## INTRODUCTION

Since the opening of Dallas/Fort Worth International Airport in 1974, airline service at Dallas Love Field has been limited under the restrictions of the Wright/Shelby Amendment. Recently, however, the introduction of new generation aircraft allowed other airlines to begin service, and the use of airport facilities has been the source of competing interests and controversy. During the last year, the increase in air carrier operations at the airport caused outspoken opposition to airport growth from communities near the airport. To plan for growth, the City of Dallas undertook this Airport Impact Analysis and Master Plan to determine the highest practical use of Love Field within federal guidelines, while maintaining balance with the environmental and socio-economic impacts that might result from increased use of the airport.

*The study was undertaken by the City to determine the highest practical use of Love Field within federal guidelines, while maintaining balance with the environmental and socio-economic impacts that might result from increased use of the airport.*

## THE STUDY PROCESS

The study process combined the following:

1. A technical aviation planning approach that adhered to Federal Aviation Administration guidelines,
2. An advanced and more detailed evaluation of environmental impacts similar in many respects to a formal federal environmental document, and
3. A community and public involvement program formed to solicit input from stakeholders and those affected by Love Field.

- ✓ *Technical aviation planning approach*
- ✓ *Detailed environmental analysis*
- ✓ *Community and public involvement*

### *DOCUMENTATION*

The technical approach centered around a demand analysis which established the market demand profile and growth potential of Love Field given the restrictions imposed by the Wright/Shelby Amendment which were assumed to remain in effect. An assessment of the capacity of Love Field to accommodate the projected growth was then conducted. This identified airfield and airspace constraints that would prohibit the ability of Love Field to grow without limitation. Given these constraints, several airport development alternatives were comparatively evaluated against a list of operational, environmental and economic criteria. A detailed environmental analysis was prepared to assess the impact that could be expected in the areas of aircraft noise, air quality, vehicular traffic and others. The result is an airport development plan that is

responsive to the immediate needs for facility and service improvements, while providing a guide for the logical, sequenced development of facilities in the future as demand warrants.

### COORDINATION

In an effort to build consensus for the plan a Master Plan Advisory Committee (MPAC) was formed. This group consisted of individuals representing local residents, businesses, airport tenants, airlines and others who are affected by Love Field. The plan was developed in a cooperative manner through a series of ten meetings and workshops conducted with the MPAC over a ten-month period. This diverse, representative group of participants provided vital input and advice to the process, which allowed for conclusions that adequately responded to the needs and concerns of all stakeholders.

*Master Plan Advisory Committee (MPAC)*

### COMMUNICATION

A thorough program was organized which included the use of several forums to keep the general public informed of the study process. The Public Involvement Program included a series of seven public information meetings held at key milestone points in the process. In addition, the Dallas Love Field Master Plan News, a periodic project newsletter, was distributed to over 50,000 residents in the communities around the airport. A project information web site was also developed and maintained over the course of the study.

*Study communicated directly to over 50,000 residents*

## AVIATION DEMAND PROFILE

The past two years have seen aircraft operations at Love Field grow by 15 percent, and airline operations increase by 25 percent. The introduction of the new generation regional jet has provided the opportunity for airlines to serve more distant destinations within the framework of the Wright / Shelby Amendment. Although the passenger demand for this additional service was clearly identified, there are constraints that will prohibit activity demand at Love Field from growing without limitation.

*Unacceptable levels of congestion and delays will result if growth were to continue unconstrained.*

The limitations imposed by the Metroplex airspace system, and the inability to expand or alter the airport's runway system, will result in unacceptable levels of air traffic congestion and delays if growth were to continue unconstrained. Based on accepted FAA and industry planning criteria, a delay level of 6–7 minutes per

operation on average was established as a threshold beyond which an acceptable level of service could not be maintained. On this basis a constrained demand profile established a projected level of activity that would be limited to 334,000 operations annually or a 23 percent increase. Air carrier activity would account for 183,000 of the operations or approximately 500 daily flights, a 44 percent increase. Table 1 provides a summary of the constrained demand forecasts used to determine gate, terminal and landside facility requirements.

