTY
SANTA ROSA
PARRETT FIELD
St. Helena
NAPA COUNTY
PETALUMA
SONOMA SKY PARK
NAPA COUNTY
SONOMA VALLEY
SOLANO COUNTY
TRAVIS AFB
RIO VISTA
MARIN COUNTY
HAMILTON FIELD
San Rafael
BUCHANAN FIELD
CONTRA COSTA COUNTY
Danville
BYRON
SAN FRANCISCO COUNTY
ALAMEDA NAS
OAKLAND
HAYWARD
LIVERMORE
ALAMEDA COUNTY
SAN FRANCISCO
SAN CARLOS
PACIFIC OCEAN
HALF MOON BAY
MOFFETT NAS
PALO ALTO
SAN JOSE
REID-HILLVIEW
SAN MATEO COUNTY
SANTA CLARA COUNTY
SOUTH COUNTY
LEGEND
Bay Area Rapid Transit (BART)
CalTrain
San Francisco Municipal Railway (Muni Metro)
Santa Clara Light Rail Transit (SCLRT)
Air Carrier
General Aviation
Military
MTC
Regional Airport System Plan
Exhibit 4.8
RAIL TRANSIT

The 4 military airfields in the region are publicly owned but restrict access. They are part of the airport system and are also mapped in Exhibit 4.1. The uncertainty of their status as active military facilities holds them poised for possible joint use conversion or perhaps complete demilitarization. Travis AFB already has a joint use agreement with Solano County which provides for commercial airline service. Private use airports and facilities currently closed are acknowledged because there may be the option for public use and/or acquisition. An example of such an acquisition can be seen in Clark County, Nevada, where the County acquired a closed private use airport which now serves as a reliever for McCarren International Airport in Las Vegas. Byron Airpark in Contra Costa County, another example, was in 1980 a private airstrip, and today is a growing public use general aviation airport.

Helicopter facilities are projected to be an increasingly important component of the national air transportation system in the future. There are two categories: (1) heliports, which are areas with full helicopter servicing available, and (2) helistops, which are pads strictly for takeoffs and landings. The only publicly owned heliport in the region developed for public use, the Port of San Francisco heliport, located on the waterfront at Piers 30-32, is closed to use. Five of the public use airports have designated helicopter takeoff-landing areas. Also, a number of private heliports and helistops dot the region. These facilities are owned and used by various groups including hospitals, corporations, and the media. In addition, there are several publicly owned military rotorcraft facilities which also limit access by the general public. Helicopter facilities in the region are shown in Exhibit 4.3.

The active gliderports in the system are privately owned, private use airports. There are two: Sky Soaring (formerly Sky Sailing), near Fremont, California, and Vacaville Gliderport near Vacaville, California. Calistoga Airpark in Northern Napa County has recently closed.

The one seaplane base in the region, Commodore Center in Marin County, changed from public use to private at the end of March, 1991. It is currently used for training and sightseeing. A second seaplane facility located adjoining San Francisco International Airport is planned. Special use facilities, those for gliders and for seaplanes, are pointed out in Exhibit 4.5.

Many changes have occurred since the last MTC Regional Airport Plan revision. The number of facilities has increased. Some have shifted in type of ownership and category of use. The 1980 plan recognized 3 commercial airports, 17 public use general aviation airports, and 20 private general aviation airfields (discounting small air strips). The same four military facilities remain today. There were 5 publicly owned heliports: Emeryville Municipal (Alameda), Alameda County Parking Garage (Alameda), Richmond Police Helistop (Contra Costa), and U of C Richmond Field Station (Contra Costa). Eleven private heliports and 5 medical heliports also served the region.

Since 1980 two additional commercial service airports now provide scheduled passenger service: Sonoma County and Buchanan Field. A net gain of two public use general aviation airports and a decrease from 20 to a current 17 private use airstrips shows the static nature of the general aviation market in this decade. In that same time period there has been a reduction in the number of public helicopter landing areas, while the region has seen a tremendous increase in the number of medical heliports from 5 to 15.

AIRPORT FACILITIES

This section is devoted to discussion of the physical facilities at each airport, and is divided into the following groups: commercial service airports; general aviation airports; military airports; and private use general aviation airports. Exhibit 4.23 provides a summary of facility information including: airport classification, number of runways, length of the longest runway, identification of instrument approach, presence of an Air Traffic Control Tower, presence of rotorcraft facilities, and the airport size, in acres.

Ground accessibility is discussed for the airports and illustrated in Exhibit 4.7, the regional highway system, and Exhibit 4.8, the public transportation system.

Commercial Service Airports

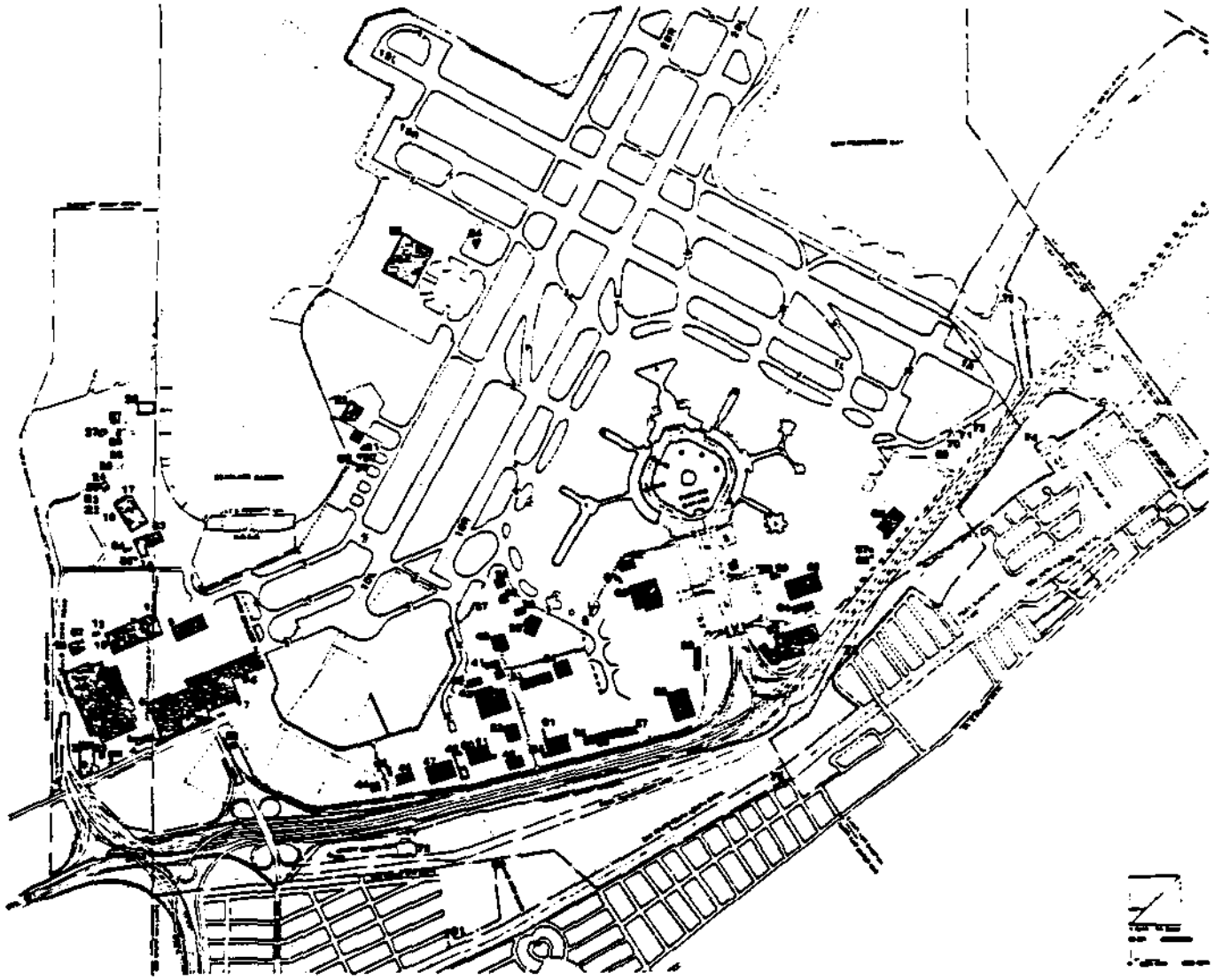
SAN FRANCISCO INTERNATIONAL AIRPORT

San Francisco International is the dominant airport in the region, serving over 70% of the total regional passengers in 1990. It began in 1926 as a modest 160 acre site located well outside the city, and has grown to claim a total site of some 5,270 acres. The site, located on the west shore of San Francisco Bay, consists of both upland and submerged saltwater bayland. The airfield system occupies approximately 1,700 acres, land partially consisting of reclaimed tidelands. Undeveloped areas are several and include: the Bayshore Parcel, 180 acres sited near the freeway; the San Bruno Interchange Parcel, 18 acres west of the United Airlines maintenance hanger; the North Field Parcel, a 150 acre parcel on the north field, north of Flying Tigers and JAL airfreight operations; and the east Field Parcel, a crash/fire/rescue practice area accessible by taxiway C.

San Francisco International Airport has two sets of intersecting parallel runways: 28R-10L, 11,870 feet; 28L-10R, 10,600 feet; 1R-19L, 8,901 feet (with a 600 foot displaced threshold); and

Exhibit 4.9

San Francisco International Airport



1L-19R, 7,001 feet. Each is 200 feet wide. They are surfaced with asphalt concrete. Three of the four runways are equipped with Instrument Landing Systems (ILS). An air traffic control tower is situated in the center of the main terminal building.

The airport has by far the largest passenger terminal complex in the region. There are 2.6 million sq. ft. of space serving 80 passenger terminal gates configured as 6 piers. The North terminal contains 2 boarding piers, and the South terminal has 4, including the International terminal.

The buildings surround a five level central public parking garage which has 6,765 stalls. Of these 6,088 are dedicated for short term parking, 223 for valet parking, 128 for taxi staging, and 328 for permit parking. An uncovered lot accessible by shuttle bus has 3,250 long term parking spaces.

Air Freight facilities utilize about 90 acres at San Francisco International, and provide for 34 aircraft parking spots. General Aviation Fixed Based Operators (FBO's), businesses providing general aviation services at an airport, can accommodate 40 based aircraft, and there are 6 private GA parking places. The passenger terminal can accommodate some 70-80 commercial jet aircraft, and there are 9 remote aircraft hardstands, which are aircraft parking places on the apron.

Surface access for San Francisco International is provided by public transit, airporter, limousine, hotel shuttle, and rental car in addition to the private automobile. Rail transportation is not a very convenient access mode at this time. The nearest Bay Area Rapid Transit (BART) station is Daly City, 8 miles away linked to the airport only by a public bus line. The CalTrain runs parallel to the U.S. 101 corridor and comes close to the airport but does not provide direct connection for passengers and employees.

Numerous support facilities including aviation support such as flight kitchens, maintenance hangars, and warehouses, and airport support including crash/fire/rescue, fuel farms, water treatment plants, and a Hilton hotel also occupy space at San Francisco International Airport.

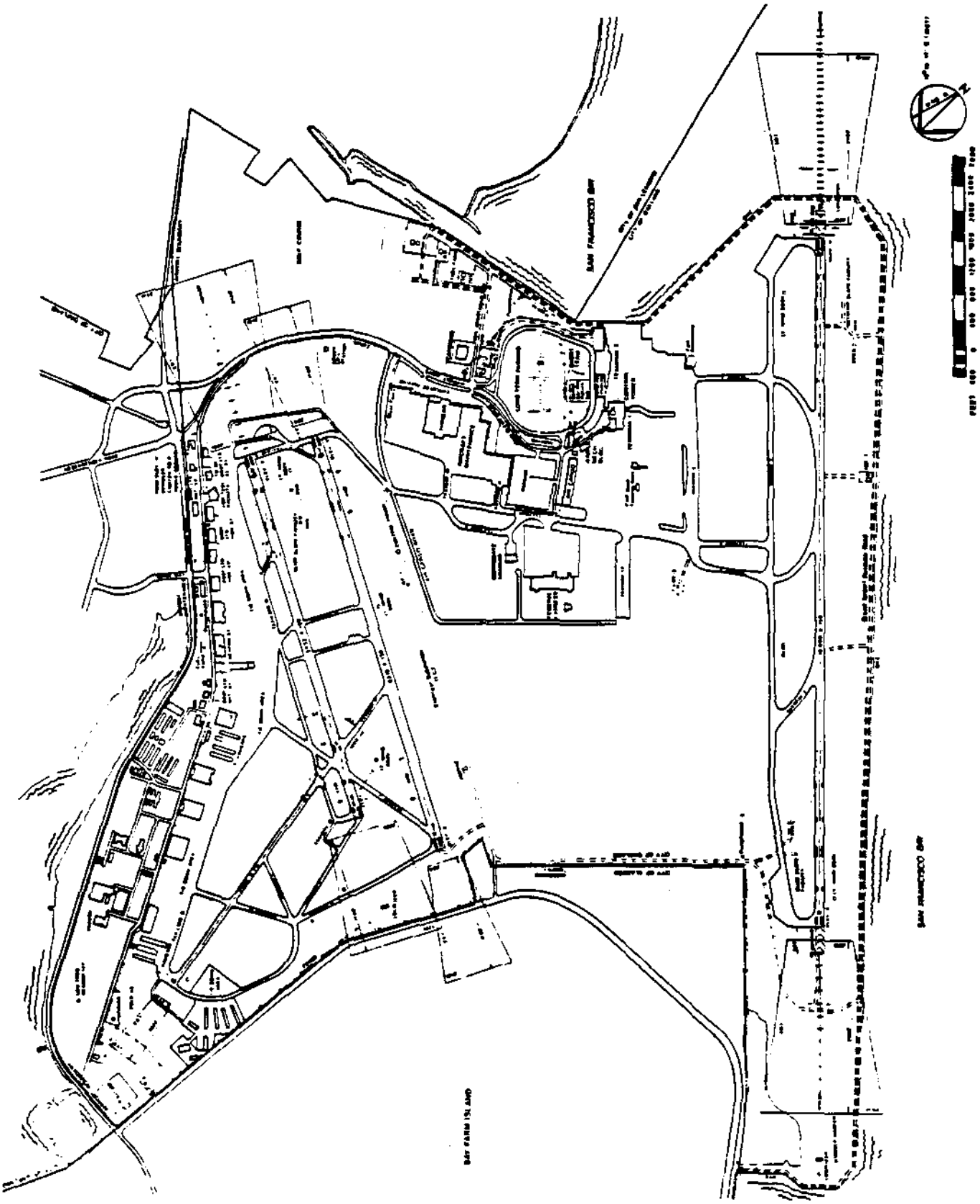
METROPOLITAN OAKLAND INTERNATIONAL

With its humble beginnings as a dirt strip in 1927, the Metropolitan Oakland International Airport has evolved into a 4 runway commercial service airport occupying some 2,600 acres of upland and wetland adjoining the east side of San Francisco Bay. The airport has experienced rapid growth in the past few years, and in 1990 served 13% of the region's passengers. Oakland airport is laid out almost as two separate airports, with commercial service occurring at South Field and general aviation activities occupying North Field.

South field consists of a single transport category runway, runway 11-29, 10,000 feet in length and 150 feet with a parallel taxiway. North field has three runways: 9R-27L, which is

Exhibit 4.10

Metropolitan Oakland International Airport



6,212 feet long and 150 feet wide; 9L-27R, which is 5,452 feet long and 150 feet wide; and 15-33, a short crosswind runway which is 3,366 feet long and 75 feet wide. The air carrier runway, 11-29 at South Field is approximately 6,400 feet from the closest general aviation runway, runway 9-27. There is one designated helicopter takeoff/landing area.

Oakland's passenger terminal complex has two unit terminals containing 20 second-level aircraft gates. The terminal also includes one international arrival gate and a recently expanded international arrivals building large enough to accommodate a 747 and can process 500 peak hour arriving passengers. Surface vehicle parking at the passenger terminal can accommodate some 6,300 vehicles. Public spaces are limited to 4,490: 805 in the short term lot, 3,485 in long term parking, all open air.

Having become the region's hub for overnight small package cargo, Oakland has a large area (some 64 acres) devoted to air cargo activity, including the Federal Express Metroplex facility and an apron area used for belly cargo, both located west of the terminal building. Another 100 acres of air cargo development is forecast for the next 16 years.

Oakland's north field is one the region's largest and busiest general aviation facilities, with a capacity of 641 based aircraft, and occupying 980 acres.

Oakland has two air traffic control towers. One, serving South Field, is located within passenger terminal 1. The second, which serves North Field, is located adjoining the cross-airport dike.

The airport may be reached by private auto and rental car. Alternative means of access include public transit with AC Transit and Air-BART service, and private operators including Greyhound, taxi, limousine, and courtesy van services. The BART Coliseum Station, 3 miles from the airport, is linked by frequently scheduled Air-Bart vehicles to both terminals at the South Airport.

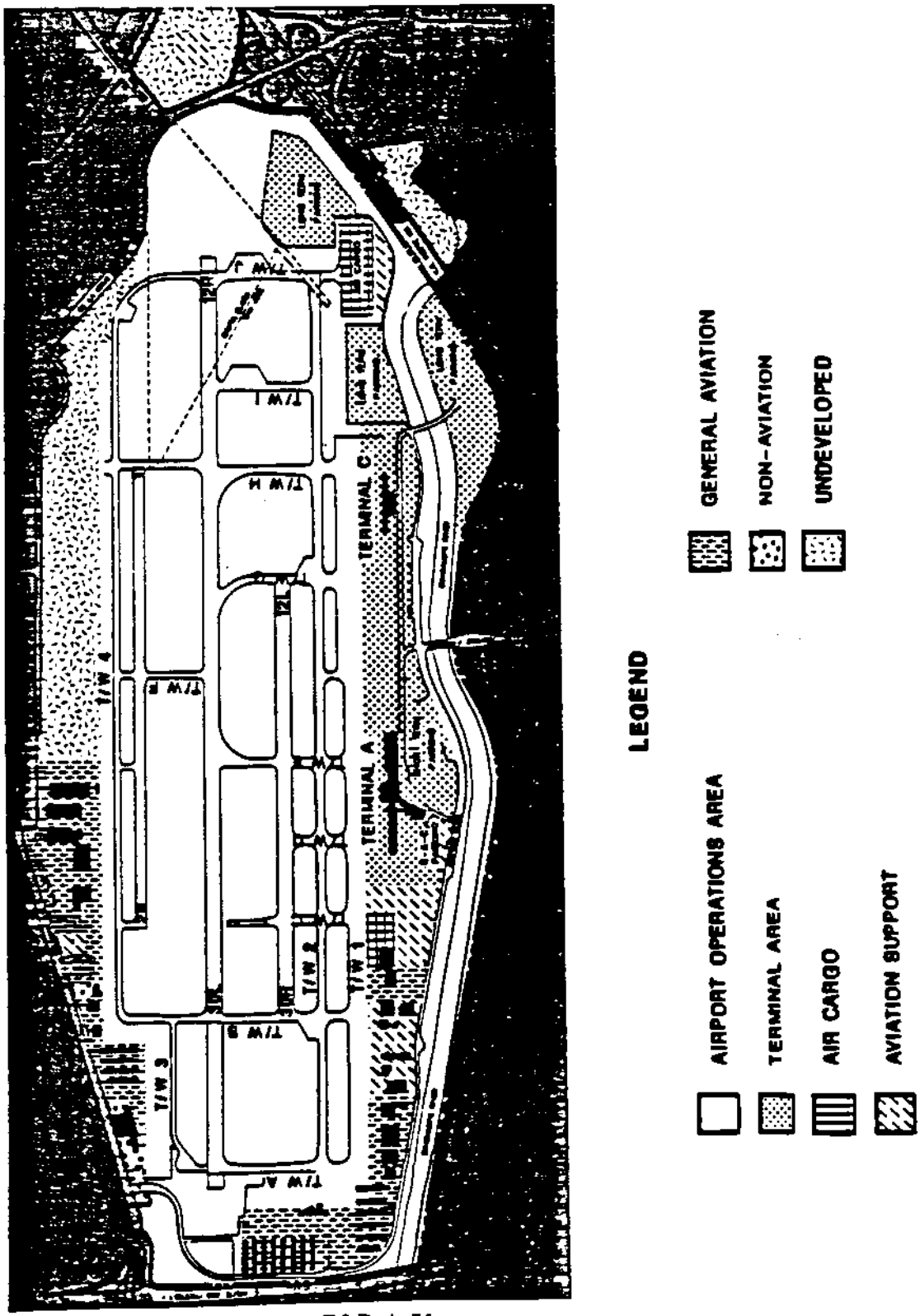
SAN JOSE INTERNATIONAL

San Jose International Airport occupies some 1,050 acres adjoining U.S. 101 on the north, Route 880 to the south, Guadalupe Parkway on the east, and the city of Santa Clara on the west. About 45 acres of airport property are now undeveloped.

There are three parallel runways, one used for air carrier aircraft, one used for commuter and general aviation aircraft, and one used primarily by general aviation. The general aviation runway, 11-29, is 4,600 feet long and 100 feet wide. The air carrier center runway is designated 12R-30L, and is 8,900 feet long and 150 feet wide. The commuter/general aviation runway, designated 12L-30R, is 4,419 feet long and 150 feet wide.

Exhibit 4.11

San Jose International Airport



San Jose now has two unit terminals (A and C) with a total of 32 gates. Of these, all 15 at Terminal A are second level loading bridges, while 16 of the 17 at terminal C are ground level gates.

A combination of surface and structure parking provide 8,250 total parking spaces at the passenger terminal. There is an 1,100 space short term lot in front of terminal C, and a 2,000 space short term parking garage adjacent to terminal A. Three long term surface parking lots provide 4,600 parking spots.

San Jose is also a busy general aviation airport, with 680 existing based aircraft. The general aviation facility also includes the San Jose Jet Center, the San Jose State University aviation program, and several other FBO and support activities, including the base of the Hewlett Packard Company's 7-aircraft fleet.

San Jose has a limited amount of space available for air cargo. Approximately 7 acres of dedicated air cargo apron is located at the northeast corner of the airport. On the southeast side of the airport there is aircraft parking space and an Air Freight Building used jointly by the commercial airlines for processing belly-cargo.

Ground access to San Jose International is possible by private or rented automobile, airport van service, shuttle, taxi, limousine, and bus. The Santa Clara Light Rail Transit (SCLRT) is about one and a half miles from the airport but is not directly connected in any way to the terminal. The CalTrain allows access to the city of San Jose but is quite a distance from the airport as well.

BUCHANAN FIELD (Concord)

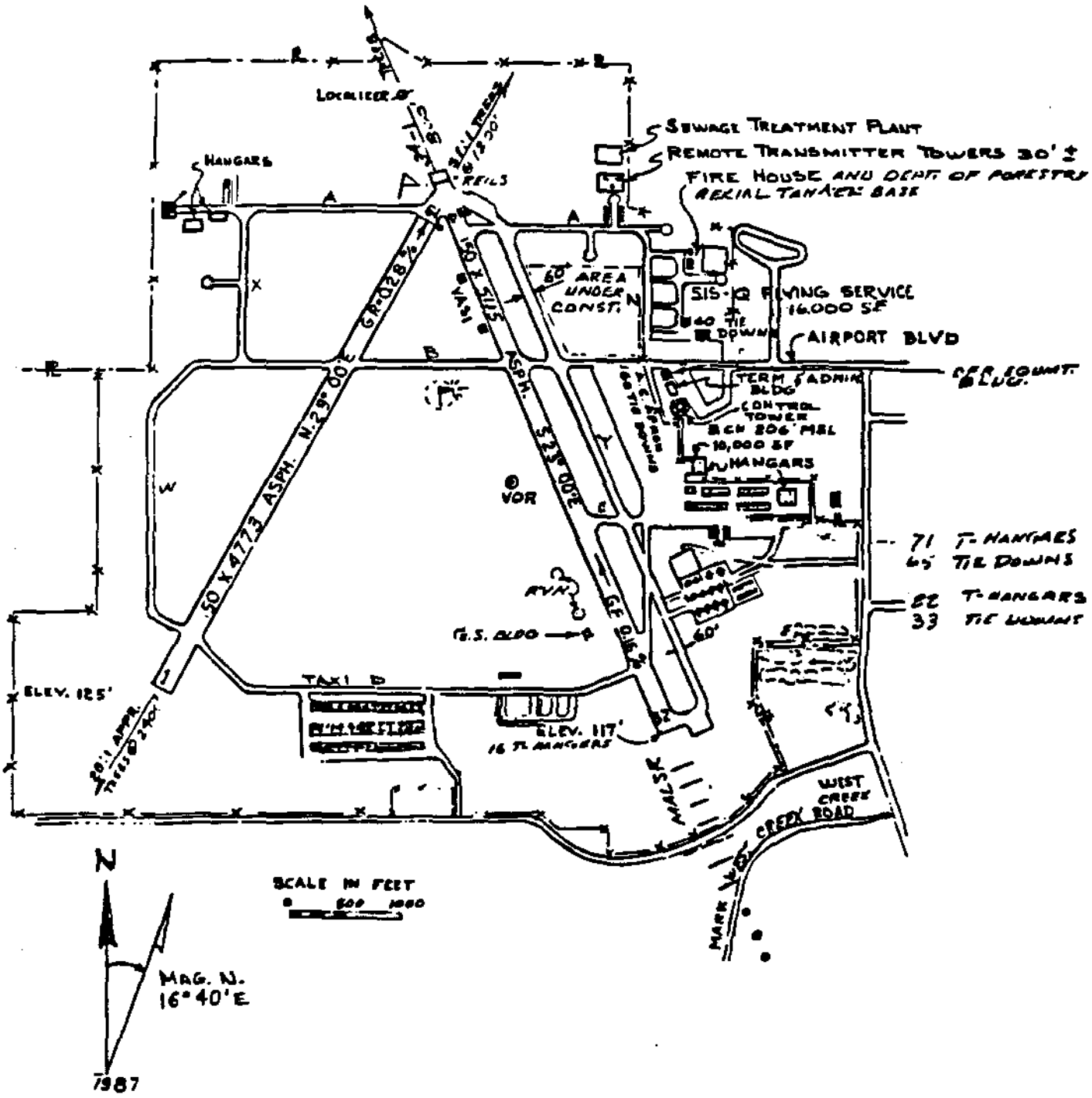
Ground was broken in 1942 for an airport to serve Contra Costa County. Before construction could be completed, though, the Federal Government built two runways there to serve the war effort. Today, Buchanan Field has two pairs of parallel runways on a 530 acre site located near Concord, California.

