



Table of Contents

Executive Summary

- Background and Overview 1
- Summary of Aviation Activity Forecasts 1
- Potential Airline Passenger Development 2
- Potential Air Cargo Development 3
- Potential General Aviation Development 3
- Potential Airfield Development 3
- Airline-Related Support Facilities 4
- Airport Ground Access 4
- Environmental Considerations 5
- Financial Plan 5
- Land-Use Maps and Recommended Studies 5

Table

- E.1 Summary of Unconstrained Aviation Activity Forecasts 2

Chapter 1: Introduction and Background

- 1.1 Introduction 7
- 1.2 History of Master Planning at OAK 8
- 1.3 Organization of the Master Plan 9
- 1.4 Approval of the Master Plan 9

Tables

- 1.1 Stakeholder Advisory Committee Meeting Topic and Dates 8
- 1.2 Master Plan Chapter Organization 9

Figure

- 1.1 Process and Timeline 10

Chapter 2: Summary of Existing Conditions

- 2.1 Background 11
- 2.2 Existing Land-Use Map 11
- 2.3 Existing Airport Data 11

Table

- 2.1 Land-Use Color Designations 11

Figures

- 2.1 Existing Land-Use Map 13
- 2.2 Existing Conditions 14

Chapter 3: Forecasts of Aviation Activity

- 3.1 Introduction to Master Plan Forecasting 15
- 3.2 Airline Passengers and Passenger Airline Operations 16
- 3.3 Air Cargo Weight and Cargo Airline Operations 19
- 3.4 General Aviation / Military Operations and Based General Aviation Aircraft 21
- 3.5 Summary 24

Tables

- 3.1 Existing and Forecast Airline Passengers (Unconstrained) 17
- 3.2 Daily Passenger Airline Operations by Aircraft Type (18 MAP) 19
- 3.3 Daily Cargo Airline Operations by Aircraft Type, South Field (0.9 MAT) 21
- 3.4 Daily Cargo Airline Operations by Aircraft Type, North Field (0.9 MAT) 21
- 3.5 Existing and Forecast Annual General Aviation Operations by Aircraft Type 23
- 3.6 Existing and Forecast Daily General Aviation Operations by Aircraft Type 23

- 3.7 Existing and Forecast Based General Aviation Aircraft by Type 24
- 3.8 Summary of Unconstrained Master Plan Forecasts 25
- 3.9 Composite Planning Day Flights by Aircraft Type, 2010 25

Figures

- 3.1 Forecasting Process 26
- 3.2 Forecasts: Million Annual Passengers, Historic and Forecast 27
- 3.3 Forecasts: Monthly Passenger Variation 28
- 3.4 Forecasts: Percent of Annual Passengers Each Month 29
- 3.5 Forecasts: Monthly Load Factors, All Airlines 30
- 3.6 Forecasts: One-Way Through Passengers 31
- 3.7 Forecasts: One-Way Through Passengers as a Percent of Total Passengers 32
- 3.8 Forecasts: Million Annual Tons of Cargo (Rolling) — Bay Area Airports 33
- 3.9 Forecasts: Million Annual Tons of Cargo (Rolling) — OAK Low Growth Forecast (3.59%) 34
- 3.10 Forecasts: Million Annual Tons of Cargo (Rolling) — OAK Medium Growth Forecast (4.52%) 35
- 3.11 Forecasts: Million Annual Tons of Cargo (Rolling) — OAK High Growth Forecast (5.14%) 36
- 3.12 Forecasts: Annual Air Cargo Operations (Rolling) — South Field 37
- 3.13 Forecasts: Annual Air Cargo Operations (Rolling) — North Field 38
- 3.14 Forecasts: Annual General Aviation and Military Operations 39
- 3.15 Forecasts: Annual General Aviation Operations 40

Chapter 4: Potential Development Areas

- 4.1 Introduction 41
- 4.2 Airline Passenger Development 41
- 4.3 Air Cargo Development 44
- 4.4 General Aviation Development 45
- 4.5 Airline-Related Support Facilities Development 46
- 4.6 Ground Access Development 47

Tables

- 4.1 Total Aircraft Gate Requirements 41
- 4.2 Area Required for General Aviation Aircraft (Acres) 45

Figures

- 4.1 Potential Terminal Development Areas 49
- 4.2 Potential Terminal Development Concept 1A 50
- 4.3 Potential Terminal Development Concept 1B 51
- 4.4 Potential Terminal Development Concept 2A 52
- 4.5 Potential Terminal Development Concept 2B 53
- 4.6 Potential Terminal Development Concept 2C 54
- 4.7 Potential Terminal Development Concept 2D 55
- 4.8 Potential Terminal Development Concept 2E 56
- 4.9 Potential Terminal Development Concept 2F 57
- 4.10 Potential Terminal Development Concept 2G 58
- 4.11 Potential Terminal Development Concept 2H 59
- 4.12 Potential Terminal Development Concept 2I 60
- 4.13 Potential Terminal Development Concept 3A 61
- 4.14 Potential Terminal Development Concept 3B 62
- 4.15 Potential Air Cargo Development Areas 63
- 4.16 Sample Air Cargo Development Concept Area 1 64