*Highest practical level of service will require 32 gates*

*Table 1 Constrained Demand Profile*

| ENPLANEMENTS | 2002 | 2005 | 2010 | 2015 | 2020 |
|---|---|---|---|---|---|
| Large Aircraft | 3,533,471 | 3,682,355 | 3,827,912 | 3,949,097 | 4,076,933 |
| Hub Markets | 371,963 | 584,513 | 708,460 | 729,885 | 751,608 |
| Non-Network Markets | 428,501 | 595,140 | 682,214 | 696,797 | 711,497 |
| **Total Enplanements** | 4,333,935 | 4,862,008 | 5,218,586 | 5,375,779 | 5,540,038 |
| | | | | | |
| OPERATIONS | | | | | |
| Large Aircraft | 100,420 | 100,720 | 101,722 | 101,722 | 101,722 |
| Hub Markets | 22,890 | 35,970 | 43,598 | 43,598 | 43,598 |
| Non-Network Markets | 23,544 | 32,700 | 37,484 | 37,484 | 37,484 |
| Total Air Carrier Operations | 146,854 | 169,390 | 182,804 | 182,804 | 182,804 |
| General Aviation | 141,916 | 149,063 | 151,196 | 151,196 | 151,196 |
| **Total Operations** | 288,770 | 318,453 | 334,000 | 334,000 | 334,000 |

This highest practical level of service was translated into a demand for 32 aircraft gates, an increase of 10 over the 22 currently in use and 3 more than the 29 presently available. At one time as many as 58 gates were in operation at the airport. This constrained demand level will also maintain the airside capacity and efficiencies required to accommodate the high-value corporate and general aviation users who make up about half of Love Field's operations.

## ENVIRONMENTAL IMPACT ANALYSIS

An environmental impact analysis of this growth scenario was conducted with emphasis placed on aircraft noise, air quality, vehicular traffic and socio-economics.

*The population exposed to the 65 DNL noise level is projected to drop from nearly 27,000 people in 1998 to 23,000 in 2010.*

### *AIRCRAFT NOISE*

A noise impact analysis was conducted using the FAA's Integrated Noise Model, and actual data from the airport's noise monitoring system. Noise contours and peak period specific data were developed to determine the impact associated with the growth scenario and the required facility development. Largely because of advances in aviation technology and airport procedures, the number of people who fall within the 65 DNL impact area around the airport will actually decrease over the next decade. The population exposed to this noise level is projected to drop from nearly 27,000 people in 1998 to 23,000 in 2010. New, quieter aircraft will replace older models and both mandatory and voluntary noise abatement procedures will help. Figure 1 provides a comparison of the 2000 noise contours and those predicted in 2010 should 32 gates be in use at Love Field.

*Sensitive land uses such as residential areas, schools, churches, and hospitals were identified*

Land use in the vicinity of the airport consists of a mixture of varying types of residential development, commercial and industrial uses and a variety of other mixed uses. Important to the Impact Analysis was the identification of surrounding neighborhoods, municipal boundaries, schools, churches, and hospitals also depicted on Figure 1.

Insert Figure 1 – 2000 vs. 2010 32 gate NOISE CONTOURS

## AIR QUALITY

The Dallas region is presently in a non-attainment area for ozone. Thus, an emissions inventory using FAA and EPA accepted computer modeling was prepared for the contributing pollutants including particulates, nitrogen oxides and hydrocarbons. The analysis included all airport related emission sources including aircraft, ground service equipment and vehicles using the airport roadways and parking lots. The following tables summarize the results of the above stated analysis.

*Particulates, nitrogen oxides, and hydrocarbons were modeled for aircraft, ground service equipment and vehicles using the airport.*

*Table 2–Air Emissions From Aircraft Operations*

| Alternative | 2000 | | 2010 – 22 Gates | | 2010 – 29 Gates | | 2010 – 32 Gates | |
|---|---|---|---|---|---|---|---|---|
| LTOs/Year | 135,913 | | 147,100 | | 160,293 | | 167,000 | |
| Pollutant | tons/yr | tons/day | tons/yr | tons/day | tons/yr | tons/day | tons/yr | tons/day |
| Nitrogen Oxides | 468.93 | 1.28 | 485.43 | 1.33 | 524.15 | 1.44 | 542.57 | 1.49 |
| Hydrocarbons | 62.21 | 0.17 | 63.14 | 0.17 | 71.83 | 0.20 | 76.09 | 0.21 |

*Table 3–Air Emissions From Ground Support Equipment Operations*

| Alternative | 2000 | | 2010 – 22 Gates | | 2010 – 29 Gates | | 2010 – 32 Gates | |
|---|---|---|---|---|---|---|---|---|
| LTOs/Year | 135,913 | | 147,100 | | 160,293 | | 167,000 | |
| Pollutant | tons/yr | tons/day | tons/yr | tons/day | tons/yr | tons/day | tons/yr | tons/day |
| Particulates | 2.63 | <0.01 | 1.38 | <0.01 | 1.49 | <0.01 | 1.50 | <0.01 |
| Nitrogen Oxides | 65.72 | 0.18 | 32.39 | 0.09 | 35.36 | 0.10 | 35.51 | 0.01 |
| Hydrocarbons | 14.88 | 0.04 | 5.64 | 0.02 | 6.26 | 0.02 | 6.29 | 0.02 |