Runway 19R-1L is the primary runway, 4,400 feet in length and 150 feet in width. The other major runway, 14L-32R is 3,951 feet long and 150 feet wide. Each has a 600 foot minimum safety area. Runway 1R-19L is 2,768 feet in length and 75 feet in width and runway 14R-32L is 2,800 feet long and 75 feet wide. The runway surfaces are asphalt concrete.

The primary runway and that lying parallel to it are equipped with medium intensity runway lights (MIRL), and 19R-1L has runway end identifier lights (REIL) as well. The other runways are not lighted. Non-precision landings are guided onto runway 19R-1L by a visual approach slope indicator (VASI). A terminal building provides processing facilities for the based airlines,

Exhibit 4.12

Sonoma County Airport



and there is an air traffic control tower. Adjacent to the terminal there is a 60,000 square foot open auto parking area.

In addition, there are three designated helicopter take off/landing areas at Buchanan Field, identified on the taxiways. Two are located on the east side of the airport, and one is placed on the west side.

The airport is accessible by Interstate 680 and State Route 4. There is public transit service to Buchanan Field as well as taxi service and rental cars available. One line of BART extends to Concord, about a mile away, but does not provide direct access to the airport.

SONOMA COUNTY

Sonoma County Airport has served Santa Rosa, California and nearby community since 1939, with interim service for the U.S. Army during WWII. It currently occupies 940 acres.

Two crossed asphalt concrete runways support general aviation and air carrier activity. Runway 14-32 is the primary runway, 5,115 feet long, 150 feet wide, and ILS equipped. Runway 1-19, 5,002 feet long and 150 feet wide, has no lighting system but accommodates non-precision landings with Very-High-Frequency Omnirange equipment (VOR). There are two designated helicopter takeoff/landing areas on site.

The airport has an air traffic control tower, and a small terminal for commuter and air carrier traffic. A limited number of auto parking places are available nearby.

Sonoma County is directly accessible by auto on U.S. Highway 101. Ground transportation services available include public transit, taxi, and rental car.

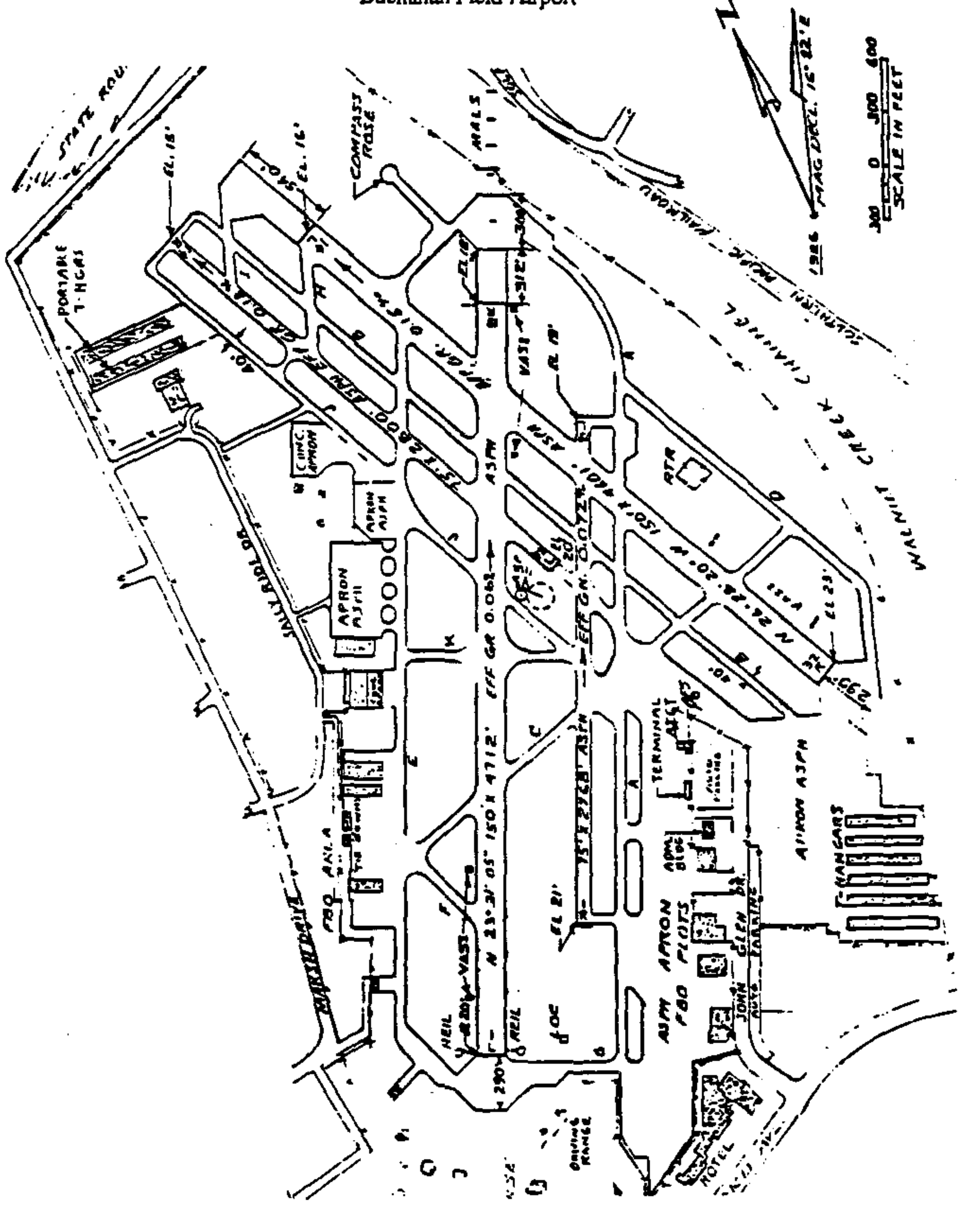
General Aviation Airports

The airports in this group by definition do not host scheduled air carrier or commuter service, and also do not have air cargo activity. Most of the facilities accommodate private or corporate aircraft and limited air taxi service.

The general aviation airports are generally much smaller than the commercial use airports. A few GA airports, such as Hayward (543 acres), Napa County (735 acres), Livermore (510), and Santa Rosa Air Center (500), compare in acreage with Buchanan Field (578 acres), but most of the others are between 50 and 250 acres. Refer to Exhibit 4.23 for the size of each airport. General aviation runway lengths generally range between 2,000 and 3,500 feet, which is typical for the size and design aircraft attracted to use these airstrips. Three airfields have significantly longer runways: Half Moon Bay (5,000 feet), Hayward (5,024), and Napa County (5,931). These airports could accommodate smaller commercial passenger jets such as the Boeing 727 and 737,

Exhibit 4.13

Buchanan Field Airport



and MD-80 series aircraft. Santa Rosa Air Park has a 7,000 foot runway, a length which can accommodate larger air carrier aircraft such as the Boeing 757. Exhibit 4.23 details the length of the longest runway at each facility. Precision instrument approaches are possible at very few general aviation airports, and the majority have no air traffic control tower.

Ground access to the region's general aviation airports is primarily by private automobile. Exhibit 4.7, that depicting the regional highways system, shows the alignment of these facilities along major highway corridors such as U.S. Highway 101.

Military Airports

Four military installations maintain airfield facilities in the region. These are the Naval Air Station at Alameda, located near Oakland in Alameda County; Hamilton Field in Novato, Marin County; Moffett Naval Air Station between Mountain View and Sunnyvale in Santa Clara County; and Travis Air Force Base, southwest of Sacramento in Solano County.

NAVAL AIR STATION (NAS) ALAMEDA

Naval Air Station Alameda provides support services to Naval aviation activities. Berthing space at two piers accommodates aircraft carriers, and ship maintenance is also accomplished at Alameda. The Naval Air Rework Facility Alameda allows for repair and revamping of Navy jet and turboprop aircraft.

The NAS at Alameda is contains 2,479 acres of property owned by the U.S. Navy: 1,521 acres upland, and 958 acres of submerged tideland in San Francisco Bay. In addition, 155 acres are leased from the City of Alameda.

The airfield has two crossed ILS equipped runways: one 8,000 feet in length, 200 feet in width; the other 7,200 feet long, 200 feet wide. Two helicopter landing areas are provided. The airfield at Alameda NAS includes 469,700 square yards of aircraft parking apron and 7 aircraft maintenance hangers. There is an air traffic control tower on site.

NAS Alameda is located in a well developed areas and is easily accessible by ground transportation. Interstate 880 provides an easy approach, and AC Transit bridges the 3 mile distance from the BART City Center station.

HAMILTON FIELD

Hamilton Field, formerly Hamilton Air Force Base, is owned and operated by the United States Army. The airfield is no longer actively used by the Army, but currently accommodates

some activity by the U.S. Coast Guard Strike Team. This unit is on call for emergencies and uses the airfield as required. They do not base any aircraft here. The U.S. military currently uses housing at the field for personnel from all branches and from the U.S. Coast Guard.

A single, 8,000 foot runway is located on the site, with no air traffic control tower.

Roadway access to the base is facilitated by nearby State Highway 101 and local bus service to the main gate by the Golden Gate Transit Company.

NAVAL AIR STATION MOFFETT FIELD

Naval Air Station Moffett Field is an airfield used primarily by P-3 Navy Antisubmarine aircraft to facilitate their patrol of Pacific Coast waters, but also serves the Ames Research Laboratory at the National Aeronautics and Space Administration (NASA).

The 2,263 acre site has two parallel runways separated by 625 feet and fully instrumented. One is 9,200 feet long and 200 feet wide; the other is 8,124 feet long (7,517 feet with displaced threshold) and 200 feet wide. There are 4 aircraft maintenance hangars and 472,300 square yards of aircraft parking apron.

There is an air traffic control tower in operation at Moffett Field.

The facility can be reached easily by State Highway 101, and is linked to an intricate highway network nearby. Public transit serves the front gate of Moffett Field.

TRAVIS AIR FORCE BASE

Travis Air Force Base is an active military airfield when duty calls. The base was heavily used to transport military personnel back from the Persian Gulf conflict. The facility has 2 parallel 11,000 foot runways and significant passenger processing facilities.

State Route 12 and Interstate 80 provide ground access for Travis AFB.

Private Use General Aviation Airports

Over half of the private general aviation airports in the region are airfields made up of a short, unpaved runway (1,500 - 3,700 feet). The balance, hard surface runways, vary in length from 1,700 feet to 2,600 feet. All are without navigational aids. Minimal aircraft storage and support facilities are generally provided.

The Commodore Center Seaplane Base is located in lower Marin County. It has a 10,000 foot takeoff/landing area length.

BASED AIRCRAFT

This section presents based aircraft fleet mix data for the following groups of airports in the system: commercial service airports, public use general aviation airports, military airports, and heliports. The distribution of the based rotorcraft and of the total based aircraft by county is then illustrated.

The existing based aircraft are categorized as: single engine piston, multi-engine piston, jet, rotorcraft, and other. Single engine piston aircraft are typically privately owned airplanes used for recreation or training. Multi-engine piston may be aircraft used for this purpose as well as for corporate charter, and for air taxi or commuter flights. The jets based at the public use airports are mostly small business jets. Based rotorcraft are generally helicopters used in Emergency Medical Services (EMS) as well as commercial applications. A complete set of numbers is provided in the data summary table, Exhibit 4.23.

Commercial Service Airports

Most of the air carrier airports in the region are home to a significant number of general aviation aircraft. Concord, with 635, and San Jose, with 680, have the greatest number of based aircraft. Sonoma County airport has 454 based aircraft. Oakland, which has lost significant numbers of based general aviation aircraft in the past 10 years, now has 409 based aircraft, all of which are located at North Field. San Francisco, the exception to the above statement, has very few based general aviation aircraft (29) as most of the airport is devoted to passenger and air cargo activities.

Of the five commercial service airports in the region, San Jose is perhaps the dominant corporate/business airport, having the greatest number of twin engine piston powered aircraft, business jets, and rotorcraft. Oakland North Field has a similar focus reflected in their based aircraft mix, yet South Field has no based aircraft. San Francisco caters to the commercial aviation market as noted above.

General Aviation Airports

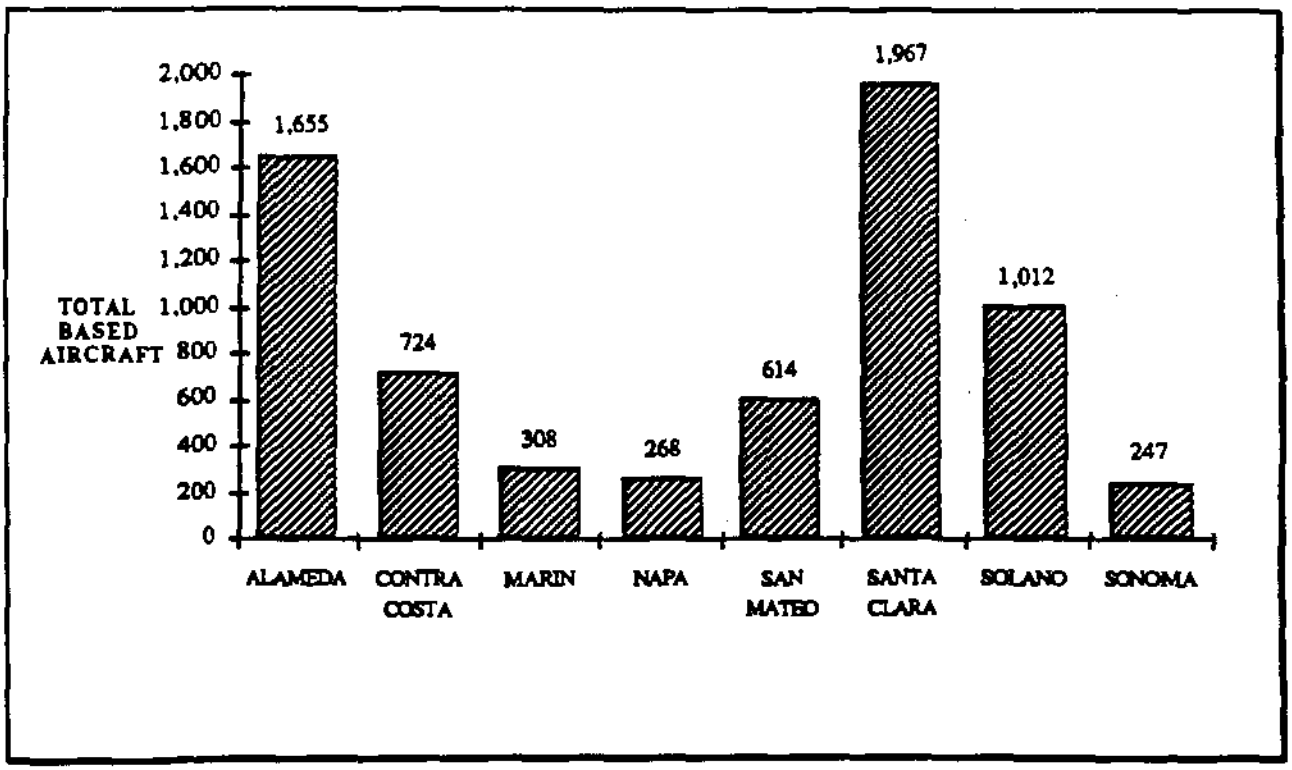
The number of based aircraft at the general aviation airports varies widely by facility. Several airports have over 600 based aircraft, most of which are single engine piston airplanes. Only Hayward, Livermore, and Santa Rosa Air Center have more than one based jet aircraft. Gnoss Field has one; the balance have none at all. The small number of rotorcraft in the system are based at a few GA airport locations across the region, including Hayward, Gnoss, Napa County,

Half Moon Bay, and Livermore. Few of the public use general aviation airports have based gliders except Byron, which has 24 gliders in the mix of based aircraft. At Sky Soaring, a prominent gliderport, 20 of the 23 based aircraft are gliders. The seaplane base in Marin County, Commodore Center, has 3 based aircraft.

Hayward Air Terminal has the largest number of twin engine aircraft, while Oakland has the most jets and rotorcraft. Of the 50 based jet aircraft in the system Oakland has 68% (34), while Hayward has some 18% of the total system's multi-engine GA aircraft (114 of 636). This reflects these two airports' importance to corporate and business aviation users. The chart below, Exhibit 4.14, displays the distribution of general aviation based aircraft by county, and clearly shows the dominance of Alameda and Santa Clara Counties in general aviation activity.

Exhibit 4.14

DISTRIBUTION OF BASED GENERAL AVIATION AIRCRAFT BY COUNTY (1990)



Military Airports

The aircraft based at the military facilities are quite varied in type and capability. The number may change at any time due to the state of the national defense. NAS Moffett Field, for example, functions primarily as a base and practice field for pilots of the P-3, the Lockheed Orion anti-submarine aircraft. Thus of the over 121 based aircraft (1988), about 74 are the P-3. Sixteen of these based aircraft are helicopters. NAS Alameda is home to some 56 U.S. Navy aircraft (1988) including approximately 16 Douglas A-4 Skyhawks, attack aircraft carried shipboard, 13 of the Vought A-7 Corsair II, also an attack jet, and 10 Douglas KA-3B Skywarriors, a refueling aircraft. The total includes 12 based helicopters. Hamilton Field currently has no based aircraft. Though it is used by the U.S. Coast Guard, they do not base any vehicles there.

Heliports

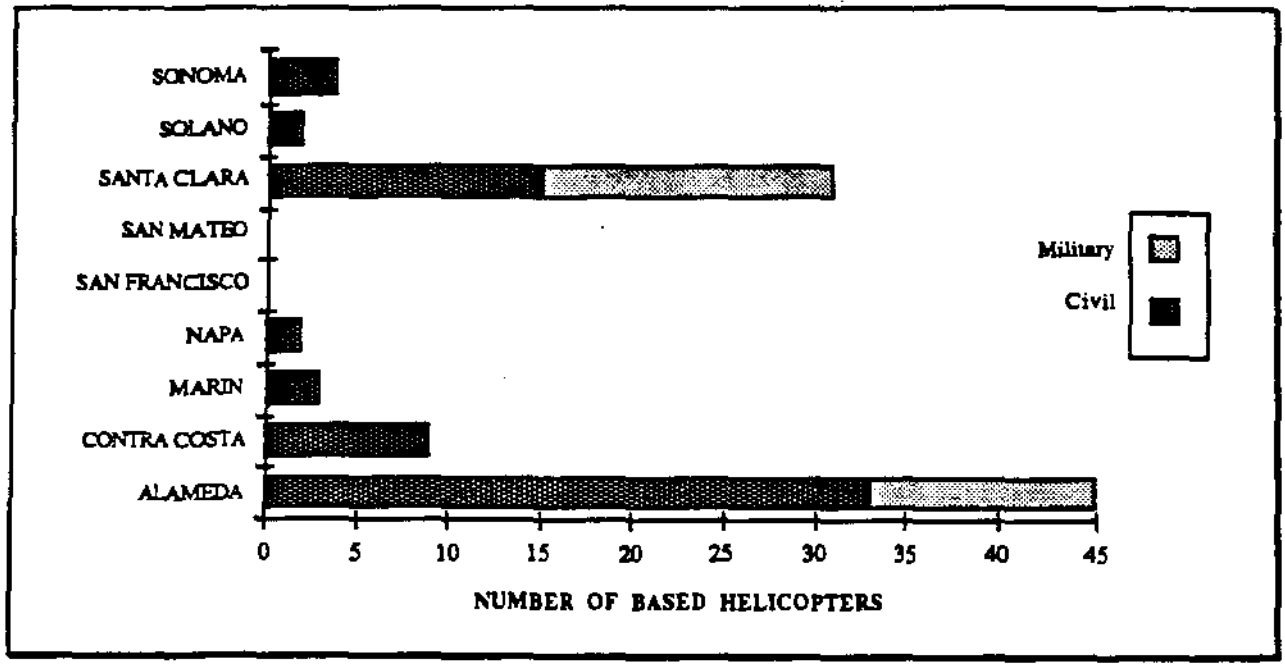
There are rotorcraft based at several of the airports in the region, with based operators serving a variety of clients. Many of the operators provide aircraft leasing services or flight services to these varying customers. The role of these based rotary-wing aircraft may include rescue, Emergency Medical Services (EMS), aerial inspection and photography, training, and corporate shuttle.

There are EMS operators in the region including CALSTAR (California Shock/Trauma Air Rescue) with its Aerospatiale AS-344 Twin Star based at Hayward Air Terminal, and Life Flight, which has its MBB BK-117 based at Stanford University Hospital.

The location of these based aircraft throughout the region illustrates in part the potential for quick response in the event of a natural disaster or large scale emergency. The largest number of based rotorcraft are housed at Oakland's North Field, San Jose International, Buchanan Field, and Hayward Air Terminal. Exhibit 4.15 shows the distribution of helicopters based at public use airports by county, and includes military helicopters. The rather limited number of public use heliports and private heliports region-wide suggests that few helicopters are unaccounted for in this survey, and this rotorcraft distribution will be representative of that overall. Exhibit 4.15 reveals that Alameda and Santa Clara Counties have by far the greatest number of based rotorcraft. This may be due to the nature of the activities in these counties; major military facilities are located there in addition to various corporate headquarters based in Alameda County and the high-tech business corridor in Santa Clara County. San Mateo and San Francisco counties have a scarce supply of based helicopters as do Solano and Napa counties.

Exhibit 4.15

DISTRIBUTION OF BASED ROTORCRAFT BY COUNTY (1990)



AIRPORT ACTIVITY

Information about airport activity was collected for the year 1990 to document current levels and to provide a basis for forecasting. Airport activity information listed here includes enplaned passengers, annual aircraft operations, peak hour operations, and annual air cargo volume. The numbers are catalogued in Exhibit 4.23.

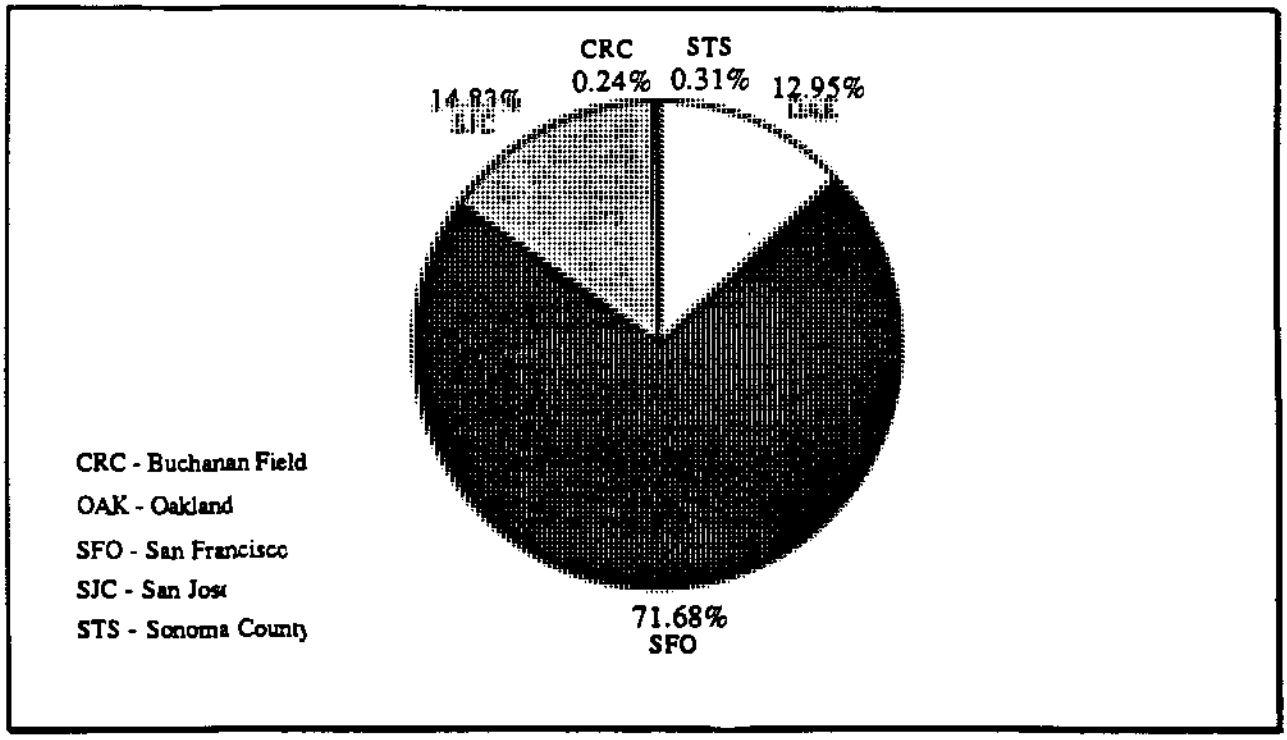
Commercial Service Airports

By definition the commercial service airports have air carrier operations on the airfield. An air carrier is an airline with scheduled transport of passengers or cargo. An air taxi is a carrier hired for transport using small aircraft (60 seats or less). Air taxi service with published flight schedules is referred to as commuter air carrier service. Commuter service is frequently referred to as *regional* service.