4.17 Sample Air Cargo Development Concept Areas 2 and 4 65

4.18 Potential General Aviation Development Areas 66

4.19 Potential Airline Support Facility Development Areas 67

4.20 Potential Ground Access Development Areas 68

Chapter 5: Potential Airfield Improvements

5.1 Introduction 69

5.2 Airfield Simulation, Potential Improvements, and Results 69

5.3 Potential North Field Taxiway Improvement 71

5.4 Potential North Field–South Field Taxiway Connector 71

5.5 Potential New South Field Runway 72

5.6 Remote Remain Overnight (RON) Aircraft Parking 73

Tables

5.1 Potential New North Field–South Field Taxiway Time Comparisons 72

5.2 Remote (off-gate) Remain Overnight (RON) Aircraft Parking Requirements 73

Figures

5.1 Runway 29 Operations 74

5.2 Potential Runway 29 Access Improvements 75

5.3 Potential New High-Speed Exit Taxiway — Runway 29 76

5.4 Airfield Queue Delay Comparison 77

5.5 Potential New Taxiway Parallel to Runway 9R-27L 78

5.6 Potential North Field–South Field Taxiways 79

5.7 Potential New South Field Runways 80

5.8 Potential Remain Overnight (RON) Aircraft Parking Areas 81

Chapter 6: Environmental Considerations

6.1 Introduction 83

6.2 Wetlands 83

6.3 Aircraft Noise 83

6.4 Other Airport Environmental Programs and Policies 91

6.5 Preliminary Environmental Screening Matrix 96

6.6 Community-Requested Environmental Projects 99

Tables

6.1 Factors that Affect Individual Annoyance to Noise 86

6.2 Master Plan Preliminary Environmental Screening Matrix 97

Figures

6.1 Wetlands Map 103

6.2 Sound and Noise — What We Hear 104

6.3 Sound and Noise — Frequency Weighting 105

6.4 Effects of Weather on Sound 106

6.5 Sound Exposure Level, Maximum Noise Level and Duration 107

6.6 Noise Metrics 108

6.7 Single Event Noise to Cumulative Noise (CNEL) 109

6.8 Examples of Community Noise Equivalent Levels (CNEL) 110

6.9 Annoyance and Community Noise Equivalent Level (CNEL) 111

6.10 Sleep Interference 112

6.11 FAA Part 150 Noise and Land Use Guidelines for New Development 113

6.12-1 Existing Airport Noise Control Program 114

6.12-2 Existing Airport Noise Control Program 115

6.13 Night Single Event Noise Contours 116

6.14 Night Single Event Noise Contours 117

6.15 Community Noise Level Equivalent Level (CNEL) Contours 2004 118

6.16 Community Noise Level Equivalent Level (CNEL) Contours 2010 119

6.17 Community Noise Level Equivalent Level (CNEL) Contours 2004 and 2010 120

6.18 Other Environmental Programs 121

6.19 Potential Takeoff Noise Barrier Near Source or Receiver 122

6.20 Potential Takeoff Noise Barriers 123

6.21 Potential Effect of Barrier on Departure Noise 124

Chapter 7: Financial Considerations

7.1 Introduction 125

7.2 Overview of Airport Finances 125

7.3 Financial Plan 130

Tables

7.1 Summary of South Field Operating Revenues and Expenses — Fiscal Year 2004 126

7.2 Airline Cost per Enplaned Passenger — Calendar Year 2005 127

7.3 Potential Projects and Costs 130

Chapter 8: Recommended Land-Use Plans

8.1 Introduction 133

8.2 Existing Land-Use Map 133

8.3 Near-Term Land-Use Map (2010–2012) 133

8.4 Long-Term Land-Use Map (2025) 135

Figures

8.1 Existing Land-Use Map 136

8.2 Near-Term Land-Use Map (2010–2012) 137

8.3 Long-Term Land-Use Map (2025) 138

Appendices

A Stakeholder Advisory Committee Members

B Stakeholder Advisory Committee Meeting Agendas and Minutes

C Comment Letters and Open House / Public Meeting Comments

D Glossary of Acronyms

E Aviation Committee Staff Reports

F Airline Passenger Market Analysis (October 2004)

G Calculation Records

H 2010 Planning Day Flight Schedule (Passenger Airline, Air Cargo, and General Aviation Flights)

I ATAC/HNTB Airfield Simulation Technical Memorandum

J Runway 11-29 Capacity and Delay with Master Plan 2010 Operations Forecasts (May 2005)

K Environmental Considerations in the Master Plan (July 2005)