*Table 4–Air Emissions From Vehicles Operating on Airport Roadways and Parking Facilities*

| Alternative | 2000 | | 2010 – 22 Gates | | 2010 – 29 Gates | | 2010 – 32 Gates | |
|---|---|---|---|---|---|---|---|---|
| Pollutant | tons/yr | tons/day | tons/yr | tons/day | tons/yr | tons/day | tons/yr | tons/day |
| Particulates | 1.66 | <0.01 | 1.41 | <0.01 | 1.50 | <0.01 | 1.55 | <0.01 |
| Nitrogen Oxides | 36.20 | 0.10 | 32.99 | 0.09 | 34.92 | 0.10 | 36.11 | 0.10 |
| Hydrocarbons | 48.05 | 0.13 | 37.62 | 0.01 | 39.75 | 0.11 | 40.82 | 0.11 |

The projected reduction in emissions from automobiles over time, and the airport's commitment to electrifying ground service equipment, will contribute to a manageable air quality situation in the future.

*The City is committed to emissions reduction in the future.*

The data results were also compared to Texas Natural Resource Conservation Commission (TNRCC) data generated in 1996 for all of Dallas County and the four-county Metropolitan Dallas-Fort Worth Air Quality Control Region (AQCR). The data indicate that in the year 2000 Dallas Love Field contributed approximately 0.7

and 0.35 percent of NOx emissions to the total NOx emissions generated in the AQCR respectively. Similar data for hydrocarbon emissions were 0.2 and 0.1 percent. These shares are not expected to change appreciably in 2010.

The air quality analysis was reviewed by the TNRCC in early March of 2001. The agency concluded that the analysis was done accurately and that in recreating the work they arrived at basically the same emissions rates.

*The future airport growth will result in minimal additional airport-related traffic at the key intersections studied.*

### VEHICULAR TRAFFIC

A traffic analysis was conducted that included a level-of-service evaluation for 12 key roadway intersections in the vicinity of Love Field. In addition, a review of the City's transportation plans and roadway improvement proposals was also conducted. The future growth on the off airport roads in the vicinity of Love Field indicate the following:

- When this growth is considered in conjunction with the currently planned City of Dallas intersection improvements and future shifts in area traffic routes projected by the North Central Texas Council of Governments, typical future levels of service will be comparable to or better than the current conditions.
- Congestion effects along Mockingbird Lane will continue near the North Dallas Tollway due to the constrained number of lanes in that area.
- Additional modest improvements at I-35E will be needed to maintain acceptable traffic flows.

*Improvements to the Cedar Springs and Mockingbird Lane intersection at the entrance to the airport are proposed.*

In summary, the majority of the intersections evaluated should not see a reduction from the existing level-of-service. Furthermore, the airport growth scenario will result in minimal additional airport related traffic at these key intersections. Improvements to the Cedar Springs and Mockingbird Lane intersection at the entrance to the airport are proposed. In addition, the extension of a mass transit rail line to the airport is also being considered by the Dallas Area Rapid Transit (DART).

## ECONOMIC ANALYSES

An analysis determined that Love Field currently contributes approximately $3.4 billion annually to the regional economy. The airport is estimated to generate an additional $1 billion in regional economic impact totaling $4.4 billion annually, if demand requires full implementation of the plan.

*An additional $1 billion in regional economic impact totaling $4.4 billion annually will be generated.*

In addition to the economic benefit analysis, an evaluation was completed to estimate the total property tax contribution from Dallas citizens residing within the 55+ DNL noise contours. The estimated property tax contribution totals by contour level were derived using information obtained from the Dallas Central Appraisal District for Tax Year 2000, as well as a survey of real estate values in the vicinity of Love Field. The following summarizes the results of the analysis. More detail is provided in the full environmental chapter of the Master Plan.

- There are approximately 33,839 residential parcels located within the 55 DNL or greater.
- The estimated market value of the above properties is approximately $5.3 billion.
- The taxable value of all residential properties located within the 55 DNL or greater is approximately $3.9 billion.
- The estimated property tax contribution is approximately:
- 55–60 DNL property tax contribution—$33,200,595
- 60–65 DNL property tax contribution—$43,278,371
- 65–70 DNL property tax contribution—$19,191,382
- Total property tax contribution from those residing within Love Field noise contours—$95.6 million

*The taxable value of all residential properties located within the 55 DNL or greater is approximately $3.9 billion.*

*Total property tax contribution from those residing within Love Field noise contours—$95.6 million.*

## DEVELOPMENT PLAN

The recommended development plan will achieve over time, and as demand requires, a terminal configuration for a maximum of 32 gates that could accommodate the highest practical level of air service. The 32 gate proposal will require a net increase of three gates beyond the 29 that are currently available. Pre-existing terminal space remaining from Love Field's busiest years is believed to be capable of supporting as many as 55 gates. The plan will involve removal of these unnecessary and outdated terminal and other airport facilities. In addition, the environmental impacts

*A plan for 32 gates as demand requires*

associated with the plan are minimal and a continuous monitoring program will provide the basis for managing and minimizing any impacts related to airport growth.