Commercial service airports maintain records of the number of enplaned passengers as a measure of the air carrier activity at the airport. The enplanement count encompasses scheduled air carriers, including commuters, but does not contain transfer passengers. The five commercial service airports enplaned 21,175,645 passengers in 1990. San Francisco International Airport enplaned 15,177,669 passengers, which is 71.7% of the region's total. San Jose enplaned 3,140,000 passengers (14.8% of the region's total) and Oakland enplaned 2,742,000 passengers (12.9%). Buchanan Field and Sonoma County enplaned 50,000 and 65,765 passengers respectively, accounting for the remaining 0.6% of the region's total annual passengers. The distribution of passenger enplanements is illustrated in Exhibit 4.16.

Exhibit 4.16

AIR CARRIER PASSENGER ENPLANEMENTS (1990)
DISTRIBUTION BY AIRPORT



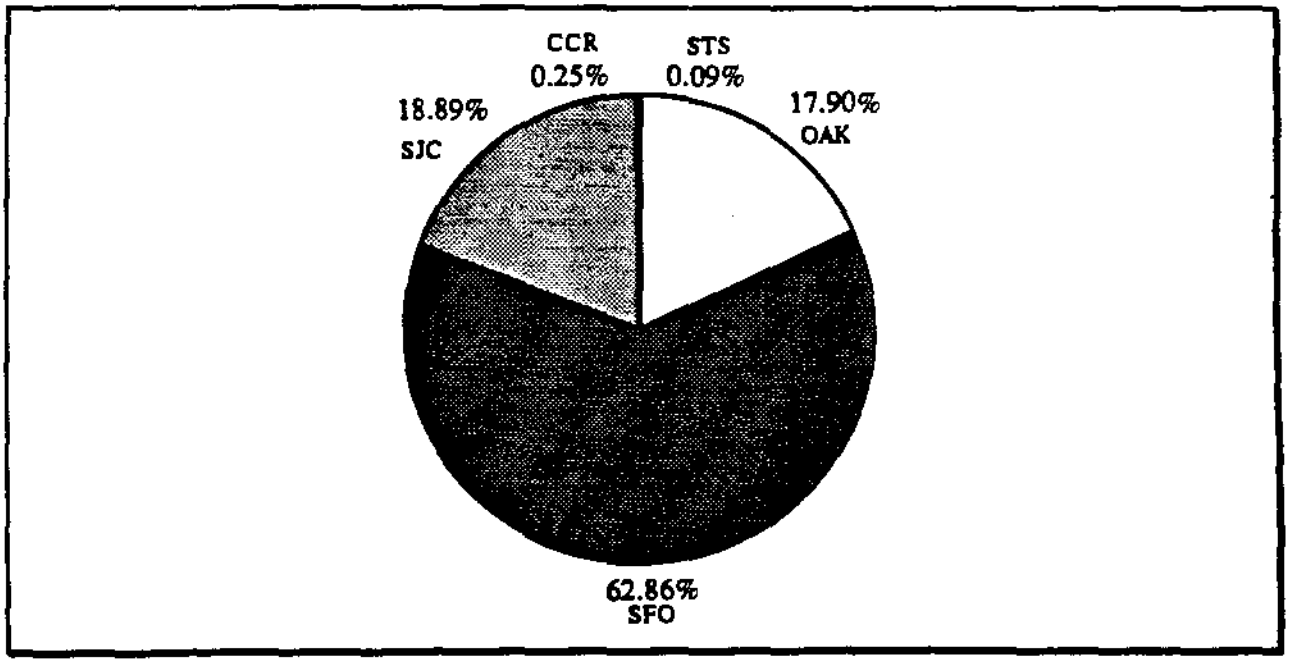
In 1990 San Francisco had over 430,000 operations. More than 90% of these were either commercial passenger flights or commuter operations. Although this still made SFO the busiest airport in the region, its share of the region's air carrier operations was only 65%, compared to its nearly 72% of the region's total passengers. Similarly its share of commuter/air-taxi plus air

carrier operations was 58% of the total. Two factors may account for this: (1) many of SFO's international and other longer distance flights use larger passenger capacity aircraft; (2) SFO flights tend to have have higher load factors. In other words, SFO serves more passengers on more flights with larger aircraft and at higher load factors.

San Jose saw a total of 95,778 air carrier operations in 1990 (19.5% of the region's total) while Oakland South Field had 74,000 (15.1% of the total for the region). Concord, with 1,285 air carrier operations, accounted for 0.3% of the total, and Sonoma County, with 439 air carrier operations, had 0.1% of the region's total. Exhibit 4.17 shows the distribution of air carrier operations by airport.

Exhibit 4.17

AIR CARRIER OPERATIONS (1990)
DISTRIBUTION BY AIRPORT

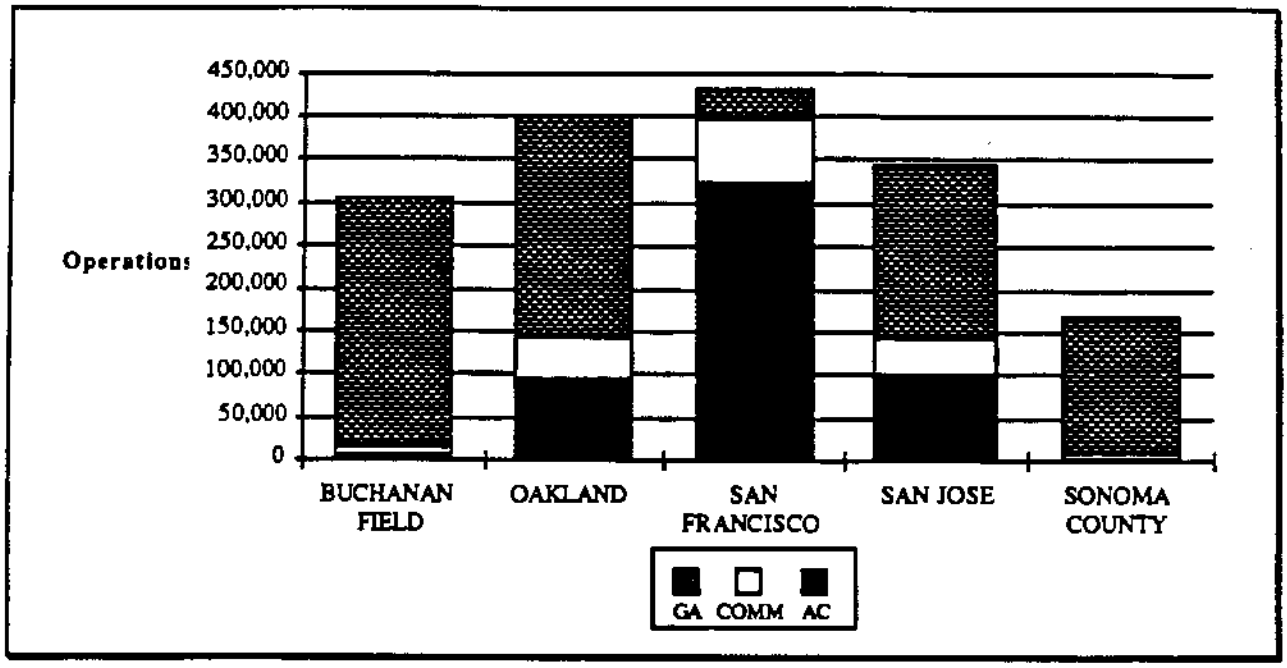


The following chart, Exhibit 4.18, displays the breakdown of total 1990 operations by type for the five commercial service airports. San Francisco has the highest volume of operations overall, including the greatest number of commuter and air taxi flights. Many of these flights provide regional connections for commercial air carrier operations. The total number of operations

at Oakland International follows next behind that of San Francisco International. Most of the operations at Buchanan Field and Sonoma County are clearly devoted to general aviation, with some regional traffic and few air carrier movements per facility.

Exhibit 4.18

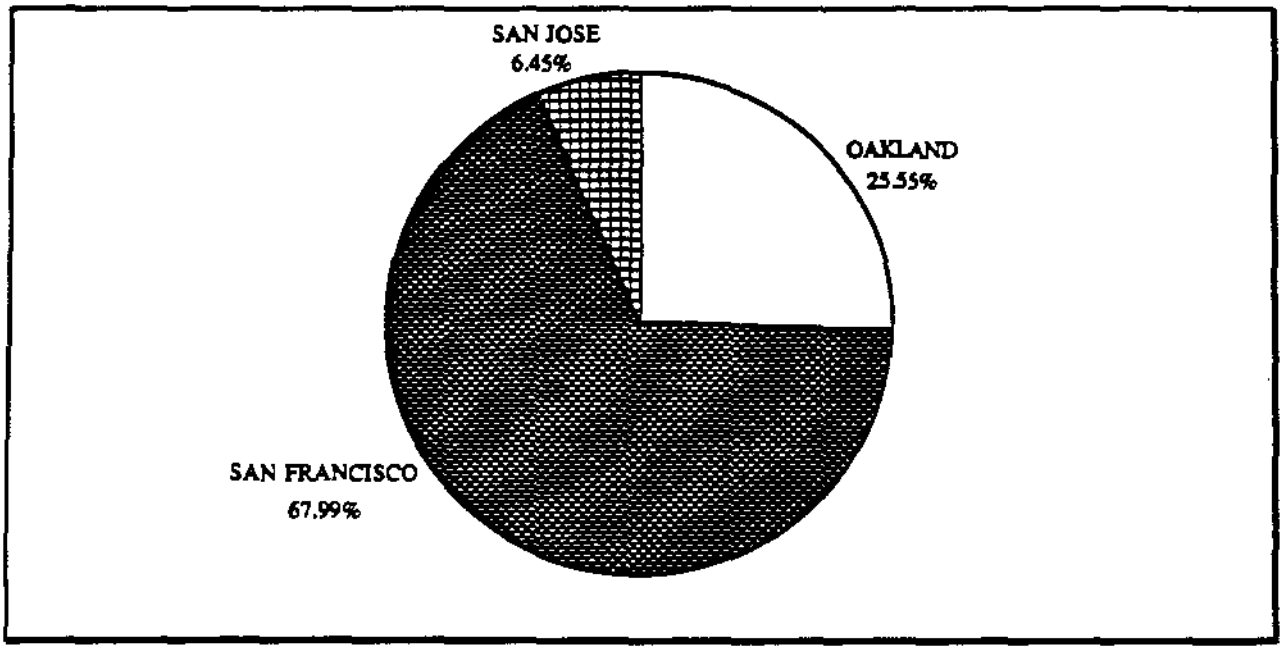
OPERATIONS BREAKDOWN BY AIR CARRIER AIRPORT (1990)



Air cargo activity for the year 1990 is concentrated at San Francisco and Oakland, with nearly 94% of the region's total air cargo processed at these two airports. The primary difference between the two is that most of San Francisco's cargo is belly and traditional air cargo, while Oakland has focused on overnight small package cargo operations, evident by the large presence of Federal Express. This is reflected in the numbers of all cargo operations at each airport. San Jose processes less air cargo (some 60,000 tons, or about 6% of the region's total). Concord and Sonoma County have very little air cargo activity, levels mostly attributable to local demand for overnight package services such as Federal Express and UPS. They have no appreciable all cargo operations. The air cargo activity split is illustrated in Exhibit 4.19.

Exhibit 4.19

DISTRIBUTION OF AIR CARGO (Tons, 1990)



General Aviation Airports

A few of the facilities have significant levels of operations. Hayward, Livermore, and Reid-Hillview had over 200,000 operations each in 1990. Gnoss, Napa County, Nut Tree, San Carlos, and South County have over 100,000 annual movements. Others, such as Byron, Cloverdale, Parrett Field, Rio Vista, and Sonoma Sky Park, have fewer than 20,000 annual operations. These airports also have small numbers of based aircraft.

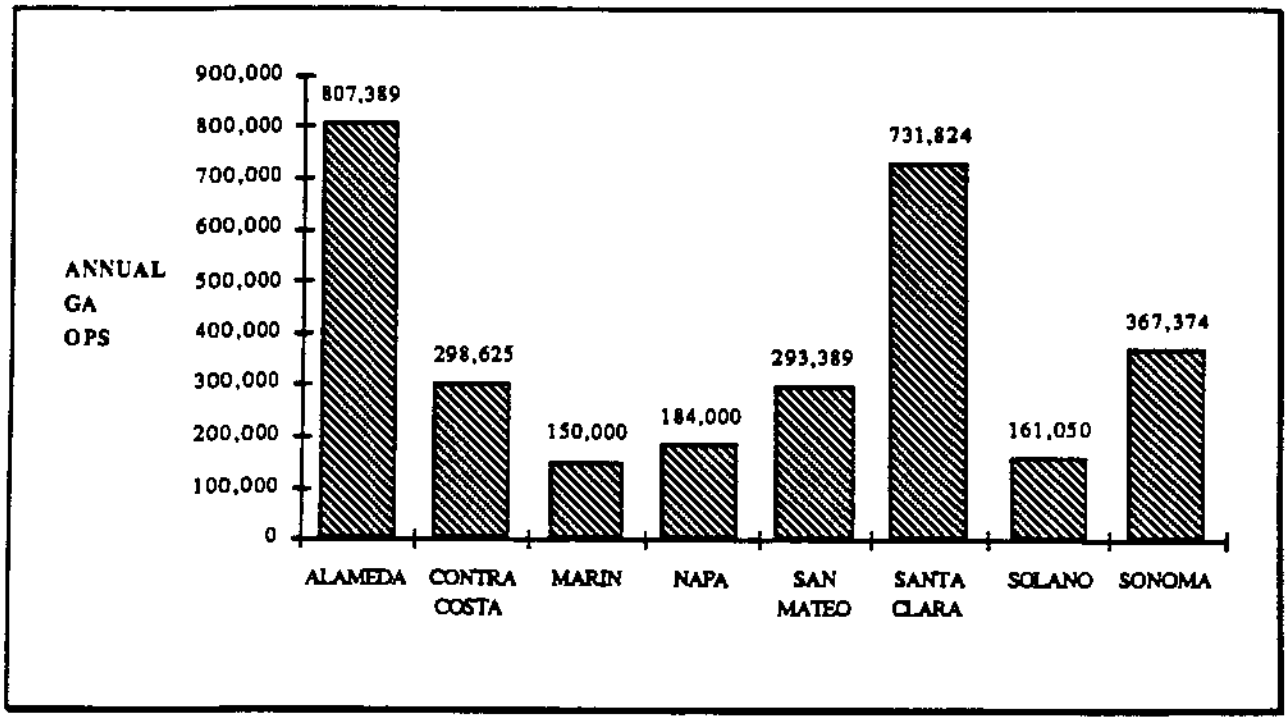
Exhibit 4.20 shows the distribution of general aviation operations by county. Comparison with Exhibit 4.14 illustrating the based aircraft distribution by county is somewhat revealing. Santa Clara County has the greatest percentage of based aircraft, but does not match the number of general aviation operations in Alameda County.

Military Airports

Awaiting data

Exhibit 4.20

DISTRIBUTION OF GENERAL AVIATION OPERATIONS BY COUNTY (1990)



CAPACITY

Comparison of existing facility capacity and existing levels of demand make it possible to assess the individual airports' ability to accommodate growth in activity. The capability analysis includes airside facility capacity and landside facility capacity. Airside facility capacity measures include peak hour runway capacity and annual runway capacity, expressed as annual service volume. Landside capacity components include based aircraft capacity, passenger terminal capacity, and air cargo capacity. Generally accepted methodologies exist for determining runway capacity, but methods for determining overall passenger terminal or air cargo facility capacity are not fully developed.

Airside Facilities

Airport airside capacity may be limited by a number of factors, including runway capacity, taxiway capacity, or gate capacity. The FAA has established standards for in-trail and lateral

separations of aircraft which take into account air traffic control capabilities, fleet mix, and airfield configuration, and these affect the airside operational capacity. Operational constraints also include the length of the runways and the structural integrity of their pavement system. Larger aircraft need lengthy runways, and repeated utilization by heavier aircraft requires substantial runway strength.

The Annual Service Volume (ASV) is defined by the FAA Advisory Circular on Airport Capacity and Delay (FAA AC 150/5060-5) as *a reasonable estimate* of an airport's annual capacity. Differences in the number of runways and their configuration, runway use, aircraft mix, and weather are incorporated within the ASV value. The capacities at the commercial service airports in the region thus differ widely. Oakland and San Francisco have the highest annual capacities, each at or just in excess of 500,000 operations per year. The air carrier runway at Oakland has an ASV of 147,870 aircraft, North Field has 352,130. San Jose may accommodate 355,000 operations annually, and Concord and Sonoma County have service volumes of approximately 300,000 operations each.

Total peak hour capacity is noted as another constraint on the airport throughput. Both the capacities in visual flight conditions, VFR and instrument flight conditions, IFR have been included because dramatic reductions result from severe weather conditions. San Francisco exemplifies this significant change as it moves from 105 aircraft per hour VFR to 33 aircraft IFR. Similarly, San Jose has its airspace capacity restricted to a single instrument approach during IFR conditions.

As a region the general aviation airports are currently utilizing about 50% of the total annual airside capacity. The situation varies airport to airport. Byron, Cloverdale, Rio Vista, and Sonoma Sky Park are operating at less than 10% of their annual runway capacity. These airports have relatively low numbers of based aircraft as well. Other, larger airports are using much more of their runway capacity, including Gnoss Field at 65%, Livermore at 90% and San Carlos at 68%. The other general aviation airports range from 25% to 55% of their annual runway capacity. The commercial service airports are using over 80% of the available airside capacity.

The approach of the aircraft activity level to the annual service volume in the case of the commercial airports and at select general aviation airports signals a need to examine possible capacity expansion. Average aircraft delay will increase rapidly as the ASV is approached.

The commercial service airports are constrained considerably in the peak hour. Demand for runway access exceeds capacity in IFR conditions. To design exclusively for the peak hour has long been recognized in transportation to be excessive. The existing condition indicates, though, that substantial delays occur in the peak hour.

Landside Facilities

Landside facility considerations other than based aircraft capacity are addressed for the air carrier airports only. Landside activity limitations include the passenger terminal size, number of auto parking spaces, vehicular access, and aircraft parking capacity. To date insufficient research has been done to establish standards for passenger terminal capacities.

Current passenger capacity estimates at the three large commercial service airports are: 30 million for San Francisco, 8.5 million for Oakland, and 11.8 million for San Jose. San Jose has a terminal capacity shortfall. Single level Terminal C which houses nine airlines plus two commuter carriers is operating above design capacity, with some functions temporarily located at non-terminal building sites. San Francisco International has insufficient domestic and international terminal capacity. The passenger terminal at Oakland has immediate baggage handling and security shortfalls, but with the recent addition of 5 new gates has an adequate terminal capacity availability.

Ease of vehicular access and auto parking are also rather important capacity considerations. Measures include on site roadway level of service and curbside congestion. Roadway level of service is a measure of traffic flow conditions designated by the letters A through F, with A the highest level or best condition on the scale. San Jose has a current roadway Level of Service A. They are lacking in rental car parking, though. Oakland has considerable congestion at the passenger loading/unloading areas. Terminal access roadways at San Francisco International are inadequate in the peak periods when congested conditions develop around the terminal curbside, but seem to have sufficient long term and short term public parking space. Regional access is being improved by the work on U.S. Highway 101.

The based aircraft capacity at these facilities is ample, for the most part. This number is a total of the open tiedowns, shelters, t-hangers, and conventional hangers available for based aircraft parking. Concord, Sonoma County, Oakland, and San Jose have a relatively comparable number of spaces for based aircraft. The range is from 641 at Oakland, to 729 at Buchanan field. Oakland is at 64% of its based aircraft capacity and San Jose is feeling some pressure, currently operating at close to 100% of its based aircraft capacity. San Francisco International differs, offering 46 general aviation based aircraft places available (the 29 existing based aircraft represent 63% of capacity). Three of these commercial facilities, San Jose and San Francisco excluded, can currently support significant increases in their based general aviation activity.

The general aviation element of the airport system is currently at just under 80% of the total based aircraft capacity. Those airports having the highest occupancy rates are Byron (115.6%), Gnoss Field (97.2%), Hayward (127.8%), Nut Tree (103.8%), San Carlos (90.7%), and South County (130.7%). At the other end of the spectrum are Half Moon Bay at 56.6% of capacity, Napa County at 46%, and Santa Rosa Air Center at 38.3%.

Of more importance than total system capacity, however, is the regional distribution of available capacity in relation to demand. Santa Clara County, for example, has a total of only 463 based aircraft vacancies, and faces the potential loss of the general aviation capacity of Reid-Hillview and San Jose (with 806 and 670 based aircraft spots respectively). Alameda County's three general aviation airports are also heavily used, and have high based aircraft capacity utilization rates. This is rather important for Alameda is home to 26% of the based aircraft capacity in the region. Hayward Air Terminal is well beyond its capacity of 521 based aircraft and Livermore has 75% of its 773 spaces filled, while Oakland North Field has some room to grow, currently at 64% of based aircraft capacity. Buchanan Field and Byron serve Contra Costa County. Byron is currently over capacity and Buchanan Field sits at 87.1% filled. Available based aircraft parking may soon not meet the overall regional demand. Areas such as Santa Clara County may find themselves aircraft parking poor if certain circumstances prevail.

CONSTRAINTS

Previous sections outlined existing airport facilities, levels of airport activity, numbers of based aircraft, and the airports' physical capability to accommodate current and future demand. There are additional factors beyond the airports' physical capacity, however, which place limitations on how much activity can and will take place at each airport. These constraints are airspace, environmental, physical, and policy.

Airspace constraints relate to regional airspace issues. The nine-county region contains over 50 airports which in 1990 generated over 4,000,000 operations. This translates to almost 11,000 operations in the region every day. The region's five commercial service airports enplaned over 21,000,000 total passengers in 1990, making it the sixth busiest region in the nation. With this level of aviation activity the regional airspace is congested and complex. From an air traffic standpoint all of the region's airports are interrelated, and affect each other. In planning for the total airport system it is therefore necessary to evaluate the airspace environment.

Environmental constraints as discussed here are those related to the natural environment, including such things as wildlife, wetlands, and San Francisco Bay. Two of the major commercial airports, Oakland and San Francisco, are situated on the Bay, and host a variety of wildlife. Development at Oakland is also affected by the presence of non-Bay wetland areas. Wetlands exist to a lesser degree at other airports as well. Construction of new runways which affect wetlands or require Bay fill will not meet with general favor. Public opposition to capacity increasing measures may be strong and well organized.

Physical constraints may be manifested in a variety of ways, including such things as limited airport size or the presence of physical barriers to growth such as highways, railroads, rivers, or buildings.

Policy constraints include noise, safety, and other community compatibility issues. In the face of such constraints, individual facilities may find it difficult to expand in order to meet growing demand. Land and airside expansion may be questioned by the interests for the environment and of the community. Neighborhoods affected by overflight noise will be reluctant to allow growth which will promote substantial increases in commercial aircraft activity, and the noise which may some with that activity. Terminal expansion, for example, may be viewed by residents affected by aircraft noise as a vehicle for bringing many more flights overhead with the additional passenger processing capability, and opposed as strongly as runway capacity increases. Other constraints on airport utilization include restrictions placed upon air traffic due to community concern. These additional qualifications may supersede the theoretical operating capacities discussed above.

These constraints have historically shaped the growth and development of the entire regional airport system, and will continue to do so in the future. This section identifies limitations on current operations and addresses factors potentially constraining future airport development and growth. These constraints are discussed in some detail for the individual commercial service airports and more generally for the military, general aviation, and heliport.

Airspace Constraints

Safety is the greatest concern in aviation and to maintain safe conditions limitations have been imposed by the FAA in order to manage the regional airspace. New technological advancements, when developed and implemented, may allow for more aircraft to be safely processed within the terminal areas.

There is a substantial amount of interaction among the operations at the numerous airports in the region, requiring an established user's hierarchy for normal (non-emergency) conditions. The air traffic pattern at San Francisco International is dominant because the volume of air carrier traffic generated as a percentage of the total is so much greater than that of the other airports, and traffic associated with other facilities must conform.

The operations at military facilities in the region can cause flight delays into and out of nearby commercial airports as the FAA recognizes the importance of United States defense requirements. Civil flights will have to yield to military operations. The proximity of Alameda NAS to Oakland will affect Oakland operations though a minimal number of interruptions will occur in a year.

Other conflicts due to proximity are several. In instrument conditions, conflict between aircraft simultaneously approaching Hayward and Oakland will result in a delay to that using Hayward Air Terminal.

Flight in the region is regulated by various controls and restrictions identified by the FAA. These may hinder flight in the region.

Controlled airspace is identified in the following ways:

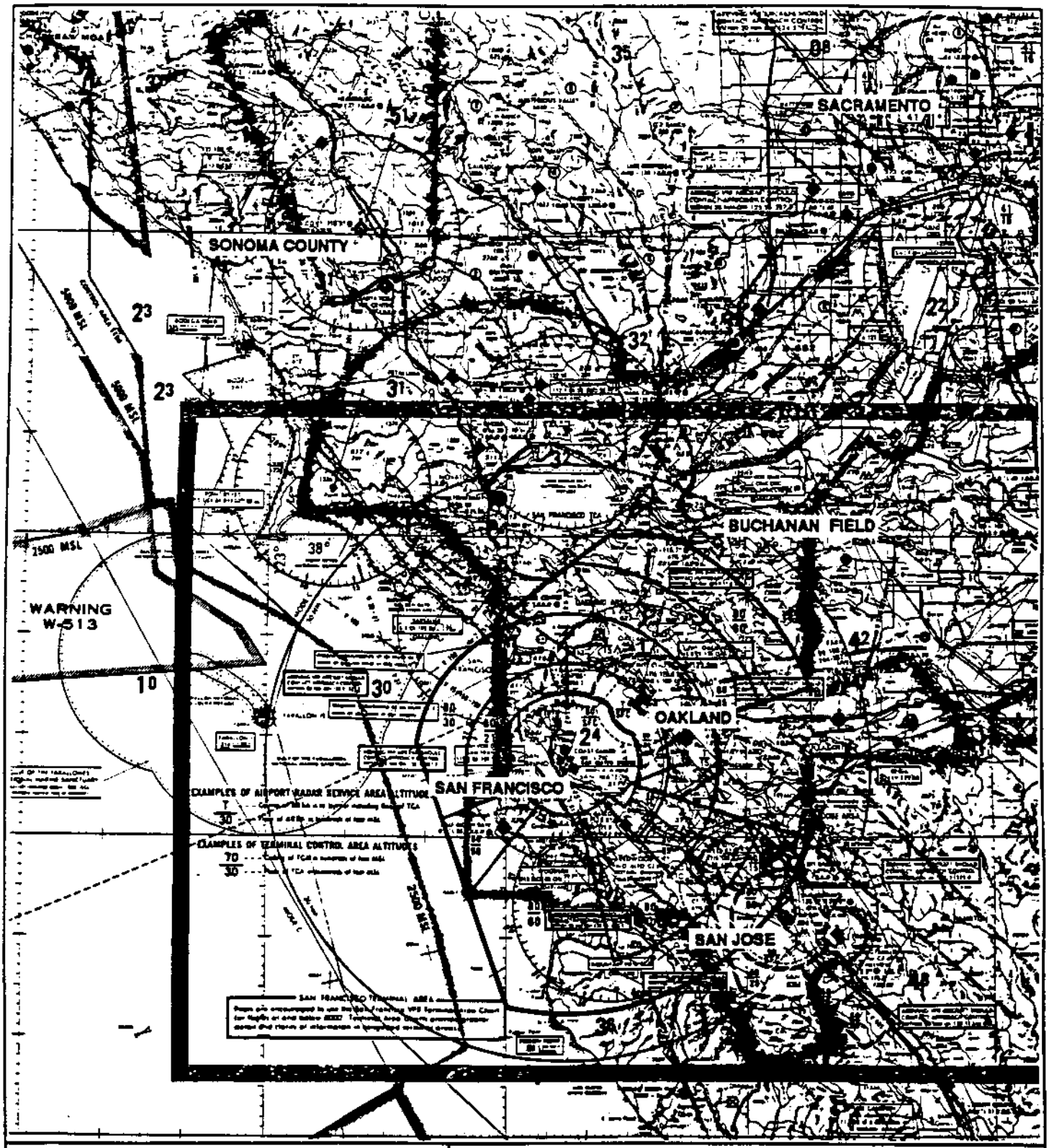
- Terminal Control Areas (TCA): [permission and communication required, speed restricted]
- Terminal Radar Service Areas (TRSA) : [no permission required, communication required, speed restricted]
- Airport Radar Service Areas (ARSA): [permission required, speed restricted]
- Control Zones: [permission req'd, contact req'd IFR, speed restricted]
- Control Areas: [permission req'd, contact req'd IFR, speed restricted]
- Transition Areas: [permission req'd, contact req'd IFR, speed restricted]
- Continental Control Areas: [permission and communication required IFR, speed restricted]
- Positive Control Areas: [entry prohibited VFR , permission and communication required IFR]

Special Use Airspace includes:

- Alert Areas: [no permission to enter, communication required IFR, speed restrictions]
- Controlled Firing Areas: [speed restricted]
- Military Ops Areas: [restricted entry]
- Prohibited Areas: [no entry permitted]
- Restricted Areas: [permission required, speed restricted]
- Warning Areas: [communication required IFR]

In the study region, San Francisco is a Terminal Control Area. Oakland and San Jose are Airport Radar Service Areas. The airspace is mapped in Exhibit 4.21.

The chart in Exhibit 4.22 indicates the type of airspace for airports in the study region.



Source: NOAA-San Francisco Sectional Aeronautical Chart.

MTC

Regional Airport System Plan

Exhibit 4.22

AIRSPACE

Exhibit 4.22

TYPE OF AIRSPACE BY AIRPORT

MAJOR COMMERCIAL SERVICE AIRPORTS	CONTROL ZONE	In or TCA	Under ARSA	STANDARD INSTRUMENT DEPARTURE	STD. TERMINAL ARRIVAL ROUTE
BUCHANAN FIELD	Y				Y
OAKLAND INT'L	Y	Y	Y	Y	Y
SAN FRANCISCO INT'L	Y	Y		Y	Y
SAN JOSE INT'L	Y		Y	Y	Y
SONOMA COUNTY	Y			Y	
GA/MILITARY AIRPORTS					
ALAMEDA NAS	Y	Y	Y		
BYRON					
CLOVERDALE MUNICIPAL					
GNOSS FIELD	Y				
HAMILTON AFB	Y	Y			
HALF MOON BAY		Y			
HAYWARD AIR TERMINAL	Y	Y	Y		
HEALDSBURG MUNICIPAL	Y				
LIVERMORE MUNICIPAL	Y				
MOFFETT FIELD	Y	Y	Y		
NAPA COUNTY	Y			Y	
NUT TREE	Y				
PALO ALTO	Y	Y			
PARRETT FIELD					
PETALUMA MUNICIPAL	Y				
REID-HILLVIEW	Y				
RIO VISTA MUNICIPAL	Y				
SAN CARLOS	Y	Y			
SANTA ROSA AIR CENTER	Y				
SKY SOARING	Y	Y			
SONOMA SKY PARK	Y				
SONOMA VALLEY	Y				
SOUTH COUNTY					
TRAVIS AFB	Y				

SOURCE:
Adapted from CALTRANS CASP Inventory, August, 1990

Environmental, Physical, and Policy Constraints

Future growth will be limited by on site development constraints, qualified here. Constraints on facility expansion will be noted for the major commercial airports and the others for whom the issue is quite significant.

SAN FRANCISCO

The San Francisco International Airport plays an important role in the community, and in working toward being a good neighbor has had to restrict its activities in several ways. Regulation has long been instituted at San Francisco International to control the noise affecting the community. Most recent noise abatement regulation was instituted in 1988 by the Airports Commission, and restricts airport noise by requiring conversion by operators to quieter Stage 3 aircraft and limiting nighttime use by aircraft other than Stage 3 type. The Airports Commission is now studying the possible modification of the runway configuration to relieve noise impacts on incompatible areas.

Additionally, SFO is constrained by the absence of sufficient land area for a new runway and passenger terminal development. The airport is landlocked by the Bayshore Freeway (Highway 101) to the west, and San Francisco Bay to the north, east, and south. Any major new runway development would likely involve Bay fill. There are a number of undeveloped areas on site, identified already in the facilities section of this chapter, which could be used for support facilities. Future development at the airport is limited to these parcels or to redevelopment of existing facilities.

OAKLAND

Metropolitan Oakland International Airport has no curfew and no limit on the number of daily or annual operations. It does enforce noise abatement procedures to reduce noise impacts on the residential communities around the airport.

Although Oakland airport has considerable land area which could accommodate development of passenger, air cargo, general aviation, or other facilities, the airport has significant areas of environmentally sensitive property. These areas have created development constraints at Oakland in the past. These include habitat for endangered species at the west end of runway 11-29; scattered wetland areas throughout the airport; several open water areas; and scattered wildlife habitat related to these wetlands. Although these areas do not significantly constrain passenger terminal development, they may limit the long term development of air cargo, aircraft maintenance, and other support facilities.

In addition, Oakland is constrained by the presence of San Francisco Bay to the southeast, southwest, and northwest of the primary air carrier runway. Extension of this runway would involve Bay fill. Construction of an additional air carrier runway at South Field would involve either Bay or wetland fill, or both. Either of these options may face strong political opposition.

SAN JOSE

San Jose International Airport has established a number of operational restrictions to address the noise and safety issues, and to reduce the airport's impacts on adjoining communities. In addition to noise abatement flight tracks and arrival and departure procedures, San Jose has established a curfew which limits the hours of airport operation. The airport is closed between the hours of 11:30 PM and 6:30 AM. This limits the total daily activity which can occur at the airport, and also creates some congestion during the morning hours. If continued into the future, the curfew will constrain activity at the airport and cause increased congestion within the available operating time envelope.

San Jose International Airport is located within an intensely developed urban area and operates on an extremely limited site. The 1,050-acre site is not sufficient to accommodate all aviation demands. As a result, future development will involve difficult choices between competing sectors, including passenger facilities, air cargo development, and general aviation.

Because of its location and limited size, San Jose is highly constrained by existing development. The runway system is limited in length by the Bayshore freeway (highway 101) on the north and Interstate 880 on the south. To the west and east the airport is limited by urban development and the Guadalupe River, respectively. The passenger terminal area is also highly constrained by the size and shape of the land available between the runways and the airport access road and the river. In addition, the presence of high rise towers in the vicinity of the airport will constrain the airport in its planning for facility improvements and operational expansion.

CONCORD

Nestled in the northern part of Contra Costa County, Buchanan Field has, by County policy, placed limitations on both its general aviation and commercial airline capacity. The total number of based aircraft is limited to a maximum of 850 spaces, a level forecasted in the Master Plan for the year 2005. Along with this restriction on growth of general aviation activity, air carrier and commuter airline service are limited. Air carrier service is capped by policy at 7 flights daily, and the commuter service is held at a similar level, leaving the enplaned passenger potential at less than 180,000 in the year 2010, according to their Master Plan. Pavement strength and runway length will create their own restrictions on air carrier possibilities, they noted. Physical restraints prevent runway extension.

SONOMA COUNTY

The County of Sonoma has placed restrictions on its airport operations and facilities development in order to meet its goal of safe and compatible air service. Commercial air carrier flights at Sonoma County Airport, involving commuter and scheduled airline service, are restricted in number and in combination by the County. Of the 21 commercial departures permitted daily, scheduled air carriers may use only up to 14 of the 21 available slots, and commuters may utilize up to 13 of the total number of departure spaces available. Aircraft used in eight departure slots held for scheduled airlines are required to have 50 seat capacity. Length of runway, for new or existing construction, is held at 5,000 feet, and runway strengthening is deemed undesirable, with a 95,000 pound limit therefore on gross takeoff and landing weight.

Military Airports

Alameda NAS is in a highly developed area which almost precludes future facility expansion. Possible development on the Alameda Estuary nearby could encroach on operations. Also, office development in downtown Oakland may obstruct Alameda NAS airspace. Airspace capacity is also realistically a concern when considering any growth in their operations. The community is concerned with the activities at this military facility, and has limited approaches to Runway 7-25.

Many groups have interest in the future of Hamilton Field as it is also in a well developed area of the region, located in Marin County. Hamilton Field has property which includes many wetland areas, and as redevelopment of the land is considered, their preservation may be a prominent concern. The land is valuable and there is possible pressure to sell the land for other development. If there is a rise in the number of flights, there is a potential for neighborhood objection to noise levels.

NAS Moffett Field is surrounded by communities, which makes it difficult for it to be a completely compatible neighbor. Close to 900 units of Navy and Air Force family housing on site could be affected by additional aircraft operations.

Travis AFB is in the less densely populated area of northern Solano County, near the city of Fairfield. The joint use agreement between the County of Solano and the U.S. Air Force limits the number of operations to twelve per calendar day. Scheduled air carrier operations only are permitted. This agreement was established in 1971.

General Aviation Airports

Many of the same issues facing the larger airports will be met by the smaller ones. Noise is the major environmental issue even in neighborhoods surrounding facilities catering to small aircraft. Communities are also concerned for safety and air and water quality. The airports may also be landlocked. Those most affected are listed here.

- Fremont
- Gnoss
- Hayward
- Reid-Hillview
- San Carlos

Heliports

The Bay Area has a rather negative public perception of heliports and helicopters. The noise generated by helicopters is slightly different from that of conventional aircraft and is easily recognizable. Rotorcraft often fly overhead at lower altitudes making them more conspicuous. Noise abatement procedures and operator-community cooperation can perhaps over come the difficulties of the helicopter's disrepute.

Airport Plans / Capital Improvement Programs (CIP'S)

The master plans of each airport have been reviewed to identify future improvements and anticipated facility expansion by airport. Examination of their capital improvement programs (CIP's) will provide clues to the funding levels and areas in which they are focused. Plans and policies of agencies at varying levels of government who may affect future change are also identified.

Airport Plans

Detailed information about the regional air carrier airports' master plans is provided, with a summary of general aviation airport plans.

SAN FRANCISCO

San Francisco International Airport plans to accommodate future growth by expanding and improving passenger and cargo processing facilities and maintenance facilities. Less emphasis has been placed on airfield modifications. Their Master Plan, completed in November of 1989, identifies various improvements for initiation in the near term, Fiscal Year 1989- 1996, and the long term, Fiscal Year 1997 - 2006.

Near Term

Terminal

• The International Terminal will be replaced by a new facility with a consolidated airport administration space.

Ground Transportation

• A Ground Transportation Center (GTC) will be developed to consolidate ground transportation activities currently scattered curbside. The new structures, one on each side of the airport entry road will be connected to the terminal area by an automated people mover system.

Airline Maintenance Facilities

• Existing Pan Am maintenance/administration facility will be relocated to the north due to construction of new Boarding Area A.

• An East Field maintenance hanger complex to be located on a presently undeveloped parcel will allow for consolidation of aircraft maintenance facilities.

General Aviation Facilities

• Existing GA facilities and the fixed based operators are to be relocated form the West Field to the East Field in order to reconfigure air freight operations.

Air Freight

• West Field and North Field apron and ground access will be restructured to allow for more room to process air freight.

Parking

• Additional short term public parking will be made available with the construction of the Ground Transportation Center.

• At two sites long term public parking will be added.

Roadway

• New two level roadway system will be constructed to serve the International Terminal and the GTC.

• The CALTRANS interchange will better separate incoming traffic.

Airfield

• Installation of a Microwave Landing System.

• Extension of Taxiway L to Runway 19L.

• Extension of Taxiway V to Taxiway L.

• Construction of high speed exit taxiway Z at Runway 19L and Taxiway F.

• Construction of high speed exit taxiway Y at Runway 10L and Taxiway L.

Long Term

Terminal

• Replace eastern section of Boarding Area B

Public Transportation

• Extend APM to Lot D - long term public parking

• Connect APM to possible BART station on west of Bayshore parcel

Air Freight

• Added air freight/maintenance facilities in the West Field area

• Addition to U.S. Mail Processing Facility

Commercial/Office

• Develop commercial office building on site

Airfield

• Expand South Terminal ramp area to accommodate reconfiguration of Boarding Area B.

• Realign Taxiways A and B.

OAKLAND

Oakland's plans involve meeting growth in air carrier operations by improving airside capacity and acting on many landside improvements. The air cargo market is important to them as is the general aviation market. Plans include:

- Construct new air carrier runway with parallel taxiway
- Expand terminal to 42 gates
- Construct parking garage
- Terminal roadway improvements
- Develop additional 100 acres for air cargo
- Develop expanded GA apron and tie-downs
- Construct new ARFF facility
- Construct new international arrivals facility
- Construct BART connection

SAN JOSE

Future plans at San Jose International include work on both the air side and land side of the airport. Their master plan should be completed by mid-1991.

Airfield

- Extend runway 12L-30R to 8,900 feet (included in previously adopted master plan)
- Reworking of the taxiways.
- Pavement management rehabilitation work on the airfield.

Terminal

- Reconstruction of passenger terminal C and construction of new passenger terminal B.
- Construction of a new air traffic control tower.

Parking

- Construct new parking garages.

General Aviation

- Relocation of all GA to west side of airport.
- Reduce total number of GA based aircraft.

Air Freight
• New air cargo facilities.

Other
• Installation of a fuel farm.

Roadway
• Terminal area roadway improvements .

BUCHANAN FIELD

The Buchanan Field master plan is a balanced response to anticipated general aviation and air carrier/commuter demand. They have focused their efforts on best utilizing available land on site, respectful of the existing airport configuration. No runway extension has been suggested, but there will be work done on the taxiway system. This master plan was completed in 1988.

Airfield
• Redesign taxiway system leading to Runway 32-L and nearby multi-taxiway intersection.
• New Taxiway M parallel to Runway 1L-19R.

General Aviation
• Increase GA parking from 629 spaces to 849 based aircraft parking spaces
• Increase transient aircraft parking form 37 to 69 spaces.
• Add other hangar spaces and tiedowns

Terminal
• Construction of an airline terminal on the west side of the airport to accommodate 180,000 annual enplaned passengers and a restaurant. There would be 700 adjacent auto parking spaces.

Other
• Crash/fire/rescue building
• A fuel farm

SONOMA COUNTY

Forthcoming

County, Other Plans

Sonoma County is recommending removing Santa Rosa Air Center from use because it is not compatible with is surroundings. The county is home to a fair number of the region's based aircraft. Consideration is also being given currently to the closing of Reid-Hillview in Santa Clara County.

Capital Improvement Programs

Forthcoming

Exhibit 4.23

MTC REGIONAL AIRPORT SYSTEM PLAN UPDATE – PUBLIC USE AIRPORTS INVENTORY

MAJOR COMMERCIAL SERVICE AIRPORTS	OWNERSHIP	LOCATION (COUNTY)	AIRPORT CLASS.	NUMBER OF RUNWAYS	LENGTH OF LONGEST RUNWAY	INSTRUMENT APPROACH	ATC TOWER	ROTORCRAFT FACILITIES	AIRPORT SIZE IN ACRES	AUTO PARKING LOT CAPACITY
BUCHANAN FIELD	PUBLIC	CONTRA COSTA	TRANSPORT	4	4,400	NON-PRECISION	YES	3 HELIPADS	578	
OAKLAND (S. FIELD)	PUBLIC	ALAMEDA	TRANSPORT	1	10,000	PRECISION	YES	HELIPAD	1,600	8,300
SAN FRANCISCO INT'L	PUBLIC	SAN MATEO	TRANSPORT	4	11,870	PRECISION	YES	OPS	5,270	9,338
SAN JOSE INT'L	PUBLIC	SANTA CLARA	TRANSPORT	3	8,899	PRECISION	YES	OPS	1,050	8,250
SONOMA COUNTY	PUBLIC	SONOMA	GU	2	5,115	PRECISION	YES	2 HELIPADS	940	
COMMERCIAL SUB-TOTAL									9,438	23,888
GA/MILITARY AIRPORTS										
ALAMEDA NAS	MILITARY	ALAMEDA	MILITARY	2	8,000	PRECISION	YES	2 HELIPADS	1,521	
BYRON	PUBLIC	CONTRA COSTA	BU	2	2,600	NONE	NO		305	
CLOVERDALE MUNICIPAL	PUBLIC	SONOMA	BU	1	3,155	NONE	NO		58	
GNOSS FIELD	PUBLIC	MARIN	BU	1	3,300	NONE	NO	OPS	90	
HALF MOON BAY	PUBLIC	SAN MATEO	BU	1	5,000	NONE	NO	OPS	325	
HAMILTON FIELD	MILITARY	MARIN	MILITARY	1	6,000	PRECISION	NO			
HAYWARD AIR TERMINAL	PUBLIC	ALAMEDA	TRANSPORT	2	5,024	PRECISION	YES	2 HELIPADS	543	
HEALDSBURG MUNICIPAL	PUBLIC	SONOMA	BU	1	2,707	NONE	NO		50	
LIVERMORE MUNICIPAL	PUBLIC	ALAMEDA	TRANSPORT	2	4,005	PRECISION	YES	OPS	510	
MOFFETT NAS	MILITARY	SANTA CLARA	MILITARY	2	9,200	PRECISION	YES	OPS	2,283	
NAPA COUNTY	PUBLIC	NAPA	GU	3	5,931	NON-PRECISION	YES	OPS	735	
NUT TREE	PUBLIC	SOLANO	BU	1	3,818	NON-PRECISION	NO	OPS	227	
OAKLAND (N. FIELD)	PUBLIC	ALAMEDA	TRANSPORT	3	6,211	PRECISION	YES	OPS	980	
PALO ALTO	PUBLIC	SANTA CLARA	BU	1	2,500	NONE	YES	OPS	182	
PARRETT FIELD	PRIVATE	NAPA	BU	1	3,217	NONE	NO		80	
PETALUMA MUNICIPAL	PUBLIC	SONOMA	GU	1	3,600	NON-PRECISION	NO	OPS	220	
REID-HILLVIEW	PUBLIC	SANTA CLARA	BU	2	3,100	NON-PRECISION	YES	OPS	179	
RIO VISTA MUNICIPAL	PUBLIC	SOLANO	BU	2	3,060	NON-PRECISION	NO		141	
SAN CARLOS	PUBLIC	SAN MATEO	BU	1	2,600	NONE	YES		110	
SANTA ROSA AIR CENTER	PRIVATE	SONOMA	GU	1	7,000	PRECISION	NO		800	
SONOMA SKY PARK	PRIVATE	SONOMA	BU	1	2,500	NONE	NO		27	
SONOMA VALLEY	PRIVATE	SONOMA	BU	2	2,700	NONE	NO		79	
SOUTH COUNTY	PUBLIC	SANTA CLARA	BU	1	3,100	NONE	NO		179	
TRAVIS AFB	MILITARY	SOLANO	MILITARY	2	11,000	PRECISION	YES			
GA SUB-TOTAL									9,344	0
SYSTEM GRAND TOTAL									18,782	23,888

MTC REGIONAL AIRPORT SYSTEM PLAN UPDATE – PUBLIC USE AIRPORTS INVENTORY

MAJOR COMMERCIAL SERVICE AIRPORTS	SGL ENGINE PISTON EXISTING BASED AIRCRAFT	MULT-ENGN PISTON EXISTING BASED AIRCRAFT	JET EXISTING BASED AIRCRAFT	ROTOR-CRAFT EXISTING BASED AIRCRAFT	OTHER EXISTING BASED AIRCRAFT	TOTAL EXISTING BASED AIRCRAFT	BASED AIRCRAFT CAPACITY	PERCENT OF CAPACITY USED
BUCHANAN FIELD	510	103	12	9	1	635	729	87.1%
OAKLAND (S. FIELD)	0	0	0	0	0	0	0	0.0%
SAN FRANCISCO INT'L	8	15	6	0	0	29	46	63.0%
SAN JOSE INT'L	490	160	18	12	0	680	670	101.5%
SONOMA COUNTY	355	90	5	2	2	454	667	68.1%
COMMERCIAL SUB-TOTAL	1383	368	41	23	3	1,798	2,112	85.1%
GA/MILITARY AIRPORTS								
ALAMEDA NAS	0	5	39	12	0	56		
BYRON	55	1	0	0	33	89	77	115.6%
CLOVERDALE MUNICIPAL	18	0	0	0	0	18	24	75.0%
GNOSS FIELD	269	35	1	3	0	308	317	97.2%
HALF MOON BAY	88	2	0	0	0	90	159	56.6%
HAMILTON FIELD	0	0	0	0	0	0		
HAYWARD AIR TERMINAL	540	114	6	6	0	666	521	127.8%
HEALDSBURG MUNICIPAL	56	2	0	0	0	58	80	72.5%
LIVERMORE MUNICIPAL	521	53	3	2	1	580	773	75.0%
MOFFETT NAS	0	18	80	16	7	121		
NAPA COUNTY	198	23	0	2	0	223	485	46.0%
NUT TREE	172	20	0	1	0	193	186	103.8%
OAKLAND (H. FIELD)	280	90	34	25	0	409	641	63.8%
PALO ALTO	519	35	0	1	0	555	629	88.2%
PARRETT FIELD	41	4	0	0	0	45	76	59.2%
PETALUMA MUNICIPAL	150	5	0	1	0	156	200	78.0%
REID-HILLVIEW	571	64	0	2	0	637	806	79.0%
RIO VISTA MUNICIPAL	49	4	0	1	0	54	70	77.1%
SAN CARLOS	414	81	0	0	0	495	546	90.7%
SANTA ROSA AIR CENTER	47	47	6	0	0	100	261	38.3%
SONOMA SKY PARK	40	4	0	0	0	44	49	89.8%
SONOMA VALLEY	175	6	0	1	1	183	140	130.7%
SOUTH COUNTY	88	7	0	0	0	95	144	66.0%
TRAVIS AFB						0		
GA SUB-TOTAL	4312	824	169	73	42	5220	6260	83.4%
SYSTEM GRAND TOTAL	5675	992	210	96	45	7,018	8,372	83.8%