The priority projects that make up Phase One of the terminal development focus on providing three additional gates. These gates, which will address the current requirement of additional capacity, can be provided in a most timely and cost effective manner by opening the three recently refurbished gates on the East Concourse.

*Priority projects focus on providing three additional gates*

The longer-term gate requirement, which will necessitate redevelopment of the North Concourse and relocation of Southwest Airlines training facilities, is a capital investment that would be undertaken in a future phase as demand for additional gates materializes.

The proposed $147 million Capital Improvement Program includes the following phased improvements, also depicted on Figures 2, 3 and 4:

*The Phase One and Future Phase Terminal Area Plan improvements will cost approximately $147 million.*

### *TERMINAL AREA PLAN–PHASE ONE:*

1. Open three East Concourse gates
2. Demolish remainder of East Concourse
3. Construct new cargo building
4. Demolish existing cargo building
5. Develop Commercial Vehicle Lot
6. Begin curb frontage and terminal roadway improvements

### *TERMINAL AREA PLAN–FUTURE PHASE:*

1. Relocate/replace Southwest Airlines Training Facility
2. Redevelop North Concourse for seven gates
3. Demolish existing vacant ticket wing
4. Construct new ticketing and bag claim wing
5. Continue with terminal roadway improvements
6. Construct new pedestrian walkway from parking garage to new ticketing/bag claim
7. Begin improvements to Cedar Springs/Mockingbird intersection

## *AIRSIDE PLAN:*

1. Dual taxiway entrances to Runways 13R, 31L, 13L and 31R
2. Extend Taxiway "L" to meet "D1"
3. Expansion of the Runway 31L holding apron to accommodate two B737-700's
4. Extension of Taxiway "K" to meet extended Taxiway "B5" and construction of Taxiway "M" between "B1" to "B3"
5. Construction of Taxiway "M" between "B5" and Runway 18-36
6. Provide a designated road for aircraft service vehicles
7. Provide a remote apron and deicing area located west of Taxiway "K" and north of Taxiway "C"

*Taxiway improvements will enhance the movement of aircraft on the ground, reducing taxiing times, departure delays, and air pollutant emissions*

Insert Figure 2—Phase 1 terminal drawing

Insert Figure 3 Future Phase terminal drawing

Insert Figure 3 Airside Improvements

## CONTINUOUS PLANNING PROCESS

This plan attempts to remove uncertainty about the future of Love Field and stabilize affected neighborhoods. To assure a continued monitoring of the plan's effectiveness, the Master Plan Advisory Committee collectively agreed to establish a number of ongoing activities:

*The Master Plan Advisory Committee collectively agreed to establish a number of ongoing activities.*

- The existing Noise Abatement Advisory Committee, which meets monthly, will become the Love Field Environmental Impact Advisory Committee to address noise, air quality and traffic impacts. This committee will include a diverse group of aviation, business and residential representatives.

*Love Field Environmental Impact Advisory Committee*

- A state-of-the-art noise monitoring system has been installed around the airport and officials and the public will be able to closely monitor noise and the specific aviation activity causing noise. The plan encourages a significantly more pro-active noise control program with special focus on the utilization of data generated from the noise monitoring system. This will help identify problem aircraft and remedy the situation. Other more pro-active policies, procedures and practices to reduce noise may also result.

*A proactive noise control program using monitoring system data*

- Continued study should be undertaken to provide an objective assessment of air quality issues.

*Air quality monitoring program*

- A comprehensive plan of action should be developed to prevent and mitigate the impact of airport-generated automobile traffic in affected neighborhoods. This plan would divert traffic from residential streets, protect neighborhoods from encroachment by tollroads and other ground transportation projects, and promote an integrated regional transportation plan.

*Airport-generated roadway traffic plan*

- The Master Plan Advisory Committee, composed of business, community, aviation and neighborhood leaders, will continue to meet at least twice each year for five years to review the overall progress of the master plan implementation. The Love Field Environmental Impact Advisory Committee will monitor noise, air quality and traffic issues on an ongoing basis. A comprehensive Web site will be developed to enable the community to access a wide range of information about Love Field, and other communications tools will be used.

*Public involvement and communication tools*