SOURCE:
FAA 5010 Forms; CALTRANS

MTC REGIONAL AIRPORT SYSTEM PLAN UPDATE -- PUBLIC USE AIRPORTS INVENTORY

MAJOR COMMERCIAL SERVICE AIRPORTS	ANNUAL ENPLANED PAX a	ANNUAL AIR CARRIER OPS b	ANNUAL AIR CARRIER OPS CAPACITY	% ANNUAL AIR CARRIER CAPACITY USED	ANNUAL COMM./A.T. OPS c	ANNUAL G.A./MIL. OPS d	ANNUAL CARGO OPS e	TOTAL ANNUAL OPS	ANNUAL SERVICE VOLUME	RATIO OF TOTAL ANNUAL OPS TO A.S.V.
BUCHANAN FIELD	50,000	1,265			13,958	289,825	0	304,868	355,000	85.9%
OAKLAND (S. FIELD)	2,742,211	90,746			30,410	0	12,000	121,156	147,870	81.9%
SAN FRANCISCO INT'L	15,177,869	318,858			78,866	32,729	736	430,253	500,000	86.1%
SAN JOSE INT'L	3,140,000	95,770			48,550	199,672	3,852	344,000	355,000	96.9%
SONOMA COUNTY	65,765	439			10,593	158,374	0	169,406	295,000	57.4%
COMMERCIAL SUB-TOTAL	21,175,845	506,906			182,377	680,400	16,588	1,369,683	1,652,870	82.9%
GA/MILITARY AIRPORTS										
ALAMEDA NAS								0		
BYRON						9,000		9,000	230,000	3.9%
CLOVERDALE MUNICIPAL						20,000		20,000	230,000	8.7%
GNOSS FIELD						150,000		150,000	230,000	65.2%
HALF MOON BAY						70,000		70,000	260,000	26.9%
HAMILTON FIELD								0		
HAYWARD AIR TERMINAL						254,869		254,869	490,000	52.0%
HEALDSBURG MUNICIPAL						31,500		31,500	200,000	15.8%
LIVERMORE MUNICIPAL						230,000		230,000	255,000	90.2%
MOFFETT NAS								0		
NAPA COUNTY						172,000		172,000	360,000	47.8%
NUT TREE						144,000		144,000	250,000	57.6%
OAKLAND (N. FIELD)					23,493	257,720		281,213	352,130	79.9%
PALO ALTO						215,584		151,000	280,000	53.9%
PARRETT FIELD						12,000		12,000	230,000	5.2%
PETALUMA MUNICIPAL						65,000		65,000	230,000	28.3%
REID-HILLVIEW						196,568		196,568	400,000	49.1%
RIO VISTA MUNICIPAL						17,050		17,050	230,000	7.4%
SAN CARLOS						190,660		190,660	280,000	68.1%
SANTA ROSA AIR CENTER						30,000		30,000	230,000	13.0%
SONOMA SKY PARK						12,000		12,000	230,000	5.2%
SONOMA VALLEY						50,500		50,500	200,000	25.3%
SOUTH COUNTY						120,000		120,000	230,000	52.2%
TRAVIS AFB										
GA SUB-TOTAL	0				23,493	2,260,251	0	2,219,180	5,627,130	39.4%
SYSTEM GRAND TOTAL	21,175,845	506,906			205,870	2,940,651	16,588	3,588,843	7,280,000	49.3%

SOURCE:

a. Airport Traffic Records, 1990; MTC Airport Activity and Noise Trends, October, 1990

b., c., d. Airport Traffic Records, 1990; CALTRANS CASP Inventory, October, 1990

e. Individual airports

MTC REGIONAL AIRPORT SYSTEM PLAN UPDATE -- PUBLIC USE AIRPORTS INVENTORY

MAJOR COMMERCIAL SERVICE AIRPORTS	PEAK HOUR OPS VFR f	PEAK HOUR OPS IFR g	TOTAL PEAK HOUR CAPACITY VFR	% OF PEAK HOUR CAPACITY USED VFR	TOTAL PEAK HOUR CAPACITY IFR	% OF PEAK HOUR CAPACITY USED IFR	ANNUAL AIR CARGO (TONS) h
BUCHANAN FIELD							180
OAKLAND (S. FIELD)			54	0.0%	48	0%	234,506
SAN FRANCISCO INT'L	115	97	103	111.7%	53	183%	624,110
SAN JOSE INT'L	113	91	150	75.3%	40	228%	59,196
SONOMA COUNTY							0
COMMERCIAL SUB-TOTAL		188	307	61.2%	141	133%	917,992
GA/MILITARY AIRPORTS							
ALAMEDA NAS							
BYRON							
CLOVERDALE MUNICIPAL							
GNOSS FIELD							
HALF MOON BAY							
HAMILTON FIELD							
HAYWARD AIR TERMINAL							
HEALDSBURG MUNICIPAL							
LIVERMORE MUNICIPAL							
MOFFETT NAS							
NAPA COUNTY							
NUT TREE							
OAKLAND (N. FIELD)							
PALO ALTO							
PARRETT FIELD							
PETALUMA MUNICIPAL							
REID-HILLVIEW							
RIO VISTA MUNICIPAL							
SAN CARLOS							
SANTA ROSA AIR CENTER							
SONOMA SKY PARK							
SONOMA VALLEY							
SOUTH COUNTY							
TRAVIS AFB							
GA SUB-TOTAL							0
SYSTEM GRAND TOTAL		188	307	61.2%	141	0.4%	917,992

SOURCE:

f., g. Individual Airports; Airport Master Plans

h. AOCI Traffic Report, Calendar Year 1988

Chapter VII

Airport System Alternatives Definition

Introduction

The objective of the definition of regional airport system alternatives is not only to identify the range of policy choices being faced by the region, but also to provide a basis for evaluating their feasibility as well as their possible consequences. The set of alternatives should offer a range of visions of the future, defined in sufficient detail to provide a basis for comparing them, choosing between them, and identifying the actions needed to implement them. While these alternatives must be founded in what is technically possible, they should not be unduly constrained by existing political or institutional agendas, for to accept such constraints may result in foregoing the best long-term solution in the interests of short-term expediency. Rather, such constraints should be recognized in the way the alternatives are defined and evaluated. The evaluation process should identify implementation pathways which could actually eliminate current constraints by building political constituencies for institutional change, where such change is needed.

Central to this approach is the requirement to quantitatively evaluate the alternatives, in order to provide a basis for choosing between them. This evaluation must address all those issues of concern to the broad array of interests in the process. For this to be possible, and for the evaluation to produce credible results, the alternatives must be defined in sufficient detail, both in terms of their specific elements as well as the actions that must be taken to implement them.

The Apogee Study

A previous study by Apogee Research, Inc., included extensive focus group discussions with a broad range of airport users, operators, and the general public. On the basis of these discussions, six strategic policy approaches were developed, as follows (Apogee Research, Regional Airport System Plan Update: Summary of Findings and Policy Alternatives, December 7, 1990):

Plan One: No New Action

This policy envisages a continuation of the current status quo, with no significant new capacity and steadily increasing congestion everywhere. Market forces would tend to shift traffic growth from SFO to OAK and SJC.

Plan Two: Centralize Aviation Activity

This policy encourages future growth to be concentrated at SFO, in order to minimize the spread of adverse impacts. Resources would be directed at improving ground access to SFO, and additional Bay fill to increase capacity and reduce noise impacts would be considered.

Plan Three: Limited Decentralization

This policy encourages growth at OAK and SJC by improving ground access to those airports. Capacity increases at SFO would be limited to increased operational efficiency, improved ATC technology, and the use of larger aircraft.

Plan Four: Greater Decentralization

This policy seeks to expand capacity at other airports in the region, including new airport sites well outside the urban area, and limits the growth at SFO, OAK, and SJC.

Plan Five: Alternatives to Aviation

This policy encourages the development of high-speed rail services or other modes of transportation as a way to reduce the need for expanding airport capacity. Resources would be directed at developing intermodal links, with growth of the existing airports limited by noise restrictions and opposition to further Bay fill.

Plan Six: Ground Transportation Focus

This policy would emphasize improving ground access to all airports and allow the growth of each airport to be determined by market forces.

These policy alternatives can be thought of as providing a strategic perspective on the development of the regional airport system. While they do not identify the specific projects and implementation actions that are necessary for a quantitative evaluation of alternatives, they articulate broad goals for the future state of the airport system. Those early alternatives were then translated into specific, implementation-oriented alternative plans, as presented below.

These policy alternatives are intended to represent the interests of different interest groups in the regional airport planning process, as expressed through the focus groups. The alternatives were prepared to encompass a wide enough range of options to ensure that each constituency should feel that at least some of the alternatives (or elements thereof) are responsive to their concerns.

Air Carrier and General Aviation Airports

The regional airport system is not a homogeneous set of facilities, but rather consists of two broad categories of airport that serve two very different types of traffic. Of the some thirty airports in the region, a small number, currently five, serve the needs of the commercial air carriers. The largest, San Francisco International, handles more air carrier traffic than all the others combined. While the three largest air carrier airports also serve a varying amount of general aviation traffic, the greater number of airports serve only general aviation traffic.

Because of the widely differing requirements of air carrier and general aviation activity, and the implications for airport development, it is useful to consider the two types of airport separately when defining alternatives for a regional system. Thus the complete range of system alternatives will consist of one set of Air Carrier Airport System

Alternatives and another set of General Aviation Airport System Alternatives. Of course, these two sets of alternatives interact in some respects, and some air carrier airport system alternatives may be inconsistent with some general aviation airport system alternatives. However, by evaluating each set in terms of how well the alternatives perform for their respective market, interaction problems can be addressed in selecting between the alternatives in each set, once they have been evaluated.

The following two sections describe the air carrier airport system alternatives and the general aviation airport system alternatives. Each alternative description includes a summary statement, a list of its major elements, the actions needed to implement the alternative, and a list of implications. The implications are explained at the end of the alternative descriptions.

AIR CARRIER SYSTEM ALTERNATIVES

1. No New Action

Description

This alternative provides the baseline for comparison of the other air carrier system alternatives. It is based on the assumption that no new major additional airside, landside, ground access, or public transportation capacity is built at the five existing air carrier airports. It also assumes that no new major operational actions or other airport system management actions are taken, either by the airports, the FAA, the airlines, or other parties. The existing five air carrier airports would continue to be operated and maintained, with annual funding provided to maintain the existing airside and landside facilities, but with no enhancement of capacity. Growth in airport activity (passenger, GA, and cargo) would be constrained by current airspace and the capacity of existing facilities (including approved projects)

Alternative 1 does assume that existing construction projects which are contained in existing approved airport master plans, and which have received environmental approvals, will be built. These include the following projects:

1. Runway Extension at San Jose
2. Passenger Terminal Expansion at San Francisco
3. Minor Bag Claim, Ticketing, Passenger Lobby, and International Arrival Facility Projects at Oakland

The purpose of including the no new action alternative is to evaluate what would happen if demand continues but no additional capacity is provided, and to compare this no action scenario with alternatives which do increase capacity. As this alternative would include no actions to affect the air travel market or the existing distribution of supply or demand, the airlines could take unilateral steps under this alternative to balance supply and demand at the five air carrier airports. These steps could include adjusting their schedules, fleet mix changes, and shifting their service between the airports. For comparison of the air carrier system alternatives, however, these airlines actions are not considered in the no new action alternative.

Elements

A. Only currently approved projects would be developed

B. No other new runway capacity projects

C. No other new terminal capacity or other support facility projects

D. No other new ground access or public transit improvement projects designed to serve the airports

E. No regional actions to encourage significant changes in airline schedules, fleet mix, or distribution of traffic among airports

Actions Needed to Implement

A. Design and construction of currently approved projects

B. Annual capital improvement programming for maintenance of existing facilities

C. Annual renewal of airport operating budgets

Implications

A. Runway/airspace congestion and delay

B. Airport ground access constraints

C. Air fares (supply vs demand)

D. Environmental impacts

E. Airline competition

F. Safety

G. Passenger convenience

2. Airport System Management (ASM)

Description

The ASM alternative would seek to maximize the effectiveness of the existing airport system without major new construction by using a number of system management strategies aimed at matching supply and demand and making optimum use of existing facility capacity. This alternative would depend on increased cooperation between all participating airports and airlines. This alternative would rely on measures to increase groundside access and public transit to airports to take full advantage of existing runway and terminal capacity.

In order to relieve congestion, this alternative would also include encouragement of passenger traffic dispersal from the three major air carrier airports to Concord and Sonoma County, and possibly other airports in the region, within their existing capacity to accommodate it. Given the current distribution of airport capacity and demand, this alternative would inevitably result in some redistribution of demand among airports. This could require a variety of political and physical development decisions at a number of levels of government. This alternative could possibly result in greater emergence of individual airport roles among the three major air carrier airports. One example could be for each of the three largest air carrier airports to focus on the following roles:

SFO: International and Tourist Traffic
SJC: California/West Coast Corridor Traffic
OAK: East-West Domestic Traffic

Another possible result of this alternative could be reduced facility duplication consistent with these emerging airport roles (eg. centralization of certain functions, such as F.I.S., cargo, etc., at one airport). Present examples of this trend are the concentration of international facilities at SFO and overnight air cargo activity at OAK.

Elements

A. FAA Measures to Enhance Capacity, including:

* Revised standards for converging runway operations
* Reduced in-trail separation
* Airspace improvements
* Improved approach and departure procedures
* Improved navigation/electronics

B. Fleet Mix Changes

* Airline shifts to larger aircraft during peak periods, on heavily travelled routes, at the most congested airports, etc.
* Eliminate turbo-prop aircraft from the air carrier runways or congested airports

C. Schedule changes/congestion pricing

* Shifts of traffic away from peak periods

E. Construction of off-airport terminals and improved bus service

F. Improved rail links (BART) to airports

G. Improved links between airports, such as ferry service between OAK and SFO

H. Encourage GA activity to relocate away from major air carrier airports

I. Joint use of military airfields (such as Travis AFB)

Actions Needed to Implement

A. FAA completion of research and development, and ATC implementation of new standards and operational procedures

B. Airline implementation of training and equipment programs to support new standards and procedures

C. Development of regional capacity allocation program

D. Development of regional program of pricing, noise budgets, or other incentives to reduce peak period demand

E. Coordinated airport and airline marketing of specialized roles of each airport

F. Development of regional airport ground access improvement program with appropriate funding and regulatory/operating authority

G. Develop pricing, leasing, and other mechanisms to encourage GA to relocate from congested air carrier airports to GA relievers

H. Provide funding for improvements at GA airports to accommodate relocated GA from major air carrier airports

I. Develop minimal passenger processing facilities at joint use airports

Implications

A. Timing of FAA capacity enhancement measures

B. Airport cooperation

C. Airline cooperation

D. Air fares (supply vs demand)

E. Transit improvements to airports

F. Joint use agreements with military

G. Safety (airport and airspace capacity)

H. Passenger convenience

3. Master Plans

Description

This alternative would meet identified future demand by expanding airport system capacity as proposed in the most recent individual airport master plan concepts. Capacity improvements to the airside, landside, ground transportation, and public transit systems would be built consistent with those updated master plans. According to those currently proposed master plans (OAK and SJC) regional air passenger market shares would shift as follows:

Potential Shift in Regional Passenger Market Share

Airport	1990 Market Share	2007 Market Share
SFO	72%	61%
OAK	13%	16%
SJC	15%	23%

One function of this alternative will be to evaluate whether the individual airport master plans will efficiently accommodate regional air travel demand from a capacity and environmental perspective. This alternative will examine whether the updated master plans are based on consistent assumptions, and, if they are not, will outline actions needed to achieve a regional balance of demand and capacity.

Elements

A. Increased Runway Capacity

* New parallel runway at OAK

B. Increased Terminal Capacity

* New international terminal at SFO
* Major terminal development at OAK
* Development of Terminals B and C at SJC

C. Increased Landside Support Facility Capacity

* Auto Parking
* Terminal curbs and roadways
* Airline support facilities
* Airport support facilities
* Fuel facilities

D. Ground Access/Public Transportation Improvements at SFO, OAK, SJC

* Improvements to freeways, interchanges, and other surface streets serving airports
* BART extension to SFO
* Future BART connection to OAK

E. Reduced GA use of air carrier airports:

* Reduced GA operations at OAK
* Reduced GA operations and based aircraft at SJC

Actions Needed to Implement

A. Completion of master plan approval process (including FAA)

B. Environmental approval/mitigation

C. Airspace studies

D. Funding process

E. Design and construction

F. Public Acceptance

Implications

A. Timing and funding of improvements

B. Airspace capacity

C. Runway capacity/delay

D. Funding of transit improvements

E. Environmental impacts/public concensus

F. Impacts on General Aviation (primarily SJC and OAK)

4. Airport System Optimization

Description

This alternative would meet forecast regional passenger demand by construction of significant new capacity, but would depart from alternative 3 by seeking to optimize the performance of the system as a whole. This alternative would include possible redistribution of regional passenger traffic to optimize the existing airport system (as well as develop new ones) and better distribute supply according to the regional distribution of demand. Among the factors used to achieve optimization of the airport system are:

* Passenger convenience
* Airspace utilization
* Airport ground access capacity
* Environmental impacts
* System cost

There are two sub-alternatives for accomplishing this: (1) major regional airport growth would be either focussed (providing major capacity increases at SFO, OAK and SJC); or (2) future capacity enhancement would be decentralized (providing for growth at a fourth major air carrier airport in the region). The focussed concept would add significant capacity at the existing airports by construction of new outboard runways into the bay at SFO and/or OAK, and a new parallel runway at SJC. This alternative could result in the following redistribution of regional passenger market share: SFO: 50% OAK: 25% SJC: 25%. The decentralized concept would include construction of a fourth major air carrier airport at either Travis AFB, another existing airport, or at a new site. This option would also result in a major redistribution of regional passenger market share. Included as a possible element of either sub-alternative would be the development of additional commuter airline service at Concord, Sonoma County, and other outlying GA airports.

Elements

A. Capacity increases at SFO, SJC, OAK, :

* New outboard runway at SFO
* New outboard runway at OAK
* New parallel runway at SJC

B. Develop fourth major air carrier airport:

* Travis AFB
* Other existing airport
* New site

C. Develop new/expanded airline service at other airports (Concord, Sonoma County, Livermore, Napa, etc.)

D. Terminal expansions to support runway capacity growth

E. Ground access/public transit improvements to support airport growth

F. Airspace/procedures improvements to support airport growth

Actions Needed to Implement

A. SFO/SJC/OAK airport runway capacity expansion:

* Airspace studies/procedural changes
* Environmental approvals (including required mitigation)
* Property acquisition (where necessary)
* Funding process
* Design and construction

B. Terminal capacity expansion:

* Environmental approvals/mitigation
* Funding process
* Design and construction

C. Ground access/public transit development:

* Financial feasibility studies and corridor/engineering studies
* Environmental approvals/mitigation
* Funding process
* Design and construction

D. Develop existing airport as fourth air carrier airport:

* Develop or expand joint use agreement (if military)
* Airspace studies/procedural changes
* Property acquisition/land banking (where necessary)
* Environmental approvals/mitigation
* Funding process
* Design and construction
* Determine operating entity
* Develop noise/land use compatibility/height hazard plans

E. Develop new airport:

* Site selection process
* Airspace studies/procedural changes
* Property acquisition/land banking
* Environmental review and approvals process (including mitigation)
* Funding process
* Design and construction
* Determine/establish operating entity
* Develop noise/land use compatibility/height hazard plans

Implications

A. Timing of improvements

B. Funding sources

C. Operating agencies (new airports)

D. Environmental impacts

5. New Technology

Description

This alternative would focus on new air and rail technology alternatives to supplement the existing airport system. The alternatives include both aviation and non-aviation technology.

Elements

A. Construction of high-speed ground transportation (primarily forintra-California Corridor Traffic), such as conventional rail, MAGLEV, automated highway, or other technology. This element would act to reduce demand for air travel by diverting air passengers to the new ground transportation mode.

B. Application of Tiltrotor aircraft technology

This element would also reduce conventional air travel demand by diverting air passsenger traffic away from traditional air transport. This element is primarily seen as an alternative for the shorter haul air traffic routes, such as those under 500 miles. This element could lso require facility improvements at reliever airports served by tiltrotor aircraft.

Actions Needed to Implement

A. Continuation of R&D efforts for both tiltrotor and high speed ground transportation

B. Development of commercial application of the technology

C. Airspace studies/procedural changes (tiltrotor element)

D. Creation of appropriate operating agency

E. Corridor/engineering studies (ground transportation element)

F. Financial feasibility studies

G. Property assembly/acquisition (ground transportation element)

H. Environmental approvals/mitigation

I. Identify facility requirements to serve tiltrotor activity

J. Funding process

K. Design and construction

Implications

A. Potential markets

B. Practical application

C. Capacity and delay

D. Timing of new technology

E. Environmental impacts

F. Airspace procedures

G. Financing

GENERAL AVIATION SYSTEM ALTERNATIVES

1. No Action

Description

The No Action GA alternative provides the baseline for comparison of the others, and would consist of no increase in capacity at any of the General Aviation airports. In addition, no regional action would be taken to prevent the potential closure of existing GA airports, such as Reid-Hillview. Total regional airport system capacity would be limited by existing airport facilities at each airport, and possibly reduced due to GA airport closures. The existing general aviation airports would, however, be maintained to provide safe, functional facilities.

Elements

A. Preserve existing airport facilities

B. Protect airports from encroachment by adjoining community:

* Maintain/enhance land use compatibility
* Maintain height hazard/safety zoning and planning

Actions Needed to Implement

A. Provide adequate funding for operation and maintenance of the airports in the system

B. Maintain and regularly update noise/land use compatibility and height hazard/safety plans

Implications

A. Capacity and delay

B. Safety

C. Financing

D. Noise/land use compatibility

2. General Aviation Airport Master Plans

Description

This alternative would meet identified future demand by developing the general aviation airport system as proposed within the current individual airport master plans. This alternative would provide a full range of GA support services, and would have all necessary navigational aids and instrumentation to provide for the pilot training needs of the region. These airports would provide some excess facility and service capacity to replace those lost due to the anticipated displacement of general aviation activities at the large air carrier airports such as SFO, OAK, and SJC. These airports would also provide for displaced GA activities in the event that Reid-Hillview or other airports were to close. In addition, this alternative could allow for selected GA airports to be used to meet demand for decentralized commuter activity close to users homes.

Elements

A. Develop facilities at selected airports to support these activities

- Runways/taxiways
- Apron/aircraft parking/hangars
- Instrumentation/navigation
- Lighting, FBO facilities, etc

B. Develop facilities for displaced recreational GA at selected airports

Actions Needed to Implement

A. Development of mechanism to allocate capacity expansion among airports and identify required facilities at each airport. Identify potential future losses in GA capacity

B. Airspace studies/procedural changes

C. Environmental approvals/mitigation

D. Funding process

E. Develop/implement noise/land use compatibility/height hazard plans

F. Project engineering/design

* Runway construction
* Support facility construction
* Ground access improvements

Implications

A. Funding of improvements

B. Airport/community compatibility

C. Environmental impacts

3. General Aviation Airport System Optimization

Description

This alternative would expand certain existing GA airports and develop new GA airports on the periphery of the urban area in locations where land use compatibility and aviation safety problems can be avoided or minimized. Because remote sites would be preferable, this alternative could also involve improvements to local streets and highways to provide ground access to the new airports. Supporting infrastructure, including sewer, water, power, aviation fuel, etc., would also need to be provided. These new airports could also support limited passenger service by commuter airlines.

By locating new GA capacity at the edge of the urban area where community impacts can be minimized, this alternative could provide for the relocation of existing GA activity from close-in urban airports which are either threatened due to existing impacts on the surrounding urban community or pressured by expanding air carrier passenger and cargo activity. An example of this concept would be accelerated development of the improvements planned at Byron airport.

Elements

A. Select sites and develop new GA airports in compatible locations

B. Provide sufficient facility capacity for future GA demand as well as GA displaced from existing close-in airports (OAK, SJC, Reid-Hillview)

C. Develop new facilities at specialized airports for training/business aviation activities

D. Develop facilities to relieve air carrier airports

E. Acquire sufficient property and ensure land use compatibility to protect airport from possible future urban encroachment

F. Restrict further investment at airports with little likelihood of achieving community acceptance

Actions Needed to Implement

A. Site selection studies

B. Establish development/operating entity

C. Develop noise/land use compatibility/height hazard plans

D. Land assembly/acquisition

E. Environmental approvals/mitigation

F. Funding process

G. Design/construction

H. Develop utility infrastructure

I. Develop/improve ground access links

Implications

A. Timing of development

B. Funding of development

C. Airport operating authority

D. Environmental impact

E. Compatibility/encroachment protection

Description of Implications

Included with each airport system alternative as described above is a list of implications. The list identifies major items which could be affected by the alternative. For example, a no action alternative could lead to increased congestion and delay, and cause passenger inconvenience. Another alternative which provided increased capacity may improve passenger convenience, but could cause impacts on the natural and human environment. Identification of major implications at this stage of the planning process was done to assist in the development of the alternative eveluation methodology.

Runway/airspace congestion and delay

A major consideration in evaluating the airport system alternatives is to how well each alternative meets existing and future demand. Alternatives which do not provide capacity improvements sufficient to meet forecast levels of demand may result in significant congestion and delay on runways, taxiways, and apron areas, in terminal facilities, on the landside of the terminals, or elsewhere. Alternatives which do not account for the structure and capacity of the regional airspace may create airspace conflicts, with related safety and delay implications. These implications are discussed separately below.

Airport ground access constraints

Ground access to the region's airports is becomming an increasingly complex issue. Future increases in air travel demand at the five air carrier airports will increase the already heavy strain on the region's existing ground transportation system. At certain locations near the largest airports peak hour surface access congestion and delay creates significant inconvenience to air passengers. Growing uncertainty about how long it will take to reach the airport requires passengers to plan greater and greater lead time before flight departures. The growing problem with airport ground access results in passenger inconvenience, decreased productivity, inefficient use of the airport system, and regional environmental impacts. Some of these related implications are also discussed below.

Environmental Impacts

Each of the airport system alternatives will have some impact on the environment. Alternatives which provide facilities to accommodate airport system growth will have direct on-site impacts, growth-inducing impacts on the region, and impacts such as air quality and noise from the operation of a larger and busier system. Those which redistribute air traffic among the region's airports may reduce noise in one area but increase it in another. The severity of this noise impact will be related to factors such as the type, density, and location of land uses near the airports.

Those alternatives which do not provide for growth, or which provide insufficient capacity to meet future demand, may cause indirect environmental impacts resulting from airport congestion and delay or increased use of alternative forms of travel such as highways.

Air Fares (supply vs demand)/Airline competition

One of the potential implications of differing approaches to meeting future demand may be the effect on air fares and airline competition. Given a free market, if demand far exceeds supply the price will rise until a balance is achieved between supply, demand, and price. Lack of sufficient terminal space can effectively block out new carriers, reducing competition among airlines. One of the regional implications of the system plan is therefore related to the potential effect on competition and ticket prices, and the related issue of equal access to the nation's air transportation system. Alternatives which do not provide for any increase in air traffic demand could cause regional increases in ticket prices and result in a decreasing ability of low and moderate income persons to access the air transportation system. Lack of airline competition could also affect level of service and ticket prices.

Safety

One of the implications of regional airport system development decisions will relate to aircraft safety, both on the ground and in the air. Growing public concern over safety is in part related to increasing congestion at airports and in the airspace around them. As congestion increases the potential for pilot, air traffic controller, air navigation, communication, and other system error increases. With this comes a growing potential for accidents. Regional airport system alternatives that do not effectively address existing and future airport or airspace congestion may contribute to this safety concern.

Timing of improvements or other actions

Timing is listed as an important implication under many of the airport system alternatives. This factor could be significant as it relates to the ability of MTC and the region to implement selected alternatives and actions. This issue relates to the length of time it may take to complete site selection processes, environmental approvals, construction projects, FAA research activities and other actions, development of new technologies, creation of necessary organizational structures, and development of the political will of the region to take action. For example, selection of a site and construction of a new air carrier airport may ease the region's congestion, but could take 10 years or more to complete. If this alternative were selected in the plan, it may be also necessary to include interim measures to meet growing demand until such time as the new airport can be built and put into service. Timing is therefore an important implication of choosing this alternative.

FAA capacity enhancement measures and new technology may also be elements of the regional plan, but there may be considerable time before they are implementable. Again, the timing of these elements of the regional airport system plan is a critical aspect in eveluating how well they will serve the region.

Airport/airline cooperation

Several elements of the alternatives will require the cooperation of both airports and airlines for their implementation. Examples include decisions to shift traffic between airports, shifts in aircraft fleet mix, and changes in airline schedules. As such elements are further defined and evaluated in the planning process this factor needs to be recognized as beyond the direct control of MTC.

Joint use agrements with the military

Civil use of military airport facilities will require the development and/or enhancement of joint use agreements with the appropriate military sponsors and/or participation in the FAA's Military Airports Program (MAP). As an example, Travis Air Force Base currently has a civil/military joint use agreement which allows up to 12 daily operations with civil aircraft. Expansion of this agreement to allow significantly more flights would be necessary in order to develop Travis as a significant passenger service facility. This would also be the case for other existing military facilities. In addition, passenger processing facilities would need to be built or improved. The Military Airports Program is one potential source of funds for such passenger improvements.

Public transportation improvements to airports

As mentioned above in relation to ground access, airport expansion and growth in passenger and cargo traffic will put additional pressure on the region's surface transportation system. Those alternatives that provide for airport expansion in areas where existing ground transportation systems are near or at capacity must also consider the need for public transportation system improvements to supplement or provide alternatives to traditional private vehicle ground access systems serving the airports. Specific examples which are already recognized and under study are a potential BART extension to SFO, future BART connection to OAK, and a future connection between SJC and the San Jose light rail line.

Funding

Most elements of every alternative will have some cost, including airport improvements, airspace changes, airline actions, ground access improvements, and public transportation projects. The funding implications of specific elements relate to the overall cost and the timing and availability of funds.

Impacts on general aviation

A number of actions at the five air carrier airports could have significant impacts on the continued existance and viability of general aviation at those airports. Significant expansion of passenger and cargo activities will likely increase the existing pressure for GA activities to relocate. The fate of general aviation at the air carrier airports therefore raises a related issue of how to address GA which is displaced. Let 'em eat jet blast!

Operating agencies

Where joint use facilities or new airports are proposed operating agencies would need to be designated or established.

Potential markets/practical application

This applies primarily to the use of new technology. The effectiveness of new technology to address the region's air travel demand will be affected by the potential market for and the degree and timing of practical application of such technology. For example, the effective use of conventional high speed rail within the California corridor as an alternative to air travel will be constrained by factors as:

1. The portion of the total market which can be diverted from air to rail.

2. The degree and timing of actual application of the technology.

3. The comparative cost, comfort, speed, and safety of rail travel as related to air travel.

Noise/land use compatibility/encroachment protection

A critical issue in evaluating alternatives for the region will be how well noise and land use compatibility between airports and surrounding communities can be achieved or maintained. It may be possible to accommodate significant increases in demand at a particular airport but only at great expense in terms of impacts to adjoining communities. Thus there can be major trade-offs between efficiently meeting future demand and minimizing human impacts.

A related issue is that of encroachment. How well an airport or system of airports functions can be significantly affected by non-airport actions. Urban development near airports can create operational, environmental, and development limitations and hamper the airports' ability to operate efficiently and safely, and to meet demand. If public funds are to be effectively invested in airport facilities the public must provide for the protection of that public investment from encroachment by non compatible land uses. Both the noise and encroachment issues can be addressed in part by noise, height hazard, and safety planning and zoning.

Passenger convenience

Passenger convenience relates to the ease of movement to and through a passenger terminal facility. Factors include ease of access to the airport, parking cost and location in relation to the terminal, passenger walking distances, and relative amount of terminal congestion and delay. Passenger convenience is an important measure in evaluating the performance of passenger processing facilities. In addition to selection of airlines, flights, and schedules, overall passenger convenience is an important factor in a passenger's selection of an airport in a multiple airport system.

HIGH-SPEED RAIL ALTERNATIVE

SAN FRANCISCO-LOS ANGELES/SAN DIEGO

Market Size and Capture

SF-LA/SD market: 30% of total SF region air market
1990 Est. demand: 12.6 million passengers
2010 Est. demand: 26.7 million passengers

2010 market capture: 10% = 2.7 million
25% = 6.7 million
36% = 9.6 million

Alternative 1:

Trip length: 422 miles
Estimated speed: 125 MPH
Travel time: 5 hr.
Est. passengers: 3-3.8 million
(Source: Caltrans and Parsons, Brinkerhoff, 1990)

Alternative 2:

Trip length: 413 miles
Estimated speed: 185 MPH
Travel time: 3 hr. 15 min.
Est. passengers: 5.3-7.9 million
(Source: Caltrans and Parsons, Brinkerhoff, 1990)

OTHER MARKET SHARE PROJECTIONS

California-Nevada high-speed train: 25% by the year 2000
(Source: Canadian Institute of Guided Ground Transport using previous work by Barton-Aschman Associates, 1989)

Detroit-Chicago HSGT train: 65% by the year 2020
(Source: Argonne National Lab, 1989)

LA-San Francisco MAGLEV train: 38% by the year 2000
(through 2030)
(Source: U.S. Federal Railroad Administration, 1990)

EXISTING NEW YORK-WASHINGTON AMTRAK RAIL SERVICE

Trip length: 225 miles

Amtrak Metroliner

Maximum speed:	125 MPH
Travel time:	2 hr. 35 min.
Fare (one way):	$74
Air fare (oneway):	$73
Capacity (each way):	17 trains per weekday
	280 seats per train
	4,760 seats per day
	9,520 total seats per day
	2.5 million weekday seats per year
	3.5 million total seats per year

Regular Amtrak Service

Travel time:	3 hr. 10 min.
Fare (one way):	$59 ($83 round trip)
Air fare (one way):	$73
Capacity (each way):	15 trains per day
	280 seats per train
	4,200 seats per day
	8,400 total seats per day
	3.0 million total seats per year

1990 Market share: 36%

ATTACHMENT C

WORK PROGRAM FOR THE AIRPORT MASTER PLAN AND NOISE PROGRAM SAN JOSE INTERNATIONAL AIRPORT

Memorandum from the Director of Aviation
to the Mayor and City Council
City of San Jose
June 6, 1991

COUNCIL AGENDA: June 25, 1991
ITEM: 9.1r

CITY OF SAN JOSE - MEMORANDUM

TO: Honorable Mayor and City Council FROM: Ralph G. Tonseth
Director of Aviation

SUBJECT: AIRPORT MASTER PLAN AND NOISE PROGRAM DATE: June 6, 1991

APPROVED DATE 6-20-91

COUNCIL DISTRICT: City-Wide

RECOMMENDATIONS

1. That Council approve the attached work program implementing the Council's May 21, 1991 action on the Airport Master Plan and Noise Program.

2. That Council approve Amendment No. 2 to the consultant contract agreement with TRA for the Airport Master Plan Update project extending the termination date to June 30, 1993 and modifying the scope of services and associated budget.

3. That Council approve Amendment No. 1 to the consultant contract agreement with David J. Powers & Associates for an Environmental Impact Report and Environmental Assessment for the Airport Runway Extension project modifying the scope of services and increase the associated budget by $24,925.

BACKGROUND

The Airport Master Plan Update project has been underway since November, 1988 under a Grant Agreement with the Federal Aviation Administration and with the assistance of the consulting firm of TRA. Since the completion of the draft Alternatives Analysis (Task 6) in December, the Master Plan Update project has essentially been on hold to allow for public review and City Council consideration of a recommended long range development plan. On May 21, 1991, the Council approved a set of recommendations to provide direction for the remainder of the project. Major approved items include:

- Direction to initiate preparation of an Environmental Impact Report (EIR) which fully evaluates Alternative 6 (the staff project case), an Alternative 8 (as submitted to the Council by the Citizens Against Airport Pollution), and an Alternative 9 (a new moderate growth alternative to be formulated). A recommended alternative will not be selected until completion of the environmental review process.

- Direction to include in the EIR process the evaluation of a number of specific noise mitigation measures, and incorporating language making noise mitigation an explicit objective of the Master Plan, with analysis of a noise ordinance in the initial phase of the EIR.

- Creation of a Council-appointed task force to review regional general aviation issues and report to Council with recommendations in November, 1991.

- Direction to amend existing consultant agreements to immediately begin studies of the extension of Runway 12R/30L and to suspend studies of the extension of Runway 12L/30R and instead include this project as part of the Master Plan Update process.

- Direction to report to Council on a monthly basis, and to the Transportation and Development Committee on a regular basis, on the status of the Master Plan Update and Noise Mitigation Program.

This direction significantly impacts the previously approved project work program, budget, and schedule. In order to begin implementing Council direction, a comprehensive work program/schedule (exhibit attached) and two amended consultant contract agreements have been prepared for Council approval.

ANALYSIS

A list and summary of the major work program elements addressing all issues associated with the Airport Master Plan and Noise Program, generally corresponding to the attached exhibit, is presented below:

I. Airport Master Plan Update

A. Environmental Impact Report/Environmental Assessment (EIR/EA)

1. Consultant Selection

Given the increasing focus on environmental issues associated with Airport growth, staff determined in late 1990 that the project EIR/EA should be prepared by an environmental firm reporting directly to the City rather than by a subcontractor to the Master Plan Update consultant (TRA). The Airport and Planning Departments have jointly conducted a consultant selection process, a consultant has been tentatively selected, preparation of a detailed scope of services and budget will occur over the next month, and a contract agreement is anticipated to be

presented for Council action in August. (The recommended amendment to the TRA contract agreement includes deletion of the EIR/EA from its scope of services.)

2. Scoping and Evaluation of Alternatives

The EIR/EA will fully evaluate Master Plan Update Alternatives 6, 8, and 9. For new Alternative 9 (moderate growth), staff proposes to initially formulate the scenario with input from citizen groups and subsequent review by the Airport Master Plan Advisory Committee (AMPAC) along with any needed refinements to Alternatives 6 and 8 and a No Project Alternative. All alternatives will be presented at a formal EIR scoping hearing and subsequently presented to the Council for endorsement prior to initiating detailed environmental analysis. The attached work program reflects an optimistic completion of scoping by the end of 1991.

3. Evaluation of Mitigation Measures

As part of the EIR process, staff identified ten specific potential noise mitigation measures for evaluation: noise ordinance; triggers; accelerated Phase 2 aircraft phase-out; hush house; accelerated/improved land use mitigation measures; additional land use mitigation measures; alternative flight tracks and approach/departure procedures; improved noise monitoring and reporting; sound attenuation policy/ordinance for new development; and real estate disclosure policy/ordinance. Council subsequently directed that noise mitigation be an explicit objective of the Master Plan.

For the noise ordinance measure, which Council directed for the initial phase of the EIR, staff will coordinate with the City Attorney's Office. Analysis of forthcoming Federal regulations implementing the Airport Noise and Capacity Act of 1990 will feed into the evaluation.

For noise monitoring and reporting, staff has begun an investigation of an upgrade to the Airport's monitoring system. Staff is also developing a revised format and content for the monthly Airport Noise Reports and a new annual report as directed by Council.

In addition to evaluating noise mitigation measures, staff also intends to evaluate potential surface traffic mitigation measures as well.

4. Completion/Certification

It is anticipated that the expanded EIR will take an additional 12-18 months to complete. Upon Planning Commission certification, expected in early 1993, selection of a preferred development alternative will be submitted for Council consideration.

B. Update of Analysis To Date

Given the expanded schedule for the Master Plan Update, staff and the project consultant will update all base year data from 1988 to 1990, and review all technical analyses (including demand forecasts) and revise as needed. Also, pursuant to Council direction, the Goal and Objectives task will be revised to add noise mitigation as a specific objective, and the Alternatives Analysis task will be supplemented with the addition of Alternatives 8 and 9. All revisions will be reviewed with AMPAC. As the existing contract agreement with the Master Plan Update consultant (TRA) terminates on June 30, 1991, Amendment No. 2 is needed to allow the consultant to continue its services to the City.

C. Economic Analysis

In conjunction with the environmental evaluation of Alternatives 6, 8, and 9, a consultant study of the economic impact of the various alternatives will be conducted. Staff will initiate the consultant selection process within the next month, with a contract agreement presented for Council action by October. One early product will be a comprehensive update to the City's 1986 Airport Economic Impact Study.

D. Remaining Master Plan Update Tasks

Upon selection of a preferred development alternative in early 1993 (following completion of the EIR), the project consultant will conduct the remaining Master Plan Update tasks, consisting of the Implementation Program, Airport Layout Plans, and final documentation. Review by AMPAC will be maintained throughout the program. It is anticipated that the final Master Plan Update will be presented for adoption by Summer 1993.

This proposed Master Plan Update schedule is optimistic and contingent upon successful discussion with Airport tenants (airlines, FBO's), other government agencies (FAA, City of Santa Clara), and community organizations (Chamber of Commerce, CAAP).

II. Master Plan Process Ordinance

Pursuant to Council direction, preparation of a City ordinance on amendments to the Airport Master Plan will be initiated by staff and the City Attorney's Office as part of the Master Plan Update's Implementation Program task. Adoption can occur as soon as possible, and must precede the adoption of the Master Plan.

III. General Aviation Task Force

Staff is currently preparing a minor consultant contract to facilitate Task Force meetings and discussions. The Task Force will initiate its activities upon completion of Council appointments and report to Council with recommendations in November, 1991.

IV. Runway 30L Extension

A. Design

The design studies for the Runway 30L Extension are currently being initiated by the Public Works Department utilizing the consultant (HNTB) already under contract to prepare the design for the extension of Runway 30R (suspended by Council on May 21, 1991). An amendment to the HNTB contract agreement will be presented to Council by Public Works in the Fall. Project design will be complete by January, 1992.

B. EIR/EA

The recommended amendment to the contract agreement with David J. Powers & Associates (previously preparing the EIR/EA for the Runway 30R extension) would allow the EIR/EA to be initiated. A second amendment will be brought forward to cover subsequent phases of EIR/EA preparation. Completion and Planning Commission certification is anticipated in December, 1991.

C. Project Construction

Once adequate environmental studies for Runway 30L have been performed and the EIR/EA has been accepted as complete, and project design is complete, the City can proceed to bid the project. This schedule anticipates that Public Works would conduct a bid and award process with Council action occurring in early 1992. Construction could then be anticipated to extend through mid-1993 under this schedule.

V. Airport Noise Program

A. Noise Monitoring System and Modified Noise Reports

Refer to item I-A-3 above. Revised monthly reports should begin in August 1991.

B. Analysis of Federal Noise Regulations

Refer to item I-A-3 above. Pending issuance of the Federal regulations this Summer, the analysis should be available in early Fall 1991.

C. Engine Run-up Operational Changes

Refer to item I-A-3 above. A report on the engine run-up issue should be available by September, 1991.

D. Good Neighbor Program and Stage 3 Airline Compliance

Staff activities on an airline "good neighbor" program and a Stage 3 aircraft compliance goal are currently being developed and should be available for review in August, 1991.

VI. General

A. Document for All Recommendations

Staff will prepare a file of information on the Airport Master Plan Update and Noise Program for public review at the City Clerk's Office. The file, which would include the Administration's reports to the Committee of the Whole and public hearings and related documents, will be available in July and include all documents and information requested by Council.

B. Reports to Council and Transportation & Development Committee

Staff proposes to prepare a monthly report on the Airport Master Plan Update and Noise Program for review by the Transportation & Development Committee which will be reported to the full Council as a General Government cross-referenced item on the following Council agenda.

COORDINATION

These recommendations have been coordinated with the City Manager's Office and City Attorney's Office.

COST IMPLICATIONS

The Airport 1991-92 CIP includes funding for consultant costs associated with the Master Plan Update EIR/EA, Economic Impact Study, General Aviation Task Force, and Runway 30L Extension, as well as for a new noise monitoring system, hush house preliminary design, and Runway 30L construction.

The recommended amendment to the contract agreement with TRA (Master Plan Update) includes no change to the existing contract cost ($842,282) at this time. Further refinements to TRA's work scope, and/or budget, may be proposed as a future, additional contract amendment.

The recommended amendment to the contract agreement with David J. Powers & Associates (Runway 30L Extension EIR/EA) changes the contract cost from $59,250 to $84,175, an increase of $24,925.

BUDGET REFERENCE (Runway 30L Extension EIR/EA)

Fund:	520
Responsibility:	520-80074443
Budget Document:	Airport 1990-91 Adopted Capital Budget, Page 25, Item 29

Ralph G. Tonseth
Director of Aviation

RGT:kph

Attachment

WORK PROGRAM ELEMENTS	1991		1992				1993			
	3	4	1	2	3	4	1	2	3	4
I. AIRPORT MASTER PLAN UPDATE										
A. EIR/EA										
1. Consultant Selection	X									
2. Scoping Of Alternatives (6, 8, 9)	X	X								
3. Evaluation Of Alternatives (6, 8, 9)		X	X	X	X	X				
4. Evaluation Of Mitigation Measures*	X	X	X	X	X	X				
5. Completion/Certification						X	X			
B. Update Of Analysis To Date	X	X	X							
C. Economic Analysis (1990 and EIR Alternatives)	X	X	X	X	X					
D. Implementation Program							X	X		
E. Airport Layout Plan Package								X	X	
F. Final Documentation And Adoption								X	X	
II. MASTER PLAN PROCESS ORDINANCE						X				
III. GENERAL AVIATION TASK FORCE	X	X								
IV. RUNWAY 30L EXTENSION										
A. Design	X	X								
B. EIR/EA	X	X								
C. Bid And Award			X							
D. Construction				X	X	X	X	X	X	
V. AIRPORT NOISE PROGRAM										
A. Noise Monitoring System	X	X	X	X						
B. Modified Noise Reports	X	→	→	→	→	→	→	→	→	→
C. Analysis Of Federal Noise Regulations	X									
D. Engine Run-up Operational Changes	X									
E. Good Neighbor Program	X	→	→	→	→	→	→	→	→	→
F. Stage 3 Airline Operations	X	→	→	→	→	→	→	→	→	→
VI. GENERAL										
A. Document For All Recommendations	X									
B. Regular T & D Committee Reports	X	→	→	→	→	→	→	→	→	→
C. Monthly Council Reports	X	→	→	→	→	→	→	→	→	→

* Evaluation of a noise ordinance will occur at the earliest possible time

ATTACHMENT D
BACKGROUND TO AIRPORT OPERATIONS

INTRODUCTION

The regulatory history of the aviation industry indicates that there has always been federal control over aspects of airport operations./1,2/ Legislation established federal regulatory control over:

- the development and operation of domestic air routes (through control of the airspace, and rules over where aircraft fly and the procedures pilots use);
- the control of air traffic (through the development and operation of airport traffic control towers and other navigation/communication facilities); and
- the development and operation of airports (through conditions attached to federal funding of airport construction, among other rules)./1,2/

Historically, the operations of commercial airlines, including their decisions about what markets (cities and airports) to serve, were also regulated. The Airline Deregulation Act of 1978 lifted many of the federal economic controls over the airlines, including control over the establishment or discontinuance of domestic service at most U.S. airports./1,2/

Recent federal legislation has emphasized the need to develop and increase airport capacity; the connection between airport noise problems and local opposition to capacity increases; and the possibility that local airport access restrictions (for noise purposes) "could impede" the operation and continued development of the national air transportation system./3,4/

The agencies most involved with the current regulation of SFIA activities are the Federal Aviation Administration and the California Department of Transportation, Division of Aeronautics. Some of the ways the FAA controls the operation of SFIA (and other airports) include:

- The FAA operates the SFIA Traffic Control Tower, from which it controls aircraft landings and takeoffs on the Airport's runways, and the movement of aircraft in the airspace around SFIA.

- The design, location, and construction of airside and landside facilities at SFIA must comply with federal standards (particularly if federal funds are used).
- In order to receive federal funding, SFIA must comply with specified "grant assurances" (conditions), including the requirement to make the airport "...available as an airport for public use on fair and reasonable terms and without unjust discrimination, to all types, kinds, and classes of aeronautical users."/5,6/

Appendix A includes a summary of federal legislative history, a discussion of the key legislation governing the operation of airports, and a discussion of the functions of the FAA and the Division of Aeronautics.

EXTENT OF LOCAL CONTROL OVER AIRPORT OPERATIONS

Given the extent of federal and state regulatory control over airport operations, there is a question as to what airport owners are able to do to regulate the use of their facilities.

The question has been raised in the context of restrictions some airports have imposed in order to reduce congestion or noise problems. Examples of such restrictions include requiring that some users shift their flights to other (less busy) airports; setting a limit on the number of flights per hour; prohibiting flights by aircraft that do not meet an airport's noise standards; and setting user fees that "more realistically" reflect the costs imposed on an airport during certain times (such as congested peak hours, or nighttime hours)./1/

These and similar restrictions imposed by airport owners have been challenged in court. The following paragraphs discuss the limited powers granted to airport owners, the potential areas of control airports do have, the requirement that airport restrictions be reasonable and not discriminate unjustly, and the meaning of "unreasonable" and "discriminatory" when applied to restrictions imposed at several U.S. airports.

There is disagreement among airport operators, airlines, and regulatory agencies regarding the limits of local airport control. The following discussion, therefore, does not offer any conclusions about the ability of an airport such as SFIA to restrict or divert airline flights.

LIMITS OF LOCAL CONTROL

There are a number of laws and court decisions that specify or limit the powers of an airport owner. Through federal and state legislation, certain powers have been granted to the Federal Aviation Administration, the U.S. Department of Transportation, and the California Department of Transportation, Division of Aeronautics. The functions (and regulatory powers) of these agencies are discussed in Appendix A.

Section 1305 of the Federal Aviation Act of 1958 allows a local government to own and operate an airport. Under most circumstances, local governments have "police powers" that allow them "...to legislate in broad areas of scope including economics, the environment, morality, law and order, and peace and quiet..." Historically, the Supreme Court has superseded local police powers "...only when Congress exhibits a clear and manifest purpose to do so."/7/

A local government acting as an airport owner, however, is not able to use all of its police powers to run and regulate airport operations (because certain powers have been granted to the federal government, as noted above). "While section 1305 allows local authorities to operate airports as proprietors [owners], the grant [of power] is limited..."/7/

Under the state Public Utilities Code, the State of California has authority over "the space above the land and waters of this state." The Code also establishes the "right of flight" within this airspace. The right of flight includes "the right of safe access to public airports."/8/

POTENTIAL AREAS OF CONTROL: NOISE, CONGESTION, AND OPERATING EXPENSES

Purposes for which airport owners have been allowed to impose restrictions include the reduction of noise, the reduction of ground congestion, and the recovery of airport operating expenses./7/

Noise

"...the Supreme Court recognizes that noise control is a necessary area excluded from federal jurisdiction and left to local authorities."/7/ Many U.S. airports, including

SFIA, have successfully imposed restrictions for noise-reduction purposes. The enforcement of some of these restrictions has resulted in the denial of access (use of the airport) to certain types of aircraft.

Airports' powers to impose noise restrictions may have been limited by the Airport Noise and Capacity Act of 1990, however. Under the Act, new aircraft or noise restrictions on Stage 3 ("quiet") aircraft must be approved by the Secretary of Transportation. The Secretary has indicated that the Department of Transportation might challenge new airport noise restrictions that the Department considers too much of an economic hardship on the airlines (by requiring the airlines to retire noisy aircraft sooner, for example), or too restrictive on the operation of the airport system nationwide./4,9/

Congestion

The following excerpt from a legal commentary outlines potential means of relieving airport congestion:

> "The two principal methods that have been upheld to relieve airport congestion are perimeter rules and peak-period landing fees. Perimeter rules seek to relieve congestion at an airport by restricting incoming and outgoing flights to destinations within a certain distance of the facility... Peak period landing fees seek to relieve congestion during the time of the day when airlines are most likely to schedule flights by making the times when the airport is operating at a lower capacity more financially attractive..."/7/

Operating Expenses

Airports may impose restrictions (in the form of fees) in order to recover operating expenses:

> "...few owners would operate an airport if they were unable to recapture most, if not all, of their operating expenses. Thus, Congress provided that airport operators could maintain a fee and rental structure that made the airport as self-sustaining as possible. In interpreting Congress' provisions, courts liberally construe what constitute 'expenses' in providing facilities and services to airport users."/7/

TESTS FOR LOCAL AIRPORT RESTRICTIONS: "REASONABLE" AND "NONDISCRIMINATORY"

The tests established by legislation and applied by courts to airport restrictions have involved two key requirements: the restriction must be "reasonable"; and the restriction must not discriminate "unjustly."/7,10/

Under the Airport and Airway Improvement Act of 1982, any airport that receives federal funds must "...make its facilities available on 'fair and reasonable terms and without unjust discrimination.'" An airport, for example, cannot impose a restriction that discriminates unjustly against a class of users, such as general aviation aircraft, or a particular user, such as a specific airline./7/

The Federal Anti-Head Tax Act allows airports to collect "reasonable" fees for the use of their facilities. "Reasonable" fees, given the language of the Airport and Airway Improvement Act, are fees that "accurately reflect the cost of operating the facility."/7/

In the context of the application of these requirements to the areas where airport owners have control, an airport owner can impose a noise restriction if it is needed to mitigate an airport noise problem and if it is not "unreasonable, arbitrary, discriminatory, or a burden on interstate commerce." "Courts will uphold perimeter rules and peak-period fees [established by multi-airport authorities] as long as the restrictions are reasonable, nonarbitrary, and nondiscriminatory rules that advance the local interest."/7,10/

Interpretations of "Reasonableness" and "Discrimination"

The following discussion of the use of a special fee structure at Boston Logan International Airport addresses the question of what makes an airport restriction reasonable.

> "The most recent [court] decision...occurred in late 1989 in *New England Legal Foundation v. Massachusetts Port Authority*. In that case, the Massachusetts Port Authority (Massport), which owns and operates Logan Airport in Boston, wanted to maximize the efficient use of its facilities. It adopted a phased plan which began with a...fee structure consisting of two elements [a standard fee and an additional charge based on aircraft weight]. ...the effect of...the plan was to increase drastically the cost per landing of small aircraft while decreasing that of large aircraft. The resulting formula departed from the traditional method of calculating landing fees, and several groups consisting of small aircraft users brought a legal challenge against the fee structure."/7/

The final court ruling on the case upheld the Department of Transportation's ruling against Massport. From the ruling and Department of Transportation decision on the case, it has been concluded that:

- A "reasonable" fee or charge "fairly and rationally reflects the cost to comparably situated users" (the court found that the fee put a disproportionate share of airport costs on small aircraft); and
- The charge must be developed through a "nonarbitrary" methodology, and must accurately reflect airport costs ("...the court believed that Massport's fee structure was unreasonable because its methodology for allocating costs was 'not scientifically derived'").*/7/*

"The issues of discrimination and reasonableness are frequently interconnected." In a case involving local noise control regulations that prevented certain aircraft from operating at John F. Kennedy International Airport, the court determined that the Port Authority of New York and New Jersey used reasonable procedures to establish an acceptable level of aircraft noise. Since the procedures were reasonable and the restriction was "rationally related to a legitimate state interest," the court determined that the noise restriction was not discriminatory./7/

In a case involving the perimeter rule imposed by the FAA which prohibited air carriers from operating nonstop flights between Washington National Airport and any airport more than 1,000 miles away, "The court held that an airport proprietor may make reasonable regulations concerning the efficient use of navigable airspace,..." In a case involving a perimeter rule established for LaGuardia Airport, an important factor was that "long-distance air traffic was not prohibited from entering New York area airports but was only diverted from one airport to another..."/7/ An additional factor in both cases was that the airports were part of a multi-airport system operated by one authority, which had the ability to accept the (diverted) air traffic at another airport in the system./10/

> "The court noted that while all regulations tend to discriminate in some way, the important inquiry is whether the discrimination is reasonable in light of the legitimate objectives the proprietor seeks to achieve. After noting that the control of ground congestion is a legitimate proprietary function, the court agreed with the authority's belief that the perimeter rule would keep LaGuardia from experiencing delays and congestion."/7/

In a case involving SFIA and its denial of access (introduction of service) to an aircraft operated by Burlington Northern Air Freight, the FAA charged that SFIA had discriminated unjustly and unreasonably against the airline, mainly because SFIA allowed noisier aircraft (than the Boeing Q-707 denied access) to use the Airport. The Ninth Circuit Court of Appeals recently ruled in favor of the FAA. Because the FAA found that SFIA had violated its grant assurances, the FAA has withheld federal funds from SFIA since Fiscal Year 1986./10/

AIRPORT ECONOMICS

AIRPORT BUSINESS OPERATIONS

The following summary of selected aspects of airport administration and finance is included to show the extent to which the airlines serving SFIA "share the risks and responsibilities for airport operations."/1/

Sources of Operating Revenue

According to a standard text on airport management:

> "At large air carrier airports, the main sources of operating revenue are air carrier landing fees, concession fees, and charges for the use of terminal areas and hangars. At large commercial airports, landing fees (usually based on the weight of the airplane) pay for the use of airfield facilities. Concession contracts provide revenue for the use of terminal areas... Airlines pay rent for leased areas..., usually based on the amount of area rented... These sources provide an airport's operating revenue... "/1/

Funding of Airport Development Projects

The following paragraph describes the means of funding airport development projects:

> "Airport construction, development, and improvement require large amounts of capital. Airports obtain this capital from a number of sources, including the sale of bonds and state and federal grants. There are three basic kinds of bonds: general obligation, revenue, and hybrid, such as self-liquidating general obligation bonds."/1,2/

Most of the capital needed for SFIA development projects has been raised through the sale of revenue bonds, which "are backed by the revenue to be generated by the facilities."/1/

"At the federal level, grants are available under the [Airport and Airway Safety and Capacity Expansion Act of 1987] for airport improvements, ATC facilities and equipment, and airspace system operation and maintenance."/1/

Airport and Airline Assumption of Risk

At airports such as SFIA, the airlines assume some of the responsibilities and risks of airport operation:

> "The large and medium-size publicly owned airports typically operate in conjunction with privately-owned airlines. This public/private character distinguishes the financial management and operation of these airports from those of organizations that are either completely publicly owned or completely privately owned... The risks and responsibilities of airport operations for air carrier airports are shared between the airport operator and the airlines that use the airport. Terms and conditions of the relationship between the airport and the airlines are contained in legal documents known as airport use agreements."/1/

> "In some cases [such as the airport use agreements used at SFIA], airlines agree to pay any costs of operating an airport or servicing its debt that are not recovered from other users. This is known as the residual cost approach to pricing; its implementation transfers a significant portion of the financial risk to the airlines, since they agree to make up the operating deficits."/1,11/

If the proposed SFIA Master Plan improvements are financed with revenue bonds, payment of the bonds would be backed by Airport revenues, with the airlines covering debt payment costs not recovered from other Airport users.

AIRLINE DEREGULATION, HUBBING, AND COMPETITION

The nature of the airline service provided at SFIA and the other Bay Area airports is influenced by the development of the hub-and-spoke route system. The ability to "manage" or influence service and demand at these airports is also influenced by hubbing, and by the presence of barriers to market entry.

Deregulation and Hubbing

Hubbing is defined as follows:

> "Hubbing is an operational system in which flights from numerous points arrive at and then depart from a common point within a short time frame so that passengers arriving from any given point can connect to flights departing to all other points..."/12/

Most air travel within the U.S. involves hubbing operations./13/ "...an airport in a hub and spoke system where a carrier or carriers elect to crossconnect passengers on a large scale" is a "connecting hub."/12/ Some of the airports currently used as connecting hubs include Denver Stapleton International Airport, Dallas / Fort Worth International Airport, Atlanta Hartsfield International Airport, and Memphis International Airport.

SFIA is not a connecting hub airport; most of the passengers using the Airport are coming from or going to locations in the Bay Area. However, United Airlines uses the Airport as a hub for connections among its international, Hawaii, long-haul domestic (such as to Chicago or Washington), and intrastate flights. San Jose International Airport is currently used as a connecting hub by American Airlines. Metropolitan Oakland International Airport is not used as a connecting hub.

Airline Competition

During the decade following deregulation, the domestic airline industry underwent "significant structural and operational change," expanding from 30 large air carriers in 1978 to 38 carriers in 1984, then, through a series of mergers and acquisitions, consolidating into 8 large carriers (in 1988-1989)./12/

In the past several years, concerns have been raised about the competitiveness of the airline industry, and the potential need for "reregulation." The Secretary of Transportation commissioned a high-level task force to conduct a comprehensive assessment of airline competition. The assessment addressed, among other topics, the industry and route structure and the existence of barriers to airline entry into markets./12/

Industry and Route Structure

The DOT Task Force study of market structure found that:

- Competitive airline service to more destinations is provided to more people by more airlines.
- Airline concentration has increased at larger airports, and decreased at smaller airports.

- There has been a "dramatic increase" in the number of markets served nationwide.

- "The hubbing process by its very nature requires a large volume of frequent service and this leads naturally to a relatively high degree of concentration. Moreover, once hubs are established, carriers have a strong incentive to attempt to increase their control of traffic at their connecting hubs.

- "Virtually all non-hubbing carriers have stopped competing with nonstop service in city pairs involving a highly concentrated connecting hub. The number of nonstop competitors in city-pairs involving concentrated hubs, therefore, is essentially limited to carriers that hub at either end point.

- "In view of the substantial load factor advantage enjoyed by dominant carriers at highly concentrated connecting hubs, in the absence of price deviations which could cause such differences, any expansion of service can be expected to involve the least risk where a carrier already has a high degree of concentration and the most risk where another carrier has a high degree of concentration...this would seem to encourage carriers to expand service by extending dominance at existing hubs or creating new hubs rather than by trying to compete at another carrier's hub."/12/

Barriers to Market Entry

"Generally, barriers to entry are practices or conditions that may impede a firm's ability to enter a market."/14/ If there are barriers (see following examples) to the entry of airlines at San Jose International Airport and Metropolitan Oakland International Airport, or if the practices used to operate SFIA favor the airlines' continuation or expansion of service at SFIA, it would be more difficult to change or "manage" the service provided at each of the three airports.

The Task Force Study of potential barriers to market entry "...addresses the availability of airport gates and associated facilities and services that are necessary for air carriers to serve an airport." The study found that "...gate facilities are a potential barrier to entry into both the aviation industry and into individual markets for firms already in the industry... Without gate facilities, an air carrier is effectively barred from serving a specific market."/11/

Three factors found to contribute to the lack of gate facilities at airports are the unavailability of gate capacity, the use of exclusive-use leases, and the airlines' right to approve airport decisions.

Underutilized Gate Capacity. "There is very little underutilized terminal and gate capacity at the large airports today... An airline requires at least one full-service gate to serve an airport in a minimum fashion, say as a spoke operation. It needs 5-10 adjacent gates to start a hub... Overall, short run gate capacity is very limited." A survey conducted in 1989 found that SFIA had no gates available at that time, and would have 4 gates available 180 days later./11/

Exclusive-Use Leases. "The 1983 Report to Congress identified...[that] airport facility areas...are typically leased to carriers on an exclusive basis for extended periods of time, usually 15 to 30 years..." At an airport with long-term, exclusive-use leases, an airline trying to introduce service would have to sublease gates from the leaseholder, probably at a higher cost./11/

SFIA has standardized long-term (10-30-year) exclusive-use contracts. "This contract is the result of a 1981 lawsuit against the airport by the airlines."/15/ As of 1990, 20 of the 65 carriers serving the airport leased gates under this contract, and the remaining carriers subleased gates from the airlines, or leased gates from the airport on a month-to-month basis. All gates at SFIA are currently used by some carrier./15/

San Jose International Airport also has long-term exclusive-use leases on airport facilities./16/

Majority-In-Interest. In many airport leases, certain airlines are "given the right, through what is called a 'majority-in-interest' (MII) clause, to approve certain airport decisions... The matters subject to MII approval...generally...involve major decisions that affect airport costs, such as capital improvements or expansions, added debt, and new bond issues. The 'interest' power also varies, and can range from absolute veto power to simply requiring project reviews./11/

> "The prevalence of MII tends to be correlated with the type of financing for airports. Under the residual cost method [used at SFIA], airlines take a substantial risk, generally as guaranteeing payment of all airport costs not covered by non-airline sources of revenue. In return, they are charged landing fees and rates for space that are calculated after all other sources of revenue are taken into account. If car rental, parking, and concession income goes up, an airline's costs for use of space can go down. The airlines assume financial risks and the airlines have an interest in seeing that the airport is operated to minimize the residual costs to be covered by the air carriers."/11/

The signatory carriers at SFIA and San Jose International Airport operate under residual cost use agreements, with the right of MII approval. As of Spring 1989, SFIA needed airline approval for large capital projects, adjustments in landing fees or terminal rates, new bond sales, or additional rates, fees, or charges./11/

"Many use agreements contain a 'no additional rates, fees, or charges' clause that prevents the airport from raising new revenue for airport development by levying fees on airlines, unless specifically authorized..." In a 1989 survey, SFIA reported that it had restrictions on charging additional rates, fees, and charges, and was prevented from changing the method of calculating landing fees./11/

AIR TRAVEL DEMAND

General Characteristics

The factors that are usually considered when analyzing or forecasting air travel demand include:

- Purpose of trip. "...most people use air transportation as a means to achieve some other purpose... Consequently, when trying to estimate passenger demand, it is necessary to go into all the various reasons that make a destination city attractive... Passengers can be divided into categories by looking at the purpose of their trip. Typically the simplest of the divisions is into tourist or business travel..."/13/
- Variability. "Passenger demand for any mode of transportation varies greatly by the hour of the day, the day of the week, and in most markets by the season of the year." For example, in a vacation travel market, the demand may be significantly higher during the summer than in the other seasons of the year./13,17/
- Passenger origins and destinations.
- Population of the region served by the airport. "The size and composition of the area's population - and its potential growth rate - are basic ingredients in creating demand for air transportation services."/18/
- Employment of the region served by the airport.
- Disposable income.
- Regional economy. "In addition to overall national and regional economic activity, this factor includes consideration of specific, identifiable, local activity that distinguishes the geographic area served by the airport from the aggregate conditions across the region. This factor is particularly important in connection with business travel by commercial and general aviation and with air freight traffic."/18/

- Price of airline travel.
- Frequency of service, defined as the convenience of travel between two points. "The larger the number of flights the more convenient are the departure and arrival times likely to be."/17/
- Level of service, such as the use of frequent flyer programs, or an airline or airport's on-time performance record.
- Overall travel time./13,17/
- External factors, such as fuel price changes, changes in the regulatory environment, and the granting of new routes for international service./18/
- Local aviation actions. "The types of ground access and support services provided, user charges, and plans for future development can each affect future growth of aviation demand."/18/

Demand and Service in a Multiple-Airport Region

In the San Francisco Bay region, travelers have more than one airport from which to choose:

> "Airport choice occurs in metropolitan areas that are served by more than one airport. In such areas, it may happen that a traveler can choose between a closer airport with access travel advantages and a farther airport with schedule frequency advantages."/17/

A model used to study airport choice for travel between the San Francisco and Los Angeles metropolitan areas considered the total travel time, the schedule frequency, and the air fare. The results of the model showed that "...business travel is more sensitive to schedule frequency and less sensitive to fares than nonbusiness traffic."/17/

The 1990 Air Passenger Survey conducted by the Metropolitan Transportation Commission (MTC) found that "The most commonly cited determinant of airport choice, regardless of air party characteristics, was closeness to residence, hotel or business." The survey also found that "San Francisco and Oakland airports...have a greater portion of respondents [than San Jose] citing service competition [flight availability, frequency, and fares] as their main reasons for choosing one of the two airports."/19/ Other MTC survey results can be found in Attachment A to this packet.

NOTES - Background

/1/ Taneja, Nawal K., *Introduction to Civil Aviation*, Lexington Books, 1987.

/2/ Smith, Donald I., John D. Odegard, and William Shea, *Airport Planning and Management*, Wadsworth Publishing Company, 1984.

/3/ Airport and Airway Safety and Capacity Expansion Act of 1987, Public Law 100-223, House Report and House Conference Report.

/4/ Airport Noise and Capacity Act of 1990.

/5/ Horonjeff, Robert, and Francis X. McKelvey, *Planning and Design of Airports*, McGraw Hill, Third Edition, 1983.

/6/ Federal Aviation Administration, "Part V, Assurances, Airport Sponsors," grant assurances under the Airport Improvement Program, October 1, 1990.

/7/ Pennington, William, "Airport Restrictions: A Dilemma of Federal Preemption and Proprietary Control," in *Journal of Air Law and Commerce*, Volume 56, Number 3, Spring 1991.

/8/ "State Aeronautics Act," Division 9, Public Utilities Code, State of California.

/9/ "FAA Eases Plan to Phase Out Noisy Jets Amid Strong Pressure," *New York Times*, September 25, 1991.

/10/ Daphne Fuller, Staff Attorney, Federal Aviation Administration, telephone conversation, October 1, 1991.

/11/ U.S. Department of Transportation, *Secretary's Task Force on Competition in the U.S. Domestic Airline Industry, Airports, Air Traffic Control, and Related Concerns (Impact on Entry)*, February 1990.

/12/ U.S. Department of Transportation, *Secretary's Task Force on Competition in the U.S. Domestic Airline Industry, Industry and Route Structure*, Executive Summary, February 1990.

/13/ O'Connor, William E., *An Introduction to Airline Economics*, Praeger, Fourth Edition, 1989.

/14/ United States General Accounting Office, *Airline Competition: Effects of Airline Market Concentration and Barriers to Entry of Airlines*, April 1991.

/15/ California Public Utilities Commission, *Fares, Service, and Terminals, Staff Final Report on Airline Service Within California*, March 7, 1990.

/16/ Steve Grossman, Deputy Director of Finance, San Jose International Airport, telephone conversation, September 25, 1991.

/17/ "Transportation Demand Analysis," handout accompanying presentation by Adib Kanafani, University of California - Berkeley, Course in Airport Systems Planning and Design, April 30 through May 3, 1990.

/18/ Federal Aviation Administration, Advisory Circular 150/5070-6A, "Airport Master Plans," June 1985.

/19/ Metropolitan Transportation Commission, *1990 Air Passenger Survey, San Francisco Bay Area*, August 1991.

APPENDIX A: SUMMARY OF FEDERAL REGULATORY HISTORY

FEDERAL REGULATORY HISTORY

The federal government has regulated the aviation industry in the United States from the early days of domestic air service. In addition to economic and safety controls on the airlines, regulation has included rules for the development and operation of the domestic airway system, the control of air traffic, and the development and operation of airports. The following "highlights" of federal regulatory history are included to show the extent and complexity of the regulatory framework within which SFIA and other U.S. airports operate.

Early Regulation (1925-1934)

Federal regulation of the aviation industry began with the Air Mail Act of 1925 (the Kelly Act) and the Air Commerce Act of 1926. The Kelly Act resulted in the transfer of airmail operations from the Post Office Department to private carriers. (Regular air passenger service was not established before 1925; most regularly scheduled air services were airmail flights conducted by the Post Office Department.) The Air Commerce Act "...initiated the development of civil airways and navigational aids and provided for safety regulations requiring that airplanes, pilots, and navigational facilities be registered, examined, and certificated." The Air Commerce Act made the aeronautics branch of the Department of Commerce responsible for "...promoting and fostering the development of commercial aviation as well as for regulating the business aspects of air transportation."/1,2/

"Until the early 1920s, a substantial number of airports in the United States had been privately owned and operated." Congress concluded, in developing the Air Commerce Act, that "...the control and operations of airports were... the responsibility of municipal authorities."/1,2/

> "...the Air Mail Act of 1934 (the Black-McKellar Act)...set up a threefold control of the air transport industry: (1) airmail contracts were to be awarded by the Post Office Department; (2) the Interstate Commerce Commission was put in charge of setting 'fair and reasonable' airmail rates; and (3) the Department of Commerce was made responsible for the regulation of safety and the maintenance, operation, and development of the airway system... The act also established the five-man Federal Aviation Commission to study federal aviation policy and recommend future policy. The most important recommendation of this commission was the creation of a separate agency for economic regulation of the civil air transport industry."/1,2/

Civil Aeronautics Act of 1938

The Civil Aeronautics Act of 1938 established economic regulation of the airlines:

> "The Civil Aeronautics Act of 1938 placed the development, regulation, and control of air carriers under the jurisdiction of the Civil Aeronautics Authority (later known as the Civil Aeronautics Board, or CAB). This authority, for the first time, subjected the airlines to rigorous economic regulation. Carriers that wanted to offer commercial service were now required to obtain from the CAB a Certificate of Public Convenience and Necessity, specifying the points to be served and the services to be provided... The CAB exercised complete power to determine 'fair and reasonable' rates for the transportation of passengers, property, and mail. The CAB also had the power to regulate competition; to decide on consolidations, mergers, and acquisitions..."/1,2/

An Air Safety Board within the CAB was created to promulgate Civil Air Regulations. However, enforcement of the regulations was the responsibility of the aeronautics division of the Commerce Department. The aeronautics division was also "...made responsible for the operation of the airways and control towers and the administration of funds for the development of airports."/1/

> "The prohibition against federal construction of airports, a part of the Air Commerce Act of 1926, had been omitted... The Civil Aeronautics Act directed the administrator to make a field survey of existing airports and present a recommendation to Congress in 1939 on whether the government should participate in the construction, improvement, development, or maintenance of the national system of airports."/2/

The administrator recommended that the "...development and maintenance of an adequate system of airports was in the national interest..."/1/ Congress appropriated $40 million for the development of airports in 1940./2/

Transportation Act of 1940

The Transportation Act of 1940 established the Civil Aeronautics Board (replacing the Civil Aeronautics Authority) and the Civil Aeronautics Administration (CAA, which was the predecessor to the Federal Aviation Agency, which later became the Federal Aviation Administration). The CAB was responsible for economic regulation; the CAA was responsible for safety regulation. The CAA's authority was extended during World War II to include air traffic control of all airways./2/

World War II

World War II affected U.S. airport development:

> "...defense considerations led to the decision to upgrade existing airports and to develop new airports... Congress... appropriated specific funds to construct and improve airports that were considered vital for national defense. After the war, the Federal Airport Act of 1946 increased the size of the airports program by providing $500 million over the next 7 years. The recipients of federal funds were required to comply with the new standards established by the CAA, such as site location, airport layout, lighting, and the safety of approaches."/1,2/

The air traffic control system was upgraded after World War II, including the establishment of approach control facilities, use of long-range radar, establishment of an accurate navigation system and installation of instrument landing systems, and improvements in communications equipment. The Office of Air Traffic Control was established in 1956./1/

Federal Aviation Act of 1958

The Federal Aviation Act of 1958 amended and replaced the Civil Aeronautics Act of 1938:

> "The new act established the Federal Aviation Agency (FAA) as a separate government agency...Its functions were to regulate airspace; to acquire, operate, and develop air navigation facilities; and to prescribe air traffic rules for all aircraft. The safety regulations became known as the Federal Aviation Regulations (FARs). Although regulation of safety was under the jurisdiction of the FAA, investigation of civil aircraft accidents was still the responsibility of the CAB. The CAB's economic regulatory authority was left unchanged."/1,2/

The FAA was also given the authority to approve the siting of airports and to administer airport development funds./1/

Creation of Department of Transportation (DOT)

The U.S. Department of Transportation was created in 1966:

> "...to provide total transportation planning, policy guidance, and protection of the public interest - with the aim of achieving an integrated national transportation system based on economic criteria rather than on modal preferences... The FAA (now Federal Aviation Administration) was reorganized and became part of the DOT. In the area of air safety, the FAA administrator was given cabinet-level functions, powers, and duties. The Air Safety Board became the National Transportation Safety Board..."/1,2/

Airport Development in the 1970s

In the 1970s, Congress authorized funding for airport development:

> "In 1970, the Airport and Airway Development Act and the Airport and Airway Revenue Act were passed to allow for the expansion, improvement, and funding of airways and airport systems... The Airport Development Aid Program (ADAP), part of the Airport and Airway Development Act, allowed an expenditure of $2.5 billion for the improvement of existing airport facilities and for the construction of new airports. Under the Airport and Airway Revenue Act, the Airport and Airway Trust Fund was established with money collected from the users of the system."/1,2/

Airline Deregulation Act of 1978

The Airline Deregulation Act was "...intended 'to amend the Federal Aviation Act of 1958, to encourage, develop and attain an air transportation system which relies on competitive market forces to determine the quality, variety, and price of air services and for other purposes.'" Former policy had been "'...oriented towards the creation and governmental promotion of an air transportation system and the protection of the air transport industry through essentially public utility-type regulation.' It was often interpreted as allowing or even requiring anticompetitive policies."/2/

Under the Civil Aeronautics Act of 1938, the CAB granted certificates to airlines for proposed service "...only if it found that the...service was 'required by the public convenience and necessity.' The board also had to find that the airline was 'fit, willing, and able' to perform the service..." Certificates were granted through "complicated and time-consuming procedures." Under deregulation, airlines are still required to obtain certificates of fitness from the Department of Transportation, but other controls over airline entry into (and exit from) most domestic markets have been eliminated. (Service to certain small communities is regulated under the Essential Air Service program.)/1/

Deregulation was achieved in phases. Passenger airline operations were deregulated as of October 1978. The CAB's authority to assign air routes ceased in 1982; authority relating to rate making was terminated in 1983. The CAB ceased to exist as of January 1985; its remaining responsibilities (such as the regulation of international transportation) were transferred to the Department of Transportation. (DOT approval of airline mergers ceased in 1988; mergers are subject to the antitrust laws administered by the Department of Justice.)/1,2/

Airport and Airways Improvement Act of 1982

Funding authorization for airport development under ADAP (established by the 1970 Airport and Airway Development Act) expired in 1980. The Airport and Airways Improvement Act of 1982, enacted to implement the FAA's National Airspace System Plan for Facilities, Equipment and Associated Development, authorized funding for airport development under the Airport Improvement Program (AIP)./1,2/

Recent Legislation

Airport and Airway Safety and Capacity Expansion Act of 1987

The Act amends the Airport and Airway Improvement Act of 1982 "for the purpose of extending the authorization of appropriations for airport and airway improvements, and for other purposes." Concerns expressed by Congress during the drafting of the legislation include the large, unspent balance in the Airport and Airway Trust Fund, the need for continued development of the national airport and airway system (especially airport capacity and air traffic control modernization), and the need to make further progress in achieving airport noise compatibility./3/

The Act:

- Authorizes $8.7 billion through Fiscal Year 1992 for the Airport Improvement and Noise Abatement Programs;
- Authorizes $5.3 billion through Fiscal Year 1992 for the FAA's Facilities and Equipment programs, to implement the FAA's plan for the modernization of the air traffic control system;
- Sets forth formulas for the apportionment of federal funds;
- Amends the federal grant assurances regarding the provision of access on a nondiscriminatory basis, the protection of terminal airspace, the requirement that airport revenues must be spent on the airport, and the disposal of land purchased with federal funds for noise mitigation;
- Permits the issuance of a Letter of Intent to fund an airport project in future years;
- Provides that if an airport is not making reasonable progress toward developing or implementing a noise compatibility program, 10 percent of the funds apportioned to the airport shall be made available to local government for noise mitigation programs;
- Provides for a higher federal share for the funding of noise projects at certain airports;

- Requires the FAA Administrator "to conduct a study of innovative noise abatement proposals that are not currently eligible for federal assistance";
- Includes provisions and requirements for certain individual airports;
- Modifies existing law regarding the Essential Air Service program; and
- Extends excise taxes through December 31, 1990, with a "trigger" that the 1990 taxes be reduced if the total appropriations for airport improvements, facilities and equipment, and research, engineering and development are less than 85 percent of the total amounts authorized for these programs./3/

Airport Noise and Capacity Act of 1990

Among the findings in the Act are that

> "(1) aviation noise management is crucial to the continued increase in airport capacity; (2) community noise concerns have led to uncoordinated and inconsistent restrictions on aviation which could impede the national air transportation system; (3) a noise policy must be implemented at the national level;"/4/

The Act requires that the Secretary of Transportation "shall issue regulations establishing a national noise policy..." The policy "...shall be based on a detailed economic analysis of the impact of the phaseout date for Stage 2 aircraft on competition in the airline industry..." The Act establishes December 31, 1999 as the phaseout date for Stage 2 aircraft (for turbojet aircraft with a maximum weight of more than 75,000 pounds), with a possible waiver through 2003. The noise policy shall include a schedule for phased-in compliance, with interim deadlines./4/

On September 24, 1991, the FAA issued the regulations required by the Act. FAA's initial proposed rule would have required the phasing out of each airline's Stage 2 aircraft according to the following schedule: 25 percent by the end of 1994; 50 percent by 1996; 75 percent by 1998; and 100 percent by the year 2000. However, the airline industry argued for a more flexible approach, and the Secretary of Transportation "...ordered that the timetable be made more flexible out of concern for the economic viability of the airlines." As a result, the rule "...allows airlines, if they choose, to move toward compliance by first increasing the numbers of quieter aircraft in their fleets, rather than by starting right away to eliminate the noisier ones." The adopted deadlines are that 55 percent of an airline's entire fleet must be Stage 3 aircraft by 1994, 65 percent by 1996, and 75 percent by 1998./5/

The Act also requires that the national policy include a "program for reviewing airport noise and access restrictions on operations of Stage 2 and Stage 3 aircraft." Any airport noise or access restriction on the operation of Stage 3 aircraft effective after October 1990 is prohibited unless "...it has been agreed to by the airport proprietor and all aircraft operators" or has been approved by the Secretary of Transportation. A restriction on Stage 2 aircraft is allowed only if the airport operator conducts a cost-benefit analysis of the restriction and allows adequate time for public comment. Compliance with these provisions is tied to the receipt of federal funds and the eligibility to impose and collect "passenger facility charges."/4/

FUNCTIONS OF REGULATORY AGENCIES

The regulatory history presented in the previous section provides the framework for the current regulation of SFIA. The agencies most involved with the regulation of SFIA activities are the Federal Aviation Administration and the California Department of Transportation, Division of Aeronautics. Information on these agencies' functions is included to show the extent to which the operation of SFIA is subject to federal and state regulation.

Federal

Federal Aviation Administration

The FAA participates directly and indirectly in the operation of the Airport through its establishment and operation of the air traffic control (ATC) system; its regulation of aircraft and airlines, airport design and construction, and day-to-day aspects of airport management; and its administration of funds. The FAA performs the following functions:

- "Encourages the establishment of civil airways, landing areas, and other air facilities;
- "Designates federal airways; acquires, establishes, operates, and conducts research and development; and maintains air navigation facilities along such civil airways;
- "Makes provision for the control and protection of air traffic moving in air commerce;
- "Undertakes or supervises technical development work in the field of aeronautics and the development of aeronautical facilities";

- Develops and enforces the Federal Aviation Regulations, including the following:
  - aircraft noise certification (Part 36)
  - airport noise compatibility programs (Part 150)
  - rules for funding eligibility and fund procurement (Part 152)
  - acquisition of U.S. land for airports (Parts 153, 154)
  - release of federal airport property for public use (Part 155)
  - reporting actions relating to construction, alteration, activation, and
  - deactivation of airports (Part 157);
- "Provides for aircraft registration;
- "Requires notice and issues orders with respect to hazards to air commerce"; and
- "Issues operating certificates to airports serving air carriers [under FAR Part 139]."/1,6/

The FAA also develops the National Plan of Integrated Airport Systems and directs the federal airport aid program. "In this connection it performs the following functions:

- "Provides advisory assistance on airport planning, design, construction, management, operation, and maintenance;
- "Develops and establishes standards, government planning methods, and procedures (for airport planning, design, and construction, and management, operations, and maintenance);
- "Develops and recommends principles for incorporation in state and local legislation"; and
- "Secures compliance with statutory and contractual requirements relative to airport operation practices, conditions, and arrangements."/2,6/

Department of Transportation

As discussed on page A-5 above, the Department of Transportation regulates air service to small communities under the Essential Air Service program, and enforces economic controls on international air transportation.

State

The California Department of Transportation, Division of Aeronautics issues permits for the operation of airports in the state. (State permitting is conducted separately from the federal certification of airports under FAR Part 139.)/7/

Any changes to "airside" facilities at an airport require a revision to the state permit. Changes to landside facilities, such as those proposed under the SFIA Master Plan, do not require a revision to the permit./7/

The Division of Aeronautics conducts yearly inspections for compliance with the permit. The Division also enforces the Federal Aviation Regulations, which were adopted by the state under the State Aeronautics Act. The Code gives authority to the Division to develop additional regulations under Title 21 of the California Code of Regulations./7/

NOTES - Appendix A

/1/ Taneja, Nawal K., *Introduction to Civil Aviation*, Lexington Books, 1987.

/2/ Smith, Donald I., John D. Odegard, and William Shea, *Airport Planning and Management*, Wadsworth Publishing Company, 1984.

/3/ Airport and Airway Safety and Capacity Expansion Act of 1987, Public Law 100-223, House Report and House Conférence Report.

/4/ Airport Noise and Capacity Act of 1990.

/5/ "FAA Eases Plan to Phase Out Noisy Jets Amid Strong Pressure," *New York Times*, September 25, 1991.

/6/ Horonjeff, Robert, and Francis X. McKelvey, *Planning and Design of Airports*, McGraw Hill, Third Edition, 1983.

/7/ Gargas, Dan, Aviation Consultant, Caltrans Division of Aeronautics, telephone conversation, September 19, 1991.

ATTACHMENT E
LETTERS FROM REGIONAL AGENCIES
COMMENTING ON THE DRAFT EIR

MTC
METROPOLITAN
TRANSPORTATION
COMMISSION

September 16, 1991

Ms. Barbara Sahm
Environmental Review Offices
450 McAllister Street, Sixth Floor
San Francisco, CA 94102

Dear Ms. Sahm:

The MTC staff have reviewed the San Francisco International Airport (SFO) Master Plan DEIR. The DEIR is a detailed and comprehensive document addressing proposed improvements at the Airport to the year 2006. The environmental document discusses forecasted traffic activity, airport development plans, and environmental impacts related to transportation, noise, air quality and other issues. As the regional transportation planning agency, MTC must develop and adopt a Regional Airport System Plan. The last regional airport plan was adopted in 1980, and the forecasts have been periodically reviewed and updated since that time (see below). MTC is now engaged in the comprehensive review and updating of the 1980 plan. The new RAP will examine airport system alternatives for 2005 and 2010.

MTC recently transmitted information to you under separate cover including: results of the 1990 MTC Air Passenger Survey at SFO, Oakland, and San Jose Airports, a memo to the Regional Airport Planning Committee on recommended regional air passenger forecasts (February 22, 1991), and a handout to the same committee on the preliminary airport system alternatives (distributed at the September 6, 1991 RAPC meeting). Specific MTC staff comments on the San Francisco International Airport Master Plan DEIR are provided below:

Forecasts and Regional Traffic Allocations

- The EIR would benefit from an expanded discussion of regional airport system alternatives including the compatibility of SFO airport improvement proposals with improvement proposals being developed in other ongoing airport master plan studies at Oakland and San Jose Airports. The DEIR should provide some discussion of how airline and airport facility investments and airline service decisions (such as creating new airline "hubs" for connecting flights) could either reinforce or change air service patterns at Bay Area airports.

- For clarification, the current regional airport plan air passenger forecasts and airport traffic assignments are different than those shown on page 11D (see attached excerpts for the MTC Regional Transportation Plan).

- The regional air passenger forecasts were last revised in 1986, and the airport traffic assignments were last revised in 1987. Note that the actual 1990 airport traffic shares for the Bay Area airports (page 120) are quite close to the recommended traffic allocations in the regional airport plan, i.e., the traffic allocations associated with a Bay Area traffic level of 43 Million Annual Passengers (MAP).

- The current regional airport plan recommends that Oakland and San Jose Airports serve a larger share of regional air traffic as air travel demand increases in the future. These recommendations stem from extensive previous analysis showing this strategy is essential to: balance available runway and airspace capacity (i.e., reduce excessive aircraft and passenger delays), provide more convenient and accessible air service to the Bay Area's population, provide noise relief to Bay Area residents, and to minimize vehicle travel and air pollution for ground trips to and from Bay Area airports. One of the reasons the Plan is now being revised is to coordinate ongoing airport master plan proposals for SFO, Oakland and San Jose Airports. San Francisco's master plan, for example proposes to serve 51.3 MAP in 2006, whereas the current policy limit in the regional airport plan is 31 MAP; similar conflicts with the regional airport plan exist at the other Bay Area airports. The question of how much additional airport capacity is needed and the optimum share of traffic for each airport is the subject of the current Regional Airport System Plan update due to be completed in the Spring of 1992. Airport system alternatives for the update study are now being defined through discussions with the ABAG/MTC Regional Airport Planning Committee (RAPC). San Francisco Airport's Master Plan should be consistent with the regional plan.

- MTC's "expected" forecast for the Bay Area is 62.6 MAP in 2005 and 70.7 MAP in 2010; these projections employ different methodologies than either the FAA forecast or the CASP forecast. However, the ABAG/MTC Regional Airport Planning Committee has also recommended that the plan update consider the long-term (20-25 year) capacity implications of a air passenger demand level of 84 MAP--which is similar to the forecast in the California Airport System Plan.

- In terms of airport system alternatives, the Regional Airport System Plan update will be looking at alternatives in which SFO's share of regional air traffic will most likely vary between the current 70% to a lower share of about 55%, reflecting substantial redistribution of air service to other airports. The Master Plan forecasts would be more consistent with retention of the current share.

Transportation Impacts

- The EIR indicates several highway segments and local intersections will deteriorate to Level of Service F as a result of projected future air traffic growth resulting from the master plan. MTC has reviewed the traffic data and assumptions in the DEIR and finds the methodologies and assumptions to be reasonable, given the air passenger forecast, including such factors as the air passenger and employee mode split, the projected use of the proposed BART extension to SFO, and the impact of the BART extension on airport parking requirements.

- Since the DEIR was prepared two additional BART extension alternatives were added to those previously under study by MTC: Alternative 5 (I-380 corridor to an "external" BART station on the airport's West of Bayshore property) and Alternative 6 (I-380 corridor to an "internal" station under the Airport's main garage). The decision on which alignment will be the preferred alignment to SFO will be a joint decision by MTC, BART, and SamTrans. This study assumes the Airport will finance, construct and operate an Automated People Mover system to the "External" SFO BART/CalTrain Station if this alignment is selected as the preferred alternative. Potential airport contributions to the capital and operating cost of the proposed BART extension will be evaluated by MTC in the ongoing BART extension study.

- The Transportation Impacts section does not adequately describe the mitigation of airport surface traffic impacts other than the impact of the proposed BART extension (and this is only discussed in relation to local intersections and parking demand; a discussion of the impacts on freeway segments would also be warranted).

- Specific mitigation measures that need greater elaboration include:

  - airport coordination activities with local agencies, including the San Mateo County Congestion Management Agency (CMA), to establish and maintain traffic LOS standards on key freeways and airport access routes as well as participation with the CMA in the development of deficiency plans to address unacceptable levels of service at intersections near the Airport

  - assistance in the planning and development of off-airport terminals (page 114 discusses this concept, but it is not listed on pages 12 - 13 which summarize potential transportation mitigation measures)

  - development of a pricing policy for parking which reduces auto access to the airport and encourages the use of transit and other high occupancy vehicle services

  - preferential access for public transit operators to the terminal curbside to place public transit on a competitive footing with auto access

  - defining a workable and effective commute alternatives program for airport employees given past experience which has shown how difficult it is for a majority of employees with different shifts and work hours to use carpools and transit

Noise:

- The growth in aircraft size appears to be higher than current industry trends would indicate.

- It would also be helpful if the noise impact information is reported both in terms of population and dwelling units within various noise contours.

Air Quality:

- The Bay Area Air Quality Management District has recently revised its recommendations for estimating future CO ambient background levels. These revisions will significantly affect the CO concentration analysis in Table 55 and the conclusions reached in that table.

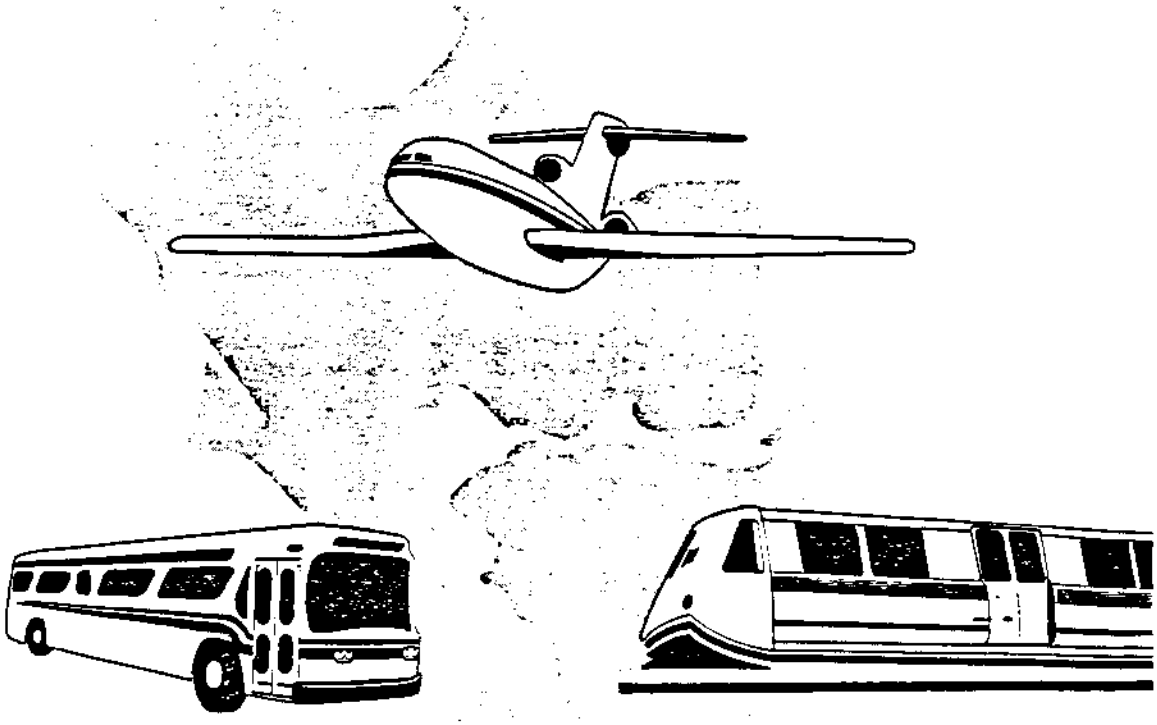
- The EIR would benefit from a discussion of the regional (ozone) and local (carbon monoxide) reductions that would be achieved by increased use of transit and ridesharing modes by air passengers and airport employees. Also, the Airport should be aware of transportation control measures (TCMs) adopted by MTC in February 1990 as Contingency Measures for the 1982 Bay Area Air Quality Plan and proposed TCMs in the BAAQMD's 1991 Clean Air Plan to meet state air quality standards which may affect the transportation impacts discussed in the DEIR.

Should you have any questions about these comments, we would be pleased to provide additional information.

Sincerely,

Chris Brittle
Manager, Planning

CB:jlr
8942p/11



Regional Transportation Plan

For the Nine-County San Francisco Bay Area

1988

MTC
METROPOLITAN
TRANSPORTATION
COMMISSION

THE REGIONAL AIRPORT PLAN

In 1977, the Regional Airport Planning Committee (RAPC), a joint advisory committee of MTC and ABAG, began a major review of the Regional Airport Plan (RAP)--which provides long-range guidelines for development of air passenger, air cargo, and general aviation facilities in the Bay Area. The airport map following this text locates the facilities identified in the RAP. In accordance with Policy 5.6, the RAP shall guide MTC in its decisions concerning airport plans and development proposals. The RAP has the following major provisions:

- Expansion of the major air carrier airports. Airline service at San Francisco International Airport, Metropolitan Oakland International Airport, and San Jose Municipal Airport should be consistent with the regional plan and with master plans prepared for these airports. The regional plan recommends that airport improvement programs and local land use decisions be guided by the regional projections of air passenger demand and airport traffic assignments shown below:

PROJECTED BAY AREA AIR PASSENGER DEMAND
(Millions of annual passengers - on & off)

Time Frame	Total Bay Area Air Passengers
1995	40.8 - 46.8
2005	48.7 - 58.7

AIRPORT TRAFFIC ASSIGNMENTS
(Millions of annual air passengers - on & off)

	Level 1		Level 2		Level 3	
Airport	Demand	Share	Demand	Share	Demand	Share
San Francisco	19.9	78.7%	30.0	69.3%	31.0	55.1%
Oakland	2.6	10.1	6.0	13.9	15.0	26.6
San Jose	2.8	11.2	7.0	16.2	10.0	17.8
Buchanan Field	--	--	0.3	0.6	0.3	0.5
Total	25.3	100.0%	43.3	100.0%	56.3	100.0%

Level 1 represents the 1981 traffic level and traffic distribution among the airports. Levels 2 and 3 represent shares derived from policies in the RAP and airport master plans. Air passenger assignments for intermediate levels of Bay Area demand may be determined by interpolation between the three levels of demand shown in the table. The RAP recommends a redistribution of additional airline service to Oakland and San Jose airports--although with the changes that have occurred in airline regulation, local agencies will find it more difficult to effect such changes in airline service. Also, the plan recognizes the potential for scheduled airline jet service at smaller, community airports which have historically handled general

ABAG
ASSOCIATION OF BAY AREA GOVERNMENTS
Mailing Address: ■ P.O. Box 2050 ■ Oakland, CA 94604-2050

September 18, 1991

Barbara Sahm
The Environmental Review Officer
City and County of San Francisco
450 McAllister Street, Sixth Floor
San Francisco, CA 94102

RE: DEIR for San Francisco International Airport Master Plan

Dear Ms. Sahm:

Thank you for sending the Draft Environmental Impact Report on the above project for our review. ABAG staff comments are directed to the DEIR's analysis of possible impacts to the jobs/housing balance, the analysis of alternatives, and the interrelationship that should exist between the San Francisco Airport and regional airport planning.

The DEIR states implementation of the SFIA Master Plan would add about 4,600 new jobs by 1996 or about 8,900 new jobs by 2006 (pg. 10). This would create a demand for 3,460 dwelling units by 1996 or 6,850 units by 2006. The DEIR projects 2,450 of these units would be in San Mateo County, 1,940 in San Francisco and 810 in Alameda County. Decision makers need to know the projected income of these employees and how housing that is affordable to them will be provided. Most airport employees cannot afford to live in San Mateo County.

Only three alternatives are analyzed in the DEIR: the no-project alternative, the on-site alternative and the off-site alternative. It would be helpful if another alternative were included that would serve more passengers than the no-project alternative but less than the Master Plan.

The DEIR points out (pg. 258) that SFIA passenger forecasts for the near-term (42.3 million annual passengers in 1996) and for the long-term (51.3 million annual passengers in 2006) exceed MTC/ABAG-recommended allocations for SFIA (27 to 31 million annual passengers in 1997). The Regional Airport Plan is currently being updated. In view of the major regional impacts of the expansion sought in the Master Plan, we recommend any decision await the development, public debate and final approval of the Regional Airport Plan. The magnitude of the proposed expansion makes conformity with the Regional Airport Plan imperative.

Thank you for the opportunity to comment on this DEIR. If you have any questions, please contact Ann Berry at 464-7919.

Sincerely,

Gary Binger
Planning Director

C&R.A.159

STATE OF CALIFORNIA - BUSINESS, TRANSPORTATION AND HOUSING AGENCY

PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
DIVISION OF AERONAUTICS
1130 K STREET - 4th FLOOR
MAIL: P.O. BOX 942873
SACRAMENTO, CA 94273-0001
(916) 322-3090
TDD (916) 445-5945

September 5, 1991

Ms. Barbara W. Sahm
City and County of San Francisco
450 McAllister Street, Sixth Floor
San Francisco, CA 94102

Dear Ms. Sahm:

The City & County of San Francisco's DEIR for the
San Francisco International Airport Master Plan; SCH #90030535

The California Department of Transportation, Division of Aeronautics, has reviewed the above-referenced document with respect to the Division's area of expertise as required by CEQA. Since no runway extension, relocations or additions are included in this proposal, the State Airport Permit for San Francisco International Airport should not be affected. We do, however, offer the following comments for your consideration.

The Division supports the proposed plans for an Automated People Mover (APM) system at San Francisco International Airport. However, we do note that it appears that with the exception of private automobile passenger drop-off, vehicles that previously proceeded directly to the terminal buildings (taxi/limo, shuttle van, shuttle bus and Sam Trans bus) would now go to the Ground Transportation Center, with the occupants then using the Automated People Mover to access the terminal buildings.

Will all curb side drop-off be discontinued for these alternative modes of travel? If so, we suggest that further consideration be given to the potential impact on the shuttle, bus and taxi/limo services if private vehicles are still allowed to drop-off passengers at the curb.

Thank you for the opportunity to review and comment on this proposal.

Sincerely,

Sandy Hesnard

SANDY HESNARD
Environmental Planner

cc: State Clearinghouse
San Francisco International Airport